

# **API PEMILU**

## **TOWARD THE SMART ELECTION**

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# FOREWORD

TRANSPARENCY has become mainstream in Indonesia. Through Law No. 14 of 2008, the internalization of public disclosure has been made more structured, systematic and massive public institutions. These principles are later deemed as crucial in sustaining the integrity of the process and the result of the election, especially after the implementation of the parliamentary and presidential election of 2014. The general public was being exposed to the spectacle of the elections presented in a so-called glass-box. Each process can be seen and monitored by naked eye. In fact, public can record or re-record any data and information regarding the election, and then re-present the data in a more creative and attractive way. Providing a more open election data and information turns out to be an effective way to strengthen election results.

Enhancing the transparency of the election process, with all the data and the information they contain, has been proven to be effective in minimizing any potential conflict. The parliamentary and presidential election of 2014 have proved that the threads spurred by some people, that the implementation of the 2014 election will split the people of Indonesia as well cause destructive conflict, are somewhat unproven. There were no cases of physical violence that caused destruction to the public or private facilities during the election until the inauguration of the elected president. The crystallized form and nature of support for the two

major political camps was boisterous, but they were all confined in the territory of online communities, and appear to be dominated by noise rather than voice. The conflict was subsided before it has the chance to exist.

The disclosure of data and information of the election is also affected public perception regarding the performance and achievements of the election management body (EMB). The KPU (Komisi Pemilihan Umum) or General Election Commission was considered successful in implementing election under a very high political pressure. The credibility of the KPU members rose sharply, and has become a role-model for many other state institutions. Many members of the society even voluntarily put themselves to defence and helped to clarify many accusations spurred towards the KPU made by some losing politicians, which usually aimed to weaken the KPU credibility, with data and information. The data and information used in that process are public records of the election process. If the electoral process is not transparent, public would not have any reliable means to uncover data and fact. The credibility and professionalism of the Commission were successfully maintained due to the strict implementation of the transparency principle.

The transparency is implemented by utilizing the KPU official website for dissemination electoral information. There are 25 types of data and information opened by the KPU RI so they can be accessed easily and free of charge to the public. Also, There are nine information systems that support electoral work, which is commonly called web-based application by the public. One of the most prominent

application is Sistem Informasi Daftar Pemilih (Voter Registration Information System) or Sidalih. Specifically, there were scanned document of C1 form (the vote counting results at polling stations) uploaded in the form of digital image (.jpg). These documents were documented in real time by the election committees. Public responded to all the data and information enthusiastically, and work in a joint-effort to record and process the information.

However, the effort to disclose information by the Commission is just a first step in implementing the principle of transparency. It is about the time for the Commission to upgrade this initiative to a higher level, which is open data. According to the international standards of open data, open data is not just an act of publishing data and information available to the public, but involves three key words that are indispensable: i) data availability and ease of access, ii) reused and distributed freely, and iii) the existence of universal participation. This implies that the data and information gathered in open data activity should not only utilizable by humans, but also by machines. This is the reason why open data initiative later requires API (Application Programming Interface), as a bridge between the data and information that is Open Data and the public at large.

Perludem is one of many civil society organization that also utilize and optimize election data and information during Election 2014. In collaboration with The Asia Foundation, Perludem implement the API program by collecting all manual data essential to the election process, then change the data format to be machine-readable, and

placed them on an online storage that can be accessed freely by anyone. To stimulate data usage and information, Perludem had organized two hackathon events prior to the legislative and presidential elections of 2014, involving hundreds of application developers. As a result, there were 485 applications and election games created during the events, which partly can be downloaded for free by users from their Android or iOS gadget.

This book is an effort to record the process and achievements that have been obtained by Perludem through the API Election program. The author, Harun Husein, summarizes and explains the experience obtained from the implementation of the program, so it can be beneficial for larger audiences. The book also discusses in depth principles and implementation of open data and API, based on the experience in implementing the API Elections. Hopefully, this will allow the reader to understand the idea and the practice of open data and API as technology that mutually supportive. In the end, the main implicit wisdom of this book is the idea that technology should be able to answer the problems of election, rather than contribute to the new problems.

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# PART ONE

# ELECTION DATA IN

# INDONESIA:

# DISCLOSURE AND

# COMPILATION OF THE

# SCATTERED

SUNLIGHT is the best disinfectant. There goes an quote that contains a fundamental truth, that openness and transparency can solve many problems due to secrecy, such as corruption, manipulation, and various deviation, which always played in the dimly and dark places. In fact, some are calling 'the sun light ' of openness and transparency as a more efficient police than literally the policemen themselves.

In the issue of election, secrecy is a nest of various germ of fraud and manipulation, which creates diseases for elections and democracy. Insularity or secrecy makes the electoral process difficult to predict, even though the result is predictable. In New Order era for instance, the election process is full of manipulation and intimidation, whereas the result, the winner, can be predicted, even before the election. Openness and transparency of election data will help prevent foul play, machiavelian election, the feast arena of the bandits, who actually despised democracy and people's sovereignty.

But the sun is not just a natural germ killer. The sunlight

is also an essential prerequisite for photosynthesis. Photosynthesis is the process that ultimately makes the plants absorb carbon and releasing oxygen that are useful for life. Photosynthesis is what makes plants can 'cook' and could ultimately produce flowers and fruit.

## **2014 ELECTION DATA DISCLOSURE AND IMPLICATIONS**

In the 2014 election, election data has been relatively more open. Disclosure of election data not only increase the integrity and legitimacy of the electoral process, but also produce beautiful fruits and flowers, in the form of innovation and creativity that – as often expressed by the election activists -- merge technology with the election. Some of which are recorded as the pioneer (in Indonesia election).

The disclosure of election data, among other things, allows the Association for Elections and Democracy (Perludem) initiate the Application Programming Interface (API) for the election purpose. This is an election data digitization activities: cleaning, restructuring, making it in a standardized format that can be read by machine (computer), to facilitating public to reuse the election data and distribute them widely in a unique and exciting way.

After creating the database for the API, Perludem organized hackathon (hack+marathon), it is an event that allow programmers and others in the field software development collaborate together in making election-themed applications. This event challenged programmers and IT developers in Indonesia, including Indonesian

citizen abroad, to utilize the variety of election data to make interesting applications or mobile web-based, in a hope that the data of the election can be presented to the public in a more fun and interesting way. So the election data can be more attractive, particularly for the young people.

Hundreds of software experts took part in the hackathon events that was held twice, once before the legislative elections and the other for the presidential elections. The result is about 485 apps and election games, some of which can be downloaded for free, especially by devices or gadgets (smart phones and tablet computers) users with Android or iOS platform, whose numbers in Indonesia has reached 100 million people.

Another pioneering-initiative that born from the disclosure of election data is the emergence of crowdsourcing 'movement' to count the election result. This phenomenon conducted by a lot of volunteers in various webs. Examples are: [kawalpemilu.org](http://kawalpemilu.org), [pilpres2014.org](http://pilpres2014.org), [pilpres.umm.ac.id](http://pilpres.umm.ac.id), [kawal-suara.appspot.com](http://kawal-suara.appspot.com), [kawalpilpres.appspot.com](http://kawalpilpres.appspot.com), [realcount.herokuapp.com](http://realcount.herokuapp.com), [j.mp/hitungpilpres2014](http://j.mp/hitungpilpres2014), [rekapda1.herokuapp.com](http://rekapda1.herokuapp.com), [caturan.com](http://caturan.com), [bowoharja.biz](http://bowoharja.biz), and [cross-check.herokuapp.com](http://cross-check.herokuapp.com).

Admittedly, these initiatives were mostly driven by the times and technological advances and improvement made in the field of information technology. However, the disclosure of election data is also an important trigger. Without transparency, no matter how rapid the advancement of technology is, it is difficult to imagine that there will appear creativity and innovation in utilizing the election data.

Out of the eleven elections that were ever held in Indonesia, it was only in the 2014 election the election data can be considered as open. Election data, that in the previous elections did not easily accessible, only partially opened, or opened only according to the electoral stages and could not be accessed at any time – in 2014 the data was almost like being poured to the public. The General Election Commission (KPU) for the period of 2002--2017, which organizes The Legislative and Presidential Election of 2014, has opened almost all election data to the public.

Most of the data opened by KPU are distributed online, either through its website on [www.kpu.go.id](http://www.kpu.go.id) or through a variety of URLs and special links that contain data grouped according to specific themes. (See table 1). Similar effort is also conducted by the Election Supervisory Body (Bawaslu) in their website, [www.bawaslu.go.id](http://www.bawaslu.go.id)

TABLE 1. DATA AND INFORMATION OPENED BY KPU VIA KPU.GO.ID AND OTHER URLS

DATA AND INFORMATION	ADDRESS
Voters List (DPS), Improved Temporary Voter List(DPSHP), Permanent Voters List (DPT) for the election of 2014	<a href="http://data.kpu.go.id">http://data.kpu.go.id</a>
Documentation Network and KPU Legal Information	<a href="http://jdih.kpu.go.id">http://jdih.kpu.go.id</a>
The Result of the Election of 2014	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/347">http://www.kpu.go.id/index.php/pages/detail/2015/347</a> <a href="http://www.kpu.go.id/index.php/pages/detail/2014/316">http://www.kpu.go.id/index.php/pages/detail/2014/316</a>
Scanned C1 Form for the Parliamentary Elections of 2014	<a href="https://pemilu2014.kpu.go.id/">https://pemilu2014.kpu.go.id/</a>
Scanned C1 Form for the Presidential Election Results	<a href="http://pilpres2014.kpu.go.id/">http://pilpres2014.kpu.go.id/</a>



<b>DATA AND INFORMATION</b>	<b>ADDRESS</b>
List of Candidates for the Regional Representatives Council (DPD)	<a href="http://caleg.kpu.go.id/browse_dpd.php">http://caleg.kpu.go.id/browse_dpd.php</a>
List of Candidates for the House of Representatives (DPR)	<a href="http://caleg.kpu.go.id/browse_dpr.php">http://caleg.kpu.go.id/browse_dpr.php</a>
List of Candidates for Provincial Parliament (DPRD provinsi)	<a href="http://caleg.kpu.go.id/browse_dprd1.php">http://caleg.kpu.go.id/browse_dprd1.php</a>
List of Candidates for the District/ Municipal Parliament (DPRD Kabupaten/kota)	<a href="http://caleg.kpu.go.id/browse_dprd2.php">http://caleg.kpu.go.id/browse_dprd2.php</a>
DPR and DPD Members for the 2014-2019 period	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/387">http://www.kpu.go.id/index.php/pages/detail/2015/387</a>
Assembly Members for the 2014-2019 period	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/349">http://www.kpu.go.id/index.php/pages/detail/2015/349</a>
List of TPS (Polling Station) for the Parliamentary Election of 2014	<a href="http://tps.kpu.go.id/pileg2014.php">http://tps.kpu.go.id/pileg2014.php</a>
List TPS (Polling Station) for the Presidential Election of 2014	<a href="http://tps.kpu.go.id/pilpres2014.php">http://tps.kpu.go.id/pilpres2014.php</a>
List of Political Party participated in the national election of 2014	<a href="http://partai.kpu.go.id/browse.php">http://partai.kpu.go.id/browse.php</a>
The List of Budget Usage (DIPA) of KPU in 2014 and the Actual Budget for the Election of 2014	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/383">http://www.kpu.go.id/index.php/pages/detail/2015/383</a>
Regional Expansion in 2014	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/384">http://www.kpu.go.id/index.php/pages/detail/2015/384</a>
End of Term of Office for Regional Authorities in 2015	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/341">http://www.kpu.go.id/index.php/pages/detail/2014/341</a>
Electoral Districts and Seat Allocation	<a href="http://www.kpu.go.id/index.php/pages/detail/2013/135">http://www.kpu.go.id/index.php/pages/detail/2013/135</a>
Procurement Plan (RUP) for Goods/Services in the KPU General Secretariat in 2015	<a href="http://www.kpu.go.id/index.php/pages/detail/2015/388">http://www.kpu.go.id/index.php/pages/detail/2015/388</a>
KPU commissioners' organizational structure	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/344">http://www.kpu.go.id/index.php/pages/detail/2014/344</a>
KPU Information Service Center	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/328">http://www.kpu.go.id/index.php/pages/detail/2014/328</a>
Campaign Finance Reports	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/267">http://www.kpu.go.id/index.php/pages/detail/2014/267</a> <a href="http://kpu.go.id/index.php/pages/detail/2014/314">http://kpu.go.id/index.php/pages/detail/2014/314</a>

DATA AND INFORMATION	ADDRESS
Registration Document for the candidates of Presidential Election	<a href="http://kpu.go.id/index.php/pages/detail/2014/284">http://kpu.go.id/index.php/pages/detail/2014/284</a>
Missions and Vision statements from presidential candidates	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/304">http://www.kpu.go.id/index.php/pages/detail/2014/304</a>
Survey institute/quick count	<a href="http://www.kpu.go.id/index.php/pages/detail/2014/324">http://www.kpu.go.id/index.php/pages/detail/2014/324</a>

However, the most striking elements from the opening of the election data is the curriculum vitae of legislative candidates, voter list checking facility via the portal Voter Data Systems (Sidalih), and the scanned vote of counting result from polling stations (C1 Form).

The uploading of candidates' resume is a breakthrough for KPU. Candidates' data, which was previously secretive, even by some people were considered as 'political party secret with the election commission' - so it can not be publicly disclosed - for the first time ever can be accessed freely by voters. This step is something very important, because Indonesia applies the open-list proportional system, in which voters not only vote for political party but also for specific candidates. Publication of data lets people know the candidate's track record before choosing.

The effort to make online voters' data checking system is also another breakthrough. Using the portal, voters can check whether their name has already registered or not. Therefore, voters do not have to check manually to the village/ward office. The portal also displays the aggregate data of the voters' data updating process, from the temporary voters' list (DPS) to the final/permanent voters list (DPT).

Online publication of the C1 Form is also an unprecedented initiative, and it is the first ever attempted in the world. It is then acceptable if the KPU often boasts their initiative to open the C1 form and its glorious impact on society as one of the best practice they had done in the Election of 2014. The C1 Form contains, among other, the vote counting result signed by the Voting Operator Group (KPPS) and the witnesses. Apart from the C1 Form, KPU also uploaded scanned recapitulation result form from district level (DA1 Form) and scanned recapitulation results form from the regency/municipality level (DB1 Form).

The fact that KPU has been more transparent is acknowledged by many people. *Kemitraan untuk Pembaruan Tata Pemerintahan* (Partnership for Governance Reform), for example, gave award to the KPU for their initiative and innovation in making the election data more transparent. Partnership states, election data transparency has improved the quality of the elections, and enhanced the integrity of the election process and the election result.

## **ELECTIONS API, KPU API, AND OPEN DATA**

Despite the fact that currently the elections implementation in Indonesia is more open, however, the quality of the transparency is still left behind compared to many other countries. Firstly, the transparency initiative is only covering a small part of the criteria outlined in Law No. 14/2008 on Public Information Openness (KIP). Secondly, the transparency resulted from the initiative can not fully

recognized as open data.

Since the enactment of Public Information Openness (KIP) Law, public data disclosure has become the mainstream in Indonesia. There are several theoretical background underlying the establishment of the law. Firstly, accessibility to information is a basic human right. Secondly, transparency of information is also a means to optimize public oversight and monitoring effort over the implementation of the state and everything that affects public interest. Thirdly, to provide legal certainty for the public in obtaining information.

The Freedom of Information Law (FoI) rigidly governs important aspects of the management of public information. Particularly about the content and how the information should be presented by state officials, so that the information can be known by the public at large. “The KIP Law encourages government to do a proactive disclosure rather than being passive, in providing important public information,” said Perludem’s Election API Program Officer, Diah Setiawaty.

The issue of FoI , Diah said, is one of the crucial issues that are important in the administration of elections in Indonesia. As a result, the burden for implementing The KIP Law should also be held by organizers of election. In this case, the government – alongside with election organizer – is legally obliged to conduct public information management based on four categories as set out in Article 9, Article 10, and Article 11 of the KIP Law. Firstly, all important public information must be publicized periodically. Secondly, the information must be publicized immediately. Thirdly, the

information must be available at all times.

Many people think that the KPU and Bawaslu has already demonstrates their seriousness in providing important public information. In order to meet the first and second category, for example, the Commission has created an official web portal filled with electoral information and data that can easily be accessed online by the public. However, Perludem argues, there are still many important information has not been uploaded yet, particularly the third category. “One example is the details about political campaign funds. Admittedly, there is no obligation for such information to be actively published. But, based on the existing regulations, information in that category can be accessed through the existing procedure in KPU,” Diah said.

Other than the fact that the government and KPU are not able to meet the criteria set out in the KIP Law yet, the disclosure of election data by the organizers of election is also can only considered as mere transparency, not entirely an open data effort, a term refers to a specific and rigid activity. According to the Open Data Handbook: “open data is data that is freely used, reused and redistributed by anyone ....”

The reason why the information and data that has been opened by KPU can not fully categorized as open data is because the data is not fully given in an open format. The data uploaded -- although KPU claimed as open data -- mostly are scanned documents (PDF or JPEG). Formats such as these, in the context of open data, are categorized as proprietary. Proprietary data can only be read by humans or users of the website, and can not be read by machine (computer),

making it difficult to be re-used and redistributed.

In the Open Election Data Principles, the National Democratic Institute (NDI) said there are nine open election data requirements. Firstly, granularity, meaning that the data should be detailed to the most detailed level. Secondly, timely, meaning the election data should be available within a certain period – in accordance to the stages of election - so that it can be used effectively. Thirdly, available for free on the internet, that the data should be used freely on the Internet (online). Fourthly, completion in bulk, where data are available and can be downloaded in bulk.

Fifthly, analyzable, i.e. the data should be analyzable, therefore the election data and the digital data must be in a format that can be read by machine. Sixthly, nonproprietary, i.e. the data should be open in a format that is not controlled by any party. Seventhly, non-discriminatory, i.e. the data should be open to all parties, both individuals and organizations without any restrictions based on the identity or intention of the user. Eighthly, license-free, i.e. the data of the election can be reused to its maximum usefulness, and there should be no restrictions on its use. Ninthly, permanently available, namely the election data must be provided with a stable availability on the internet for an unlimited period of time.

Open Data is not only a matter of disclosing data to the public, but there is a number of prerequisites that need to be met. “Specifically, these data should be available in bulk, in a format that can be read by machine/computer,” as is asserted in the Open Data Handbook.

“One standardized characteristic of open data is that the data must be provided in a format that is open or non-proprietary. Open format means that the data is stored in a form that can be opened by all applications, no special application is required to read the data. Examples are .txt format or Comma Separated Value (.CSV). Referring to this standard, the majority of KPU data formats are not open and not machine readable,” said Diah Setiawaty, who is also one of the founders of Open Data Club.

Diah Setiawaty added that KPU and Bawaslu has indeed shown their seriousness in disclosing public information via their website. However, these data are still not attractive enough for the public. Firstly, because the data are not machine-readable, so these data do not appeal to the interests of many computer programmers, application developers, and researchers. Secondly, the data are incomplete, especially regarding to past elections. Thirdly, the websites owned by the Commission and its subsidiaries in local areas are not presented in the same standard, and this renders confusion to the public when accessing the data.

Fortunately, those deficiencies were then covered by Perludem. Through the initiative of Election API, Perludem reformat the election data from KPU, Bawaslu, and other sources - including election data owned by Perludem themselves - into machine-readable format, and turn it into a digital database. After tireless effort in data entry, data-cleaning, and data-management the existing data was compiled into specific themes, Perludem created an interface so that the data packages can be easily distributed

and reused by the programmers and application developers. These programmers and developers then use the electoral data as the basis for creating a variety of applications and exciting games, and send them directly into the hands of the voters through devices (gadgets).

“Perludem sees that there is a growing need for alternative solutions regarding on how to present electoral information to the public in ways that are creative and provokes people attention. There should be new approach that is more than just web portal. That approach is than decided through gadgets, web-based, Android-based, and iOS-based applications. This is an interesting idea because the internet and gadgets have become a means of communication that is enjoyed by the people in Indonesia. In addition, the development of social media use in major cities in Indonesia also made significant progress, “ as of the ecosystem needed to develop the new approach is already exist and well preserved,” Diah said.

Diah added, “Perludem believes that one of the ways to encourage public participation is by giving education to the public. Serving and educating voters with as much information presentation and visualization as possible regarding profile candidates, election stages, ongoing campaign schedules, or other information that is considered to be essential for the public to know. Not only that, Perludem will use the best media to spark people’s interest in finding out information related to the election. Therefore, Perludem looked at the API as a strategic solution to make it happen”.

Inspired by Elections API event, before the presidential



election, KPU created API KPU, and labeled the data packages with the terms ‘open data’. However, the majority of data provided in the API KPU did not relate to the presidential election issue, but instead relate to the matters of legislative election. The data of which the API has been created are the data regarding voters, electoral district, candidates, polling stations, political parties, and C1 Forms, as shown in the following picture:

FIGURE 1 : OPEN DATA AND KPU API



Despite the fact that KPU has created an API, KPU still has not been able to keep up with global progress. Moreover, the API they created is still controversial. Many people have commented that the data provided in the API KPU are not yet machine-readable, such as the scanned data of C1 forms, which are stored in the format of PDF and/or JPEG. As a result, many people still doubt the claim that KPU has implemented open data initiative.

“That’s not API. It is a regular URL. The data can not be categorized as open data,” says information technology expert

from Bandung Institute of Technology, Basuki Suhardiman, to the author, April 2015.

Ramda Yanurzha, an Ambassador for the School of Data, a program run by Open Knowledge Foundation, also said that what the KPU claims as open data can not actually be called as API. “However, for developing countries like Indonesia, the effort is good enough,” said Ramda who is also a member of Data Portal Indonesia.

Fortunately, this situation can still be faced by many volunteers like Kawalpemilu.org. Despite the fact that the scanned documents regarding the vote-counting (Form C1) uploaded by the KPU are stored in locked format, and the amount of the document reaches 500 thousands. The document was only successfully recapitulated by crowdsourcing. Kawalpemilu, for example, had mobilized 700 volunteers, so that on average each volunteer analyze 700 C1 forms. These volunteers comes from different area. They live in different city in Indonesia, even some of them are Indonesian living in 27 other countries.

Not only they managed to recap the vote-counting results in relatively short time, the volunteers were also able to expose the error in the polling station level. The volunteers then uploaded all the C1 forms that have irregularities, among others, to the web address [c1yanganeh.tumblr.com](http://c1yanganeh.tumblr.com) (weird [c1.tumblr.com](http://c1.tumblr.com)) and to the KPU helpdesk. The errors found in C1 forms - whether intended as a mode of cheating or due to sheer carelessness - justifies the frase saying ‘sunlight is the best disinfectant’. And, this method is very effective to uphold the integrity of election.

The effort to recount election results by volunteers was also coincides with rare momentum. Firstly, the vote difference between the two presidential candidates were very close. Secondly, quick count results conducted by different pollsters showed different results as well: some were in favor of Jokowi-JK, and some others were in favor of Prabowo-Hatta. As a result, the recounting effort conducted by cyber volunteers became something that caught public attention in the midst of the fierce electoral competition. Because, unlike the quick count survey conducted by pollster which only took samples from several polling stations, the crowdsourced recalculations utilized documents from all polling stations. It is later proven that the crowdsourced recalculation result is not much different with the results from manual counting.

The initiative to upload the scanned C1 documents and its impact is something that nobody has anticipated. Previously, many people think KPU had gone backwards because they do not dare to implement electronic voting tabulation like what they have done in 2004 and 2009. Vote tabulation process used vote-counting result data from polling stations - where in the 2004 elections was sent directly from sub-districts, and in 2009 was sent from regency/municipality - to the KPU's Data Center. KPU then publish the result openly.

“Actually, we were initially offered by BPPT (Agency for the Assessment and Application of Technology) to utilize application for recapitulating votes at polling stations level, a some kind of e-recapitulation. However, our proposal were terminated due to the case of Lemsaneg (State of Cryptography Agency), while the election process must still

go on. Due to the time constraints, we thought that this data (regarding the result of vote-counting) is too important to be kept away from the public, we finally choose to upload the C1 forms online. We created a simple application so that the C1 forms can be automatically arranged after being scanned,” said a KPU member, Ferry Kurnia Rizkiyansyah, to author, early April of 2015.

It is also important to note that, at some point during the third quarter of 2013, KPU signed an MoU with Lemsaneg to guarantee the security of election data. Many people protested against this cooperation. Those protesters argue that the cooperation is prone to interventionism because Lemsaneg is a non-departmental government agencies. The cooperation was officially terminated in late November 2013. Lemsaneg is an institution similar to the National Security Agency (NSA) in the United States. Lemsaneg tasks include securing state secret information, performing intelligence functions, and others.

Eventhough KPU did not implement electronic tabulation as in the two previous elections, most voters still gained the same benefits of transparency, thanks to the initiative to upload scanned C1 forms to the internet. Because, due to the initiative, voters can easily find out the results of the vote counting process based on the official data the Commission, although the data may only serves as a second opinion, like the quick count.

An IT practitioner, Johar Alam Rangkuti, said that, psychologically, the open data initiative was more acceptable to society, because what was uploaded was scanned version

of the original documents of the counting result, not the summary of the votes. This way, members of the society were provoked to get actively involved in re-calculation and monitoring activity. “So, the idea to display the C1 forms on the website of KPU is a brilliant idea,” Johar said, as quoted from Kompas.

## **DATA SCARCITY IN THE PREVIOUS ELECTION**

Although many people celebrate the disclosure of data and its implications for the 2014 election, however, when we’re looking back in history, we can only see a blurry shadow. All data of the previous elections can not be accessed easily. Let alone election data from the New Order and Old Order era, we might also consider election data from the Reform era as rare commodity.

KPU member Hadar Nafis Gumay said that he, during his time as the Executive Director of Cetro, he was very annoyed because when he was trying to acquire data regarding voting result among political parties and candidates at the DPR, DPD, and DPRD from KPU. The fact that Hadar was not looking for old data, but only data from the recent 2009 election, is not helping at all. “I even get to the point where I have to threatened them that I will report their incompetency to the Information Commission,” he told the author, some time after the 2009 election.

Such intransparency is also the case with the data concerning the results of the local election. The fact that the implementation of direct local election in Indonesia has just been recent does not help. The first direct local elections

was held in 2005. However, today it will be very difficult for us to acquire data regarding candidates, the percentage of public support for political parties, as well as the percentage of public support for individual candidates, and votes acquisition in local elections.

Annoyed by that fact, the Executive Director of Perludem, Titi Anggraini, once said, “I wonder why KPU feel the need to withheld information regarding election? Why is it so hard to acquire?”.

As a matter of fact, Titi said, those data are excellent records regarding the history of elections in Indonesia. “These data should be reused for many purposes, such as to improve the quality of elections, for academic research, as well as to improve the overall quality of Indonesian democracy,” Titi told the author, last April.

Diah Setiawaty added, the scarcity of election data led to the price inflation of election data, automatically turned them into commodities that can be bought and sold by individuals and certain organizations.” Perludem had encountered several cases like this when documenting data for the Election API. One of the most common excuses made by the people who commoditized the data is because it takes a huge cost and effort to collect those election data,” Diah said.

Due to poor management, only a few people know that before the 1955 national election - which has been written in history books as the first general election since Indonesia’s independence - there had been local elections in the residents of Minahasa, Makassar, and Yogyakarta to choose members

of local parliament in 1951-1952. The fact that there had been elections before the 1955 elections was told by a member of the Provincial KPU of Gorontalo, Verrianto Madjowa, in the book *Pemilu Gorontalo 1955-2014*.

Ferry Kurnia admitted this situation. Unlike the 2014 election data that are relatively well-documented, most of the data from previous elections are lost into oblivion. “For the 2009 elections, the only documentation of election data is the book *Pemilu Dalam Angka*,” he said. Unfortunately, the data available in that KPU publication are only the aggregate data from the national level, and they are not complete.

Where are the other election data? It still remain unknown. One thing that is clear: the halls in the KPU Headquarter in Jl. Imam Bonjol, Central Jakarta, are crowded with file cabinets. Some of the files are no longer able to be properly stored. Some of them just casually tied and placed on the floor or on top of cabinets, dusty, like garbage. “Our colleagues from the National Archives have been waiting for us to submit those documents. But, we want to digitize those documents first,” Ferry said.

However, the problem turns out to be not only about data collection, but the KPU is also still in the phase of searching for the data. The data are, other than hard-copy data, also exist in the form of scanned documents. There are also digital data that can be traced to polling stations, such as the vote counting result data, especially the data on tabulation results of the electronic vote counting in the 2004 and 2009 election. All of the data were collected with the cost of billions of rupiah to procure data centers, computers,

scanners, internet networks, and emoluments for volunteers who entry the data. However, all these resources were abandoned after the election.

The same condition also applies to the Data on Voter Registration and Sustainable Population (Pendaftaran Pemilih dan Pendataan Penduduk Berkelanjutan, P4B), which was created by the KPU for the 2004 Election. The data were collected by the means of census, in cooperation with the Central Bureau of Statistics. After the database was created, it is expected that the voters' data will become more organized. KPU does not need to be confused with the affairs of voters' data ahead of every election, because KPU then will already have an update-able database. Unfortunately, the database, which created with the cost of nearly half a trillion rupiahs, is then wasted.

“We are currently in the process of searching for and collecting data regarding the election process, at least since the election of 1999, 2004, and 2009. We've already made the legal basis for this kind of activity in the KPU Regulation No. 1/2015 on Information Management. Later, the data will be digitalized, so that everyone can access them easily. One of our functions is to provide services related to electoral information, documentation, and data, and it is our commitment to make it more open and transparent,” Ferry Kurnia said.

Ferry also said that, actually, most of election data are open data, and there is no need to hamper public access to them. He estimated that 90 percent of election data are open data. And the other ten percent are confidential data that, if



disclosed, can endanger national security. However, There are some data that are closed due to certain conditions. “One example is data on campaign finance reports. If the report is still being audited by auditor, it should be kept secret. But, upon completion of the auditing process, the data should be open to the public,” Ferry said.

However, there is one interesting question: why does the KPU suddenly decided to be more open and transparent regarding their electoral data? The election law explicitly only requires the KPU to open the data regarding voters’ list and campaign funds. Is it because there is pressure from the government, who, when the election was held, was the Chair of the Open Government Partnership?

“No. We decided to open our data solely because we want to fulfill our commitment. We believe the core of democratic value is the principle of public participation. In that context, the whole community needs to be involved in democratic process which, among others, is manifested in electoral contestation. With a wider public participation, the political contestation will also become more democratic. If the public is involved (in the democratic process) from the beginning to the end, the result will be more trusted by the public,” said Ferry Kurnia.

The previous KPU administration, admittedly, did not take a good care of the election data, especially the voters’ data. Because of that, tens of millions of people lost their voting rights. Data from the National Commission of Human Rights (Komnas HAM) reveals that there are 40 million people who lost their voting rights. Because of the

chaotic data of the voters' list, the government decided to form the Special Committee for Voters' List Inquiry in the Parliament. One of the important recommendations made by this Committee is the dismissal of all members of the KPU at that time.

Another reason why the voters' list data was so muddled is because the government change the recording method after the Ministry of Home Affairs assume the responsibility. The Ministry of Home Affairs changes the voter registration type from continuous register/list, that has been used since P4B program, into civil registry type. The KPU administration for the period of 2012-2019 has also finally resigned to the data type of civil registry the government handed over, but with strict filtering through Voter Data Systems (Sidalih).

In the end, the transparency of election data, either it is regarding the electoral process or the results, confirms the old saying that sunlight is the best disinfectant. The transparency has encouraged many people to be actively involved in the activity of monitoring the electoral process, especially in the crucial issues such as voters data, campaign finance, and the vote counting result. It has also invited many people to actively participate in the electoral process - contributing with a wide range of innovation and creativity - reducing many potential confusion, and ultimately strengthening the legitimacy of the election.

## PART TWO

# API: TRANSLATOR, BRIDGE, AND LEGO

*“Google Maps API and the Twitter API, has changed the face of the Internet forever, because it effectively started a mashup APIs trend that allows developers to utilize the services of a backend web application in other ways, for different purposes.”*

—**Meg Cater**, A Brief History of API-Based Web Applications.

THERE are several major trends that shape the world of internet these days. The most prominent one, is the development of social media networks; the use of mobile devices to access the Internet, and; location-based services, a service to identify a person or an object, such as to identify where the location of the nearest ATM. In addition, there is an important program called API, which helped underlying the trends. But what is API actually?

API stands for Application Programming Interface. Before we discuss about it any further, we should start with a simple and easy analogy, that API is like a bridge and a translator. Another popular analogy is that API is like the famous children toy, Lego: plastic blocks of various sizes and shapes, which can be connected and formed into anything innovative and creative, according to player’s imagination,

because every piece of Lego's block has a standard design that is the holes and the protrusions.

FIGURE 2: CHILDREN'S TOY NAMED LEGO THAT HAS SIMILARITIES WITH API



PHOTOS: FLIXCART.COM

## API DEFINITION

There are many definitions that has been put forward on API. One of the most concise was proposed by Konkani NLP Team, Goa University, in a presentation titled API-Application Programming Interface. According to them, "API is a set of commands, functions, and protocols that can be used by programmers when building software. API allows programmers to use standard functions to interact with other operating systems."

Because its function is like translators, bridges, and the game Lego, API can make complex matters simpler and easier. API can be used for any programming language operating system, as long as the API package is installed. API contains functions/commands which can replace the language used in system calls (which usually is different from one operating system to another) with a more structured and easier to understand language, even for a beginner programmer. The functions that are built using API will then summon the system calls according to the operating system being used.

Unique and separated operating system or process is difficult to communicate to each other. It is because every system and program is based on different programming language, such as JAVA, Microsoft, C++, or others. “There should be an interface to connect one system to another system, one database to another database, therefore we need API for the translation,” said information technology expert from Institut Teknologi Bandung (ITB), Basuki Suhardiman, to author, April 2015.

“API provides direct programmatic access to the systems and processes of software using a standard protocol for requesting and providing data. API facilitates the sharing of structured data, serves as a common language (common language), and solves critical issues, “(from the book Digitalisasi Data Pemilu, Perludem).

Lego and API have something in common in terms of its user’s creativity. Lego enables its players to explore their creativity without limit because they can combine the blocks

to make anything, even something that is unimaginable by the Lego creator. This is also the case with API, which enables programmers and developers to create and innovate applications freely, to create something that maybe unthinkable by API creator.

## **HISTORY OF API**

When was API created? This issue is still a debate. Some people argue that API technology has been around since the Internet was created. However, the modern API, according to the website [apievangelist.com](http://apievangelist.com), was created by Roy Thomas Fielding, through his dissertation titled *Architectural Styles and the Design of Network-based Software Architectures* at University of California, Irvine, in the year of 2000.

In the dissertation, Fielding describes Representational State Transfer (REST) architecture as the key principle of the World Wide Web, which then get a lot of attention. As the result, nowadays, REST has become the most common method for developers to build web services.

REST is simpler, easy to learn, and does not rely on tools. That's because REST philosophy is that any principles and protocols exist on the web are enough to create a robust web service. In addition, in its design and philosophy, REST has a relatively closer connection to web rather than its predecessor: SOAP (Simple Object Access Protocol) and WSDL (Web Services Description Language), an XML-based protocol (Extensible Markup Language).

“The API web, that is almost a synonym to web service

nowadays - the latest trend of the technology (the so-called Web 2.0) - has moved from the service-based Simple Object Access Protocol (SOAP) to the communication style of Representational State Transfer (REST) that is more direct.” (Web API, Wikipedia).

Web service is different from web site. Web site is created to interact directly with users who have limited and passive position in viewing the content of the web, where all they can do is signing in and leave comments. Meanwhile, web service is created to provide direct interaction with other applications using different operating systems and even different concepts. Web site is also created to be presented on web browser only, while web service is made to work on all types of applications/devices.

“Web service is an interface for many things. I firmly believe the, de facto, API is a web service. The difference between API and other web services is that other web services provide GET and PUSH feature, so they are two-way interaction. Whereas API only provide GET data feature,” Basuki Suhardiman said.

Although not entirely a web service, an API expert, Kin Lane, said that API allows software or even hardware to communicate on the Internet, in a secure way. “World Wide Web using the Internet to allow people to communicate and sharing information. Meanwhile, API uses the Internet to enable websites, web applications, mobile applications, and devices to communicate and share information,” Kin wrote in an article titled History of APIs on the website Apievangelist.

Meg Cater, in an article titled A Brief History of API-based Web Application stated that “API works behind the scenes. API is made to be used by developers who want to utilize API’s program and data according to their need. They manage these data by sorting all the specific things into categories, so that they can be accessed through applications or games.”

These days, API has already more evolved. API became a popular way to provide public access to a dataset or a specific service. Google Maps API is one example. Google Maps API provides a “service map to the numerous third parties, either the website or application. As a result, programmers, web designers, and application developers do not need to create a map to be displayed in their applications. Because the application they have created can directly displayed a map from Google Maps server via API. Thus, they can focus their attention on making the application.

Via a public API, a data provider or database owner can decide what data they want to share with external parties. By allowing third-party developers create software connected the Public API, data can be shared to customers through exciting new ways.

Despite the fact that many people consider modern API is first created after Fielding describes the REST technology, however the first web API appears in the early 2000s when Salesforce, a computer company based in California, officially launched its API at IDG Demo 2000 conference, February 7, 2000. The API is based on XML and is still in use to this day. Salesforce is also the pioneer of enterprise



applications on the internet.

Less than a year, on November 20, 2000, an online auction site, eBay launched eBay's API web or eBay API, along with eBay Developers Program. However, the launch of the web API is only for limited users with license, who are the partners and developers of eBay. Later, this practice is referred to as closed API or internal API.

On July 16, 2002, Amazon, a multinational electronic commerce company based in Seattle, which is better known as an online book retailer sites, launched the Amazon.com Web Services (AWS). With the launch of AWS, Amazon allow third-parties to combine content and features to their website. AWS, among others, let developers find and choose Amazon products, then place it on their website in XML format.

Although, at that time, the modern API web movement has been launched, but for some reason, its popularity is still rather low. There are a few things that is suspected to be the cause. First, because the dotcom fever was sweeping the world at that time. The fever occurred since 1998, and made investors competing to set up dotcom companies. Shares price of dotcom companies also skyrocketed because many believe that advanced technologies will change the pattern of life for many people into completely online, especially on goods and services sector. Many owners and employees of dotcom enterprises at that time became suddenly rich.

But, API web then got momentum. Not only because the dotcom fever turns out to be a bubble phenomenon –

which burst in 2000 and made many dotcom companies goes bankrupt - but also because of the emergence of a new phenomenon, namely the internet as social media.

In February 2004, there are two social networking site officially launched on the internet, namely Facebook and Flickr. Flickr, a photosharing site, launched its API six months later, and six months after that they received invitation to cooperate with Yahoo. The Restful API launched by Flickr was rapidly gaining popularity, and became the number one choice as image platform website for beginner bloggers and social media movement. That's because Flickr was made it easy for their users to embed photos to blogs or social media.

Unlike Flickr, Facebook has only launched its development platform and its API two years later, on August 15, 2006, to be exact. Facebook Development Platform version 1.0 provides an opportunity for developers to access data on Facebook, including photos, events, and profile information of Facebook users.

The social media site Twitter, which launched in July 2006, was also quick to exploit API. Twitter launched its API on 20 September 2006, just a month after Facebook. "Just like eBay API, Twitter decided to launch its API as a response to their users who ruffled the site, or create rogue APIs on behalf of Twitter," wrote Kin Lane.

## **GOOGLE MAPS API, API MASHUPS, AND CLOUD COMPUTING**

Almost at the same time with when Facebook and Twitter experimenting with the strength of social media web API,

Google also start to explore the power of API by launching its Google Map API. Like Twitter, Google launched the Google Maps API as a direct response to numerous hackers attacks. Google Maps API was launched six months after Google Maps app.

Google Maps is a great app. In addition to displaying a map of the world online, the features in Google Maps are also able to display satellite imagery, traffic density, topography of an area, and the street view to see road conditions and situations. As a result, since the application was launched in 2007, Google Maps was immediately getting popular. But then a lot of hackers tried to tamper the application by creating new applications with hacked JavaScript-based interface and embeded the application into their web sites, such as housingmaps.com and chicagocime.org.

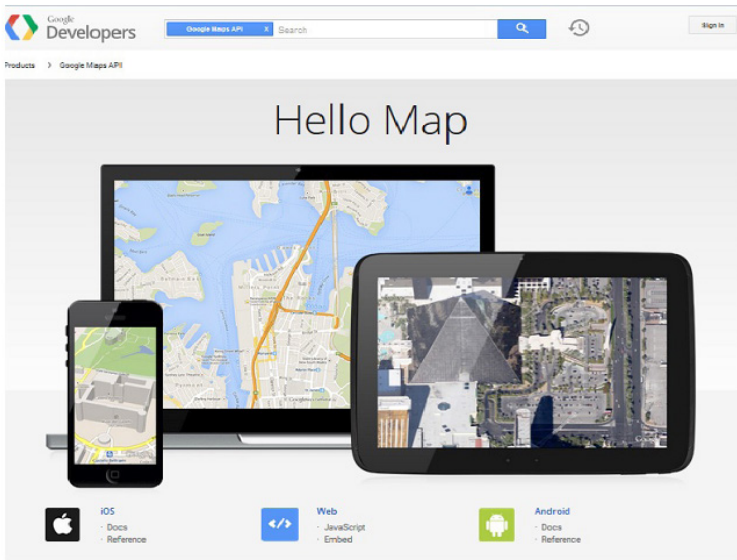
“It is only a matter of time before Google Maps launch its API, so developers can use their maps without hacking it. Google Maps API, just like the Twitter API, then change the internet face forever, because they effectively started a trend that allows third-party developers to utilize their back-end service in many other ways, for different purposes,” wrote Meg Cater in *A Brief History of API-Based Web Applications*, published in 2013.

Meg Cater also wrote that Google Maps is the first to demonstrate the strength of “Mashup API” to a wider audience. According to Wikipedia, a mashup is a web page or web application which uses content from more than one source to create a new service.

The mashup method, according to Meg Carter, can be

used to create, for example “a map showing all locations of band performances tonight, a map that can track travel route, or a map that highlights hiking trails. With Google Maps API, developers can take advantage of the amazing strength of Google Maps, to fulfill their wildest imagination using the geographical map.”

FIGURE 3: GOOGLE MAPS API



At this point, Kin Lane write, API web shows the power of the internet when things on the internet are shared and make everything embeddable and become more social. However, up until now, API web is still regarded as a mere ‘hobby’ by major businesses, and not as a viable business in itself.

However, when the use of API became more dominant on the Internet, Amazon gradually began to see it as a potential business opportunities. Amazon saw API in a way that no one else did before. This led to a decision to rejuvenate Amazon Web Services (AWS) into something more than just an e-commerce site.

In March 2006, Amazon launched a new service, something that is totally different than a virtual book sales sites and e-commerce. Amazon made a new initiative called Amazon S3, a storage webservice. Amazon S3 provides a simple interface, which can be used to store and acquire a lot of data on the Amazon web anytime, from anywhere. It provides an opportunity for developers to access the data warehouse infrastructure in a rapid, inexpensive, and reliable way, just like the way the Amazon used in running their own globally-networked website.

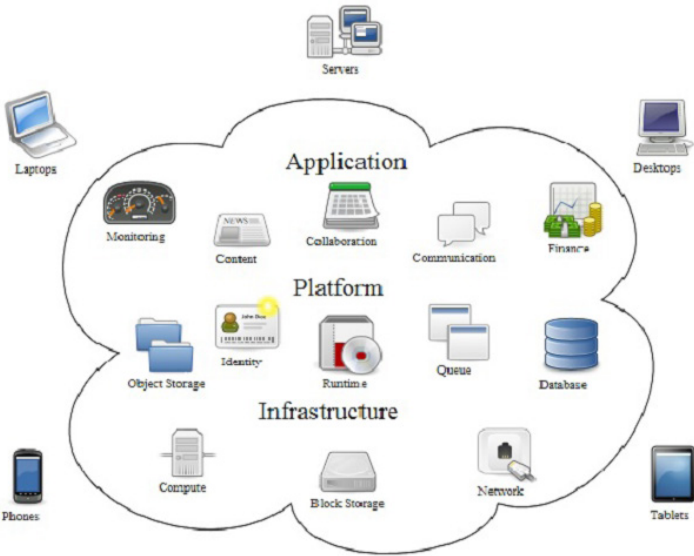
Six months after the launch of Amazon S3, Amazon released a new cloud computing service called Amazon EC2 (Elastic Compute Cloud). Amazon EC2 provides computing capacity that can be resized in the ‘cloud’, which allows developers to launch different sizes of virtual servers in Amazon’s data center. Like the Amazon S3, Amazon EC2 is also a Restful API.

“With cloud computing, the API web has become real. You can now utilize global infrastructure using API. It is no longer just about social fun, but you really can run a business using the API,” Kin Lane wrote.

Kin Lane added, “API has found a new strength due to cloud computing. Thanks to cloud computing, developers do

not need to carry storage devices anywhere. Because, with online storage-based cloud computing, developers can easily bring their work with them wherever they want. As long as there is internet connection available, then developers can access their data anytime on cloud storage. This system effectively enhance developers mobility.”

FIGURE 4: CLOUD COMPUTING DIAGRAM BY SAM JOHNSTON



David S. Linthicum, a consultant at Cloud Technology Partners, even said that API is everything for cloud computing. “API is not a new thing for cloud computing.

Most cloud services are accessed using API,” he wrote in a short article entitled The API is everything for cloud computing in InfoWorld website, June 2010.

“I was a speaker at Glue Con last week, a developer-oriented conference held in Denver. What is the core message of that conference? You can answer with three letters: A-P-I,” said David Linthicum, author of 13 books on computing.

Among the popular services that use cloud computing technology is cloud storage, such as Dropbox, which was launched in 2008 and Google Drive that was launched in 2012. In this storage warehouse, the user can store files, share files, edit documents, and various other activities. Dropbox offers 2 GB storage capacity for each account, which can be increased to 8 GB for any users who can get other people to open a Dropbox account, and Dropbox also rents large capacities storage up to tera byte in size. Meanwhile, Google Drive offers 5 GB storage capacity for opening an account, and you can have larger cloud storage capacity for a price.

With the cloud storage, users can access and work with files anytime, anywhere, via the web or mobile device, as long as there is internet connection available. They do not need to bring hard drive or flash drive anymore.

There is a popular story on how the cloud-based storage technology was initially developed by Dropbox founder, Drew Houston, because he frequently forgot to carry his flash drive when he was still a student at the Massachusetts

Institute of Technology (MIT). He then had an idea to save the file on the 'cloud', another term for the internet.

## **THE GADGET FEVER AND THE ERA OF APPLICATIONS BOOM**

When everyone is still busy on the social media and cloud computing, a new device rose to the surface. And, like the social networking media and cloud computing, this device, said Kin Lane, will be proven later as a game changer.

It began when in June 2009, Apple launched the iPhone 3G, and the App Store started spoiling iPod Touch and iPhone owners with software applications that can be downloaded via desktop iTunes or the App Store on their iPhone. "This opens up an entirely new world, namely mobile applications, where the API will become the driving force," wrote Kin Lane.

Evolution of mobile Internet continues. On October 6, 2010, Instagram launched an application that allows people to share photos on their iPhone. And the public response was enormous. Less than three months since its launching, Instagram users had reached one million people. Instagram founder Kevin Systrom was then determined to deliver a better and simpler application to solve persistent problems that have been experienced by the user, such as poor image quality and the difficulties users experienced when sharing photos.

However, API potentiality to push the development of mobile sector has not completely explored until Apple



introduced the iPad tablet, and the growth of mobile devices based on Android and Windows. “So, the smartphone is like the last piece of the puzzle of digital media strategy, including the commercial and social interests. All that is needed before the original vision of web APIs is truly realized,” Kin Lane wrote.

These developments, which then gave birth to the web and mobile application boom, are created by third-parties (programmers and developers) who utilize the API data. The term application has become so popular that the American Dialect Society, an institution for language studies in the US, in 2011 proclaimed the word “application” as the Word of the Year 2010.

Steve Jobs, CEO of Apple, introduced the first iPad at the Apple Special Event in San Francisco on January 27, 2010, and launched it into the market on April 3, 2010. In a short time, the product, which is a combination of smart phone and laptop, became an instant sensation and changed the way people use mobile device. Previously, in June 2007, Apple launched the iPhone that already uses iPhone Operating System (IOS).

Subsequently, in July 2008, Apple launched the App Store application store. This service allows the users of iOS devices (iPad, iPod, iPhone, and others) as well as personal computer users to browse and download applications. These applications are created by third parties, programmers and developers, who utilize the API data. The App Store also provides API so that third parties can utilize the data.

In early 2012, Apple stated there have been 1.1 million

applications made by Apple and third parties available on the App Store, where 84 per cent of them can be downloaded for free, and the rest are paid application. The number of people

who download application from the App Store continues to grow. By the end of 2012, Apple said applications in the App Store have been downloaded 40 billion times. This is a remarkable increase, because in early 2011, the number downloads were only 9.9 millions.

However, after that, the increase is slowing down. Up until July 2014, according to [statista.com](http://statista.com), there were about

1.2 million applications that can be downloaded from the App Store, which means that the increase is just around one hundred thousand applications compared to the last two years. Allegedly, it was because Apple's competitors have also made a similar move: launched similar apps store. Google Play Store eventually took over the App Store's spot as the number one application store.

Android, an open source Linux-based operating system, has a long historical background. The development of this operating system was started in 2003 by Android Inc., and purchased by Google in 2005. However, Android as an operating system for mobile devices was launched in November 2007, or three months after the iOS. Meanwhile, the commercial version was launched in September 2008.

On March 6, 2012, or four years after the creation of the App Store, Google launched the Google Play Store, after combining the Android Market, Google Music and Google eBookstore. This application store managed to overtake the

App Store's spot as the number one apps store in 2013.

The increasing number of applications in the Google Play Store is exceptional. In July 2014, [statista.com](http://statista.com) wrote that there are 1.3 millions apps available in Google Play Store, while in November 2014, according to [catatanappbrain.com](http://catatanappbrain.com), the number had reached 1.4 million applications, consisting of 1.2 million (85.7 percent) of free apps and 200 thousands paid apps. These applications can be accessed in 135 countries. Total application downloaded in the Google Play Store was more than 50 billions in July 2013.

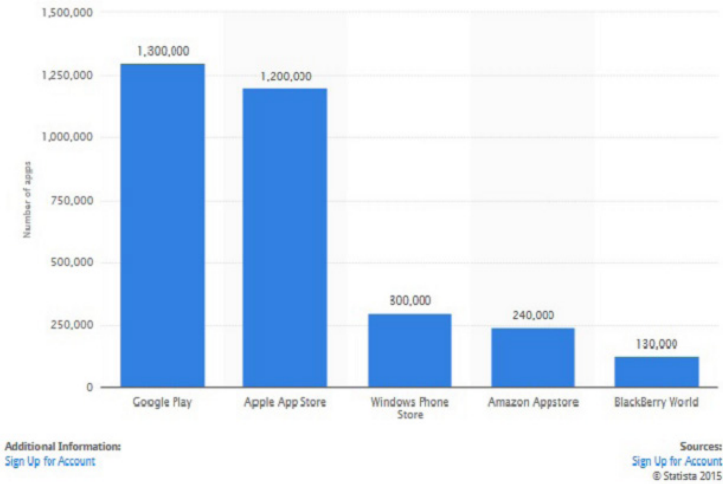
The total number of Android users is also increasing. On 3 September 2013, Google announced that it has one billion users all around the world. In January 2015, Android has over 62 percent market share of smart phones and tablets in the US, 82.7 percent of the Chinese market, and 73.3 percent of the European market.

In addition to the App Store and Google Play Store, a similar service is also provided by Blackberry, the Blackberry World, for Blackberry OS and Blackberry Tablet OS; Nokia (Nokia Store, for Symbian-based platform, MeGoo, Maemo, S40, Nokia X); Microsoft (Windows Store and Windows Phone Store, for Windows Phone, Windows Desktop, Windows Runtime / Windows 8); Amazon.com (Amazon App Store, for Fire OS and Android); Mozilla (Firefox Marketplace for Firefox OS, Windows, Android), Palm/HP (App Catalog, for web-based OS), and many others.

### GRAPH 1: BILLIONS OF APPLICATIONS THAT CAN BE DOWNLOADED FROM PROMINENT APPLICATION STORES

**Number of apps available in leading app stores as of July 2014**

This statistic contains data on the number of apps available for download in leading app stores in July 2014. As of that month, Android users were able to choose between 1.3 million apps. Apple's App Store remained the second-largest app store with 1.2 million available apps.



In addition to the development of the tablet devices, the applications boom is also supported by the development of widescreen smartphone. It is a phenomenon beyond the prediction of Steve Jobs, the Apple founder. Because, since

2010, the Syrian-descendant genius whose real name is Abdul Lateef Jandali, predicted that the big screen phone would not be desirable, because it does not fit in most people's hand. As a result, since the iPhone first launch until Steve Jobs' death in October 2011, the size of the iPhone only grow half an inch.

Only after Steve Jobs passed away, Apple started to produce widescreen iPhone. In 2012, Apple finally enlarge the iPhone screen to four inches. And, in 2014, Apple launched the iPhone 6+, with a 5.5 inch screen size. This decision was proven to be effective in increasing sales. Meanwhile, its competitors, Samsung, has already offered widescreen 4-inch phone since they first launch the Samsung Galaxy S in 2010, and continues to widen their smartphone screen every year.

The number of mobile-based internet users continues to increase, particularly smartphone users, and the continuation of mobile applications production, indicate that the application boom era will continue to take place. Today, millions of applications is being sold in app stores, with number of downloads reaches almost 100 billions. And this figure will continue to grow quickly, because the number of gadget users - who download those applications – is also growing rapidly.

Based on We Are Social research published in March 2015, the number of unique mobile device users, globally speaking, has reached 3.679 billions users. This figure is an increase compared to the January 2015 report, where the number of unique mobile device user amounted to 3.649 billions.

GRAPH 2: GLOBAL DIGITAL DATA 2015 FROM WE ARE SOCIAL



Thus, in the last decade, technology has developed so quickly. The use of gadgets has been increasingly popular, even one particular writer said that the gadget has become the world wide word. This is a pun on the term ‘world wide web’. Applications, especially the mobile-based, keep on popping up like mushrooms in rainy season. And API plays an important role, although - as Meg Cater said – the role is oblivious to the naked eye.

“In conclusion, API web started its debut in the early stages of e-commerce development on the Internet. However, its role is not as important as today, because, back then, there was no social networks, no backend (a set of applications used as a support for an open data management) which scale can be enlarged, and there was no mobile devices yet. API has only realize its significance in 2012,” Kin Lane wrote.

# PART THREE

## API AND OPEN DATA

*Open Data isn't just data sets. It's APIs, it's open source, and most importantly — it's people.*

—American Council for Technology Industry Advisory  
Council

### THE SUCCESS STORY OF GOVTRACK.US CIVIC HACKING

There are two important technological trends in last decade, where both trends are supporting each other's existence, that is open data and Application Programming Interface (API). Many people believe that the combination of both trends have enhanced innovation and creativity in the internet age that we live in today.

But why does open data need API and, vice versa, API need open data? Before answering that question, let us examine the story of Joshua Tauberer, a civic hacker.

Joshua Tauberer, or Josh, is one of the name that always mentioned when people talk about open data, especially open government data. This is because of his important role in advocating attempt to make the White House and Capitol Hill to release their data to the public. Josh is at the forefront of that effort, which then becomes a success story and inspiration to the world.

FIGURE 5: JOSHUA TAUBERER (PHOTO: THE PENNSYLVANIAN GAZETTE)



The skinny and shy young man is one of the 30 signers of the “Eight Principles of Open Data” initiated by the advocates of open government data movement in the United States (US) in 2007. All 30 of them are the most prominent figures that encourage open government data in the land of Uncle Sam.

Back then US government had been partially releasing public data. Many of these data are difficult to read, both by man and by machine (computer). As a result, these data were difficult to reused and redistributed. That’s because the US government at the time had not been really sincere to open their data to the public.

Faced by this unfortunate fact, Josh decided to try to obtained the data by himself. He screen-scraped many



official websites owned by the US government. And, he succeeded in collecting data scattered in many websites belonging to the US government. He then sorting and putting the data back together, then uploaded and publicized them to the site GovTrack.us. This site was made in 2004, when he was a student of psychology at Princeton University.

FIGURE 6: GOVTRACK.US



“It is so surprising that a man who has a deep interest with data can do so many things like Josh did. With his attempt he can provide pressure to the government, so that they will make a more accessible data to be accessible to the public, and contribute a great deal in changing the way the government works,” said Jim Harper, the Director of Information Policy Studies at Cato Institute, quoted from an article titled Civic Hacker in the October 2013 edition of the Pennsylvania Gazette.

Civic hacker is a term that has a special meaning. In his book, *Open Government Data: The Book*, published in 2012 and the second edition in 2014, Josh stated, “Civic hacking is a creative approach, and often use technology, to solve civic problems, ranging from voter registration to public education to help consumers buy a house and select a financial advisor. Civic hacking often involve the use of government data to make government more accountable.”

Civic hacker is not a hacker or cyberspace hackers as widely known by most people. It is not hacker in a negative sense such as people who often crack computer servers or commit crimes using computer technology to damage the security system of a computer system that usually, once they get access, led to data theft or other vandalistic actions.

Josh said, “Civic hacker could be a programmer, web designer, data expert, communicator, civil organizer, entrepreneurs, government officials, or anyone who are willing to get their ‘hands dirty’ to solve problems. Some civic hackers are employed by nonprofit organizations such as Code for America. Some others work in profit-oriented

company like Azavea, geospatial software provider based in Philadelphia. “

What is the result of activities undertaken by civic hacker like Josh? Through the site GovTrack.us, the American public and the world can follow the discussion for law (bill) draft development in the US Congress. The site provides information from the very beginning: the submission of a bill to Congress, the discussions in committees in the Senate and House of Representatives, when the bill left the committees, and which member of the parliament responsible to discuss and vote the bill. The site also provides information on the development process of state-level legislations.

Because of its continuous effort in answering the public needs, the site, which picks the slogan “Tracking the United States Congress”, has become popular very quickly. In 2014, for instance, the site is visited by seven million people. Moreover GovTrack have been sending four million emails notification regarding the latest development of legislative process to the users of the site.

There have been many websites and mobile apps that use the data and API of GovTrack.us, such as OpenCongress, Follow the Oil Money, TheMiddleClass.org, Connect2Congress, Polco: Political Compass, Informed American (mobil application for Windows Phone), Eligo Congress (iOS), and 113th US Congress (Android).

“Open government movement involves the public in general, web developers, designers, researchers, writers, statisticians, government officials, and member of the parliament, in an effort to make data as national asset, to

make government more transparent and effective, and empower people to participate effectively in government and in their communities,” wrote GovTrack.us.

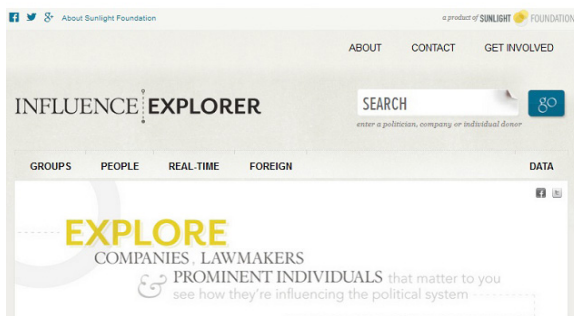
The site inspires many similar efforts in the United States and many other countries in the world. In America, there is Sunlight Foundation which is inspired by GovTrack.us initiative. Sunlight Foundation provides information that belong to the US government, both the executive and legislative branches, and in every level of administration (federal, state, and local). Sunlight Foundation also provides its API so the data can be used widely.

## **SUNLIGHT FOUNDATION: DISINFECTANT FOR CORRUPTION IN THE GOVERNMENT**

Sunlight Foundation was founded in April 2006, by Ellen S. Miller and Michael R. Klein over their concern regarding the influence of money in politics. They then developed Influence Explore, an online device capable to track the use of money in politics that involves the lawmakers, corporations, and public figures. They also created Foreign Influence Explorer to track the activities of lobbyists who represent foreign interests in Washington, so that the public can find out how foreign entities influence policy and public opinion in the US.

These data make the government and members of Congress constantly monitored by million eyes. Sunlight Foundation also opens their API for the two ‘explorer’ so the data in the websites can be freely accessed, reused and redistributed by third parties.

FIGURE 7: INFLUENCE EXPLORER CREATED BY SUNLIGHT FOUNDATION



In its profile webpage (SunlightFoundation.com) Sunlight Foundation states that open data is a remarkable resource which has not been fully utilized. Many individuals and organizations try to collect various types of data to perform their tasks. According to Sunlight Foundation, the Governments have a very significant role in this matter, not only because of the quantity and the centrality of the data they possess, but also because the data, legally speaking, have to be considered as public record. So, the data must be made open and available for every people to use.

“We believe that information is power, or to put it more subtle, disproportionate access to information is power. We are committed to improve access to government information by making it available online. We redefine public information within the context of ‘online’ activity,” wrote Sunlight Foundation.

In his book, Josh said there are two methods to publish data on the internet. First, directly upload the entire data in a file or a set of files (data bulk). Thus, all of the data can be

directly downloaded by users. Second, through the API data, a method of presenting the data in small pieces. The latter is implemented by GovTrack.org and SunlightFoundation.com.

But, according to Josh, there are certain data sets that are too large, such as census data, or data that is constantly changing, such as stock trading data, and it would be very burdensome for users to download them at once. Therefore, he stated, it would be better for such data to be presented in small pieces, so that it can reduce access barriers, as well as make it easier for software developers to use the data.

Josh said, “Bulk data is static, while API data is dynamic. API is a contract, not legally, but rather a technical contract. It is a commitment that the system would work in a certain way. An API would say ‘If you visit a particular web address, you will get a certain data’..”

## **OPEN DATA COMPATIBILITY WITH API**

Open data and APIs become closely intertwined, because open data is defined as follows: Open data is data that can be freely used, re-used, and redistributed by anyone – subject only, at most, to the requirement to attribute and share alike.

Because of this definition, then API can be very much considered as a solution for the success of the open data movement, because API can be a bridge to distribute and utilize data in ways that are attractive, easy, systemic, and secure. “Literally, API is an interface between a database to another machine or program. It is very helpful to think

API as a tool that does specific tweaks to your data.” (API Challenges and Milestone, Perludem).

According to the Open Data Handbook, there are three important keywords in the definition of open data: availability and access, re-use and redistribution, and universal participation.

First, availability and access. This means that data should be available completely, and should be accessible via the internet. The data also can be accessed easily and in a format that can be modified.

Second, re-use and redistribution. Re-use and redistribution mean that the data provided should allow for re-use and redistribution activity, including combining the data with other data sets.

Third, universal participation. This means that everyone should be able to use, reuse, and redistribute data without discrimination. There should be no restrictions on the use of data only for noncommercial interests, so that the data may also be used for commercial purposes. The data also should not be only for specific purposes, such as only for education, but may be used for any purpose.

“If you’re wondering why it is so important to be able to explain very clearly about the notion of open data and why the definition is used, there is one simple answer: interoperability,” said a quote from the Open Data Handbook, a handbook published by Open Knowledge Foundation in November 2012.

Interoperability refers to the ability of different systems

and organizations to work together or interoperate. In the case of open data, interoperability is the ability to intermix different datasets. Interoperability is important because it allows different components to work together and combine them to build a large and complex system.

“Without interoperability, open data becomes impossible. And will end up like the myth of Tower of Babel, where the inability to communicate (interoperate) eventually resulted in the collapse of the tower,” as quoted from the Open Data Handbook.

Inevitably, open data is indeed the heart of all transparency and open data movement. But as the lines at the beginning of this article suggest (Open Data is not just a data sets. It's APIs, it's open source and, most importantly, it's people), open data is not simply a matter of how to provide a set of data so that it can be freely accessed, but it is also a matter of how the data can be reused and redistributed. API is the right tool to do so.

With API, open data becomes more accessible, reusable, and distributed, which could then trigger and stimulate creativity and innovation and public participation. This is because API presents the data in small chunks and distribute them to the programmers and developers so that they can modify the data with a variety of creative and innovative ways that did not even imagined by the data owner - because the data can be packaged in various forms and ways, and combined with other data - and then redistribute them again to website visitors or mobile gadget users.



“The point is, open data is about the effort to make the data collected by the governments, organizations, companies, and others, become available to anyone, and preferably without paying any money for the data. API, on the other hand, provides standardization as well as easy and simple way to connect sources of open data to each other. By utilizing standardization and platforms such as HTTP, JSON, and XML, APIs become a facilitator for integrating all sources of open data into applications and innovative solutions,” as quoted from the article titled How Open Data and APIs Fuel Innovation.

An open data practitioner, Jason Hare, said that every portal of open data should have been API. Because, according to his hypothesis, first, the data used directly by users through a website have less value reusable value. Second, the data presented in web and mobile platforms require extra work to be reused rather than API.

John Hare based his hypothesis on why API is needed in online data distribution on a research conducted by Open Raleigh, a website owned by Raleigh City government in the state of North Carolina. The site initially only had 1,115,125 page views in 18 months. However, when applying API platform, the figure increased significantly. In October 2014, the site received 17,307,822 API calls. “In just a month our data get 17 times more visits from machine rather than human visitor,” Jason Hare said in the article titled Open Data Portals Should be API.

As a comparison, Jason Hare told the story of open data portal that does not use API, such as the official website

of City of Minneapolis, the largest city in the state of Minnesota. The portal was heavily criticized, among other things because the design is not very responsive and its webpages are convoluted. Jason said, “What was the data for? If it is for field workers, it is a major failure. Majority of field worker use mobile devices such as tablet computer and smartphone. The decision on developers’ behalf to not utilize API is a barrier for data usage.”

## **OPEN DATA, API, AND DATA BULK**

Even though open data and API are perfectly compatible, Josh admitted that the ability to only presents certain pieces of data is not qualified to be considered as open data. By presenting only a small fraction, it means more data section are not yet open. Data can only be considered as open data if the data is presented in its wholeness (data bulk).

Actually, API - even API data – can be provided in bulk. “If that is so, then great. But, it is not what most people had in mind when they talk about API data. API data, does not qualify to be considered as open government data if it does not provide bulk data.. Therefore, if there is a choice between API with bulk data and API that does not provide bulk data, we must prioritize the first,” Josh said.

This kind of understanding is indeed often emphasized in the Open Data Handbook, that publishing raw data in bulk should be the primary concern of all open data initiative. “Open data should be technically open, as well as legally. Specifically, data bulk must be available and in a format that can be read by machine. “There are three keywords

here: available, in bulk, and in an open, machine-readable format.

First, availability. Data access should not be subject to burdensome price. If the data have to be charged, the price must be reasonable. In fact, if necessary, and this is to be expected, these data can be downloaded for free via the Internet.

Second, in bulk. That is, the data should be available in a complete set. Therefore, API web or similar service will be very useful, although it is not a substitute or replacement for the requirement that the data should be available in bulk.

Third, open, machine-readable format. The re-using of public data held by the public sector should not be patented, thus blocking people's rights to access them. And, more importantly, it is important to make sure that the data is presented in a format that can be read by machine, so it can be massively re-used. As an illustration, statistical data is often presented in a PDF format (Portable Document Format). Documents such as this can only be read by a human, but it is difficult to be read and reused by computer, there by inhibiting many people to reuse the data.

Open Data Handbook states that there are a number of ways to publish data online: via website, third-party sites, File Transfer Protocol (FTP), as a torrent, and as API. Each of this method has its advantages and disadvantages.

“API is a very popular interface because this technology allows programmers and developers to choose and obtain a certain portion of data, rather than only allowing them to

obtains the data in bulk, which could be very burdensome since the file size might be very large. API is usually connected to a database that constantly updated in real time. This means we can always sure that the data available in an API is always up to date,” as quoted from the Open Data Handbook.

## **A BRIEF HISTORY OF OPEN DATA**

The term ‘open data’, according to Simon Chignard in an article titled A Brief History of Open Data, first appeared in 1995, in a document belonging to a US scientific agency. The document contains a discussion regarding the opening of geophysical and environment data. “[The article] promotes a complete and open exchange of scientific information between countries as a pre-requisite to analyze and understand global phenomenon,” Simon wrote in the article, posted on Paris Tech Review, March 29, 2013.

Simon, also the author of Open Data: Understanding the Opening of Public Data (2012), suggested the concept of open data is closely linked to the concept of shared resources (common good). “The idea of the common good has been applied in the scientific world long before the invention of the internet. Robert King Merton, one of the fathers of sociology, in early 1942 emphasized the importance of research results that can be freely accessible to everyone. Each researcher must contribute to the ‘common pot’ and hand over his/her intellectual property rights for the sake of the progress of science,” he wrote.

Simon, who is also the President of Bug, an NGO in

France advocating for social and digital innovation added: information technology gives a new breath in joint-ownership philosophy. Simon cites research conducted by Elinor Ostrom, a Nobel laureate in Economics in 2009, that shows specifically that the utilization of public information, which Olinor considers to be very similar to public resources (public goods), should not deter other people to using them. The mass utilization of such information will not drain them, but instead enrich them.

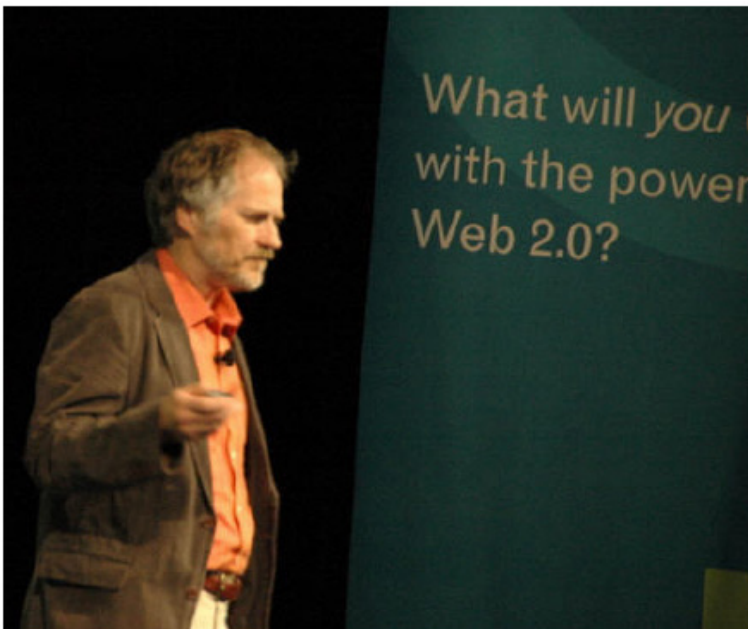
As a result, Simon wrote, long before it became an object of technical or political movement, open data has already been rooted in the scientific community praxis. The researchers are the first to experience the benefits of openness and sharing of data. “It is the gathering of ideas among scientists and the concept of free software and open source that gave birth to open data as we know it today,” wrote Simon, who is also a vice president of Rennes’ Barcamp La Cantine and a consultant and trainer for public and private companies in data development and its deployment strategy.

Open Data article in Wikipedia declares that the goal of the the movement of open data is similar with other ‘open’ movement, such as open source movement, open hardware, open content, and open access. “The philosophy behind the open data movement has been long established, but the terminology ‘open data’ gains its popularity due to the popularity internet and the world wide web, and more specifically to open data government initiatives such as Data.gov and Data.gov.uk.

Simon explained the relationship between open data,

open source and open government data. Some time in December 2007, 30 thinkers and activists who advocate open government data, set up a meeting in Sebastopol, north of San Francisco, USA. The purpose of this meeting is to define the concept of open public data, which they expected to be adopted by the US presidential candidates. The meeting is sponsored by Google, Yahoo, and the Sunlight Foundation. Among those who were present at the time are Tim O'Reilly, Lawrence Lessig, and Joshua Tauberer.

FIGURE 8: TIM O'REILLY, THE OPEN SOURCE ADVOCATE



[PHOTOS: FYI.OREILLY.COM]

Tim O'Reilly is known as a writer, editor, and a pioneer

of the various social movements related to computer and the Internet, some of which define the various trends and popular terms such as open source and Web 2.0. He initiated open source in 1998 that allows people to get free software. He sees the role of open source as an integral part of the development of the internet, referring to the various platforms that are widely used, such as TCP / IP protocol, sendmail, Apache, Perl, GNU/Linux, and others.

Meanwhile, the phrase Web 2.0 was popularized by O'Reilly in 2004, after the collapse of dotcom companies in 2000. At that time, he had already envisioned the operational system of the internet will consist of various subsystems such as media, payment, voice recognition, location, and identity.

Lawrence Lessig is a law professor at Stanford University, California. He is the originator of the Creative Commons license (CC), which is based on the idea of free dissemination of knowledge and cemented the concept of open data and APIs. The slogan of the CC movement is keep the Internet creative, free, and open.

CC is a free copyright license that can be used by the public. Any inventor, creator, or writer, can release their work under a CC license, by selecting one of many license types in [CreativeCommons.org](http://CreativeCommons.org) websites. There are six licenses available. They could, for example, choose Attribution License (CC BY) so that they can allow other people use their works without permission or fees, but credit should still be given to the original creator. As long as credit is attributed to the original creator, any third party is allowed to distribute creative work, mix it with other works (remix), and even use

it for commercial purposes.

Other license is Attribution-ShareAlike (CC BY-SA). Just like Attribution License, this Attribution-ShareAlike License. Allows other people to remix and use creative works for commercial purposes, as long as the credit is attributed to the original creator, and licensing new work - the result of the work process of its creators - with identical requirement. This license is often called as copy left (as opposed to the word of copyright) that are often used in free software and open source. This license is also used by the open source online encyclopedia that is Wikipedia.

FIGURE 9: CREATIVE COMMON WEBSITE.



Eight Principles of Open Government Data that they produce in Sebastopol meeting, as reported by Opengovdata.org, are as follows: First is completeness. This means that all data should be made publicly available. Public data should



not be limited by the rules of privacy, security, or other restrictions. With this principle, bulk data or entire dataset can be obtained, even using a simple application. Consequently, bulk data should be made available before the API is created, because API will only show several pieces of data.

Second, primary data. This means that the data provided should be original, not an aggregate or modified data. Third, timeliness. This means that the data should be available as soon as possible, so that the value of the data is maintained. Fourth, accessibility, ie the data should be available to as much as users as possible, so that the data can be used for many purposes.

Fifth, machine-process ability. This means the data structure must be simple and feasible so that the data can be processed automatically. Sixth, non-discrimination, ie the data is made available to everyone, without the need to register, and can be accessed by anonymous users. Seventh, non-proprietary, ie: the data should be available in a format that can not be controlled exclusively by particular party.

Eighth, freely licensed, ie: the data are not subject to copyright, patent, trademark, trade secret or rules. However, there is an exception for privacy, security, and privilege matters. This exception is necessary because the data kept by the government are a combination of public data, personal information, copyrighted work, and other data that are not in the category of open data. Therefore, it is important to draw a clear distinction on which data are available, which are licensed, which data can only be accessed by certain terms and conditions, and which data are legally restricted. All of the data that is freely accessible without restriction should be

marked as public domain with a Creative Commons license or MIT license, although every users need to include credit attribution to the original source of the data.

## **THE DREAM OF OPEN GOVERNMENT DATA AND ITS REALIZATION**

“In Sebastopol,” Simon wrote, “Tim O’Reilly’s contribution to open government movement has shine a new lights on the relationship between the open source movements with the development of the principles of open data: in his own words, ‘we need to apply the principles of open source and its implementation in public affairs’”. In 2007, Simon said, it all sounded like a dream.

However, in a short time, the dream was indeed realized. In fact, Simon wrote, the results are beyond their expectation. Only a year after the Sebastopol meeting, President Barack Obama rose to power. Shortly after inaugurated on January 20, 2009, he signed three presidential memorandum. Two of the three memorandum are about open government, where open data is one of the pillars. “This president Memo explicitly set the culture of open source at the heart of public action, including its principles of transparency, participation, and collaboration.”

Not long after the White House legally adopt it, the movement then has become a global trend. Two years after the signing of the three memorandum, Open Government Partnership (OGP) initiative was formed. There were eight countries involved as initiators: Indonesia, the United States, Britain, Brazil, Mexico, Norway, Philippines, and

South Africa. OGP was launched by the eight leaders of the countries, during a meeting on 20 September 2011, at the Waldorf-Astoria Hotel, a luxury accommodation in Manhattan, New York, and ended with the reading of the “Declaration of Open Government” and the launching ceremony of the OGP.

OGP is a new multilateral initiative that aims to secure the commitment of countries in the world to promote transparency, public participation, fight against corruption, and improve the use of new technologies to make government more open, effective, and accountable.

Started with only eight member-countries, OGP has grown rapidly in a short time. In 2015, according to the official website of OGP, [Opengovpartnership.org](http://Opengovpartnership.org), the number of members was 65 countries. “In these countries, governments and civil society are working together to develop and implement ambitious reforms called open government,” wrote [Opengovpartnership.org](http://Opengovpartnership.org)

Indonesia became chairman of the OGP for the period of October 2013 - September 2014, succeeding the United Kingdom. In his speech at a brief succession of OGP leadership ceremony at Churchill Auditorium, Queen Elizabeth II Conference Center, October 31, 2013, Vice-President Boediono said, “with innovative and out-of-the-box activities, the Open Government Indonesia programs has managed to push our bureaucrats out of their comfort zone. Some of them even gained national and international awards.” ([Setkab.go.id](http://Setkab.go.id))

After Indonesia, Mexico then held the position of

chairman of the OGP. President Susilo Bambang Yudhoyono (SBY) handed over the chairmanship of OGP to the President of Mexico, Enrique Pena Nieto, in New York, September 25 2014. At the ceremony, President Barack Obama gave a speech in Indonesian to SBY, “Congratulations, Sir.” Obama then continued in English, “I appreciate and praise your leadership in bringing Indonesia to the transition to democracy.” (Setkab.go.id).

## **OPEN DATA AND API: FROM RESTROOM TO VOTING BOOTH**

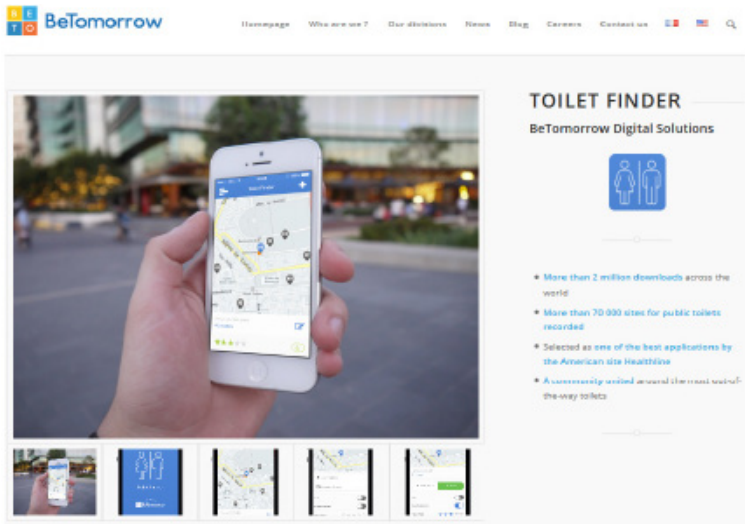
What will you do when you're sightseeing in a crowd, then suddenly you get a stomachache and need to go to the restroom? What if it happened in a foreign country like New York City? It will be a major issue for you. But, do not worry, there is a solution.

Many developers have already thought of solutions for such complex issue. For instance they create applications that make it easier for Internet and smartphone users to locate the nearest public toilet. One of the available applications is the Toilet Finder. This application is made by BeTomorrow, the company that has the slogan “beautiful solution in a connected world”.

This application combines maps from Google Maps API, with data containing location of 70 thousand public toilets acquired from the US government open data. If you have downloaded this application, whenever you need to go to a restroom in a public area, you only need to click a button on your smartphone and you can immediately find out the nearest public restroom near you.

This application can be downloaded for free in Google Play Store or App Store. In the early 2015, this application has been downloaded by about two million Internet and smartphone users based on Android and iOS. In addition to mobile applications, Toilet Finder is also available as web application.

FIGURE 10: TOILET FINDER



Because this app is so useful - especially for people with Crohn's disease or inflammatory bowel - in 2012 Toilet Finder was elected as one of the best applications by American Site HealthLine.

People with Chron disease have to stand by the nearest toilet. It is because any person with this disease may have diarrhea 10 to 20 times a day. This disease is genetically suffered by many Jewish descent. "This app makes things

easier,” said a user with Crohn disease on the website BeTomorrow.

There are similar applications made in many different countries, such as Denmark, Britain, and our neighboring country, Australia. In Denmark, for instance, toilet finder application is combined with information whether the toilet is friendly for the disabled users, which is indicated from the disability logo on toilet locations displayed on the map.

The effort to combine location-based applications (location-based service/LBS) with various maps API, such as Google Map API, with a variety of open data, has made such service useful and popular. In addition to find a toilet, there are also applications to find the nearest ATM, hospital, direction (navigation), tracking, etc.

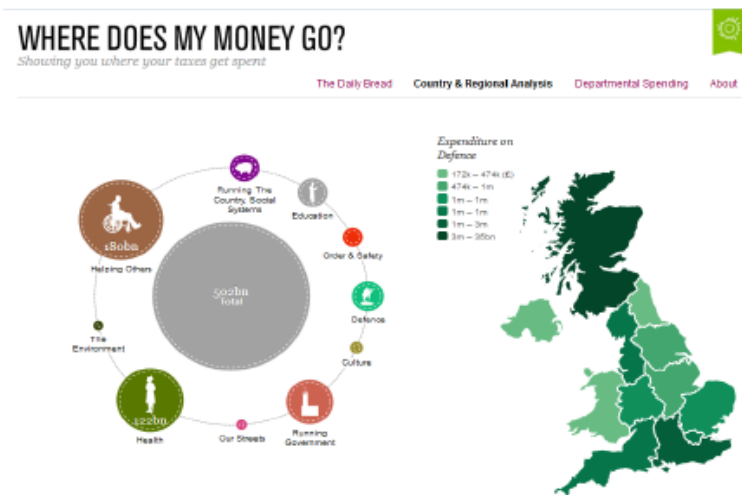
Two ATM finder applications that quite popular are ATM Hunter created by MasterCard and ATM Locator created by Crixol Pvt Ltd. In Indonesia, there are also similar application, such as ATM Bersama created by PT Electronic Payment Artajasa. This application, that contains information regarding the location of 49 thousand ATMs owned by 83 banks, were just released in the Play Store in December 2014. In April, the number of downloaders reached 10 thousands, and in May the number increased to 50 thousands downloaders. The application may be simple, but many users say that they are quite satisfied.

In the UK, a civil society organization, Open Knowledge Foundation, focus on processing data on government spending, and created the API for the data so that they can be used widely. The information are then published, among others, in attractive and interesting ways via the website

Wheredoesmymoneygo.org, created in 2007.

The website, which has the slogan “showing you where your taxes get spent”, presented the British government budget data visually with infographics, making it easy for visitors to read and understand complex budgetary report. This easiness significantly increases people participation in the attempt to monitor government expenditure such as health budgets, defense, education, and others.

FIGURE 11: WHERE DOES MY MONEY GO APPLICATION



Because the transparency offered by this initiative is very Helpful for the public and the government, in November 2008, this program won the competition titled ‘Show Us a Better Way’ held by the British government. “Our main goal is to inform the public on where their tax money is spent, not how it is spent. We hope the information could be useful for everyone who want to, for example, conduct political

persuasion and understand the government spending,” as quoted from the website [Wheredoesmymoneygo.org](http://Wheredoesmymoneygo.org).

In the United States, there are similar websites, such as [Govtrack.us](http://Govtrack.us) and [SunlightFoundation](http://SunlightFoundation.org), but their emphasis is more on the disclosure of government data. [GovTrack.us](http://GovTrack.us) and [Wheredoesmymoneygo.org](http://Wheredoesmymoneygo.org) have inspired the creation of similar websites and mobile applications in various countries. In Indonesia, [GovTrack](http://GovTrack) inspired the creation of DPR Kita application, which utilizes [Perludem Election API](http://Perludem Election API). Meanwhile, [Wheredoesmymoneygo.org](http://Wheredoesmymoneygo.org), has inspired budget transparency within the Provincial Government of Jakarta.

As for the use of API technology in elections, there are already many instances of implementation in various countries and companies. Google, for example, has launched [Google Election Center API](http://Google Election Center API) since 2010. Meanwhile, Indonesia began to implement [Election API](http://Election API) in the 2014 election, after [Perludem](http://Perludem) created [Election API](http://Election API). With this API, either created by Google or [Perludem](http://Perludem), programmers can create any variety of applications on elections and election candidates.

In 2012, Google replaced [Google Election Center API](http://Google Election Center API) with [Google Civic Information API](http://Google Civic Information API). It was after Google updated and enriched their API data. [Google Election Center API](http://Google Election Center API) was shut down on 7 January 2013. Chetan Sabnis from Google’s Political and Electoral Team explained that the replacement API allows users to view election information more comprehensively.

“Our mission is to organize all information in the world and make it universally accessible and more useful. We want to make it easy for you to create applications using electoral information. By releasing this API, we hope to facilitate



creativity on the Internet, and helps to produce innovative products so that information can be distributed to the civil community in a variety of interesting ways,” Sabnis said.

With the new API, users can obtain many kinds of information such as information on individual candidates, polling locations, ballot, and information regarding the election officials at the local level. “This new API only contains election information in the US, but we plan to expand to other countries,” he said.

In addition to the electoral process, the API is also still useful after the election, especially for GovTrack.us and DPR Kita. It is because the API also provides information about the elected candidates who now serve at the federal, state, and district/city level of government, according to their electoral districts.

Google also cooperates with Sunlight Foundation and technology venture, to set a new standard for transparency, that make it easier for developers to incorporate Google’s Election APIs with their dataset. For example, when retrieving data on electoral district and its representatives from Google’s Election API, users can examine and combine the information of the district with information of the election history and results published by Open Elections.

Open Elections is a website that collects data on the US elections, organizes them, and provides them in machine-readable format and can be reused. “We want people who work with the data of election to be able to get what they want. Either in CSV format for writing articles and analysis, or in JSON format for interactive graphics and web applications,” explained Open Election.

FIGURE 12: GOOGLE CIVIC INFORMATION API

Google Developers

Search civic information

Sign in

Developer > Google Civic Information API

# Google Civic Information API

Using the API

Performance Tips

Civic Information API Forum

Reference

Politics & Elections Blog

Terms of Service

Get Started

## What is the Civic Information API?

The Google Civic Information API allows developers to build applications that display civic information to their users. For any U.S. residential address, you can look up who represents that address at each elected level of government. Using suggested elections, you can also look up polling places, early vote location, absentee ballot, and other election-related information.

## Get to know your representatives

The newest feature of the Civic Information API allows you to enter an address to look up the corresponding district at each level of government and the names and social media profiles for the elected officials in those districts.

**DLS**  
Daniel L. Squadron  
Congressman  
New York State  
District of Columbia

**DG**  
Deborah Clark  
Congresswoman  
New York State  
District of Columbia

**RD**  
Robert Duffy  
Congressman  
New York

**Charles (Chuck) Elia Schumer**  
Senator  
New York

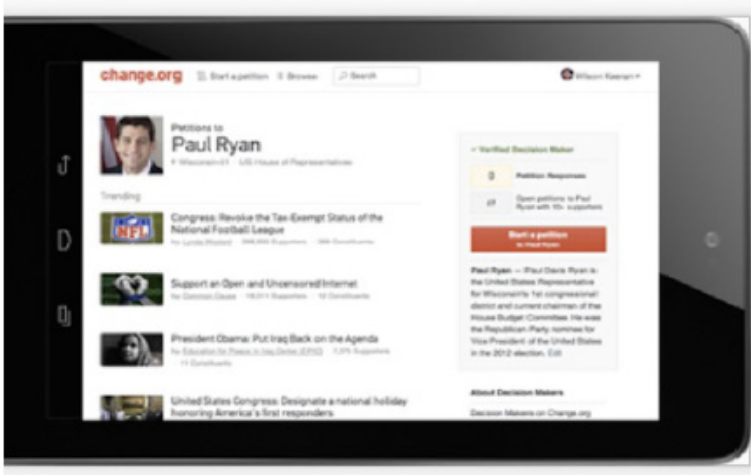
**Wesley Gilman**  
Congressman  
New York

**Andrew M. Cuomo**  
Governor  
New York

[Visit the "I Dig Your Representative" application](#)

Google’s API data, among others are utilized by Change.org to create the Decision Maker feature, which allows users to make a petition to the representatives of the people in the parliament. The petition will be published in the representatives’ profile. “As a result, leaders will have an understanding of the issues discussed in their district, and this, in turn, will become a new way for the representatives to respond to their constituents,” wrote a software engineer, Jonathan Tomer, in the article titled Civic Information API: Now Connecting US Users With Their Representatives.

FIGURE 13: DECISION MAKER FEATURE IN CHANGE.ORG.



Other website, such as PopVox, helps users to express their opinions on a regulation draft to the representatives. Popvox use Google APIs to connect users with the appropriate representatives in their respective district. PopVox always verify the authenticity of their users, whether or not they

are actual constituent, so that the opinions of the users will create real impact on the political process.

## PART FOUR

# Reasons Why Indonesia Elections NEED Technology, Especially API

*Half of internet users in Indonesia are youngsters aged 18-25 years. They are digital native, the millennium generation, voters, voter confusion ...*

A combination of something that is massive and complicated, that is how we define election in Indonesia. National election in this country is the largest one-day election in the world, and has the world's most complicated electoral system. In fact, there is a popular joke: if there was an election in the hereafter, the electoral system in Indonesia will continue to be the most complicated in the world and in the hereafter.

“In terms of size and anatomy, our election is extraordinary. If election does not adopt technology, then the election process will continue to be difficult, expensive, and not attractive to young people,” said the Executive Director of Perludem, Titi Anggraini, to author, April 2015.

Titi Anggraini argues that technological implementation in elections will simplify the complexity. “Admittedly, technology alone would not completely resolve all of our electoral problems, there should be electoral engineering

also. But, technology makes some impossible things become possible.”

For example, Titi said, the issue where voters have to choose one out of hundreds of legislative candidates in an electoral district. “Without technology implementation, it would take time, hard work, commitment and dedication from the voters behalf to dig the background of their candidate. Out of a hundred thousand voters, perhaps only ten voters who have that kind of commitment. But, technology then can facilitate us to identify that plethora of candidates, for example with applications such “Orang Baik”, “Caleg Store”, and others. This is one of many advantages of the implementation of technology in election.”

The key point to handle a large and complicated election, like the one described by Titi Anggraini, is the implementation of technology in the election process. But first, let’s examine more deeply of how big the size of our elections and how intricate the anatomy. Later, we will discuss how technology plays a role in unraveling the complexity, and how it can attract young people.

## **THE LARGEST ONE-DAY ELECTION IN THE WORLD**

In 2004, the magazine Far Eastern Economic Review, published a report that refer to the election in Indonesia as the largest one-day election ever held in the world. In that single day, voters have to simultaneously vote for their representatives in four different level of institutions: candidates for the DPR (national level), DPD (lower house), Provincial DPRD and

Regency/Municipal DPRD (regional level).

Actually, Indonesia is not the largest democratic country in the world. Judging from the number of population, Indonesia is the third largest democratic country after India and the United States. The number of population and electorate in India and America are larger. But, India and the United States do not carry out their election in one day. They conduct each election separately. After all, in terms of geographical condition, Indonesia is much more complicated than India and America.

TABLE 2: COMPARISON OF GEOGRAPHICAL CONDITION OF THE THREE WORLD'S LARGEST DEMOCRATIC COUNTRY

COUNTRY	POPULATION	TOTAL AREA	MAINLAND	OCEAN
India	1,200 million	3.16 million km <sup>2</sup>	2.86 million km <sup>2</sup>	0.30 million km <sup>2</sup>
United States of America	321 million	9.52 million km <sup>2</sup>	9.16 million km <sup>2</sup>	0.36 million km <sup>2</sup>
Indonesia	255 million	5.18 million km <sup>2</sup>	1.92 million km <sup>2</sup>	3.26 million km <sup>2</sup>

SOURCE: WIKIPEDIA

The regional condition of India and the United States are mostly mainland. Meanwhile, in Indonesia, three-fifths of its territory are oceans. Indonesia land area is divided into 17 thousand islands. Indonesia is the largest archipelago country in the world. Six thousand islands are inhabited, which means the government should establish polling stations in all of that areas. If the number of inhabitants of an island is too few for a polling station, then the voters of that island will have to cross the sea to get to another island

to cast their vote.

The distance from Sabang (the westernmost area) to Merauke (the easternmost area), is the same with the distance from Tehran to London, and is separated by three time zones. The total coastline of Indonesia is the second longest in the world, after Canada.

Although the infrastructure in Indonesia is still relatively poor, especially for linking inter-island, Indonesia still maintains the habit to hold legislative elections in early April. This means that the elections are held at the end of rainy season. Therefore, the distribution process of election logistics are conducted during the rainy season and during the peak of western winds that make the seas more billowy.

Every five years, the election officials who are responsible for logistics delivery have been practicing what the ancient poet said, "I will climb the mountain, I will crossed the ocean". They have to hoof the stormy rain, face the fierce waves, climb a hill or a mountain, through the forest, and visited the outermost and the most remote region of the country. Some of the logistics do not even carried by vehicle, but ushered in by bearers who walk for several kilometers.

From electoral management point of view, election in Indonesia is indeed very challenging. In the 2014 election, for example, the number of voters is nearly two hundred million people, the number of polling stations is around 550 thousands. Voters and polling stations scattered in 33 provinces, 497 regencies/municipalities, 6,980 sub- districts, and 81.093 villages/wards. The number of



electoral administration officers in Indonesia - including the Commissioner, polling staff, election monitoring staff, until the election supervisory field officer at village level – is nearly five million people, or nearly equal to the total population of Singapore.

## **THE MOST COMPLICATED AND FRAUDULENT ELECTORAL SYSTEM**

In addition to its large scale, the electoral system in Indonesia is also extraordinarily complex. In its report on the 2004 Indonesian election, the Far Eastern Economic Review calls it the most complicated electoral systems in the world. In the report, the Hong Kong-based magazine highlights the electoral system and its elements, such as electoral districts, the method of counting, the method of determining the elected candidates, and their implications.

In the 2004 national election, Indonesia for the first time used the open-list proportional representation system. With this system, the voters are not only able to cast their vote to political party, but also the individual candidate. This system is used as a correction for the closed-list proportional representation system that were applied in previous elections, which often criticized because the voters are not able to know their candidates, and the system also tend to create oligarchic power.

However, this open-list proportional representation system has to be combined with a multiparty system. At that time, the number of election participants are 24 political parties. Thus, the ballot used for the election was

cumbersome because it needed to display all the image of the political parties and candidates. And there are three large

ballots used in the 2004 election, one for the DPR (national level), one for the Provincial DPRD (provincial level), and one for the Regency/Municipal DPRD (regency/municipal level).

If, for the DPR election, the provincial DPRD election, and the regency/municipal election, every political party proposes 10 candidates, then there will be 720 name of candidates on the ballot paper: 240 candidates on the ballot for the DPR election, 240 names for the provincial DPRD election, and 240 names for the regency/municipal DPRD election.

There are still additional ballot, which is equally large because it includes photos and names of the candidates, that is the ballot for Lower House (DPD) election. The members of the DPD, that is similar to the Senate in the US, are voted with the Single Non Transferable Vote (SNTV) system or, as it is called in the election law, the district system with multi representation.

If the total number of DPD member is 30 representatives, then the total number of candidates in the ballot is 750 candidates. Every voter have to choose four candidates out of the total 750 candidates. That would be like searching for a needle in a haystack.

The big question is: do voters really know beforehand all the candidates they have to choose? Do they able to digest all the political vision, mission and programs of the

candidates? Can they be able to get deeper information, such as life history and track record of the candidates, before casting their vote? What kind of voter education do we need to effectively educate voters so they can choose the best candidates in the midst of the massive options?

An election expert, Ramlan Surbakti, in one occasion said that he was not able to identify all the candidates. “For the DPR and the provincial DPRD candidates, there might be some names that I can still recognize. But, for the regency/city level, I really have no idea whom to choose,” he said. If an election expert admit that he cannot know all the candidates, what about ordinary voters or majority of voters, who live in remote areas and are uneducated?

India and the United States have greater number of voters, but their electoral system is not complicated. Both countries implement First Past The Post (FPTP) system, or more commonly known in Indonesia as the ‘district system’. This is the simplest variant of majority/plurality system, where in every electoral district every political party submits only one candidate (single representation district). And there is only one candidate who will elected as the representative of the district.

In the United States, because there are only two dominant parties, the Republicans and Democrats, the electoral matter is relatively simple and easy, because there are only two candidates contesting in each electoral district. As a result, to elect members of the House of Representatives, for

example, voters are only offered two names on the ballot. This also applies to the election of members of the Senate and state representative.

As a result, the Americans, who are better educated and more well-informed than Indonesian, have a super simple electoral process. They just have to choose one out of two names on a mini-sized ballot, give a check mark on the face of the candidate, and the election schedule is also divided - the parliamentary election does not always coincide with the Senate election – making it easy for the voters to follow the election dynamics.

Meanwhile, in Indonesia, the education level is much lower, access to information is unequal, five percent of the population is illiterate, and some voters are still living in villages without electricity, in the forests and mountains, shirtless, barefooted, wearing koteka (penis gourds), live by hunting and gathering, but they have to face a complicated electoral system, where the participant party and candidate are plenty, and there are many complicated rules for casting vote.

Any vote on the ballot paper is considered as valid if the vote (cast by punching the ballot with a nail) is punched at the image of the political party and candidate, or the political party only. Punching only the name of candidate is considered as invalid, because the lawmakers insisted that electoral participant is political party, not individual candidate. This is to differentiate the system used in Indonesia with the district system, where the participant of the election is individual candidate, even though the candidate is supported

and proposed by political party.

Meanwhile, the election system for DPD election is different from the the local parliamentary/DPRD election. The method to cast vote in parliamentary election in Indonesia is almost similar to the method used in the United States and India, that is by marking or punching the image of the candidate. However, unlike the FPTP or single-representative district system, in which only one candidate is elected in a district, the SNTV system that is used for the DPD election in Indonesia implies that there are more than one representatives are elected in a district. There are four DPD seats for every province. Meanwhile, the amount of candidate competing for these four seats could be dozens.

In open-list proportional representation system as is used in Indonesia, if voters cast their vote for political party and candidate, then the vote is secured for the party and candidate. The votes for political party are used to calculate the number of seats the party acquire in the parliament, while the votes for candidate are used to determine which candidate elected to the parliament. Meanwhile, if the votes that was casted for political party only (where voter only punches the image of political party in the ballot, but not punching the image of candidate), then the votes are only used to determine the number of seats for the party and not to determine elected candidate. Sounds complicated? You bet it does!

This complicated voting mechanism, in some cases, makes the vote given to the political party and candidate ultimately calculated as two votes, where it should have been counted as one vote. This complicated mechanism

also allegedly contributed to the rise of invalid votes, from only three million in the 1999 election, to ten million in the 2004 elections. At that time, there were voters who cast their vote only to a certain candidate, or cast vote for political party A, but they vote for candidate from political party B. And, of course, the enormous size of the ballot paper also contributes to the increase of invalid votes because many voters did not open the ballot paper entirely in the cramped voting booths, resulting in so many ballot papers have double punch-mark that makes the vote invalid.

TABLE 3: COMPARISON BETWEEN LEGITIMATE AND ILLEGITIMATE VOTES IN THE LAST FOUR ELECTIONS

Election	Valid votes	%	Invalid votes	%
1999	105.786.661	96,60	3.708.386	3,40
2004	113.462.414	91,20	10.957.925	8,80
2009	104.048.118	85,60	17.540.248	14,40
2014	124.972.491	89,54	14.601.436	10,46

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/KPU

However, the complexity of the election system does not stop there. This complexity also has many implications for other electoral aspects, especially the conversion method of votes into seats and the method to determine which candidates are elected. In the United States and India, after the counting of ballots from all polling stations in a district, the election officers can immediately determine the winners

of the election, but, in Indonesia, the election officials will still have to sit to do some math.

The election officials must first separate which votes are given to political party and which are for candidate, and which votes are cast for political party only, then apply a formula to determine the allocation of seats for each party with Hare quota method/largest remainder. In the first phase, seats are distributed to political parties that won one hundred percent of voters divisor number or a full quota. If there are still seats left, then the election officials need to continue the calculation to the second stage: the seats are allocated to political party with the largest remaining votes, the second largest, and so on, until all seats are properly allocated.

After all seats are properly allocated to political parties, then election officials have to determine to which candidates the seats are allocated. The method for this allocation is similar in determining seats allocation to political parties, that is the Hare quota, but without counting the largest votes remainder.

At the first stage, seats are allocated to candidates who gain one hundred percent voters divisor number, without considering the number of the candidate in the party's list. If all seats have been allocated to candidates who won one hundred percent of voters divisor number, or if there is no candidate who won a hundred percent voters divisor, then the election officials have to continue the calculation to the second stage, where seats are allocated to candidates based on their assigned number in the party's list. Any candidate

at the top of the list, no matter how many votes they get, is entitled for a seat. Let's just call this syncretic, Indonesian-originated calculation method as Hare quota/ordinal allocation.

There are many elements of the electoral system that have been changed since 2004, one of them is the concept of electoral district that no longer simply refers to administrative area, as implemented since the 1955 elections to 1999. The process of electoral district boundary delimitation (districting) is now based on the population data gathered from provinces, regency/municipality, and districts. The current Election Law allows the government to slice provinces, regencies/municipalities, and districts territory into parts so the ratio between the number of votes and the number of seats available is more equivalent. With district magnitude up to 3-12 seats, at that time, there are 2,057 electoral districts throughout Indonesia, consisted of 69 electoral districts for Parliament (DPR), and the remaining are for provincial and district/municipality parliament.

Further consequence of the open-list proportional representation system and the new districting model is that there will be many variation of ballot designs, that definitely will confuse the election officials when producing the ballots. In 2004, there are 2,057 variants of ballot design, equal to the number of electoral district. If the shipment of ballot papers for a particular district is mistaken, then the election officials must conduct re-election or substitution elections.

In the 2009 elections, the situation is more complex. The



Far Eastern Economic Review called the 2004 elections as the most complex electoral systems in the world. Meanwhile, the 2009 election is considered to have an electoral system that - to quote the Chairperson of Perludem, Didik Supriyanto - the most complicated in the world and the hereafter, because there are many careless provisions, or as many people call it: Fraudulent provisions, are injected into the Law No. 10/2008 on Election.

The tale of this complicated election starts from the growing number of political parties participating in the elections, from 24 in 2004 to 44 political parties in 2009, in which 38 are national parties and the other six are local parties in Special Province of Aceh. The increasing number of political parties also automatically increases the total number of candidates. In 2004, the total number of candidates for the Parliament/DPR is 7,785 candidates, and in 2009 the number rises to 11,225 candidates.

The number of electoral districts is also increased. In addition to the national population growth, the increase is also caused by the reduction of district magnitude from 3-12 seats per district to 3-10 seats per district. At that time, there are 2,200 electoral districts. And, of course, the ballot design variation is also increasing.

However, the heart of the complexity in the 2009 election is in the method of conversion of votes into seats, to determine which political party gets chairs, and the method to determine which candidates get elected. The modifications made in the Law No. 10/2008 on Election should be remembered as the basis for the implementation of the most difficult electoral

counting method in human history. An electoral fraudulent that is unethical, because it causes problems rather than solve them. If you don't believe it, let's examine it more closely.

This method of converting votes into seats is using the Hare quotas/Largest Remainder. However, if in the 2004 elections the conversion process has only two stages (like in many other countries using this method), in the 2009 elections the conversion process has five stages. In the first phase, seats are given to all political parties who gain one hundred percent of voters divisor number or full quota. In the second phase, if there are still seats left, the chairs are not allocated directly to political parties based on their ranking related to the remaining votes until all seats are allocated, but are allocated to political parties who won 50 percent of voters divisor number.

If seats in the Parliament have been not allocated completely, then the conversion process must be continued to the third stage, where all the remaining votes in all electoral district must be sent to provincial level (this stage only applies to electoral districts of Parliament/DPR that are parts of a province, while if the electoral district is a province, then the votes should be allocated in the province). Then, all the remaining votes from various electoral districts that have been sent to provincial level are combined into one batch of votes, that will be allocated based on a new voters divisor number, in which the formula is to allocate the remaining votes based on the remaining seats. If there are still seats left, the process is continued to the fourth stage, where seats

are allocated based on the largest remaining votes. However, if chairs have not been completely allocated while there is no remaining votes left, then the process must be continued to the fifth stage, where seats are given to political parties who have the biggest accumulated votes.

Where do the seats in the third and fourth stage will be allocated based on the combined votes from the various electoral districts? The Election Law states that the seats are given to political parties who only have few seats. How is that possible since the votes come from different electoral districts, and the voters did not just vote for political party, but also vote for candidates, because of the open-list proportional representation electoral system? There has never been a logical explanation for this. This is indeed a strange mechanism but it happens nonetheless.

Now let's take a look on how the system determine elected candidates, or candidates who are entitled for a seat. This process had already been modified since the previous elections. The voters divisor number has been reduced from 100 percent to 30 percent. As the result, any candidate who won 30 percent of voters divisor number is eligible for a seat. However, the 30 percent requirement is not absolute. There are terms and conditions that have to be met.

Firstly, if the votes acquired by candidates who gain 30 percent of voters divisor number are more than the votes obtained by political party, then the seat allocation is determined by the candidates' number in the candidates list. It is important to note that the candidates who gain 30 percent of voters divisor number have equal allocation of

seats. They are only a benchmark. If, for example, 30 per cent of voters divisor number is equal to 10 thousand votes, and let's say a candidate at the number one on the candidates list acquire 11 thousand votes, while the number three candidate acquire 22 thousand votes, then the seats allocation will prioritize the number one candidate, eventhough he/she has less votes.

Only candidate who gained 100 percent of voters divisor number is exempted from that rule, because every candidate who achieves a full quota is automatically entitled for a seat. However, achieving 100 percent voters divisor number is not easy. Out of 7785 candidates in the 2004 legislative election, for example, there are only two candidate who managed to achieve it: Hidayat Nur Wahid, candidate from the Justice-Prosper Party (PKS) from the electoral district of Jakarta, and Djasri Marin, candidate from the Golongan Karya (Golkar) from the electoral district of Riau.

What if the candidates who gain 30 percent of voters divisor number have exactly same amount of votes? The Election Law states that the allocation is based on the candidate's number in the candidates list. If the number candidates who gain 30 percent of voters divisor number is considerably less than the number of seats gained by political party, for example: the total number of candidates who gain

30 percent of voters divisor number is two candidates, while the political party get four seats, then the remaining two seats are allocated by the candidate's number. What if the political party won seats, but there is none of its candidates who gained 30 percent of voters divisor number? Then the

seats allocation is also based on the candidates' number.

If the method of determining the elected candidates in the 2004 elections can be easily called as Hare quota/Ordinal allocation, the method in the 2009 election, however, is quite difficult to define because it has been too deviated from the original method invented by Thomas Hare. However, I think it might be quite right if we call the method as DPR-RI quota/ordinal allocation.

Thankfully, this method is subsequently amended by the Constitutional Court during the judicial review process of the election law. The Court considered the method as undemocratic, and the Court required the seats allocation to be directly ranked based on the largest remaining votes. After the amendment, the conversion process of votes into seats has become more straightforward. There will be no more complicated and intricate counting method. Whoever win the most votes, then it is he/she who will get the seat, no matter at what number does the candidate in the candidates list. Some politicians and political commentators considered this simpler method as the “regime of majority vote”.

Despite the amendment, the method to determine the allocation of seats for political party, however, remain untouched. Therefore, technically speaking, the electoral system applied in the 2009 election is still far more complex than the 2004 election.

However, there is one thing that was made easy in the 2009 election. Due to the high number of invalid ballot papers, around 10.95 million, that was caused by the complicated

way to vote in the 2004 elections, the government then decided to change the rule. In the 2009 election, any vote that only punches the image of candidate is considered as valid. As the result, voters are allowed to vote in three ways: punching the image of political party and candidate, punching only the political party, and punching only the candidate. However, unfortunately, this is apparently not powerful enough to reduce the number of invalid ballots, because the number of invalid ballots rose to 17.5 million instead.

What about the 2014 election? It should be simpler because the number of parties participating in the election is only 12 national parties and three local parties in Aceh. The Parliament also reduced the number of candidates in half into 6.607 candidates. In addition, the method of determining the elected candidate is still similar with the method used in 2009, i.e. by majority vote. Meanwhile, the method of conversing votes into seats is restored to the original method as in the 2004 election that has only two phases, of which the legislators in Senayan called as 'pure quota system'. Many heretic methods in the previous election have been removed.

The number of electoral districts is increased to 2,438 areas, as a consequence of population growth, and this means the ballot design variant is also increasing compared to the previous elections. However, this is not a big problem. The rule for casting vote is remain similar with previous election, where voters are allowed to punch the image of political party and candidate, political party only, or candidate only.

However, there are still complications caused by the organizers of the election (KPU). With the KPU Regulation No. 26/2013, the Commission stated that if a voter chose two or more candidates on the ballot, the votes are still considered as valid and counted as vote for political party. The Commission argued that this decision is made in order to save votes.

There are two consequences from the regulation. Firstly, there will be many ballots that should have been deemed invalid will passed. Secondly, if the votes were initially given out to candidate, why then they are counted as party votes? On what ground?

In response to these oddities in Indonesian electoral system, Didik Supriyanto, in one of his op-ed article wrote, “Thus, if the 2004 elections was referred by foreign media as the most complicated election in the world, then the 2014 election will never be competed in its complexity by any other electoral practice in the rest of the world. If in the hereafter were elections, our election would still be the most complicated election in the world and in the hereafter.” (Merdeka.com, February 28, 2014: The Most Complicated Elections in the World and the Hereafter).

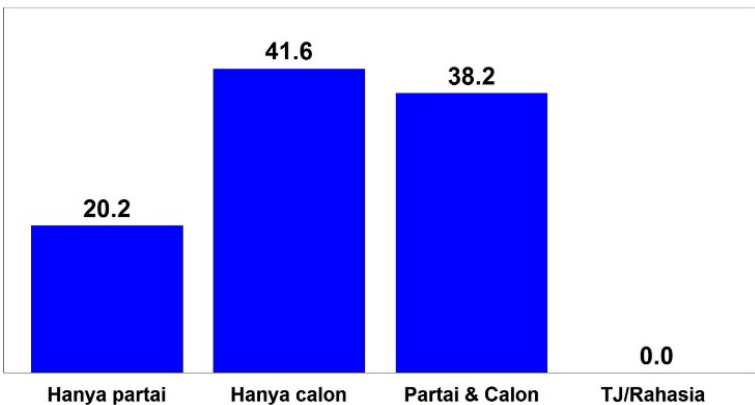
All these complexities that we are talking about are only involves several elements of the electoral system, thus we have not discussed all of the complexity. If all these situations do not change, then, for the upcoming 2019 election, there will be a culmination of hassle in the history of elections in Indonesia. Especially if we consider the fact that, in the 2019 national election, legislative election will

be held simultaneously with the presidential election, or as commonly called as the election of five boxes.

The public tendency to prioritize presidential election over legislative election has the potential to drown out the significant role of political parties and candidates, and displacing local issues. It has been pointed out that this situation can make the voters to be increasingly more irrational because their attention will be heavily focused on the personal figure and behavior of the presidential candidates, that they forget to examine the political vision, missions, and programs, and track record of dozens of political parties and hundreds of candidates for the legislative election (DPR/DPD/DPRD).

GRAPH 3: HOW VOTERS VOTE IN THE 2014 LEGISLATIVE ELECTION (PUNCHED THE IMAGE OF POLITICAL PARTY ONLY, CANDIDATE ONLY, OR POLITICAL PARTY AND CANDIDATE)

**PILIH PARTAI, CALON ATAU PARTAI & CALON? (%)**  
 EXIT POLL INDIKATOR - METRO TV

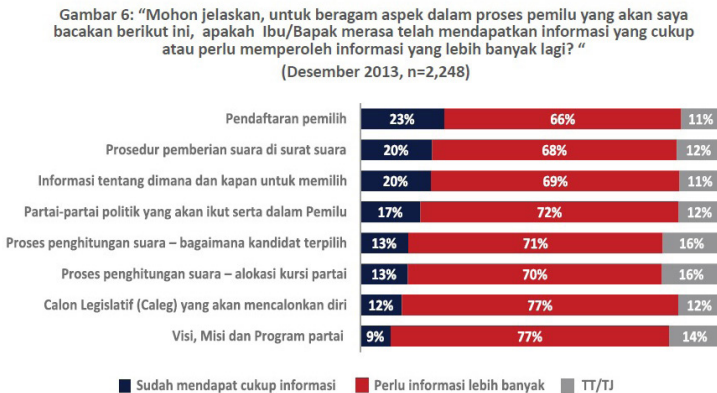




# THE SIDE EFFECTS OF LARGE AND COMPLICATED ELECTION: FLOATING VOTERS, ABSTENTIONS, AND MONEY POLITICS

There have been three elections using the open-list proportional representation system in Indonesia, and it has been three times Indonesian voters have to choose among hundreds of names of candidates. Yet, it all has been fine. But, after three complicated elections, do Indonesian voters really become accustomed to such complicated elections, and able to identify hundreds of names of candidates, understand their political vision, missions, and programs? Let's answer this question by looking at the data gathered by polling and survey institutions.

GRAPH 4: RESEARCH ON CANDIDATES INFORMATION CONDUCTED BY IFES-LSI



The answer, as it turns out, is not a good news. Indonesian voters are still having difficulties to identify their representative candidates. This is hardly surprising: in every election there are about 200 thousand candidates competing for seats in the DPR, DPD and DPRD. That number is ten times more than the number of seats available.

A survey conducted by the International Foundation for Electoral System (IFES) and the Indonesian Survey Institute (LSI), in December 2003, for example, found that only 12 percent of respondents who get enough information about the candidates. Meanwhile, 77 percent admitted that they do not get enough information about the candidates. Respondents who claimed to have sufficient information about the political vision, missions, and programs of political party and candidate are even lower, only nine percent.

During the period between February 28 and March 10 of 2014, or a month before the voting day, Indikator Politik Indonesia (IPI) conducted a survey and found out that 48.7 percent of respondents do not recognize the candidates in their respective district; 40.5 percent admitted that they just know some of the candidates; 5.5 percent claimed to know most of the candidates, and; only 1.2 percent of the respondents claimed to know all of the candidates.

IPI researcher, Dodi Ambardi, as quoted from Tempo, said this phenomenon is because the candidates do not disseminate their political programs enough to the public and the voters feel that finding out information for themselves is just too much of an effort. Dodi suggested the Election Commission to create biographical data of candidates, make

the data open so they can be available to the public.

However, this issue is very complicated. Not only there are too many political parties and candidates, many voters in Indonesia have also decided to be floating voter. This tendency is indicated from the diminishing relationship between voters and political party. Voters' identification with political party (party id) has decreased to an extreme condition, that a survey conducted by IPI before the 2014 election revealed that only 10 percent of respondent are claiming they have strong relationship with their favorite party. This means the floating voters in Indonesia is 90 percent of total voters!

Floating voters are confused voters. They are the voters who are disappointed with the party/candidate elected in the previous election. They then become indecisive, decide to 'wait and see'. There are also the first-time voters who tend to be indifferent, the internet generation that is not in direct contact with the various political events and ideology of the past, and have not decided to vote for a specific party/candidate. They all can be categorized as the Undecided voter.

TABLE 4: THE DECLINE OF PARTY ID IN INDONESIA

ELECTION	PARTY ID (%)	FLOATING VOTERS (%)
1999	86	14
2004	54	46
2009	20	80
Juni 2011	18	82

## API PEMILU

Juni 2012	17	83
Maret 2013	14,3	87,7
Oktober 2013	10	90

Description: 1999-2009 Data from the Indonesian Survey Circle (LSI), 2011-2012 data are from Saiful Mujani Research & Consulting (SMRC), while 2013 data are from the Indikator Politik Indonesia.

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/LSI/INDIKATOR

In the case of non-first time voters, previous surveys has detected that they have a tendency to be swing voters that generally swing in two directions: choose different political party because the party they voted for in the previous election is disappointing or become abstainer if they do not see any credible alternative. However, the tendency of floating voters or undecided voters to become abstainers continues to grow. It is indicated from the voter participation rate that plunged for more than 20 points in ten years, between the 1999 election and the 2009 election. In addition, the number of abstentions is nearly 50 million abstainers, or two times higher than the total votes of the winning party in the elections at that time (the Democratic Party).

Thankfully, in the 2014 elections, the number of abstention can be suppressed, and the voter turnout rose up to five percentage points compared to the previous elections. However, in the presidential election, strangely, the participation rate declined (see table).

**TABLE 5: VOTERS PARTICIPATION IN THE LEGISLATIVE ELECTIONS**

ELECTION	REGISTERED VOTERS	PARTICIPATION	%	ABSTENTION
1987	93.630.632	90.388.758	96,54	3.241.874
1992	107.565.697	102.250.370	95,06	5.315.327
1997	124.210.809	117.542.466	94,63	6.668.343
1999	117.815.053	109.495.047	92,70	8.320.006
2004	148.000.369	124.420.339	84,06	23.580.030
2009	171.265.442	121.588.366	70,99	49.677.076
2014	185.826.024	139.573.927	75,11	46.252.097

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/KPU

**TABLE 6: VOTERS PARTICIPATION IN THE PRESIDENTIAL ELECTION**

ELECTION	REGISTERED VOTERS	PARTICIPATION	%	GOLPUT (DO NOT CHOOSE)
2004*	153.320.544	122.293.844	79,76	31.026.700
2004**	150.644.184	116.662.705	77,44	33.981.479
2009	176.411.434	127.179.375	72,09	49.232.059
2014	193.944.150	134.953.967	69,58	58.990.183

\* first round, \*\* second round

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/KPU

The fact that money politic has become increasingly widespread, among others, is confirmed by a survey conducted by IFES-LSI on June 1 to June 10, or two months after the election. The respondents of the survey are two thousand voters from all over Indonesia, and most of them confirmed the increase of money politics in the implementation of electoral democracy in Indonesia.

Meanwhile, the growing significance of the role of money in politics is indicated by the increasing number of voters who consider the provision of money and in-kind gifts from political parties and candidates as something ethically justified. The phenomenon can be seen from the many surveys conducted between the year 2005 and 2014, such as the one conducted by the Indonesian Survey Circle (LSI) and IPI:

TABLE 7: VOTERS' ATTITUDE TOWARDS MONEY POLITICS

POLLSTER	SURVEY PERIOD	JUSTIFIED (%)	UNJUSTIFIED (%)	NO ANSWER (%)
LSI	October 2005	11,9	80,4	7,7
LSI	October 2010	20,8	60,7	18,5
Indikator	March 2013	41,5	54,3	4,2
Indikator	October 2013	41,5	57,9	0,5
Indikator	9 April 2014	35,3	60,5	4,2

Notes:

- The survey is conducted by the Indonesian Survey Circle nationally with multistage random sampling method, with 1,000 respondents. The error rate (sampling error) plus or minus 5 percent. The survey is conducted by face-to-face interviews in early October 2010. The results of this survey is then compared with a similar survey conducted in October 2005.
- Indikator Politik Indonesia (IPI) survey is conducted in September-October 2013, in 39 electoral districts, with 400 respondents in each electoral district.
- IDI's exit polls on 9 April 2014 is conducted nationally with 2,000 respondents selected by stratified two-stage random sampling, with a margin of error of 2.2 percent at 95 percent confidence level

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/LSI/INDIKATOR.

**TABLE 8: THE EFFECT OF MONEY POLITICS ON VOTERS (IN PERCENTAGE)**

In the survey, LSI and IPI asked additional questions to the respondents (especially to respondents who consider money politics as ethically justified) and it is revealed that there are still many voters who are willing to receive money from politicians and fulfill their agenda:

<b>VOTERS' ATTITUDES</b>	<b>2005 (%)</b>	<b>2010 (%)</b>	<b>2013 (%)</b>	<b>2014 (%)</b>
Accept the money and vote for candidates who give money	27.5	37.5	28.7	26.8
Accept the money and choose the candidate who gave more money	-	-	10.3	4.1
Accept the money but vote for the appropriate candidate conscience	-	-	55.7	59.1
Accept the money but do not vote for the candidate who gives the money	13.2	7.8	-	-
Will not accept/reject provision	45.6	47.6	4.3	9.7
Do not know/do not answer	11.7	9.1	1.0	0.3

SOURCE: PEMILU INDONESIA: FAKTA, ANGKA, ANALISIS, DAN STUDI BANDING/LSI/IPI

“Our survey shows that voters who have close relationship to political party tend to reject vote buying. Voters tend to be more tolerant and accepting money politics because they do not have psychological proximity with political parties, therefore they build transactional relationship with political party. If political parties do not improve their quality, then they will be even more shunned by the people, and that means political cost will be more expensive,” said the Executive Director of IPI, Burhanuddin Muhtadi, in the release of the survey in Jakarta, December 2013.

Voters who have strong resistance against money politics, according to the survey, are voters who have strong party id. This type of voters are increasingly rare. If political party

expect these kind of voters, then they will have to do serious works, such as political education, cadres regeneration, and accommodate the aspiration of the people.

However, political parties in Indonesia have increasingly become vote-gathering machine. To win the election, they have left door-to-door and interpersonal method of campaign, but to rely on the service of political consultants to polish their image and conducting surveys to lead public opinion. Cadre regeneration process is not going well. It is indicated by their decision to instantly recruit candidates based solely on popularity and money.

Recognizing that they are no longer connected with their voters, political parties and candidates decided to just give away money to voters, just like Santa Claus. This situation creates high cost politics, a component that constitutes the political corruption cycle.

Thankfully, in the midst of the unfortunate situation, there is still a glimmer of light. Despite pre-election surveys show that money politics has increasingly become prevalent and has greater impact than ever, but, as it turns out, Indonesian voters are still using their common sense when casting their vote in the polling booth. This is indicated from an exit polls conducted by IPI, that shows majority of voters



GRAPH 6: VOTERS' CONSIDERATION IN CHOOSING POLITICAL PARTY AND CANDIDATE ACCORDING TO EXIT POLL BY INDIKATOR POLITIK INDONESIA



Therefore, if political parties or candidates introduce their political vision, mission, and programs more aggressively, there is still a chance voters will choose to vote for decent political party/candidate. And the most important thing is that this effort can make floating voters, who tend to be abstentions, have better information so that they will have reason to execute their voting rights.

Floating voter is not necessarily a bad thing. They are the kind of voter who does not choose political party/candidate based on blind fanaticism and emotional consideration, but based on rational consideration on the political programs offered by the party/candidate. According to political commentator Eep Saefullah Fatah, floating voters are voters with relative autonomy. It has been proven that,

with their large number, floating voters play an important role in giving punishment and reward to political parties/candidates. This particularly can be seen from the election results in Indonesia, in which the winner of the election is always changing. In 1999 PDI-P won the election, then Golkar won the 2004 election, in 2009 the Democratic Party won the election, and PDI-P won the 2014 election.

For the future, floating voters could still be an important factor for changes. The government needs to facilitate them with information so they will not become non-voters or easily sell their votes for money. At this point, technology plays an important role in disseminating high-quality information about the political vision, missions, programs, and track record of political parties and candidates to the voters.

## **WHY ELECTION API IS THE SOLUTION**

According to those facts, then what is the appropriate technology that can be implemented in Indonesia to simplify the complexity of election and to provide necessary information to voters, so the elections can be more interesting, especially for the young people? There are many technologies that can be offered. One of them is Application Programming Interface (API). And this technology has been adopted by Perludem in their program Election API.

Why API? The answer is ‘momentum’. API emerges amid the widespread of three major global trends. First trend is the open data movement (and many other social movements associated with it such as open source movement and open government data), that encourages more and more people to

free all the data that are categorized public data - including data in the hands of the government. The data in open data is not just opened, but should be opened in digital format so they can be freely reused and redistributed, and compatible with API.

Second trend is the massive development of the internet, especially mobile internet access via gadgets (smartphones and tablets), that, according to Kin Lane from Apievangelist, is the final puzzle piece of the digital strategy. This development has opened up an entirely new world: the mobile application. And, according to Kin Lane, API is the driving force for the mobile applications boom that is currently sweeping across the world.

Third trend is the increasing use of social media in Indonesia. Data from We Are Social in March 2015 revealed that more than a third of the population in the Asia-Pacific region have access to internet. Of these, about two-thirds are using social media. The use of social media in Indonesia represents 29 percent of the use of social media across the Asia Pacific region, with 80.2 million Facebook users and 26.4 million Twitter users (data from Media Matrix, 2013). The utilization of API into various applications that can be shared into social media platform, allowing a more massive socialization of information.

API is a translator and a bridge connecting one system to another system, one database to another database. Therefore, API is an important technology to stream election data, which are basically public data, directly into the hands of the voters through mobile applications, as well as web

applications. These data are valid because they come from the most authoritative sources, have also been cleaned, and will be sorted according to specific theme and issue, so they will be very beneficial to voters' education process.

TABLE 9: INTERNET USERS IN 25 COUNTRIES (2013-2018) ACCORDING TO A RESEARCH BY EMARKETER

**Top 25 Countries, Ranked by Internet Users, 2013-2018**  
*millions*

	2013	2014	2015	2016	2017	2018
1. China*	620.7	643.6	669.8	700.1	736.2	777.0
2. US**	246.0	252.9	259.3	264.9	269.7	274.1
3. India	167.2	215.6	252.3	283.8	313.8	346.3
4. Brazil	99.2	107.7	113.7	119.8	123.3	125.9
5. Japan	100.0	102.1	103.6	104.5	105.0	105.4
6. Indonesia	72.8	83.7	93.4	102.8	112.6	123.0
7. Russia	77.5	82.9	87.3	91.4	94.3	96.6
8. Germany	59.5	61.6	62.2	62.5	62.7	62.7
9. Mexico	53.1	59.4	65.1	70.7	75.7	80.4
10. Nigeria	51.8	57.7	63.2	69.1	76.2	84.3
11. UK**	48.8	50.1	51.3	52.4	53.4	54.3
12. France	48.8	49.7	50.5	51.2	51.9	52.5
13. Philippines	42.3	48.0	53.7	59.1	64.5	69.3
14. Turkey	36.6	41.0	44.7	47.7	50.7	53.5
15. Vietnam	36.6	40.5	44.4	48.2	52.1	55.8
16. South Korea	40.1	40.4	40.6	40.7	40.9	41.0
17. Egypt	34.1	36.0	38.3	40.9	43.9	47.4
18. Italy	34.5	35.8	36.2	37.2	37.5	37.7
19. Spain	30.5	31.6	32.3	33.0	33.5	33.9
20. Canada	27.7	28.3	28.8	29.4	29.9	30.4
21. Argentina	25.0	27.1	29.0	29.8	30.5	31.1
22. Colombia	24.2	26.5	28.6	29.4	30.5	31.3
23. Thailand	22.7	24.3	26.0	27.6	29.1	30.6
24. Poland	22.6	22.9	23.3	23.7	24.0	24.3
25. South Africa	20.1	22.7	25.0	27.2	29.2	30.9
<b>Worldwide***</b>	<b>2,692.9</b>	<b>2,892.7</b>	<b>3,072.6</b>	<b>3,246.3</b>	<b>3,419.9</b>	<b>3,600.2</b>

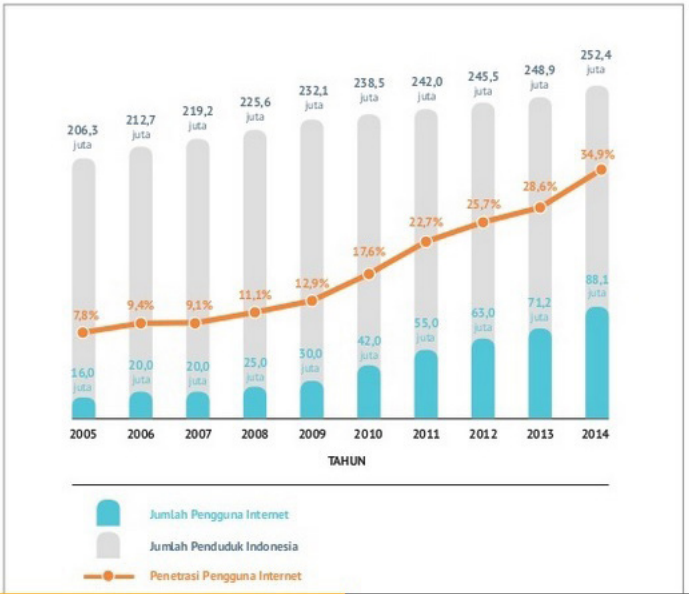
*Note: individuals of any age who use the internet from any location via any device at least once per month; \*excludes Hong Kong; \*\*forecast from Aug 2014; \*\*\*includes countries not listed*

*Source: eMarketer, Nov 2014*

Moreover, unlike other election technology such as e-voting that is only beneficial for the voting and vote-counting process, API can be applied to all of the phases of elections. As long as the package is installed, API can be used to facilitate all kind of electoral process, from voters' registration to vote counting. In fact, the API data can still be used after the election, for example, to monitor the performance of the elected candidates.

Now, let's take a look at the development of the Internet in Indonesia, especially mobile internet users, which are the main target audience of the Election API program.

GRAPH 7: THE SIZE OF POPULATION AND PENETRATION RATE OF INTERNET USERS IN INDONESIA 2005-2014 ACCORDING TO A SURVEY BY APJII-PUSKAKOM UI



According to eMarketer, Internet users in Indonesia in 2014 is ranked sixth in the world in term of the size of users population, below China, the United States, India, Brazil, and Japan. In fact, according to the New York-based market research institute, in 2017 Indonesia will be ranked fifth, replacing Japan, with 112 million Internet users.

The result from E-marketer research somewhat understates the result from a research conducted by the Indonesian Internet Service Provider Association (APJII) in collaboration with the Center for Communication Studies, University of Indonesia (Puskakom UI). In their research titled Indonesia Internet Users' Profile 2014, APJII-Puskakom claimed that there are 88.1 million internet users in Indonesia. The penetration rate is 34.9 percent of the total population of 252 million people.

Despite the different result, APJII-Puskakom and eMarketer reached the same conclusion regarding on why internet access in Indonesia has grown rapidly. Both researches answer: the increase of Internet access in Indonesia is very much indebted to the increase of mobile devices use.

“The low price of phone set and mobile broadband connection has increased internet access and use in countries where there is no reliable fixed-line internet, either because of poor infrastructure or high service cost. Therefore, when the growth of internet users in developed countries becomes stagnant, developing nations such as India and Indonesia still have room for significant growth,” said eMarketer senior analyst, Monica Peart, as quoted from an article

entitled Internet Users to Hit 3 Billion in 2015, on webpage emarketer.com.

The research by APJII-Puskakom also revealed that internet access via mobile devices in Indonesia has far surpassed Internet access via other devices. And the highest access is through smartphones which reaches 85 percent of total access, while internet access via tablet is about 13 percent.

GRAPH 8: COMPARISON OF INTERNET ACCESS IN INDONESIA BASED ON TYPE OF DEVICES ACCORDING TO SURVEY BY APJII-PUSKAKOM UI



The growth of mobile device users in Indonesia, especially smartphones, is exceptionally strong. According to data from the General Directorate of Information and Public Communication, Ministry of Communications and Information Technology, the number of devices in 2013 has exceeded the total number of domestic population. The ministry stated that the number of device sales in Indonesia increased from two million in 2009 to 4.5 million in 2010; 9.5 million in 2011; 13.2 million in 2012; and 15.3 million in 2013. The growth is predicted to be sharply increase in 2014 and 2015.

TABLE 10: TEN LARGEST SMARTPHONE MARKET ACCORDING TO GFK RESEARCH

<b>Top 10 smartphone markets for growth by value, 2015 compared with 2014 (GfK forecast)</b>		
<b>Ranking</b>	<b>2014</b>	<b>2015</b>
1	China	India
2	United States	China
3	Japan	Indonesia
4	Brazil	South Africa
5	United Kingdom	Brazil
6	Germany	Pakistan
7	India	Nigeria
8	South Korea	Egypt
9	Russia	Vietnam
10	Italy	Bangladesh

SOURCE: THE TELEGRAPH.

According to a survey by Baidu, 59.9 percent of Internet users in Indonesia use smartphones. This is much higher



than the population of internet users who uses laptop. Currently, the low-end (cheap) smartphone is the most used device by internet users in Indonesia to access the internet.

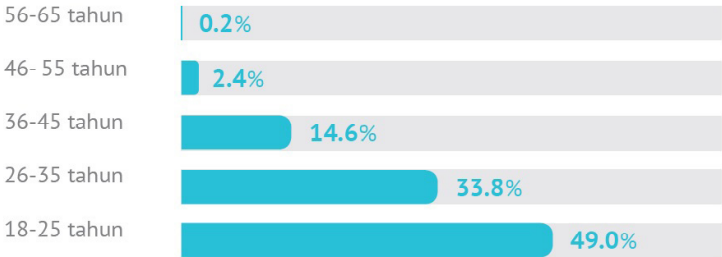
“More than 80 percent of users use smartphone with a price range of Rp 1,000,000 - Rp 3,000,000,” said Anthony Pack, Product Manager of Baidu Indonesia, in a press conference on Thursday, November 27, 2014, as quoted from TechnAsia. “The penetration rate of mobile internet in Indonesia is very fast.”

The market research institutes in Germany, the Gesellschaft für Konsumforschung (GfK), predicted in 2015 Indonesia will become the third biggest smartphone market in the world. GfK, which is the fourth largest market research institutes in the world after Nielsen, Kantar, and Ipsos, said developing countries will lead the market thanks to the supply of cheap smartphone. “The price of the smartphone is only 30-50 US dollars. This will definitely attracted most of the population into the smartphone market,” said the Director of GfK, Kevin Walsh, to The Telegraph.

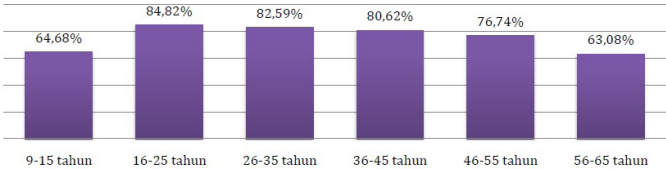
Then, what do these researches and surveys mean to the implementation of technology in elections? The majority of Internet users in Indonesia, particularly mobile Internet, are young voters. According to the research by APJII-Puskakom, out of 88.1 million internet users in Indonesia, 49 percent of them (about 43 million Internet users) are young people aged 18-25 years. APJII-Puskakom call them the millennium generation or the digital native, who at the time of their birth and first-cry on earth the Internet has been widely used.

If the survey include young people at the age of 17 years, then the amount of young internet users may be more than 50 percent. The minimum voting age in Indonesia is 17 years old or any person who has been married.

GRAPH 9: INTERNET USERS IN INDONESIA BY AGE ACCORDING TO SURVEY BY APJII-PUSKAKOM UI



GRAPH 10: MOBILE PHONE USERS IN INDONESIA BY AGE ACCORDING TO SURVEY BY THE MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY

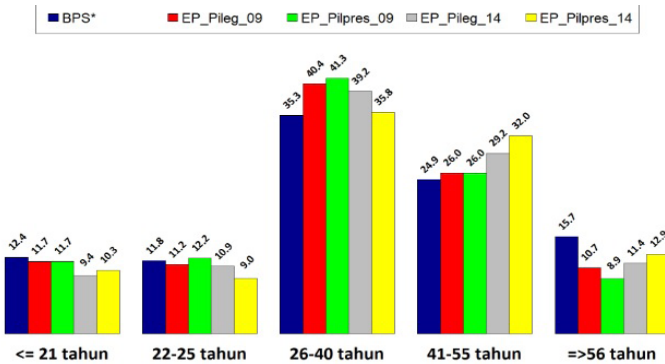


The digital native is the generation who urgently needs political education because they do not necessarily in contact with various political events in the past. So, it is safe to assume their party id is low. This digital native are mostly young people who are currently studying in middle school or college, fresh graduate, single, and whose lives

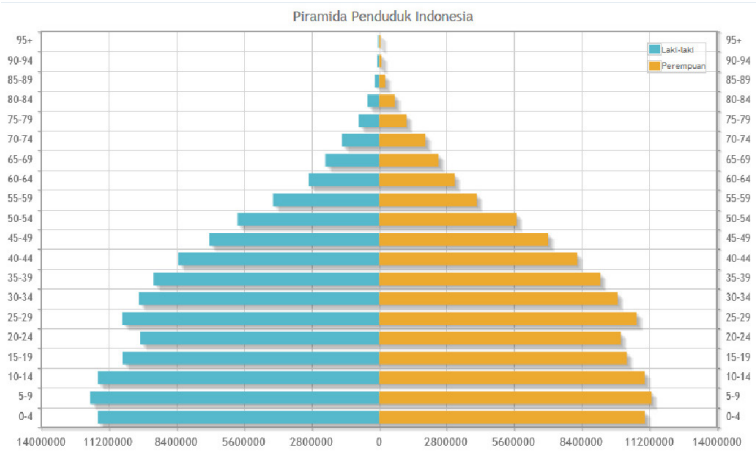
could still be financed by their parents. Therefore, it is not easy for politicians to seduced these people with money. The floating voters and undecided voters of this type have greater tendency to be abstentions.

And, data from the exit poll conducted by IPI confirms that this group is the most likely to become abstention, compared to other age groups of voters. Unfortunately, this group, according to the results of the Central Bureau of Statistics (BPS) in 2010, is a large group. We do not want the demographic bonus will become a bonus of abstentions, do we?

GRAPH 11: TRENDS IN VOTER PARTICIPATION BY AGE GROUP ACCORDING TO EXIT POLL BY INDIKATOR POLITIK INDONESIA



GRAPH 12: THE PYRAMID OF INDONESIAN POPULATION BY AGE (BPS CENSUS 2010)



Looking at the BPS population pyramid and exit poll data from IPI, it is apparent that we urgently need a new method to approach this group. If the election organizers and election activists do not stay in touch with this digital native, it is feared that they will not be interested in election. This millennium generation is not the generation of ‘general meeting campaign’. They live in a very different era.

Then, what kind of approach is right for them? Seeing that they are the biggest internet users, especially mobile Internet access via mobile devices, and in everyday life they are very familiar with a variety of mobile applications that facilitate their everyday lives, then it is at most appropriate to utilize the same technology to approach them. We need to send election information directly to their hand, via interesting mobile applications they can download at any

time from the app stores such as Play Store and Apps Store.

This is why Election API is important. Election API can provide valid and clean data from authoritative sources. Thus, voters, especially the digital native, can obtain quality information packages about the election and its contestants. That way, they will have a chance to know and understand the cumbersome and complex Indonesian elections, especially for the upcoming 2019 concurrent national election.

Why API is important to dissolve the complexity of Election? because API – according to Josh Tauberer – breaks data into small pieces. In this case, the election data are turned into packages. There are data packages on candidates, electoral district map, data on election violations, campaign finance, voters registration data, result of election, most frequently asked questions in the election (FAQ), and data on election-related news.

Each of this package presents specific but incomplete information, because a complete and comprehensive information is what programmers called the endpoint. For example, a data package on legislative candidates that provides information of all candidates, including their photographs and complete life history. In making an application, programmer or developer can combine that data with other API packages such as electoral districts and other information from other places because of the API elastic character. They just need to focus in making the application to be attractive in its presentation, they can even combine the packages to make a game.

An IT expert from ITB, Suhardiman Basuki, said Election API is the answer to fulfill the needs of voters. According to Suhardiman, it will be very uncomfortable for the voters to be presented with a large election data sets. “For example, Ministry of Home Affairs provides data, but they are all raw data. What are you going to do with it? When we only need data of one particular district, but then provided with the data of all districts, what are we going to do with it? We only want what we need. Therefore, we need data that is structured and application-based, so it will be easy for us to find. The prime principle we need to heed is the data must serves people accordingly. Election API is the way to achieve that principle. I applaud the Election API initiative. This initiative should have been come from KPU. KPU should create something like this, if they really want to serve voters,” Suhardiman told author in April.

# CHAPTER FIVE

## **THE CREATION PROCESS OF ELECTION API, HACKER MARATHON, AND THE BIRTH OF HUNDREDS OF ELECTION APPLICATIONS**

*With technology life can be made simpler and cheaper, including elections.*

“SINCE February 2013, we have been talking about API in many occasions. However, because we don’t have proper knowledge and experience on the subject, we were only groping in the dark. What is actually API? How does it work? What is the requirement? What the result will be like?”

These questions are from the Executive Director of the Association for Elections and Democracy (Perludem), Titi Anggraini, when she recollects her memories about the starting process of the Election API initiative. Those questions are quite understandable, because API technology is absolutely something new in election discourse, not only for Indonesia, but for the whole world as well. API and election are amalgamation of two complex matters: technology and election.

FIGURE 14: THE DISPLAY OF ELECTION API



The image shows the homepage of the API Pemilu website. At the top, there is a logo consisting of a red pixelated shape above the text 'API PEMILU' in a bold, sans-serif font. Below the logo, a welcome message reads: 'Selamat Datang di API Pemilu, API informasi sipil untuk Pemilu 2014 dan yang akan datang!'. Underneath this message is a link for 'bahasa - english'. The main content area is divided into three sections: 1) A light gray box with the text 'Ingin tahu lebih banyak tentang API ini?' and a blue button labeled 'Apa itu API Pemilu?'. 2) A light gray box with the text 'Subscribe Untuk Update', an input field for 'email address', and a blue 'Subscribe' button. 3) A light green box containing text in Indonesian: 'Para developer menggunakan API Pemilu untuk mengembangkan aplikasi mobile dan web; temukan aplikasi-aplikasi tersebut di [pemiluapps.org](http://pemiluapps.org) dan cobalah.'

However, Perludem believes the premise that with technology life can be made simpler and cheaper, including elections. In this case, the collaboration of the two complex things, technology and election, will be like negative with negative multiplication, the result is positive. Technology can unravel the complexity in elections in Indonesia, and



turns elections into something that is interesting in the internet era.

However, to start something completely new, that almost nobody has ever attempted, is a challenging task. Moreover, Perludem is not an institution that has a particular interest in the field of technology. As the result, for many months, the idea was only discussed in meetings, and never has the prospect to be executed.

However, an idea – like the scholar Sudjatmoko said - has legs. After some deliberations, in August 2013, there is a silverlining. “We began to see a clear path for this project,” said Titi.

Perludem then began the preparation process. First is the preparation of inventories needed to build Election API, from the technology to the data for building a database.

Regarding the technology, the problem is relatively easy. Perludem only needed to contact software developer to write an API program. For this, Perludem contacted Wolden Global Services (WGS).

Regarding the data preparation, however, is a big challenge. It’s easy to understand why: API requires a digital database. In practice, the amount of available election data is not enough to fulfill such requirement. The reason is because most of the election data have not been re-formatted into digital data.

The General Election Commission (KPU) - as the most complete and authoritative source of election data - has already opened their data via official website [kpu.go.id](http://kpu.go.id) and

many other various links/URLs. However, most of these data are stored in PDF/JPEG format, which can only be read by people (human-readable). API requires such data to be stored in a format that is machine-readable, such as CSV (comma separated value), excel, or TXT.

This is because API is not like website, if anything, API is more of a webservice. The API data are not meant for direct consumption by website users, but to be used by programmers and application developers. These programmers and developers are then resemble the data to create web applications or mobile applications. Application is the end result, which later can be downloaded via personal computers (PCs), notebook or laptop, netbook, or mobile gadgets (smartphones, handheld computers, and tablet computers).

The data stored by the KPU are not only categorized as locked (proprietary) data, but they also have other issues. One of the issues is the lack of consistency in writing. For example, in one data the educational background info of a candidate is written as ‘undergraduate’, but in other data it is written as ‘S1’ (Strata 1, official degree for undergraduate college in Indonesia). This kind of input is not standardized, which categorized differently by computer algorithm. And, of course, this may cause a serious problem when the data will be used later.

Other common errors when input data content, as described in the Open Election Data Module, are the use of upper-case, for example, the word “blue” (first letter is written in lowercase) and “Blue” (capitalized); “seven”

(written as word) and “7” (written as numerical symbol); and others.

## **ENTRY, CLEANING, AND PACKAGING**

Faced with all of these problems, there is no other way except to re-entry the election data election while cleaning them. Thus, a great work begins.

At the same time when the Election API project begins to show a clear path, the government was also beginning the validation phase for the fixed candidates’ list (DCT) in the end of August 2013 for the DPR, DPD and DPRD election. This means Perludem have to accelerate the data entry process.

“We have to perform data entry for almost the entirety of election data. The most difficult part is when we have to entry ten to hundreds of thousands CV (curriculum vitae) of candidates in the form of scanned PDF/JPEG and many others are handwritten,” said the Election API Program Officer, Diah Setiawaty.

Titi Anggraini added, “After converting the candidate profile data from PDF/JPEG format into a machine-readable format, we have to cross-check the converted data with what is written in the original documents. Unfortunately, there are many documents in handwriting format. So, we really worked hard to convert those documents.”

If Perludem only collected data of candidates for the DPR and DPD election, eventhough the data are locked, then the entry process would be so much easier. The total amount of the candidates is not much, only 7,552 candidates (6607

candidates for the DPR and 945 candidates for the DPD), the data are also available on the official website of KPU. However, Perludem was also want to create a database for the DPRD candidates, of which the data is not as easy to acquire as the data of the DPR and DPD candidates.

As a solution, Perludem hired data collector/data enumerator, recruited from other civil society organizations in the region that shared the same concern on election issue. The enumerator team in each region consisted of three people, one coordinator and two enumerators.

For your information, for the 2014 national election, there were 530 autonomous regions in Indonesia, where in every one of the regions there are DPRD candidates. In total, there are 33 provinces and 497 regencies/municipalities. The total candidates from all the regions is about two hundred thousand candidates. Perludem then decided not to cover all of the areas. Due to time constraint, Perludem only focused in ten provinces namely: Nanggroe Aceh Darussalam, South Sumatra, Jakarta, Central Java, East Java, South Sulawesi, West Papua, East Kalimantan, Bali, Gorontalo.

Despite the fact that Perludem had already hired data enumerators, serious obstacles remain in the way. It turned out it was really difficult to obtain the data on DPRD candidates. The data enumerators had been looking for the data on the official website of local KPUs, but the data are not available. When asked directly to their office, the officers treated the data like they were some sort of government's secret.

“In Central Java, the KPU official said they are not able to

upload the data because their website is being hacked. But we know it's just a lousy excuse, because after we insisted, they told us to write a letter for the leaders of political parties participating in the elections, to ensure that they will not mind to share the candidates' profile data with us. This is unreasonable, because the central KPU has issued a policy to open all of the candidates data. There seems to be a gap of commitment and spirit of openness between the KPU at the national level and the KPU in local areas. This gap might be resulted from ignorance, misunderstanding, or any other reasons," said Titi.

After many negotiations, finally there are local KPUs who are willing to share their data with Perludem. However, new problems occurred. One of them is the unavailability of digital documents (soft copy) because majority of the KPUs only physical documents (hard copy). This leads to another problem: it required extra effort to acquire the documents needed. The data enumerators had to scavenge files that were scattered in the KPU office, even to their warehouses.

Most of the difficulties were eventually overcome, but not for the case of West Papua. The difficulty in collecting data of candidates in the region was never unravelled. "Finally we decided to stop the data collection process in West Papua because it was just too difficult," Diah said.

In addition to data of candidates, Perludem also collect other data from the KPU, Bawaslu, and other various institutions. For example: data on constituency and campaign funds from the KPU, the data on electoral violation from the Supervisory Board of Elections (Bawaslu) and Mata

Massa, an NGO that focus on election monitoring activity. To create electoral district map, Perludem hired a freelance officer, Endiyan Rachmanda from Jakarta Lab. All of these data were then combined with the data from Perludem's researches, and data from the website Rumah Pemilu.

After data collection and data cleaning, the next step is restructuring the data. During this process, the election data are grouped and sorted according to a specific theme. For the data on candidates, for example, Perludem does not only provide candidates data for the DPR, DPD and DPRD election, but also provides data on female candidates.

As for the technical aspect, Perludem uses Representational State Transfer (REST) protocol and Java Script Object Notation (JSON) programming language. Perludem decided to use these technology because they are relatively easier to use, even to beginner programmers and software developers alike. "Users will only need URL and parameters in order to utilize the Election API," said Diah.

REST is indeed simpler, easy to learn, and does not rely on tools. That's because REST protocol follow the philosophy that all the principles and protocols already exist on the web is enough to create a robust webservice. In addition, the design and the philosophy of REST is more suitable to web platform, compared to SOAP (Simple Object Access Protocol) and WSDL (Web Services Description Language), an XML-based protocol (Extensible Markup Language).

How to use the Election API? Upon opening the front page of Election API's website (<http://developer.pemiluapi.org/>), visitors are provided with a quick guide on how to use

the Election API. The content of the guides are as follow:

- Welcome to the Election API website, the API for civil information for the 2014 election and for all the election to come!
- If you want to develop applications using this API, you've come to the right place.
- Please sign up to acquire an API key by creating an account and registering your app, or use this free key: fea6f7d9ecob31e256a673114792cb17
- We recommend that you register with your own key if you want to use this API for production application.
- Documentation of the API endpoint can be seen here: <http://developer.pemiluapi.org/endpoints>.
- Election API is completely open-source. You can find all the code for this API in our organization GitHub page. You can find and download all the raw data from the API in the data-election repository.
- Thank you for using this API. If you encounter any problem, please contact us at [contact@pemiluapi.org](mailto:contact@pemiluapi.org) or Twitter @APIPemilu

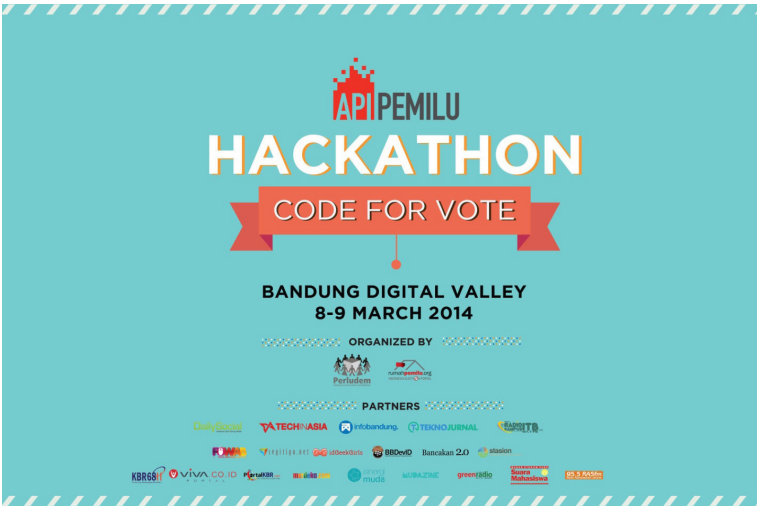
## **HACKER MARATHON OF ELECTION API VOLUME I**

After finishing all the problems related to programming and database creation for Election API, Perludem – in collaboration with the Asia Foundation and Bandung Digital Valley – invited programmers and developers to compete with each other in utilizing the Election API. The competition, titled Hackathon Code for Vote, was held in

Bandung Digital Valley, Bandung, West Java, in March 8-9 2014, or exactly one month before the voting day for the legislative election on April 9.

“... Perludem invites all the creative minds to create applications using data from Election API to provide insights or guidance for the application users to select the right candidates. Election API invites you all to participate in the Hackathon, a 24-hour coding competition to create election-themed applications...” wrote Perludem in the invitation.

FIGURE 15: WEB BANNER FOR THE HACKATHON CODE FOR VOTE



As you might have already guessed, ‘hackathon’ is a abbreviation of ‘hacker’ and ‘marathon’. This is not a physical marathon where the participants are hackers. Nor did Perludem gathered hackers community to commit cyber



crime or cyber war. Hacker marathon is an activity that is prevalent to develop software, application, or game in the form of competition. Other terms that are often used in a similar context are hackfest, hack day, or code fest.

The use of the word hack in this type of competition is more to highlight a spirit of exploration. Meanwhile, the notion ‘marathon’ does not refer to distance, but time. Hackathon is a race where the participants should completed the competition within a certain duration of time, such as 15 hours, 24 hours, or 48 hours. Perludem decided that the Hackathon Code for Vote will take 24 hours time.

FIGURE 16: THE OPENING CEREMONY OF HACKATHON CODE FOR VOTE IN BANDUNG DIGITAL VALLEY



Hackathon has been repeatedly held around the world, and several times in Indonesia. However, a hackathon that uses API data for election is something unprecedented. Such hackathon is not only the first in Indonesia, but also in the

world.

This is why Perludem did not set out grandiose target. Especially, Titi Anggraini said, when the prizes for the winner are not that substantial. In addition, the people working in the field of technology are not usually enthusiastic about political matters. So Perludem expected only about 50 participants for the competition.

However, it turned out many people were coming to register as participant. During the event, that was attended by member of KPU, Ferry Kurnia Rizkiyansyah, and the mayor of Bandung, Ridwan Kamil, there were 170 participants consisted of programmers and developers from various regions in Indonesia. Aside from Bandung, this event was also attended by software experts and web designers from Malang and Yogyakarta. In fact, there was participant who participate in the event remotely from Qatar, assisted by his team in Indonesia.

The number of applicants was three times more than the initial prediction, so some of them had to be rejected. Perludem then decided to only receive only about a hundred participants.

The huge enthusiasm was due to the rapid spread of information about the contest, either via the mainstream media or virtual medias such as websites, blogs, and social media. An owner of a website, for example, put up the invitation for the Election API hackathon, while added: "Bring your laptop and let's build awesome apps and support our nation! Let's code for vote!"

FIGURE 17: DEVELOPERS WERE STRUGGLING TO MAKE APPLICATIONS IN THE HACKATHON CODE FOR VOTE IN BANDUNG DIGITAL VALLEY



In the hackathon arena, developers are required to use the data set provided from the Election API's endpoint. With the cleaned data set, that can be easily appropriated from the Election API, all the programmers, developers, and web designers, only need to focus on making their own application. Nevertheless, they are still allowed to integrate the data set with other systems, programs, and data, even from other API. However, the Election API should be the primary data source.

In Bandung Digital Valley, Titi Anggraini, upon hearing the comments from the participants, admitted that she felt so relieved: “(The participants) said, ‘it turns out working with election data is a lot of fun, there are lot of things we can do with our politics and elections’. Such statement shows that the IT communities, who previously have been far away

from politics, democracy, and elections matters, now feel that those are important parts of their life, and they feel the need to contribute. Initially, they consider politics as dirty, boring, and full of unfair competition,” Titi said.

Oni from AppKitchen said, the Election API has allowed developers to make contact with political territory. “This is great. We, as developers, are rarely in touch with the realm of politics, because everything in politics has little to no amount of open data. The only contact we made with politics is usually just by reading it in the news paper. Thanks to Election API, we feel so motivated.”

Perludem announced the results of the first Hackathon competition on March 17, at the KPU Media Center, Imam Bonjol Street, Jakarta. The winners of the competition are (according to the order of the ranking): Appkitchen with application titled Orang Baik, The Ciheulang with Election Hore, Alexier with Caleg Store, One Bit with One Vote, and Xymply Studio with Pemilu Kita. Each winner got a prize of Rp 20 million, USD 17.5 million, USD 15 million, Mac Book Air 13 “, and the iPad Air, respectively.

The day of the announcement was also the day Perludem officially launched the applications born from the hackathon to the public, both the mobile version – for Android and iOS platforms – and the web version. The applications are available in app stores such as Google Play Store and AppStore, and they also available at the gallery application on the API of Elections website at <http://pemiluapps.org/aplikasi/>. Everybody can download all the applications free of charge!

Here are the profiles of the five winners of the Hackathon Code for Vote in Bandung:

# 1. ORANGBAIK

Platform: Android

Developer Team: AppKitchen

FIGURE 18: ORANGBAIK APPLICATION



During their presentation in front of the juries, AppKitchen exposed the fact that the number of abstentee voter has soared up in Indonesian election. They argued one of the reasons for the high abstention is because voters do not know their candidates. They then cited a survey results

from CSIS at the end of 2013 which revealed the fact that

81 percent of respondents do not know their candidates. According to the same survey, 48 percent of people vote for political party because of the candidates' qualification, while the rest of them vote based on ideology (23 percent), family influence (15 percent), and the influence of people around them (13 percent).

How to solve it? "We need to make all the qualified candidates win," said the AppKitchen team.

AppKitchen has a solution for it: an algorithm for calculating the quality of candidates. With this algorithm, the quality of the candidates can be measured into score. The score is based on the profile of candidates in the election. The candidates are rated on a score between 10 to 100. There are many aspects of the candidates taken for the accumulation of the score, such as education background, organization, and others.

Despite the algorithm and the score for the candidates, which can be ranked from the lowest to the highest, or vice versa, Orangbaik application also provides further checking mechanism for users to search the name of the candidates on Google or Wikipedia. Users can also share the data of any qualified candidate on their social media account.

## 2. PEMILU HORE

Platform: Android

Developer Team: The Ciheulang

FIGURE 19: PEMILU HORE APPLICATION



Judging from its name, Pemilu Hore seems like an application that offers something fun. Well, Yes it is. The content of this application is serious, but it is delivered as a game. “After playing this game, it is expected users will be more aware of the elections, political parties, candidates, and the voting procedure,” explained the developer team, the Ciheulang.

Eventhough the application is made in a hackathon event that was held ahead of the legislative election, the developer went even further. This application does not only invite users to play around with the data on political parties and legislative candidates, but also the data on presidential candidates.

This application has two main games, presidential election mode and legislative election mode.

In legislative election mode, this application will first ask users to fill their personal information, such as the province where he/she lives, the electoral district where the user is registered, and the representative institution that he/she wants to know (DPR, DPD or DPRD). then, the application presents questions in the form of a quiz, such as political party's logo quiz, ballot quiz, political party-matching quiz, and quiz designed to introduce candidates to users.

In presidential election mode, users will be faced with a series of questions in the form of quizzes, such as candidate profile quiz, candidate's vision and missions quiz, and guess-who quiz. After going through a series of quizzes, the users will be asked which political party/candidate they would choose in the polling booth. If the user is still undecided, this application can show the statistics of the game, to show them which candidates they know best.

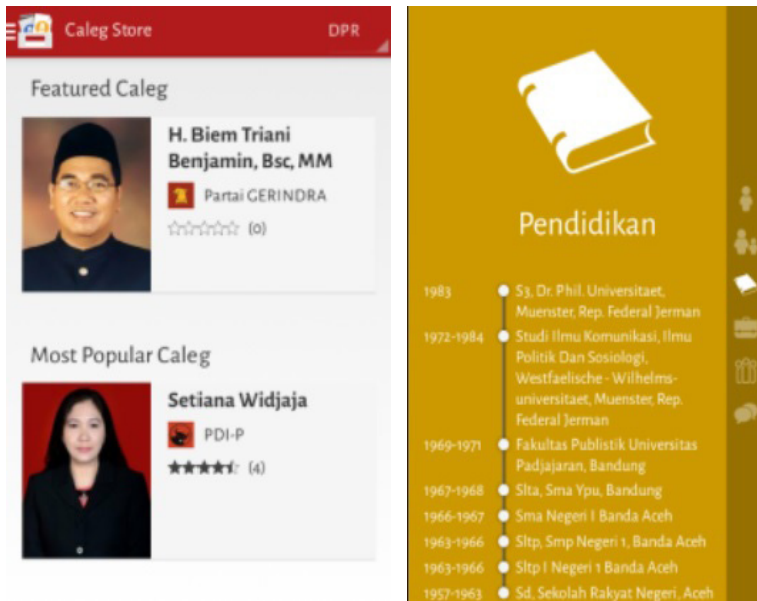


### 3. CALEG STORE

Platform: Android

Developer Team: Alexier

FIGURE 20: CALEG STORE APPLICATION



As the name suggests, this application also provides the name of candidates for the DPR, DPD, and DPD election. This application, which is made by Indonesian students who are studying in Singapore, provides candidates' profile information and presents them in attractive graphics.

The interesting feature of this application is the constituency location checking which immediately displays

the candidates in specific category, such as the most popular candidate and the highest rated candidate. Other useful features are the ability of this application to allows voters to compare two candidates head-to-head. In addition, there is also feature that allows users to give their rate and comment on candidates.

### 4. ONE VOTE

Platform: Android

Development Team: Onebit

FIGURE 21: ONE VOTE APPLICATION



Unlike previous applications that assess candidates based on their personal background, One Vote analyzes the reputation of candidates based on the growing sentiments in social media. There are three types of result based on the analysis: positive, negative, or neutral.

This application, which requires user to provide a national identification number or Nomor Induk Kependudukan (NIK), can also be used to check whether you have already registered as voter or not. Because, after typing the NIK, the application will then display your name and the name of the village/sub-district and the number of the polling station where you will be casting your vote.

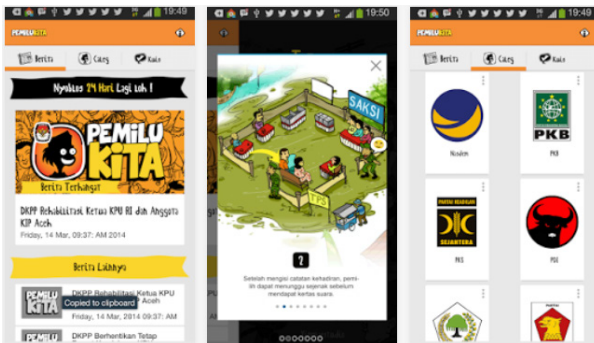
This application also has feature to display latest news about elections, where the source of the news is the Election API; list of contesting parties; list of candidates for the DPR, DPD and DPRD election; favorite candidates, and; comment section on candidates with text or images, or text and images simultaneously.

## 5. PEMILU KITA

Platform: Android

Developer Team: Ximpli Studio

FIGURE 22: PEMILU KITA APPLICATION



Besides its attractive interface design that uses cartoonish character, other prominent aspect of this application is the way it visually communicates the election procedures to its users. Users of this application can learn the sequence of voting procedures at polling station, from signing up at the polling station, entering the voting booth, and dipping finger into erasable-ink. This application also provides the layout of polling station to show the location of polling station officials (KPPS), ballot box, election observers, and others. The application also provides the sample of ballot papers used in the election.

As for the rest, the application provides a variety of information related to the 2014 election, such as breaking news, election schedule, election quizzes, as well as the list of candidates for the DPR, DPD and DPRD.

## **HACKER MARATHON OF ELECTION API VOLUME II**

After the success of the first hackathon, Perludem held a similar competition. This time, the event is called Hackathon Code for Vote 2.0 Challenge. The competition was held at FX Sudirman, Central Jakarta, on June 14, 2014. For this occasion, Perludem cooperated with more institutions, such as Google Developers Group (GDG), the Asia Foundation, and the KPU.

Like the first hackathon, this second hackathon was greeted with huge enthusiasm. There are 334 developers/computer programmers took part in this competition. Those developers/programmers come from 107 developer teams.

FIGURE 23: THE WEB BANNER FOR HACKATHON CODE FOR VOTE 2.0.

**Perludem**  
GONGGONGAN PERLUDEK

**GDG Jakarta**

MEMPERSEMBAHKAN

**API PEMILU**  
**CODE FOR VOTE 2.0**  
**CHALLENGE**

Wujudkan ide aplikasi terbaikmu untuk pemilu presiden tahun ini!

CARA BERGABUNG

**BENTUK TIM**  
Maks. 5 orang, terdiri dari setidaknya 1 desainer dan 1 developer.

**APLIKASI WEB / MOBILE**  
Gunakan tools/bahasa pemrograman yang kamu kuasai. Buat aplikasi sekreatif mungkin!

**GUNAKAN API PEMILU\***  
Pelajari tentang API-nya disini: [developer.pemiluapi.org](http://developer.pemiluapi.org)

**KIRIM APLIKASIMU**  
ke [bit.ly/code4vote-submit](http://bit.ly/code4vote-submit) sebelum 10 Juni 2014

\*API Pemilu tersedia tanggal 7 Juni. API terdiri dari data seputar kandidat presiden, partai politik, dan anggota legislatif.

TIM TERPILIH AKAN DIUNDANG UNTUK MENGHADIRI DEMO DAY PADA:

**SABTU, 14 JUNI 2014**  
**THE CONE, FX JAKARTA**  
Jl. Jendral Sudirman, Pintu Satu Senayan

DAFTARKAN TIM KAMU SEKARANG:  
[bit.ly/code4vote](http://bit.ly/code4vote)

**MENANGKAN TOTAL UANG TUNAI LEBIH DARI RP 50 JUTA DAN KESEMPATAN TUR KE KANTOR GOOGLE SINGAPURA!**

POWERED BY  
**Google** **The Asia Foundation**

SUPPORTED BY  
**SatuDunia** **wgs** **NATAMASSA** **KOMPAS.com** **MarketIns** **DailySocial**  
**ziliun** **RUMAH** **femaledev** **kreavi** **idDevDaily** **kibar**

This competition, which was ceremonially opened by the KPU chairman Husni Kamil Manik, challenged all the

participants to create applications that can show the results of the previous legislative elections and inform its users about the upcoming presidential election that must be attractive in design and easy to use. Information about the previous legislative election remain necessary, because the presidential candidates are from political party or coalition of political parties.

The juries for this second hackathon are more diverse. They are composed of a member of the central KPU, Ferry Kurnia Rizkiyansyah; a member of the KPU of Jakarta, Betty Epsilon Idroos; several representatives from civil society such as Perludem, Women’s Solidarity, the Network of Voters Education for the People (JPPR), HIVOS, the Asia Foundation, and Celup Kelingking, as well as representatives from Google, Google Developers Group (GDG) Jakarta, KIBAR, and Walden Global Service. “This event successful synergized three elements: the election management body, civil society and private sector,” said Diah Setiawaty.

FIGURE 24: DEVELOPERS WERE STRUGGLING TO MAKE APPLICATIONS IN CODE FOR VOTE 2.0 HACKATHON IN JAKARTA



FIGURE 25: THE JURIES TALKED TO PARTICIPANTS IN CODE FOR VOTE 2.0 HACKATHON IN JAKARTA



After going through the selection process, an application called *Pemiluman* was selected as the first winner. This application is made by *Ice Barble* team. As the first winner, they received the prize of a tour visit to the Google offices in Singapore and Rp 12 million of cash.

The first runner-up is the *WOW* team, with an application called *Pemimpin Kita*. They received the prize of one unit of *Nexus 5* and Rp 10.5 million of cash.

The third winner is *Femmouse*, with an application called *Ayo Nyoblos*. They received the prize of one unit of *Nexus 7* plus Rp 9 million of cash. Because *Femmouse* is an all-female team, they also won the *Best All-Female Team* category, and entitled for the prize of beauty kits, *Andorid* figurine, and Rp 5 million of cash.

The fourth prize winner is Lummachrome Developer, with an application called Pelita. They got Google jackets, Android figurine, and Rp 7.5 million of cash.

The fifth winner is IR24JAM with the 2014 Presidential Election Analysis application. They got a reward of one unit of Chromecast, Android figurine, and Rp 5 million of cash.

It is important to note here that the first three winners are team of students from different universities. The Ice Barbel team is consisted of computer science students from Bandung Institute of Technology (ITB). The WOW team is consisted of students of computer science from University of Indonesia. Meanwhile Femmous is a team of students from Gunadarma University.

“We believe young people in Indonesia have the potentiality, willingness, and ability to contribute positively for change in Indonesia. Through this competition, Google Developers Group (GDG) of Jakarta is very proud to help (the event organizer) in bringing a great impact to society through technology. This is indicated by the huge enthusiasm from the participants, although the event is only prepared in a fairly short time,” said Princess Izzati, the Manager of GDG Jakarta. (Perludem & GDG: 2014).

Titi Anggraini said, “One of the most distinguishing aspect of the 2014 election compared to previous elections is the passion and commitment shown by the election management body for electoral data transparency. However, that alone is not enough. Electoral data need to be presented in a simpler and easier way to use, and they should be attractive to attract more voters. Perludem believes that



the use of technology can facilitate these needs. Technology and election have become an interesting combination that produced many election-themed applications for web-based Android-based, and iOS-based platform.”

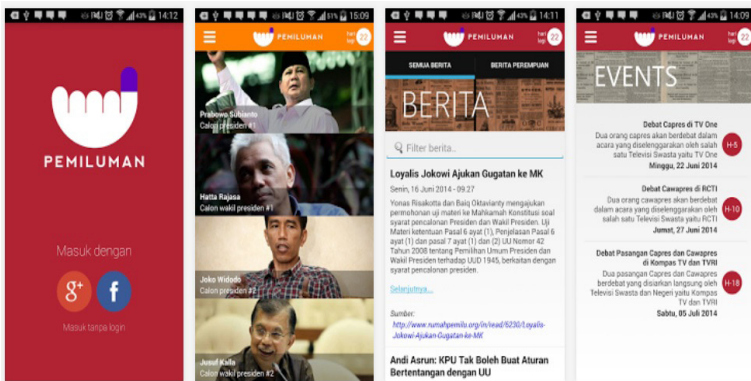
Here are the five applications that won the Hackathon Code for Vote 2.0 Challenge in Jakarta:

# 1. PEMILUMAN

Platform: Android

Developer Team: Ice Barbel

FIGURE 26: PEMILUMAN APPLICATION



This application is developed by a team of computer science students from Bandung Institute of Technology (ITB). The features provided by this application include candidate’s profiles, compare!, endorsement, campaign promises, news, violations, frequently asked questions (FAQ), and events.

In the compare! Feature, this application features profiles of two candidates, making it easier for users to compare the two candidates. In the endorsement feature, users are allowed to endorse their favorite candidate, and every opinion on the candidates will be visible to other users.

This application is also able to provide notification to user to remind him/her with important events in the presidential elections. The reminder feature, which always displayed on the top right corner of the application, also functions as a countdown to the election day.

## 2. PEMIMPIN KITA

Platform: Web Application

Developer Team: WOW

FIGURE 27: PEMIMPIN KITA APPLICATION



This applications, which made by students from the Faculty of Computer Science, University of Indonesia (UI), contains many anti-abstention messages. In fact, the

application considers abstention as the worst option. This application encourages its users to contemplate the negative consequences abstention could bring to the nation. For example, abstention can make a better candidate to lose over a worse candidate, and make an incompetent person become elected as leader.

There are many consequences of abstention described in this application. Ranging from potholes on roads, up to state injustice. In summary, this application shows how abstention is something that is very uncool.

However, this application does not only tell its users to avoid abstention. This application also helps its users to define their political preferences based on the political programs offered by candidates, and not merely on the profile of the candidate. In the feature topic of interest, user is presented with a number of issues, for example on the economics, politics, law, and others. This application allows users to check the candidate's program on these issues, and then leave their comments on the program.

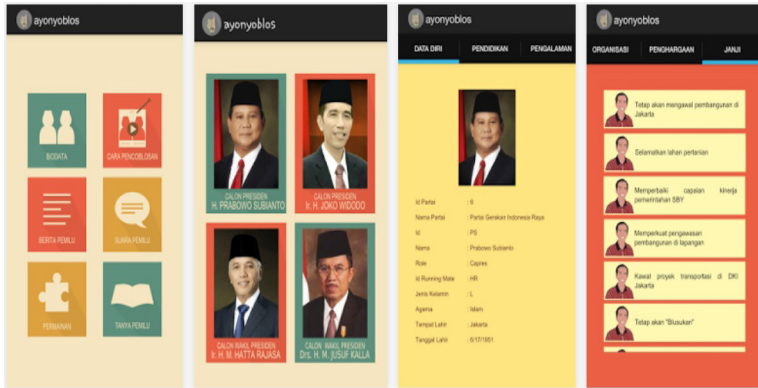
Because this application can compare the vision, mission, and political programs of candidates, users can easily assess which candidate they like the best. And after preferences are formed, users can express their preference, by giving a support badge on the candidate's photos. There are many types of badges that can be used with attractive designs.

### 3. AYONYOBLOS

Platform: Android

Developer Team: Femmous

FIGURE 28: APPLICATION AYONYOBLOS.



This application is made by Femmous developer team. As the name of team suggests, the members are all women. The team consists of students from Gunadarma University.

AyoNyoblos invites users to recognize more deeply about their presidential candidates and the presidential elections in general through the eight features provided in the application. Those features are: complete data on candidates' profile; animated video simulation of the voting procedure; latest news about the election; public opinion on the social media about the election; games with prizes; questions about the election; countdown notification for the election day, and: the voting day reminder that is synchronized with mobile phone's calendar.

From these eight features, the animated video simulation of the voting procedure is the most prominent. This feature does not only useful as a reminder for voters who have voted in the previous election, but also very useful as a guide for first-time voters, so they will not confuse in the polling station (TPS).

If users get tired of viewing the candidates' profile, news, public opinion, and video simulations, they can play the lottery games for fun. The game is presented in a format of a quiz. Users who answer the questions correctly, will get attractive wallpaper for their mobile gadget.

## 4. PELITA

Platform: Android

Developer Team: 'Lumachrome Developers

FIGURE 29: PELITA APPLICATION



The name of this application is an acronym of ‘Presiden dan Wakil Presiden Pilihan Kita’ (‘President and Vice-President of Our Own Choosing’). Unlike the three previous applications, Pelita made by a team of software developers from a creative design company. They named the team ‘Lumachrome Developers’.

Pelita provides information about election, including information on the background of the candidates, their promises, the debates between candidates, election news, banner pictures that is provided for users to be shared on the social media, and answers to frequently asked questions (FAQ) about election.

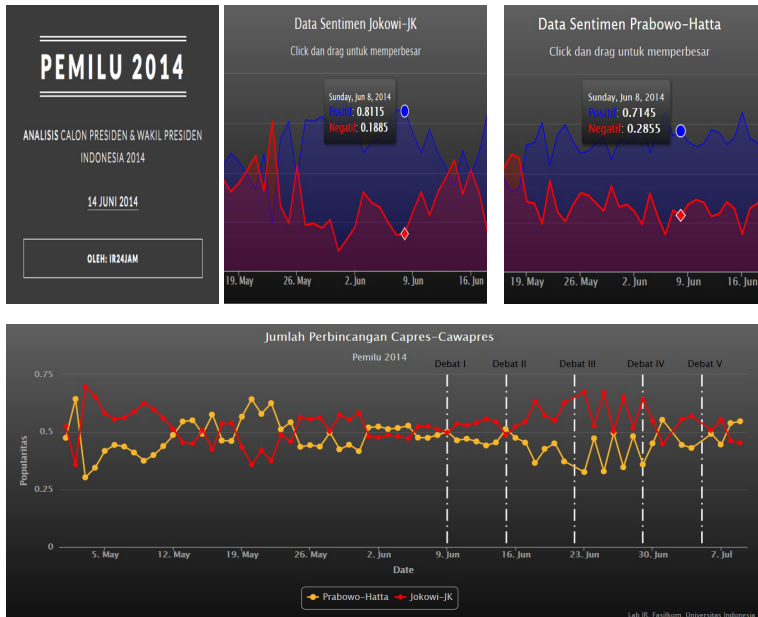
This application is also friendly to the disabled community, especially the blind because it provides text-to-speech feature, a feature that can read aloud the text that appears on the screen.

# 5. ANALISIS PILPRES 2014

Platform: Web Application.

Developer Team: IR24JAM.

FIGURE 30: ANALISIS PILPRES 2014 APPLICATION



If there was an application that is beneficial not only to voters but also to the campaign team of candidates, then Analisis Pilpres 2014 may be the one. This application has the ability to detect all the hubbub on social media, which candidate is the most talked about by the users of Facebook, Twitter, and Google Plus, what are their sentiments towards the candidates, what electoral issues they are talking about, and so on.

This application was made by a team of researchers from the Laboratory of Information Retrieval, Faculty of Computer Science, University of Indonesia (UI). This application retrieves data from social medias and combine it with other data from Election API and the results are displayed in charts.

According to the developer team, the basic algorithm used in this application has been developed since 2010. Not surprisingly, this application is the most technically advanced in the hackathon. The developer team also disclose its methodology, the distribution of the data, what topics are being discussed on the social media, and how the application can detect social media users that upset the balance and neutrality of conversation on social media, which is often referred to as 'buzzer'. Buzzers are usually paid accounts or robot accounts.

This application shows the total percentage of the number of buzzer accounts on social media, the total percentage of conversations started by buzzer accounts, and then neutralize its influence in the result of its analysis. "We are aware that there are many other applications that provide a complete analysis on the candidates for the presidential election. However, we also noticed that a lot of them are being manipulated by people who are trying to influence the conversation and obscuring the sincere opinion of the community," wrote IR24JAM on the website <http://budaya.cs.ui.ac.id/pilpres2014/index.html>.

They added, "Therefore, we are trying to provide information and the real aspiration of social media users



by eliminating the ‘manipulator’ in our analysis. We try to provide information on the issues and areas of public concern and their relation with the available candidates. We are striving to be an institution that is free from influence from any party or candidate, and we are trying to provide quality information that are free from manipulation for the community.”

## **485 APPLICATIONS AND ELECTION GAMES**

There are 485 applications/games created as the result of the two hackathon competitions. Besides from the Google Play Store and the App Store, as many as 40 of these applications (30 presidential election applications and 10 legislative election applications), can be viewed and downloaded from the Election API gallery at <http://pemiluapps.org/>.

Of these 40 election applications/games, three-quarter of them are Android-based, while the rest are iOS-based, web-based, and Windows Phone-based. There are also developers who create application for mobile platforms and web version, or for Windows Phone and Android en bloc. In aggregate, up to April 2015, these applications have been downloaded hundreds of thousands of times, and generates 101 million hits from seven million unique users.

In addition to the ten winning applications from the two hackathon events that have been shown above, there are 30 other applications that can be found at <http://pemiluapps.org/>. Interestingly, there are quite a lot of developer teams where the members are all-female. Here are the 30

applications (25 presidential election applications and five legislative election applications):

# 1. SEPUTAR PILPRES

Platform: Web Application  
(Presidential Election Application)

FIGURE 31: SEPUTAR PILPRES APPLICATION



‘Seputar Pilpres’ or colloquially called ‘Sepi’ is created by a team of developer who calls themselves as ‘Tim Empat Serangkai’, consisting of four female students from Gunadarma University. This application is designed to persuade its users to vote, and then provoke them to take a stance. “Speak up, show your support to your favorite candidate by making an Avatar,” says the message of the application. This application also provides a variety of information about the election, such as candidate’s profiles, their promises, election news, and others.

## 2. KUIS CAPRES

Platform: Android  
(Presidential Election Application)

FIGURE 32: KUIS CAPRES APPLICATION



Judging from stars-decorated banner, one could easily conclude that this application is a game. That is true. This application, titled Kuis Capres, invites users to test their knowledge about the presidential election candidates. This quiz asks questions about various topics, ranging from candidates' personal matters, up to their programs. Player can compare their scores with other players.

### 3. WOWEE. 14

Platform: Android  
 (Presidential Election Application)

FIGURE 33: WOWEE.14 APPLICATION



Feminine. That would be the first impression one get upon seeing this applications. That impression could be because of the dominant purple and pink colors, and a number of other soft colors. The design is quite cute, like the name of the application. Ironically, the developer team has a fierce name: Rebel Creative Syndicate.

What does the name, WoWee.14, represent? Apparently, this is an acronym. Wowiee is taken from the last syllables of Prabowo and Jokowi (the two candidates in the presidential election), while the number 14 refers to the year of the election, which is 2014.

What distinguishes this application with other applications is the ability to match the personality of

the voters with the candidates. By answering 20 questions, Rebel Creative Syndicate claims that users can find a good match with one of the two candidates.

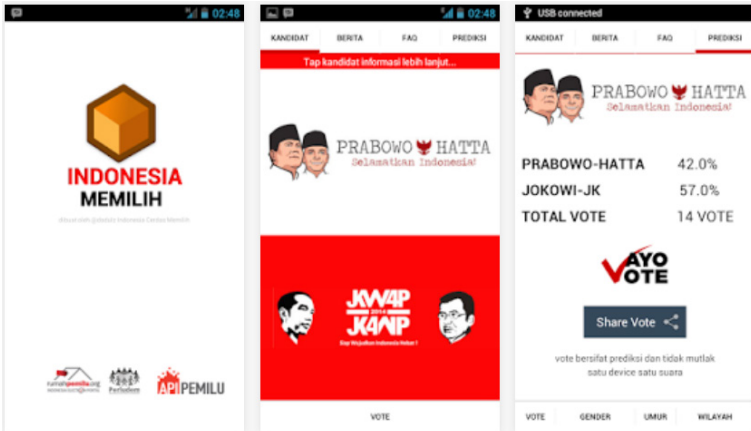
“Many people support a candidate based on regionality or possibly because they share a same vision. But, many of them also favor a candidate because of the personal character of the candidate. In fact, many people believe that there are certain characters that make a good leader,” explains Rebel Creative Syndicate on galerygadget.com.

In addition to presenting news and other information about the election, this application also provides a feature where users can watch the rerun of the presidential debate. “There is also a feature called Promises, inspired by a song by the band The Cranberries that alludes to the heavenly promises from our leaders,” explained Rebel Creative Syndicate.

## 4. INDONESIA MEMILIH

Platform: Android  
 (Presidential Election Application)

FIGURE 34: INDONESIA MEMILIH APPLICATION



“Providing solutions to the voters, so they will not get confused and vacillated about which one to choose.” That is how the application developer describe this application. Indonesia Memilih provides information about the presidential election candidates, as well as news and voters education based on frequently asked questions (FAQ).

As the name suggests, Indonesia Memilih, this application also encourages its users to vote. This application has a feature called ‘voting’, where users can vote for their favorite candidate. However, users cannot give their vote at any time and as many as they like like when they vote for their favorite singer in the reality show Indonesian Idol, because the application will locked down the simcard and the device

id of each phone whenever the user cast their vote for the first time. Thus, one user can only cast one vote. The voting results then can be shared online.

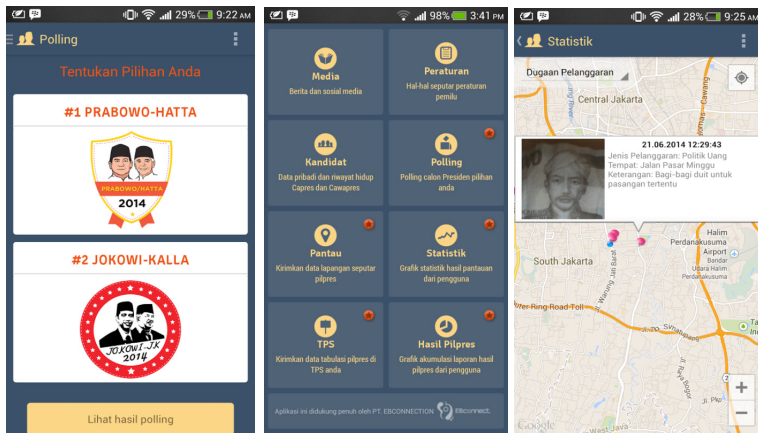
Because the voting feature is rather politically sensitive, and the results can be used to lead voters' opinion to choose certain candidates, the developers feel the need to explain that the results of the voting is really genuine. “We should underlined beforehand that there is no vote engineering process in the voting feature and the result is purely comes from votes cast by users.”

## 5. PANTAU PEMILU

Platform: Android

(Presidential Election Application)

FIGURE 35: PANTAU PEMILU APPLICATION



“With this application, we want to facilitate all members of the society and political activists so they can monitor the

election process in realtime and get information and news about the election....” That is how the developer of Pantau Pemilu describes the application they have created.

With this application, users can report suspected violations. The results of the monitoring then can be communicated with map-based dashboard, that can be accessed via the statistics feature, so people can see the location where the violation occurred. Similar mechanism is also used to display the results of survey or polling about candidates.

“The application is designed in such a way so that it is modular. Existing modules can be utilized for other purposes such as surveys, data collection, project reports, and many other activities,” said the Director of EB Connection Indonesia, Putranto Yuwono, when launching this application on July 1, 2014, as quoted from Antara News Agency.

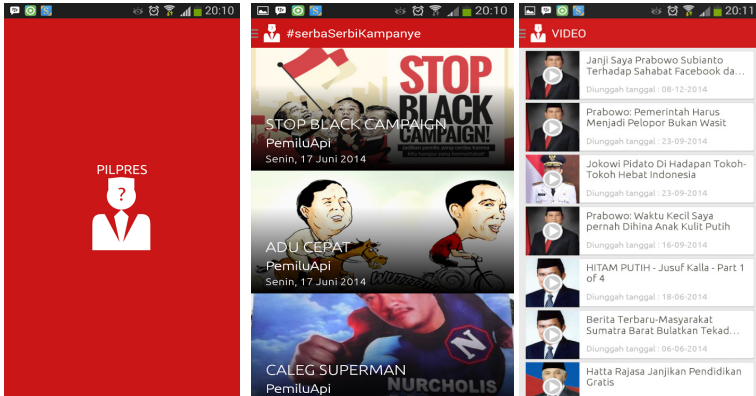
This app also has a feature on the election rules, candidate profiles, and allows users to send the result of vote-counting process at the polling station.



# 6. PILPRES

Platform: Android  
(Presidential Election Application)

FIGURE 36: PILPRES APPLICATION

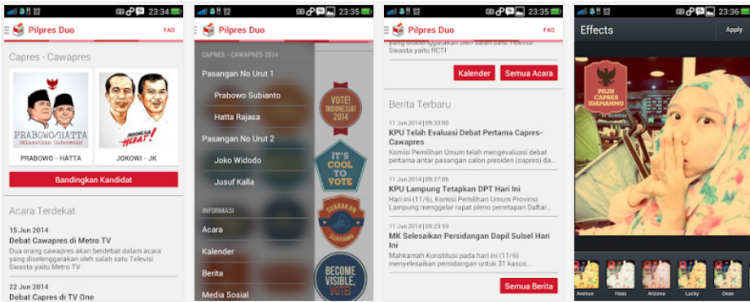


This application is made by Sabai Apps and contains various information about the presidential election. There are several features available in this application, including Candidate Info, News, Event Video, Promises, Various Info, and Presidential Election.

## 7. PILPRES DUO

Platform: Android  
(Presidential Election Application)

FIGURE 37: PILPRES DUO APPLICATION



Pilpres Duo is made by GITS Indonesia, an information technology company that focuses on software development. It is no wonder then the content of Pilpres Duo is still updated, when many other applications have already disappeared in the app stores.

The main feature of this app is the Cek Antigolput (Anti-abstention Check). In this feature, users will be presented with a question, “Are you going to vote on July 9, 2014?”. Either the answer is yes or no, there will be appropriate followed-up questions.

If a user answered ‘yes, I am going to vote on July 9’, then the application will ask where are you going to be on the voting day. If the answer was outside the country, then the application will provide information on how to vote from abroad, namely through dropbox, mail, or visit the polling station provided by the Indonesian Embassy.

However, if the user answered he/she will not cast his/her vote, then the application will ask the reason why. If the user selected the answer “I do not know or am confuse who to choose from the two available candidates”, then this application will presented the user with the profile of both candidates. In the feature Melihat Profil Kandidat (Candidates’ Profile), the user will be presented with a head-to-head comparison of the candidates, including the biography, campaign promises, up to what the candidates have wrote on their Twitter and Facebook account.

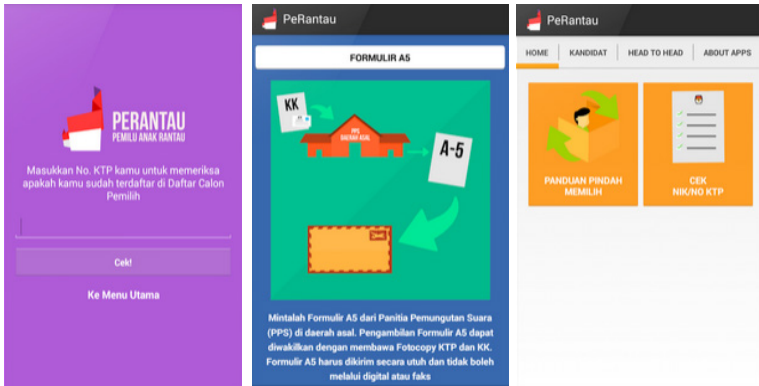
Another interesting feature of this application is the feature that allows users to add badges to their profile photo. Users can also edit the picture by adding effects, photo filters, and others. Other features include election news, information on the election rules, and the election calendar.

## 8. PERANTAU (PEMILU ANAK RANTAU)

Platform: Android

(Presidential Election Application)

FIGURE 38: PERANTAU APPLICATION



This application is made by a team of developers who call themselves Area 54 Labs. As the name of the application suggests, this application is designed to help emigrants, nomads, and travelers who are outside of the country when the election is taking place. This application provides a guidance feature for voters who have move out to a new area which means they will also have to vote in that area.

“Please ask for A5 form from the Voting Committee (PPS) in your previous domicile. The A5 form can be retrieved by submitting a copy of ID card and family card. A5 form should be sent to you as a complete document and cannot be sent in digital form or by fax,” as displayed in the guidance feature in this application.

In addition, there is also a feature in which the user can

check whether he/she has been verified in the voters' list or not. And, of course, the application also provides information on the presidential candidates and their campaign promises.

## 9. PESTA PEMILU

Platform: Windows Phone

(Presidential Election Application)

FIGURE 39: PESTA PEMILU APPLICATION



Pesta Pemilu is an application created by Nekonesia. The main difference this application has with other applications is the feature to determine whether a news story a political black campaign or not. The feature is called “berita baik” (decent news).

This application also provides general information about the presidential candidates, from their place of birth, working experiences, up until their accomplishments so far. “To use the feature, we simply need to tap the logo of each candidate. On the dashboard menu, there is also a countdown of how

much longer the election will take place,” wrote a reviewer about this application in idwinphone.com.

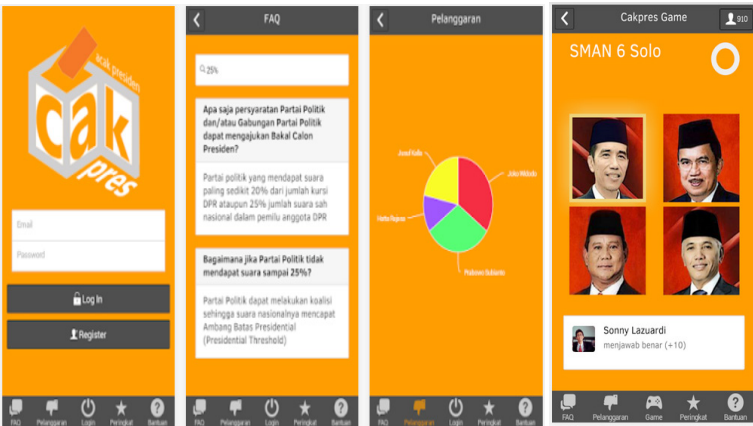
Other feature includes ‘choose a candidate’. In this feature, users can vote for their favorite candidate, by tapping the vote icon above the home button. “Rest assured, the vote will remain secret because there is no login system in this application.”

There are also other features such as news on the election, FAQ, list of promises from the candidates, badges, and countdown feature to the voting day on July 9, 2014.

## 10. KUIS PEMILU-CAKPRES

Platform: Android  
(Presidential Election Application)

FIGURE 40: KUIS PEMILU-CAKPRES APPLICATION



Kuis Pemilu-Cakpres is created by SuitMedia. As the name of the application suggests, this application features

an online real-time massive multiplayer game, where users play a fact-guessing game about the presidential candidates.

“Play this game and get to know with your favorite presidential candidate! Collect all the achievement badges and be the best!” is how the developer of this application advertise their product.

There are also other features in this application such as FAQ and reports on election violations committed by candidates, where the report is shown in charts and infographics.

## 11. JOKO VS BOWO

Platform: Android

(Presidential Election Application)

FIGURE 41: JOKO VS BOWO APPLICATION



Jokowi vs Bowo is made by Creacle Studio. It is a game application, that is designed to introduce new voters to the

presidential candidates.

Unlike other games, this application has more than 60 pictures of Jokowi and Prabowo for the users to guess. The pictures are shown one by one very quickly, to test the reflexes and concentration of the users. The more correct answers, the more this app declares you, as a voter, are familiar with the presidential candidates.

## 12. VOTE FOR INDONESIA AR

Platform: Android

(Presidential Election Application)

FIGURE 42: VOTE FOR INDONESIA AR APPLICATION



Vote for Indonesia AR is made by Gooddiffer. What does the AR in the application's name mean? That refers to 'Augmented Reality', a technology which this application uses.

With the technology, users will more easily assess all the



promises conveyed by the presidential candidates. However, this application does not display the list of promises in text form, but tin pictures. “This application uses the same target image with Election API,” explained Gooddiffer in the description of the application.

### 13. KITA MEMILIH

Platform: Android / Web  
(Presidential Election Application)

FIGURE 43: KITA MEMILIH APPLICATION



The application Kita Memilih is made by Skyver 27. This application has the slogan “the application of the people and for the people”.

As with other applications, this application is carrying voter education mission, by introducing the background profile of the candidates. The goal, as explained by Skyver 27 in the description of the application, is to provide voters with

reasons to vote, and to prevent abstentions. Furthermore, the information provided in this application are expected to make voters to vote more intelligently.

This application has many features such as voting feature via twitter, the biography of the candidates, information and news on the election, schedule for the presidential debates, reports on election violations, and questions about the election (FAQ).

Like the previous developer team, Skyver 27 also needs to clarify their political stance because of the voting feature. “We create this application in a neutral and impartial manner,” they wrote.

Besides the Google Play Store and Election API applications gallery, the web version of this application can also be used in <http://app.kitamemilih.org>.

# 14. INFO PILPRES 2014

Platform: Android  
(Presidential Election Application)

FIGURE 44: INFO PILPRES 2014 APPLICATION



Info Pilpres 2014 application is made by Gulajava Ministudio. As the name of the application suggests, Info Pilpres 2014 presents a variety of information about the presidential election.

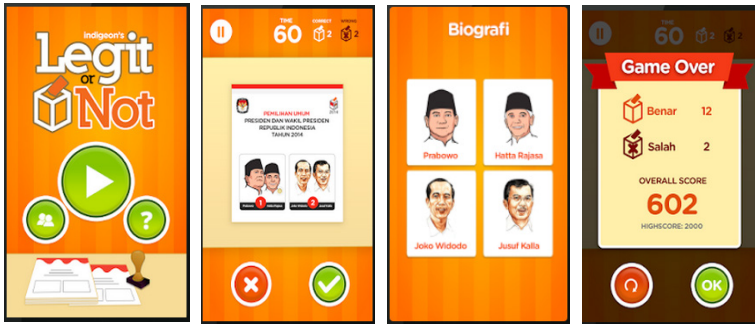
In this application, there are information about the biodata of the two candidates, the list of promises from each candidate, videos related to each candidate, the schedule for public debates, questions about the regulations or the rules of the election, and news related to the presidential election.

## 15. LEGIT OR NOT

Platform: Android

(Presidential Election Application)

FIGURE 45: LEGIT OR NOT APPLICATION



This Legit or Not application is a casual game. This application is made by Femaledev, an all-female team of developer. It focuses to show to its users how to vote correctly in the polling booth. “This game teaches us how to cast vote properly so that our ballot will be considered as valid or legit by the committee,” explained Femaledev on the website Femaledev.com.

To test the knowledge of the users on what constitutes the validity of a vote on a ballot paper, this application shows the picture of the ballot paper to the user. Then, the user is asked to determine whether the ballot is valid (legit) or not.

There are two game modes available. First, Time Challenge, which challenges players to guess as many as valid ballots in a limited time. Secondly, Endless Mode, which challenges players to guess valid ballots without error.

Knowledge on the legitimacy of ballot papers is indeed an important thing, because Indonesia has adopted open-list proportional representation system. With this election system, voters do not only vote for political party, but also directly choose individual candidate in the party's list.

The issue to date is that there is no uniformity on how voters should cast their vote on the ballot. It has caused the number of invalid votes to be increased. In the last legislative elections in 2014, the number of invalid ballots is nearly 15 million.

The correct way to vote according to the Election Law is by punching the image of political party and candidate, party only, or candidate only. However, there were still voters who vote for political party A, but they vote for the candidate from political party B.

## 16. KUIS PEMILU

Platform: Android and Windows Phone  
(Presidential Election Application)

FIGURE 46: KUIS PEMILU APPLICATION



This application is made by a team from the Informatics Students Association (HMIF) ITB. Kuis Pemilu invites users to learn the election through quiz games. Quizzes and lessons are divided into four categories, namely the presidential and vice presidential candidates, election rules, political parties, and voters' education. This application has four primary features, namely Kuis (Quiz), Pelajari (Learn), Share, and Achievement.

In the Kuis feature, players can compete with other players for the highest score in answering questions about elections. In the Pelajari feature, players can learn the 2014 election, the candidate, as well as its rules. So that players do not get bored, this feature displays pictures.

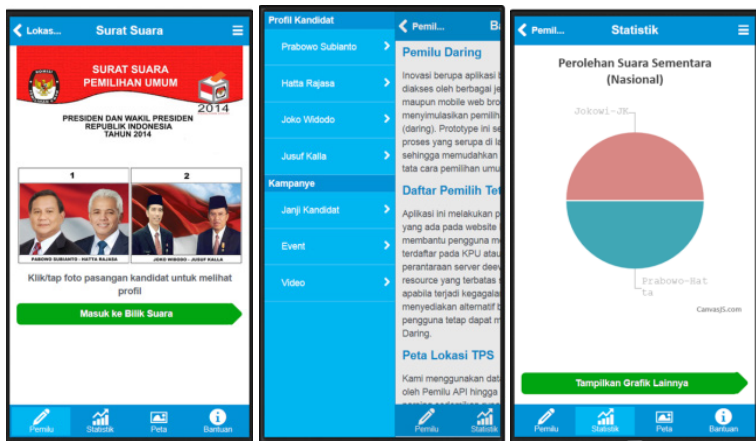
In the Share feature, players can share information about the election and the score they have achieved to Facebook.

Meanwhile, in the Achievement feature, players can complete game missions to increase the game level.

## 17. PEMILU DARING

Platform: Web Application  
(Presidential Election Application)

FIGURE 47: PEMILU DARING APPLICATION



Pemilu Daring is designed by the developer as a web application. The goal is so that the application can be accessed by multiple platforms. Despite being a web application, this application is relatively mobile friendly. Strangely enough, this application seems more pleasant to be opened with a smartphone rather than a notebook. Within a notebook screen resolution, there are a lot of empty space in the application layout, but it will look like a mobile phone in general if it is opened with a smartphone.

Upon opening the application, we will immediately presented

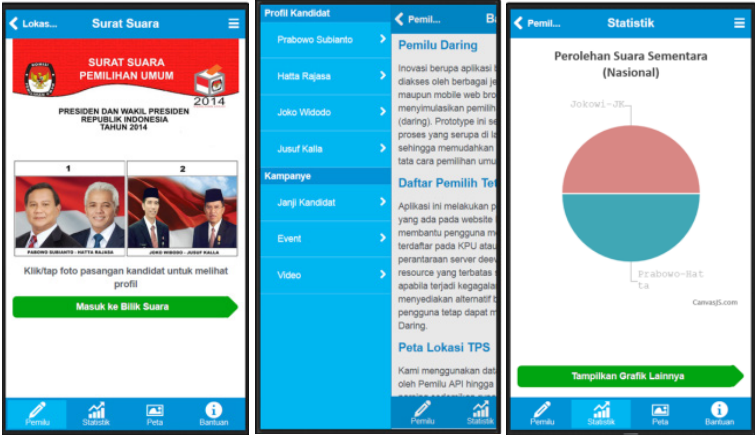
with a dialog box, which is similar to standard login method. However, instead of asking email address or username, this application requests national identification number (NIK). This is also useful for voters to check whether they have been registered as voter or not. This application establish a connection with the voters' list (DPT) database in KPU.

The application also displays a map that shows the location of polling stations. “We use geographical data provided by the Election API that we parse in such a way so it can be displayed as a map...” explained the developer on the website <http://pemilu-daring.appspot.com>. In addition, this application also provides users with election statistics, data on the candidates, electoral events, videos, and others.

## 18. PEMILU PRESIDEN 2.0

Platform: iOS  
(Presidential Election Application)

FIGURE 48: PEMILU PRESIDEN 2.0 APPLICATION





This application has several features, including presidential candidates' profile, news about the candidates and their activities in campaign, news about the election, the list of candidates' promises, and creative campaign. The application also provides 17 ready-made images that can be used for any purpose, as well as information about the quick count result conducted by many survey institutions or pollsters.

## 19. VOTE FOR CHANGE

Platform: Web Application  
(Presidential Election Application)

FIGURE 49: VOTE FOR CHANGE APPLICATION



Vote for Change is an application developed by Donbaka team. The slogan of this application is “recognize and support the candidate of your choice!”

The developer have the idea to create this application because there are so many negative and unhealthy news about the two presidential candidates circulated in society.

Fearing the effect will lead the public to abstention, the developer of this application invites its users to compare the two pair of candidates based on their accomplishments and working experience.

After comparing, this application let the users to choose their favorite candidate in the voting feature. This feature is designed to increase voters' enthusiasm. This application also presents information about the candidates' profile and many other information.

## 20. PEMILU FOR US

Platform: Web Application

(Presidential Election Application)

FIGURE 50: PEMILU FOR US APPLICATION.

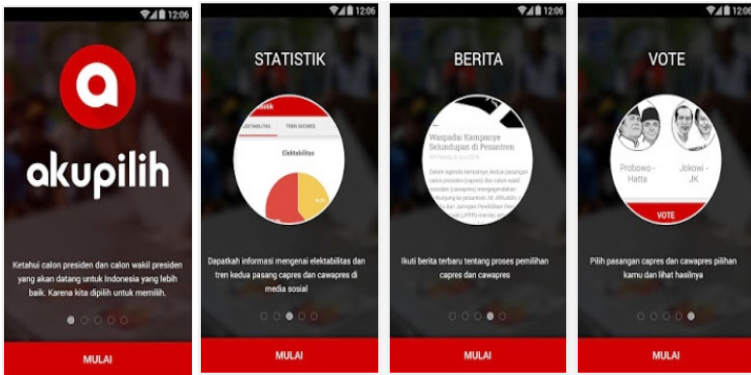


The prominent feature of this Pemilu For Us application is the voting feature. In this feature, users can vote for their favorite candidate. In addition, this application also provides information about the candidates' profile and their promises, as well as the election day countdown.

# 21. AKU PILIH

Platform: Android  
(Presidential Election Application)

FIGURE 51: AKUPILIH APPLICATION



This applications is created by a team of developers who called themselves Developer Ganteng. This application combines the data from Election API with data from Politicawave.com. One of the results is a feature to see Social Media Statistics Analysis about the presidential candidates, so users can look for the popularity and the electability of the candidates.

Other interesting feature is voice command navigation feature, where users do not have to touch their phone's screen to select all the menus in the application, and there is also a feature in which the users can vote for their favorite candidate. The result of the vote then can be shared to social media.

In addition, this application also provides candidates'

biographical information and news about the election and the candidates.

## 22. SIAPAPRESIDENKU

Platform: Android  
(Presidential Election Application)

FIGURE 52: SIAPAPRESIDENKU APPLICATION



SiapaPresidenku application is a little different with the previous applications, because this application provides a feature that informs you the financial statement of the candidates, and also the list of violations occurred in the election.

As for the rest, this application encourages users to get to know deeper about their candidates. “Do you know who are the candidates for presidential election?” ask this application to its users. A mere rhetorical question, because underneath the question there is already available facilities to find out more about the candidates. Starting from their

biography, up to their promises during election campaign. This application provides many virtual badges that can be shared on the social media.

## 23. PEMILU KITA

Platform: Android

(Presidential Election Application)

FIGURE 53: PEMILU KITA APPLICATION



Pemilu Kita application is made by DjakTechTeam. The name is the same with the application made by Ximply Studio. The difference is the application made by Ximply Studio is created at the hackathon in Bandung ahead of the legislative election, while the application made by DjakTechTeam is created at the hackathon in Jakarta, ahead of the presidential election.

DjakTechTeam's Pemilu Kita application contains information about the candidates' profile, their

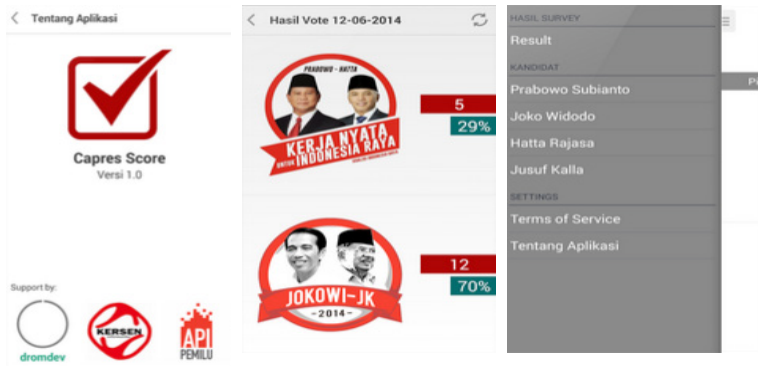
promises, and news about the presidential election. Also there is a feature called ‘Voting Pemilu’, Where users can vote for their favorite candidate.

## 24. CAPRES SCORE

Platform: Android

(Presidential Election Application)

FIGURE 54: CAPRES SCORE APPLICATION



Capres Score application is created by Ndorodev. As the name of the application suggests, this application is designed to assign scores to the presidential candidates.

However, “the scores assigned to each candidate in this application are, of course, not based on thorough and rigorous survey process that usually conducted by polling institutions,” the developer explained.

Ndorodev also said that this application facilitates users to express their support to a certain candidate by giving their

vote. The goal of this feature is to arouse users' interest to the presidential election.

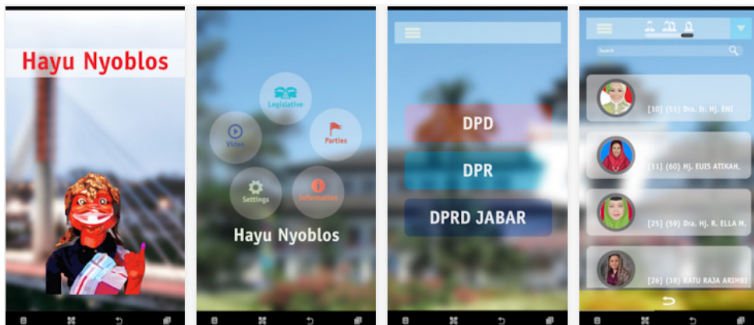
As with other applications, Capres Score also provides information about the candidates' profile.

## 25. HAYU NYOBLOS

Platform: Android

(Legislative Election Application)

FIGURE 55: HAYU NYOBLOS APPLICATION

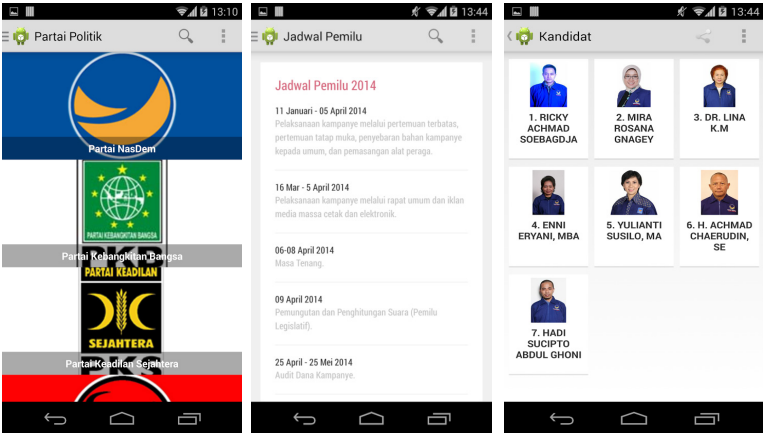


Judging from its name, many people might have easily guess that this application is heavily nuanced with Sundanese language and culture. And that is not wrong at all. This application is made by KAT Studio and especially designed for voters that reside in West Java area, especially in Bandung, to introduce outstanding young candidates for the DPR, DPD, and DPRD. Information about the profile of young candidates and their achievements can be easily acquired from this application.

# 26. PEMILOE

Platform: Android  
(Legislative Election Application)

FIGURE 56: PEMILOE APPLICATION



Pemiloe or Pemilu 2014 application is created by HakimLabs. This application provides the list of all contesting political parties and their candidates in the legislative election. In addition, this application also provides information about the election schedule.

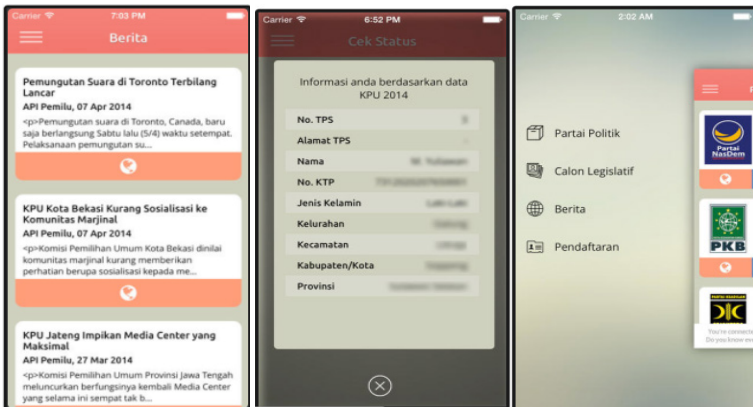


## 27. SEPUTAR PEMILU

Platform: iOS

(Legislative Election Application)

FIGURE 57: SEPUTAR PEMILU APPLICATION



One of the most prominent features in Seputar Pemilu application is the Cek Status feature. By filling the form in the feature, users can check whether they have already registered as a voter or not.

With this application, users can also check the data on contesting political parties and their candidates. Users can also follow news about the election updates.

# 28. EMPU INFO

Platform: Web application  
(Legislative Election Application)


FIGURE 58: EMPU INFO APPLICATION

**CALEG PEREMPUAN 2014**

Dari kuota 30% DPR RI kini hanya diisi 18,04% (101) legislator perempuan. Mau mengubahnya? Yuk bandingkan & rekomendasikan Caleg Perempuan pilihan. Sekali refresh, dua tiga caleg terkenal.

Sentuhkan kursor, intip portofolio. **Mau milih? Klik foto.** Masih ragu? **Klik nama** untuk info.


Bisa juga [per dapil](#), [per partai](#), [per kelompok usia](#), atau [refresh lagi](#).



**Dra. FENI DWI JAYANINGRUM**

Monang 121, Kalah 350  
Nilai: 1429  
1 vs 2: 0.402  
1 vs 3: 0.8308

VS



**ARI EKOWATI, SE**

Monang 226, Kalah 391  
Nilai: 1428  
2 vs 1: 0.598  
2 vs 3: 0.7540


VS




**Hj. LATHIFA MARINA AL ANSHORI, BPS**

Monang 335, Kalah 702  
Nilai: 1221  
3 vs 1: 0.3494  
3 vs 2: 0.5


**Paling Terpilih Dari Semuanya**




Nilai: 1918  
Monang 558  
Kalah 851




Nilai: 1500  
Monang 811  
Kalah 371




Nilai: 1769  
Monang 515  
Kalah 383




Nilai: 1482  
Monang 458  
Kalah 349



Nilai: 1723  
Monang 505  
Kalah 326



Nilai: 1732  
Monang 541  
Kalah 542




Nilai: 2228  
Monang 383  
Kalah 872



Nilai: 2105  
Monang 339  
Kalah 876



Nilai: 1892  
Monang 482  
Kalah 879



Nilai: 1883  
Monang 451  
Kalah 887

As the name suggests, Empu Info, this application specifically provides information about female candidates. The information can be sorted based on political party, electoral district, or age of the candidates. Also, there are data about female candidates with the highest electability rate.

This application encourages users to elect woman candidates, by reminding them that the 30 percent minimum quota of women representation in the parliament still has not yet been reached. In the 2009 elections, for instance, there are only 18 percent female parliament members in Senayan.

## 29. PEMILU INDONESIA 2014

Platform: iOS

(Legislative Election Application)

FIGURE 59: PEMILU INDONESIA 2014 APPLICATION.



According to the developer, Pemilu Indonesia 2014 is designed to answer the needs of the users, because this application provides data on all political parties participating in the election, their candidates, and the latest news about the election process.

## 30. PEMILU

Platform: Android  
(Legislative Election Application)

FIGURE 60: PEMILU APPLICATION



As an application designed specifically for the legislative election, this application contains information about all the political parties and candidates participating in the legislative election, as well as individual candidates for the DPD (lower house of the parliament). In addition, this application also includes information about the upcoming presidential candidates that has been discussed a lot by the public.

### THE EFFECTS OF ELECTION API TO KPU

Just like the open government movement in the United States changed the way the government works in the US to become more open, so does the Election API movement in Indonesia. For instance, Election API has successfully changed the way the Election Commission (KPU) in

providing election data to the public.

After seeing the Hackathon Code for Vote event in Bandung Digital Valley in March 2014, which was greeted with great enthusiasm by programmers and application developers alike, KPU started an initiative to digitize all of their election data. “I believe, in the future, such initiative will become a necessary thing to do by institutions like KPU. That’s why we decided to join forces with Perludem in organizing the hackathon event,” said a member of KPU, Ferry Kurnia Rizkiyansyah, to author in April.

The KPU management team for the 2014 election is actually the most transparent KPU management team compared to the previous periods. However, the transparency is still in the level of mere transparency, not yet in the level of open data openness. This is indicated by format of the data opened by KPU, which mostly in PDF or JPEG data format. Such data format can only be read by human, it is not machine-readable (can be read by computer), so the data are difficult to re-distribute.

After convening the hackathon event in Bandung, KPU invited Perludem to provide training sessions about the open data initiative to its staffs. Perludem agreed. “The content of the trainings includes lessons about data explanation, methods on how to open data, tools that are used to unlock data, how to implement Election API in Indonesia, and the application to open data for other countries,” said the Program Officer of Election API initiative, Diah Setiawaty.

Because of the training, KPU has moved further. Just before the presidential election, KPU opened the API for

most of their data, including data on voters' registration, electoral district, candidates, polling, political parties, and vote counting result from the polling station level (C1 forms), all of which can be accessed via the following address:

1. Open Data on Voters: <http://data.kpu.go.id>
2. Open Data on Electoral Area: <http://dapil.kpu.go.id>
3. Open Data on the legislative Candidate: <http://caleg.kpu.go.id>
4. Open Data on Voting Sites: <http://tps.kpu.go.id>
5. Open Data on Party: <http://partai.kpu.go.id>
6. Open Data on C1 forms: <http://pemilu2014.kpu.go.id>

And, shortly thereafter, KPU started to feel the positive impact of their open data initiative. The scanned C1 forms data distributed via KPU API were utilized by many people to crowdsourcingly recount the votes in the presidential election, like the one initiated by [Kawalpemilu.org](http://Kawalpemilu.org). The result of this crowdsourced vote counting definitely enlivened the electoral process.

KPU's open data initiative did not only provide official information about the result of vote-counting process, but also facilitated public participation to actively oversee the election process. In fact, the crowdsource initiative effectively discovered many peculiar C1 forms, which then very useful for correcting any counting error made by the election officers, and also useful to minimize any loophole and opportunity for systematic fraud in the presidential election.

Of course there are still criticisms toward the open data

and API initiative by KPU, although there are also many people appreciate the effort. Because, despite many defects and imperfections, the initiative has demonstrated the power and the advantages of open data.

FIGURE 61: OPEN DATA TRAINING FOR ELECTION ORGANIZERS.



Up until April 2015, KPU has underwent three training sessions and produced several findings and recommendations. Among others are the finding that there is no standardized protocols for the KPU’s website. The websites for local KPUs (in regency/municipal and provincial level) each have different domain name, web design, layout, and data placement. Some KPUs even use free blog hosting service, and they also rarely update the content. “Based on our research, the majority of KPU’s websites are not active. Approximately 240 of them are inactive,” said Titi Anggraini.

Given the importance of these websites for open data

initiative, especially when the openness of data for open data activists is interpreted as ‘accessible via the internet’, it is highly recommended that KPU to immediately improve their website. Among other things, the format of the websites needs to be standardized. KPU should also set a regulation that compels its staff to upload data in a format that can be read by machine.

Another recommendation is to increase the capacity and competence of the personnel responsible to manage the website, both at the central and local level. Therefore, it is recommended for KPU to establish a cooperation with other institutions that have expertise in the field of information technology. KPU is also advised to organize events like the hackathon conducted by Perludem, by inviting programmers and developers to utilize the data in the KPU API. “That is why I believe that Election API has successfully initiated improvements in many aspects of our election organization and process,” said Titi Angraini.

## **THE STORY OF HACKATHON WINNER WHO USES MATCHMAKING ALGORITHMS FOR ASSESSING POLITICAL CANDIDATES**

“(This application is) so cool. Those who want to know more about high quality candidates should download it immediately, so they don’t vote for the wrong candidate,” commented Ahmad Faiz Nasshor in the application review column on Google Play Store. He immediately gave five stars rating for the application.

Kamal Fahrurizal also expressed his satisfaction in the



review column. “Very informative guide for us who do not want to elect the wrong candidate for the upcoming election. Good job!” He wrote. He also gave the application five stars rating.

Perfect rate was also given by Rendy Wijaya. “Innovative. An application that can encourage new voters to vote and choose more wisely.”

However, there are also some people who convey their criticism, like Angga Kusumadinata. “How does this application assign its value on a candidate? Based on what criteria? What is the scale? The application fails to address these questions. The lack of transparency on its methodology could be a loophole for candidates to pay the developer of this application to increase the value of those candidates

... If only the developer cared to explain their valuation methodology, I would have given 5 stars”. Angga only gives one star rating for this application.

Similar comment also submitted by Bima Arywibowo. “The idea is solid. But what does the valuation on candidates based on?”

All of the comments above is about the application OrangBaik made by Appkitchens, the winner of the Election API Hackathon Code for Vote in Bandung Digital Valley, Bandung, in March 2014. The contest is organized by the Association for Elections and Democracy (Perludem) in collaboration with The Asia Foundation.

“This is not about popularity or PR stunt, but this is all about ‘Orang Baik’ (‘Good People’)” is the slogan of

this application. Since its first appearance in Google Play Store just before the legislative election, this Android-based application has been downloaded ten thousand times, with the overall rate of 3.8 eight stars.

Where do the ideas to assign score to candidates come from? Apparently, the developer adopt the science of matchmaking in the application. This is not surprising, since the three members of the development team, Oni, Ziyad, and Farid, are the managers of Setipe.com, a matchmaking host startup.

So, the application uses matchmaking algorithm to assign score to election candidates? Oni just laughed upon hearing that question.

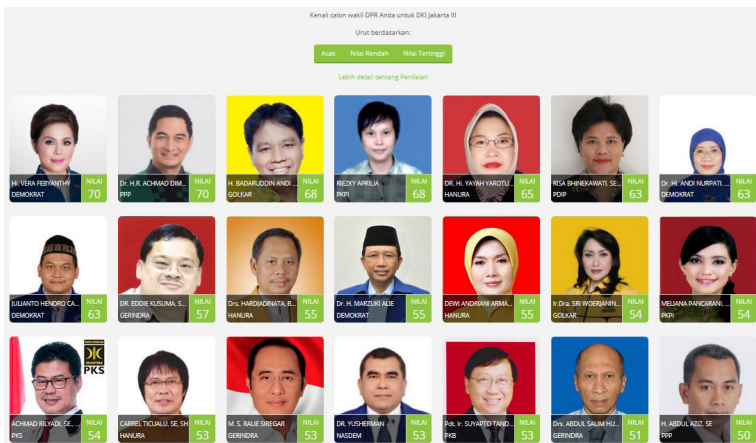
“Setipe.com is an online dating website. Upon registration, visitor will be provided with 150 psychological questions that they have to answer. Those answers are the basis for the algorithm. We then decided to apply the same algorithm to assign score to election candidates based on data from Election API,” Oni explained to author in April.

However, Appkitchens does not only apply the algorithm from Setipe.com. Oni, who also participate in Gerakan Turun Tangan (Get Down to Work Movement) dan Indonesia Mengajar (Indonesia Teaches movement), also said that he and his team adopt the assessment method used in the two social movements initiated by Anies Baswedan (now the Minister of Culture and Primary and Secondary Education).

Why does Appkitchens decided to use the legislative candidates and electoral district endpoint rather than many

other endpoints? Oni said, “Because we do not have the ability to make video game, so we focused on data. We have already experienced in tinkering data for our Setipe project, so it would be better for us to tinker with candidates’ data. It is easier, because the data is already available completely, and we only need to present the data to our users.”

FIGURE 62: CANDIDATES’ SCORE IN ORANG BAIK APPLICATION



All candidates’ data in Election API can be accessed through Orang Baik application. Users of this application need only to type in the electoral district and choose the representative institution, the application then will display the name of all candidates in the selected location/region.

However, Appkitchens decided to implement a more flexible approach on the electoral district data, so it will be easier to use even for beginner voters. Orang Baik do not ask user to type in the name of electoral district, that might not be familiar to them (electoral district in Indonesia may be

a combination of several regencies/municipalities). Orang Baik uses city names to refer to electoral district, which arranged alphabetically.

As a result, if someone wants to know all the legislative candidates in West Jakarta, users do not have to memorize in which electoral district is the West Jakarta area. They only need to type 'West Jakarta' in the search box, and the application will provide the list of all candidates representing the electoral district of Jakarta III (West Jakarta, North Jakarta and the Thousand Islands District).

However, if users type in 'West Jakarta' to search for the candidates for the DPD (lower house of the Parliament), then the application will display the entire DPD candidates in whole Jakarta. That's because DPD is a provincial electoral district.

In addition to displaying the name of candidates, this application also displays candidate's photo and their score. These candidates can be sorted based on their highest score, lowest score, or randomly sorted.

With this application, voters can easily assess the quality of their candidates. The developer team has created a special algorithm to assign score for every candidate. The candidates are rated with a score of 10 to 100. The scoring is based on the profile and track record of the candidates.

However, this application has not been very keen in providing candidates' data for the DPRD (Local Parliament). For example, when typing in 'West Jakarta' in the search box, the application will only display electoral district of

Jakarta-10, even though for the DPRD election West Jakarta is consisted of two electoral district: Jakarta-9 and Jakarta-10.

In addition to providing the name of candidates and electoral districts, this application also features the most commonly asked questions or frequently asked questions (FAQ). For example, a question like: “I have not been enrolled in the Voters’ List, can I still go to the polling station and cast my vote? If I still can, what should I do?” “To read the answer, users only need to simply pressed the “read more” button.

Oni said he and his team received a lot of positive response from the public. “We have been invited to appear on television for a couple of times now,” he said.

Since Orang Baik is only available for Android-based platform, Appkitchens decided to develop it further. Appkitchens has made OrangBaik application for the iOS and the web version. “Initially, we created this application exclusively for Android because of the time constraint,” he said.

Despite the positive responses, the Appkitchens team did not denying the fact that there are still criticisms toward their application, especially regarding the method they use in determining score for candidate. Appkitchens weighing 30 percent of the candidate’s score for education level, university background (20 percent), work experience (15 percent), organizational experience (15 percent), age (15 percent), and environmental sensibility (5 percent).

Despite the fact that the application is still rudimentary,

but Appkitchens team has successfully demonstrated the power of API technology, that facilitates the creativity of computer programmers and developers, like a child playing lego, combining a variety of plastic blocks and turn it into various creations. And, in the case of Orang Baik application, the API power is demonstrated in the way Appkitchens team is able to implement an algorithm for matchmaking website in an application that is useful to assess political candidates.

The application is not perfect. However, if the valuation method is improved, in the future, this application may become an excellent guide for voters.

## PART SIX

# AFTER ELECTION API GAVE RISE TO DIGITAL ELECTION DATA BANK

*The Election API technology is not only useful during the election period, but also beneficial post-election, among others is to bridge the broken linkage between the electorate and the elected.*

ELECTION API initiative has recorded several landmarks in the history of Indonesian election. Besides being the first implementation of the Application Programming Interface (API) technology in Indonesian election, Election API also initiated the first election-themed hacker marathon (hackathon) in the world. That event is basically a collaboration of two different worlds: election activism and the field of information technology. A total of 480 election-themed applications and games were produced as the result of that event.

However, all of that initiative and its results now has been passed away following the end of the 2014 election, and they are all have become fond memories. Then, what is left of the Election API initiative? Will the API Election end up like a polar bear that go into cave to hibernate when winter comes, only to wake up again when spring is approaching? “Oh, of

course not,” said the Executive Director of the Association for Elections and Democracy (Perludem), Titi Anggraini, to author, in April 2015.

Titi asserted that Election API is still useful after the election. The election data contained in Election API have been used to create applications that are useful to juxtapose the relationship between the representatives and their constituents, as demonstrated by the application DPR Kita and Kilas DPR. This is an advanced stage of the election process. If in the previous stage the initiative mainly focused on candidates, now the focus is turned to the elected representatives.

Election API will also be utilized immediately for the concurrent local election in 2015. In fact, there are signs that Election API will be adopted by election activists in other countries. Many international communities regarded the implementation of Election API in Indonesia as one of the best practice of API technology for electoral purposes, and they intend to implement similar initiative in their country.

Before discussing it further, there is one more important achievement of Election API initiative that needs to be covered, and that achievement is an important milestone in the history of Indonesian election. That achievement is the creation of the first Indonesian election database. This is something that we need to be grateful of, because finally Indonesia has its own election data bank after eleven elections.

More than just an electoral database, the Election API database provides data that are clean, structured, and -



this is important – stored in digitized format. The data format is compatible with the ever-advancing technological progress, especially in the era where open data movement and the booming of applications and mobile gadgets is the norm as today. The digitize data format will facilitate data redistribution via various technological devices, so that the benefits of the election database can be received by wider population.

That digital data format allows developers to use the Election API database to create applications after the presidential election, like the application DPR Kita and Kilas DPR. In fact, Election API will remain be opened so it can be used by anyone, anytime, for free! Election API is an open API, there is no need to ask for permission to use the data contained in the API. Users only need to login and comply with the license and regulation.

FIGURE 63: ILLUSTRATION FOR PERLUDEM’S API AS ELECTION DATA CENTER.



Perludem is still developing the database, so in the future there will be more and more data available. “The election data in Election API includes data for the legislative and presidential elections. Now, we are developing it so they also contain data for local elections. We continue the effort to digitize all election data,” Titi said.

While preparing the API data for local election, Perludem will also keep updating the data for legislative elections, especially data on candidates, which have not been fully explored. This is a huge task, because the number of candidates for the provincial and regency/municipality DPRD alone is about two hundred thousand candidates. “Up until April 2015, the database for provincial DPRD has been one hundred percent complete. Meanwhile, database for regency/municipality is about 60 percent complete,” said Titi.

Election API can also be used for various other needs, such as to demand the realization of promises from elected politician during their campaign period. This is because Election API is keeping the digital data on candidates’ vision, missions, and programs, either written in documents pronounced orally in various occasions. If you are interested in creating an application to remind the politicians of their promises, you can use the data from Election API. “Now it is easier to collect campaign promises, because those promises are all documented. And we have means to access the information. Now we can encourage our leaders to fulfill what they have promised to the voters,” said Titi Anggraini.

## TABLE 11: LIST OF ELECTION API ENDPOINTS

The packages available in the Perludem's Election API endpoint until June 2015 are as follows:

### **Presidential Candidate API**

The Presidential Candidate API is a service that provides information about candidates running for president and vice-president in the 2014 Indonesian elections.

Link to documents: <http://docs.calonpresidenapi.apiary.io/>

### **Social Analytics API**

Social Analytics API is a service that provides social media information from president candidates in the 2014 Indonesian President Elections.

Link to documents: <http://docs.socmedpemilu.apiary.io/>

### **Stamps API**

Stamps API is a service that provides links to election-related stamps and banners that can be overlaid on photographs.

Link to documents: <http://docs.stampsapi.apiary.io/>

### **Campaign Finance Report API**

The Campaign Finance Report API is a service that provides information about campaign finance reports in the 2014 Indonesian elections.

Link to documents: <http://docs.laporanakampanyeapi.apiary.io/>

### **Laporan Pelanggaran API**

Laporan Pelanggaran API is a service that provides election violation reports.

Link to documents: <http://docs.electionviolationreportapi.apiary.io/>

### **Candidate API**

The Candidate API is a service that provides information about legislative candidates who ran for office in the 2014 Indonesian elections, including election results.

Link to documents: <http://docs.candidateapi.apiary.io/>

### **Geographic API v1**

The Geographic API is a service that provides information about geographic boundaries relevant to Indonesian elections and civic government.

Link to documents: <http://docs.geographicapi.apiary.io/>

### **FAQ Presiden API**

The FAQ Presiden API is a service that provides answers to questions about the rules and regulations affecting the 2014 Indonesian Presidential elections.

Link to documents: <http://docs.faqpresiden.apiary.io/>

### **Pertanyaan API v1**

Pertanyaan API is a service that provides information about rules and regulations API in the 2014 Indonesian elections.

Link to documents: <http://docs.peraturanapi.apiary.io/>

### **Pendidikan API v1**

Pendidikan API is a service that provides information about the Indonesian elections.

Link to documents: <http://docs.pendidikanapi.apiary.io/>

## API PEMILU

### **Berita API v1**

News about elections

Link to documents: <http://docs.beritaapi.apiary>

### **Election Results API**

The Election Results API is a service that provides information about election results from the 2014 Indonesian elections.

Link to documents: <http://docs.electionresultsapi.apiary>

### **Rekap DPT - DPK API**

Rekap DPT - DPK API is a service that provides information on the number of DPT (Voters' List) and DPK (Special Voters' List), these data are completed from <http://data.kpu.go.id/ss8.php>

Link to documents: <http://docs.rekapitulasidptdpk.apiary>

### **Proporsi Kursi Perempuan API v1**

Information on the proportion of women seats in the Parliament and in any regency/municipality that has greater than 30 percent women's seat proportion

Link to documents: <http://docs.proporsikursiperempuan.apiary>

### **Hasil Pilpres API v1**

The recapitulation of the 2014 presidential election result

Link to documents: <http://docs.rekapitulasipilpres.apiary>

### **Track Record Buruk API v1**

Poor track record of the members of the Parliament

Link to documents: <http://docs.trackrecordburuk.apiary>

### **Data Kekerasan API v1**

Data on violence cases occurred in election

Link to documents: <http://docs.datakekerasan.apiary>

### **Infografis Selasar API**

Infografis Selasar API is a service that provides a collection of infographics from the website [www.selasar.com](http://www.selasar.com)

Link to documents: <http://docs.infografisselasar.apiary>

### **DPR API v1**

DPR API is a service that provides information on the Member of the National Parliament (DPR) for the 2014-2019 tenure, the data are gathered from [www.wikidpr.org](http://www.wikidpr.org)

Link to documents: <http://docs.anggotadpr2014.apiary.io>

### **DPRD API v1**

DPRD API is a service that provides information on the Member of the Local Parliament (DPRD) for the 2014-2019 tenure, the data are gathered from <http://www.kpu.go.id/index.php/pages/detail/2015/349>

Link to documents: <http://docs.anggotadprd2014.apiary>

### **Dapil API**

Dapil API is a service that provides information about the electoral districts, the data are collected from [www.kpu.go.id](http://www.kpu.go.id) ([http://www.kpu.go.id/dmdocuments/UU%20No%20thn%208%202012%20Pemilu%20Leg\\_oke.pdf](http://www.kpu.go.id/dmdocuments/UU%20No%20thn%208%202012%20Pemilu%20Leg_oke.pdf))

Link to documents: <http://docs.dapil.apiary>

### **Webnews API**

Endpoint that contains news about the election from various news sources.

Link to documents: <http://docs.webnews.apiary>

### **Calon Terpilih DPD**

Calon Terpilih DPD is an endpoint that provides information on the elected candidates in the DPD (lower house of the parliament) election 2014. The data comes from [http://www.kpu.go.id/koleksigambar/SK\\_KPU\\_417\\_Penetapan\\_calon\\_terpilih\\_DPD\\_1452014.pdf](http://www.kpu.go.id/koleksigambar/SK_KPU_417_Penetapan_calon_terpilih_DPD_1452014.pdf)

Links to documentation: <http://docs.calonterpilihdpd.apiary>

### **Produk Hukum (Regulasi)**

The service provides information about Acts, President's Regulations, Government's Regulations, Presidential Decrees, General Election Commission's regulations, Handbills/Technical Guidances/ Others, as well as the Minister's Decree.

Link to documents: <http://docs.produkhukum.apiary>

### **DIPA API**

DIPA API is a service that provides information on the main Budget Implementation List (DIPA).

Sample data: [http://www.kpu.go.id/koleksigambar/DIPA\\_KPU\\_2014.pdf](http://www.kpu.go.id/koleksigambar/DIPA_KPU_2014.pdf)

Link to documents: <http://docs.dipa.apiary>

### **Realisasi Anggaran Pemilu API**

Realisasi Anggaran Pemilu API is a service that provides information about the realization of the electoral budget for fiscal year of 2014. Sample data: [http://www.kpu.go.id/koleksigambar/REALISASI\\_DJPB\\_31\\_DESEMBER\\_2014\\_WEBSITE\\_1201201511.pdf](http://www.kpu.go.id/koleksigambar/REALISASI_DJPB_31_DESEMBER_2014_WEBSITE_1201201511.pdf).

Link to documents: <http://docs.rekapanggaranpemilu.apiary>

### **Ambang Batas API**

Ambang Batas API is a service that provides information on political parties that meet the minimum threshold of valid votes share nationally and those that don't. Sample data: [https://web.archive.org/web/20141028020937/http://www.kpu.go.id/koleksigambar/952014\\_ambang\\_Batas.pdf](https://web.archive.org/web/20141028020937/http://www.kpu.go.id/koleksigambar/952014_ambang_Batas.pdf)

Link to documents: <http://docs.dapil.apiary>

### **Perolehan Suara Partai API**

Perolehan Suara Partai API is a service that provides information about the vote acquisition of political parties nationally. Sample data: [https://web.archive.org/web/20141028020859/http://www.kpu.go.id/koleksigambar/952014\\_Perolehan\\_suara\\_parpol.pdf](https://web.archive.org/web/20141028020859/http://www.kpu.go.id/koleksigambar/952014_Perolehan_suara_parpol.pdf). Link to documents: <http://docs.perolehansuarapartai.apiary>

### **Perolehan Suara Pemilu API**

Perolehan Suara Pemilu API provides information on the vote-counting result in every region/province.

Link to documents: <http://docs.perolehansuarapemilu.apiary>

### **WEB KPU API**

WEB KPU API is a service that provides information about the website address the Election Commission and its local subsidiaries.

Link to documents: <http://docs.webkpuapi.apiary.io>

### **Potret Pemilu Kota Banda Aceh API**

Potret Pemilu Kota Banda Aceh API is a service that provides information about the 2014 election in the special city of Banda Aceh. Link to documents: <http://docs.potretpemilikotabandaacehapi.apiary>

## **DPR KITA APPLICATION**

DPR Kita application is the effort to answer the classical problem that often occurs after the presidential election, namely the increasingly tenuous relationship between the voters with the elected politicians. In fact, in some cases, the relationship is not just becoming tenuous, but increasingly turning into a broken linkage.

After all this time, the relationship between candidates and their constituents is only established for five years period. After the election ended, the relationship is becoming fractured. Ahead of the next elections, the politicians will then approach the voters again, and so on, like a vicious circle. This is ironic, because the candidates are directly voted by the voters through the open-list proportional representation system, in which voters are not only voting for political party, but also voting for candidate.

DPR Kita was launched in Jakarta on Tuesday, February 24, 2015, or four months after the inauguration of the elected candidates in the legislative election. This application is made by Perludem in cooperation with various civil society organizations such as the Centre for Legal Studies and Policies (PSHK), Indonesian Parliamentary Center (IPC), Public Virtue, Kontras, Information and Communication Technology (ICT) Watch, ICT Laboratory for Social Change (i-Lab), and Selasar.com.

The making of this application is not preceded by a hackathon event. Nevertheless, there was still a selection process of the applicants, which conducted by six judges

from the three different organizations. After deliberation, the judges chose GITS Indonesia. GITS Indonesia is also one of the participants in the Hackathon Code for Vote 2.0

Challenge that created the application Pilpres Duo. DPR Kita is an Android-based, iOS-based, and web-based application and can be downloaded for free via the Google Play Store, the App Store, and others. In addition, this application is also developed with special features for people with disabilities.

So, what can this application do to preserve the relationship between the representatives and the voters and prevent it to become a broken linkage? Before answering that question, we need to examine the rationale from civil society activists to create DPR Kita application.

The broken linkage phenomenon is not only caused by voters' reluctance to convey their aspiration to the politicians, but also because they do not know how to do it. In addition, it would be impossible for the politician to communicate with all of their constituencies. This is exactly the problem that election activists try to overcome by utilizing the power of information technology. The technology is expected to facilitate the interaction between the people and their representatives, and facilitate the representatives to respond directly to the aspirations their constituencies.

This two-way communication that facilitated by applications such as DPR Kita is becoming feasible and easy, since the total users of mobile gadget in Indonesia has reached a hundred million people. This amount is already more than half of the total registered voters, that in the 2014

election the total number is around 190 million. This total population of gadget users will continue to grow, considering Indonesia is one of the world's biggest mobile gadget market. Germany's largest market research agency, Gesellschaft für Konsumforschung (GfK), predicted in 2015 Indonesia will be in the third place of the biggest gadget market after India and China.

“After all this time, the biggest constraint for the public to express their aspiration to the politician, among other things, is the lack of means. The communication between the member of the representatives with the public is mostly facilitated by mass media, in which the message could have been distorted. Therefore, with this application, it is expected that communication problem will be resolved, so that the people and their representatives can understand each other,” said the Chairman of Perludem, Didik Supriyanto, at the DPR Kita application launching event.

Indra Pahlevi from the DPR's Data and Information Processing Centre admitted that up until the creation of DPR Kita, DPR was still using the old ways of accommodating the aspirations from the public. That is, people express their aspirations by going straight to the House of Representatives, conducting a demonstration, or by sending letters. Therefore, Indra said, information technology could be used to enhance the performance of the Parliament (rumahpemilu.org, February 25, 2015: Utilization of Information Technology Enhance the Quality of Democracy).

So, what's in the DPR Kita application? This application contains information about the 560 members of the



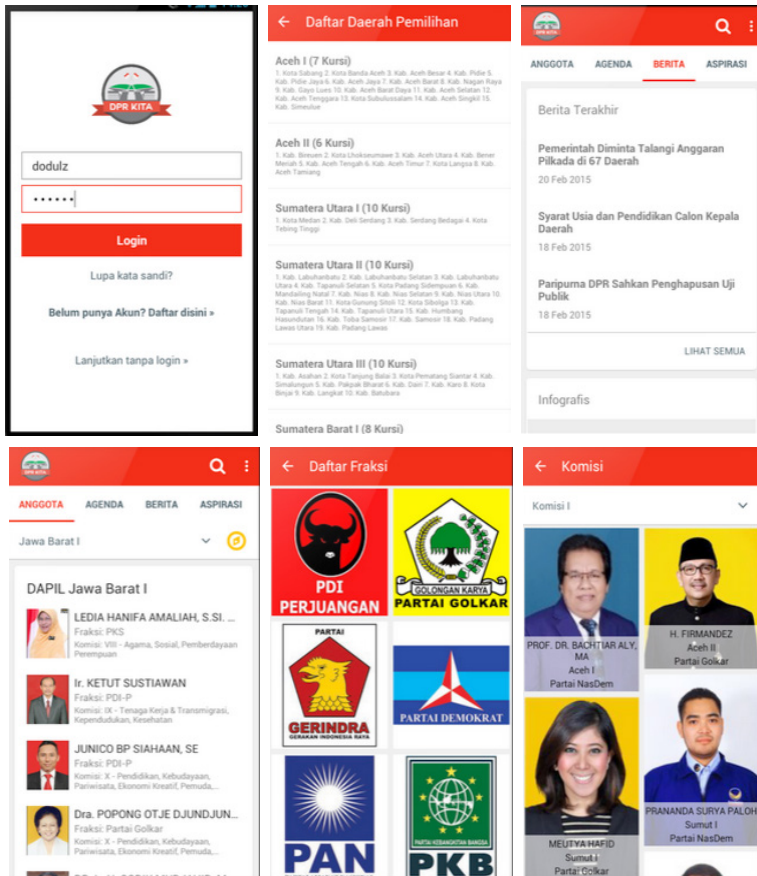
Parliament who represent 77 constituencies (provinces or joint districts/municipalities). User of this app can take a look at the profile of the Parliament members, the activities of the Parliament, the Parliament commissions including its functions, news about the Parliament, and infographics.

With DPR Kita, users can express their aspirations directly and immediately. These aspirations can be addressed to a specific receiver, namely the representative that represents a specific constituency, or a representative who serves in a particular commission. Here are some examples of the aspirations that have been submitted through DPR Kita by users:

- “Assalamualaikum. We are expecting (representatives’) participation to take care of our remote village, please do not look after villages near big cities only. We’re requesting your contribution to build roads in our village, Cumpiga Village, Awangpone Sub-district, of Bone Regency.” (This aspiration was delivered by Sabrisaputra, on June 9, 2015, addressed to Andi Iwan Darmawan Aras SE, representatives from the electoral district of South Sulawesi II that consists of Bone regency, Sinjai, Maros, Bulukumba, Pangkajene Islands, Barru, Soppeng, Wajo, and Parepare).
- “The Parliament and the government should took an immediate action on the discovery of ‘synthetic rice’ or ‘plastic rice’. The Minister of Agriculture, Minister of Trade, and police officers must ensure that similar incident will not occur in the fasting month. Regards from the Banten people.” (This aspiration was sent by Asmuni

Rakhman on May 21, 2015. This aspiration is addressed to the Commission IV of the DPR that specializing on the issue of agriculture, horticulture, forestry, marine, fisheries, and food).

FIGURE 64: DPR KITA APPLICATION



The aspirations submitted to the commissions of the DPR are then followed up in accordance with the three

institutional functions of the Parliament, namely legislative function, oversight function, and budgetary function. Meanwhile, the aspirations addressed to the representatives that represent a particular constituency are often more specific. And, this will encourage the member of Parliament to execute their often-neglected function of representation.

With the representation function, a representative is directly involved in enhancing the interests of his/her constituencies, including in trivial matters such as potholes, clogged sewage, and others. Other than helping voters to channel their aspirations to the relevant representatives, DPR Kita is also useful for the representatives to acquire up to date information about the well-being of their constituencies.

Geo Tagging feature in DPR Kita is also very helpful to connect constituents with their representative. With the location-based system technology, user can immediately see a list of members of the Parliament from the electoral district in the location where the user opens the application.

With DPR Kita, members of Parliament can publish various information and photographs of their activities, so they can be known by their constituencies. They, for example, can upload the documentation of their work programs, their performance and achievements which may not be published in the media.

Titi Anggraini asserted that public's participation in the political process does not have to stop with the end of election. Because political participation is not only about casting vote at the polling station, but also about actively involved in

expressing aspirations to the elected representative.

Although the election has ended, Titi said, people still have the right to interact directly with their representatives in Parliament. They can demand the promises that were given by representatives during their electoral campaign, or they can just gripe about various problems they found in their neighborhood.

A researcher from the Centre for Legal and Policies Studies (PSHK), Ronald Rofiandri, said the use of technology will not only accelerate the delivery of information from constituents to the representatives and vice versa, but also will reduce Parliament's budget. Because, in order to accommodate people's aspirations, the Parliament does not need to spend a lot of money to hold a formal meeting. Parliament members can also give political education by utilizing the technology.

Deputy of the Parliament, Fadli Zon, said DPR Kita is very easy and comfortable to use. He said the application can be integrated with Parliament's efforts to make the Indonesian parliament into a more modern parliament. This application allows users to get every updates on the activities of the members of the Parliament, including in recess period. This way, people can always find out what is being done by the politicians. (rumahpemilu.org, Saturday, March 7, 2015: DPR Wants to Adopt the Application DPR Kita and Immediately Integrate Their Activities with the Applications).

Similar application with DPR Kita is also made by developer Gulajava Ministudio. This application utilizes Election API and is called Kilas DPR. This application does

not only contain information about the newly elected parliamentarians at the national level (DPR), but also at local level (DPRD). In addition, this application also contains news and infographics, list of political factions in the Parliament, list of commissions, list of constituencies, and the phone numbers and emails of the Parliament for users to submit their complaints and aspirations.

“We are hoping that the idea of DPR Kita will be adopted for the local legislatives. If there was developer who want to create application similar to DPR Kita for the local Parliament, we will be very happy, because the main spirit of Election API is to serve the voters. We have provided the primal data and the tools that can be continuously developed by various parties. We believe the technology will continue to grow. Open Data movement will continue to innovate and enhance public participation from time to time,” said Titi Anggraini.

## **ELECTION API IN LOCAL ELECTION**

In the concurrent local election that will be held in 269 electoral districts in 2015, Election API will once again take part. In fact, the local election will be an opportunity to improve Election API as applied in the previous legislative and presidential elections.

Unlike in the previous hackathon where the participants can freely use all of the data or endpoints available in the API, the hackathon event for the local election will be a little different, because it has a specific focus. Perludem decided that the application making competition will be separated

based on different categories. This way, Perludem expected the variation of the data provided in the API can be explored more thoroughly.

For local elections, the data package that will be provided includes candidates' profile, candidates' track record, candidates' campaign promises, candidates' wealth and financial report, campaign finance reports, voters' data, and others.

“To maintain the integrity of the election, if possible, we also would like to create application that allows voters to report any electoral violations. However, such application can only be effective if the election monitoring body is responsive enough,” said Titi Anggraini.

During the previous Hackathon, programmers and developers were mostly utilizing the candidates endpoint. This is understandable, because the most interesting thing about the election is indeed the competing candidates, as the journalistic principle suggests: names make the news. However, this is implying that the other data packages have not been utilized to its full potentiality.

“In the previous Hackathon, the most used data packages is the candidates' data, then geographic data, presidential candidates data, stamps, FAQ-presiden, campaign finance, and voters' education,” said the Program Officer of Perludem's Election API, Diah Setiawaty.

For the upcoming local elections, Perludem decided to utilize the Election API for all the governor elections and a number of regent/mayor elections. In 2015, the local

elections will be held concurrently in 269 areas, consisting of nine provinces and 260 districts/cities. The nine provinces are North Kalimantan, Central Kalimantan, South Kalimantan, Jambi, Bengkulu, West Sumatra, Riau Islands, North Sulawesi, and Central Sulawesi.

The Hackathon for the 2015 local elections will be held after the completion of the nomination process, and all the candidates for governor and regent/mayor elections have been confirmed. “We are planning to start the hackaton in September or October,” she said.

The Hackathon will be held in five different cities. Those cities represent the three time zones in Indonesia. For the western zone, the Hackathon will possibly be held in Jakarta, Surabaya, or in one of the cities in the Sumatra island. For the middle zone, it will possibly be held in Bali, Kalimantan or Sulawesi. Meanwhile, for the eastern zone, the Hackathon will most likely be held in Maluku.

The two first Hackathon will be held in Jakarta and Surabaya. Perludem choose Jakarta because the capital city represents the national KPU, so that all the election data in the KPU can be opened to the public and transformed into API endpoints to be used in the competition. Meanwhile, for the Surabaya competition, Perludem will establish a cooperation with the Surabaya KPU in organizing the hackathon event in Surabaya.

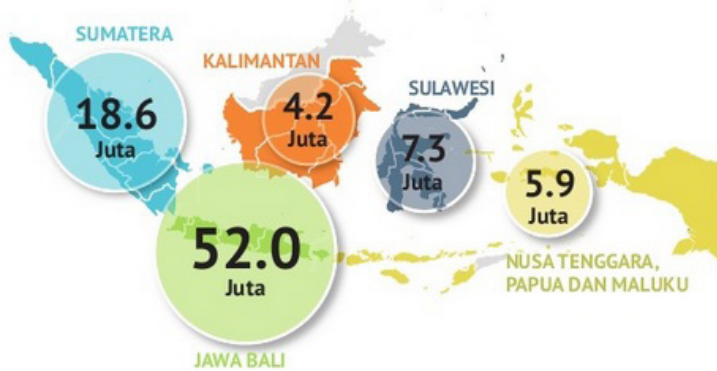
GRAPH 13: THE NUMBER OF INTERNET USERS AND INTERNET PENETRATION RATE IN INDONESIA BY REGION

**PENETRASI PENGGUNA INTERNET DI INDONESIA**

Asosiasi Penyelenggara Jasa Internet Indonesia (APJII) mengungkapkan jumlah pengguna internet di Indonesia tahun mencapai 88 juta orang hingga akhir tahun 2014. Berdasarkan populasi, jumlah pengguna Internet terbanyak adalah di provinsi Jawa Barat sebanyak 16.4 juta, diikuti oleh Jawa Timur 12.1 juta pengguna dan Jawa Tengah 10.7 juta pengguna.



**Jumlah Pengguna Internet**  
berdasarkan wilayah di Indonesia



Will the hackathon separate the participants based on the time zones? Titi said not necessarily, because the effort to utilize the election open data is not limited by geographical border. Either local or national developers can work for any area.



“We are hoping there will be more local programmers and developers participate in the event. However, it does not really matter if there are also national developers participating in the Hackathon. Those developers actually do not need to be physically present in the event to participate, because all of the data are available online. For example, in the first hackaton event, the third winner, Alexier, who created the application Caleg Store, is a group of Indonesian students that were living in Singapore. There was also an iOS application developer who work in Kuwait,” said Titi.

Actually, Titi said, the implementation of Election API in local election is very much the same with the implementation of Election API in the legislative and presidential election. However, this does not mean that there will be no difficulty at all. “Most of the staffs in Local Election Commissions in local areas do not understand about API and open data. That is one of many challenges,” she said.

Titi said, for the local elections, Perludem decided to reduce the number of enumerator or data collector staff, because Perludem wants this initiative to be regarded as a collaborative work between Perludem and KPU. If we can guarantee KPU’s commitment to the open data initiative, then, Titi said, it would be easier to implement API technology for electoral affairs.

And it would be much better, Titi said, if those data can be directly consolidated by the KPU, at the very least they consolidate the data of candidates and the data of public supports for candidates, either they come from political party or independent candidates. Alternatively, KPU can

consolidate the data on regency/municipality so that they can be obtained at the provincial KPU, making it easier for users to collect the data, because they do not need to search the data to all local KPUs in regencies/municipalities.

“So far, the data are not centralized. If KPU is willing to give us the data, then we can create the APIs nation-wide. But, if the data are not consolidated, then we will aim to work on the election data in eight provinces only. As for the regency/municipality level, we will only work on areas that are easy to reach by land transportation,” said Titi.

Titi argued that it would be better if KPU initiate the Election API initiative. “In the future, we are hoping that this program will be a KPU’s initiative. We are also hoping that KPU is able to digitize all the necessary data for the public. We are hoping that every local KPUs has API. With their current budget, they could invite programmers and developers to utilize the API. For a country as big as Indonesia, we believe it is not enough to only have KPU as the sole actor in managing the election. Voluntary contribution and participation from the public and other stakeholders are necessary,” she said.

Titi also said that she does not mind if the hackathon event has to be taken over by KPU. “If the Election Commission can bring programmers and developers together to participate, that would be great. Based on our experience during the first and second hackaton event, there were many developers, after participating in the hackathon competition, said ‘it turned out working with election data is fun ... there are a lot of things we can do to our politics and elections’. Therefore, to ensure the success of our cooperation with

KPU, we will make a memorandum of understanding on the implementation of open data and voters' education.”

Titi said PerluDEM did not spend a lot of money to hold two hackathon events. PerluDEM only provided prize money that are relatively small in contribution compared to applications created by the participants.

## EXPORTING ELECTION API

Election API is one of the best practice in Indonesian elections. Therefore, there are many countries have already started exploring the possibility of applying API technology for elections in their own country. Among others are Myanmar and several other ASEAN countries, and technologically- advanced countries such as Taiwan.

FIGURE 65: MYANMAR'S ELECTION COMMISSION VISIT TO PERLUDEM, APRIL 2015, TO LEARN ELECTION API



“From democracy and election perspective, Indonesia has many advantages that can be shared with neighboring countries. Indonesia’s success story should not stop

as domestic consumption only. We want to share this success story and the experience, so the synergy and the collaboration will give rise to the strengthening of election process in neighboring countries, particularly in ASEAN countries. In economical aspect, ASEAN is one community. It is one of the best diplomacy in building friendships with other countries,” said Titi Anggraini.

Titi added, for a country like Indonesia that has a complex electoral system, complicated electoral management system, and with huge geographical challenges, technology has facilitated the voters and encourage their participation and trust in the election. Such technology could bring a massive difference if it is applied in countries in which the electoral system is simple, with less geographical challenges, the election management is not too complicated, and the literacy rate is high.

The Election API Program Officer, Diah Setiawaty, said Taiwan and Myanmar are two ASEAN countries that have expressed their interest in implementing the API technology. In April 2015, for instance, the Myanmar Commission delegation visited Perludem to learn about the Election API. In addition, Diah also said that in early August 2015, the staffs from Ministry of Technology, Information and Computer (TIC) of Ethiopia, also visited Perludem to study the application of open data in Indonesia, in particular in the field of elections.

In May 2015, in Timor Leste, Perludem presented the implementation of Election API to many election stakeholders from ASEAN countries. In the same month,

“we were also invited to Canada to present Election API and the development of open data in Indonesian elections,” said

Diah Setiawaty. ELECTION API, FIVE BOXES ELECTION, AND ELECTION ENGINEERING The role of Election API will become increasingly important in the upcoming 2019 national election. At that time, the election will be more complicated, because there will be five public positions to be filled simultaneously: president/vice- president, DPR (national parliament) members, DPD (lower house) members, provincial DPRD (local parliament at provincial level) members, and regency/municipality DPRD (local parliament at regency/municipality level). With this five boxes election, the election will absorb voters’ attention. So, we can easily imagine how the election later in 2019 will be more difficult to manage than previous elections.

In this context, the implementation of Election API provides a solution so that the voters will not cast their vote carelessly. With Election API, they can easily check the background of candidates, learn about candidates’ vision, missions, and programs, via technological devices that they possess, such as laptop and smartphones.

Admittedly, the government is still indecisive about the implementation of the five boxes election. Despite the Constitutional Court decision to conduct the presidential election simultaneously with legislative elections, it is still a possibility for the government to conduct the concurrent election in the format where the national election is separate with the local election. In this format, the national election is held to elect president/vice-president, members of the

national parliament, and members of the local parliament. Meanwhile, the local election is held to elect governors/regents/mayors and the representatives, as well as members of the local parliament at provincial and regency/municipality level.

Structuring the operational time of the election in national elections-local format has become a solution in various countries, including Brazil. Synchronizing the time of the presidential election with legislative election usually resulted in a situation where the executive branch and the legislature branch are controlled by the same political party or coalition of parties. This way, the presidential system is strengthened and democracy is more stable.

How does it easier that the executive and the legislative to be controlled by the same party if the election is concurrent? That's because the bandwagon effect. It is only natural if a voter choose candidate A, for example, he/she tends to vote for the political party of that candidate.

However, it might be a bad idea to let the voters to be controlled by their own emotion and rumors. Voters still need to be facilitated to get to know their candidates, so they choose the candidates based on rational considerations such as the track record of candidates, candidates' vision, missions, and programs. This way, we can ensure that voters will elect the best possible candidates. At this point, technology plays a key role in facilitating such enlightenment.

There is one more electoral engineering that has a chance to be applied in the future: changing the electoral system from open-list proportional representation system into

closed-list proportional representation system. The system changes will make technology implementation more urgent. So, the system changes is not just a step set back, nor it should be considered as old fashion.

Changing the election system from open-list into closed-list requires several things. Firstly, the process of candidates recruitment must be done openly, through the mechanism of preliminary election. Therefore, the candidate who occupies the number one on the list must be the candidate who has passed the internal democratic mechanisms and not solely because of the decision of the political party's oligarch. In principle, the electoral system is closed-list, but the political party is open.

Secondly, because the candidates will not appear on the ballot, then the name of the candidates need to be socialized more often. And, again, technology plays an important role at this point. Election API is able to send data about the profile and photo of candidates directly to voters via mobile gadgets. Yes, whatever electoral engineering that we are going to apply, technology has become an integral part of the process, especially the information and communication technology (ICT).





# PART SEVEN

## THE FUTURE OF ELECTION API: TOWARDS SMART ELECTION

*The application of technology in election is often focus only to the what and the how, but it often neglected the why question (Basuki Suhardiman, information technology experts from ITB)*

THE rapid development of technology, especially information and communication technologies (ICTs), has also developed the ongoing conversation in society. The topic of discussion is no longer just about smart phones, but also about smart cities. In relation with the implementation of technology in elections, the discussion also produces unique terms such as e-election, digital election, digital democracy, and democracy 2.0.

Smart city, which has become a popular term in Indonesia, is a concept of city management that relies on the use of digital technology or ICT, among others, for public services such as public transportation, traffic management, health, and water and waste management. The utilization of ICT is to improve public service quality, to reduce costs and resource consumption, and to increase citizens' participation actively and effectively.

What about election? As well as the application of technology in city management, which is expected to solve problems of the city, the application of technology in the management of elections is also something that is also expected to solve the problems of election. And, just like the application of technology in city management has given birth to the term ‘smart city’, the application of technology in election management has also given birth to the term ‘smart election’.

However, before the election organizer is able to implement smart election, it is necessary for them to make smart choices about the technology they want to use. It is true that one of the natural characteristics of technology is to facilitate and to reduce cost. However, the wrong choice of technology may result in backfire, making the election process more complicated, messy, and expensive. A number of developed and developing countries have already testing the applicability of such technology. Some are successful, some are failing. Let’s take a look at some cases.

## **SOME CASES WHERE THE IMPLEMENTATION OF TECHNOLOGY IN ELECTION IS A BLUNDER**

One tragic example of blunder technology implementation in election happened in Kenya during the 2013 Election. The election to elect president, members of parliament, members of the Senate, and governors, in the country of birth of Barack Hussein Obama, was designed to be the first modern and the most computerized election in the history

of Africa.

To realize that target, the government of Kenya bought advanced tools and technologies, ranging from laptops to contain voters' data; biometric identification equipment including fingerprint scanner, and; SMS-relay to transmit the results of the election from polling stations in real time to the National Tabulation Center in the capital city of Nairobi. With such equipments, the election will indeed be a hi-tech election.

Kenya, as mentioned in the NPR report titled How Kenya's High-Tech Voting Nearly Lost the Election, was doing a 'leapfrog' in terms of election technology. Despite there are still many dirt roads in Kenya, and 23 percent of Kenya have not been electrified, the state government was willing to spend around 10 billion US dollars to build a Silicon Savannah, which is designed to be an epicentrum for IT startup companies in the African continent. The country that does not even have underground telephone cable network for fixed line connection was also developing a popular software for online money transfer.

However, the dream of Kenya's middle class, that technology will refresh the election process and make it fairer and more transparent, has turned into a nightmare. Poor infrastructure has made the technology application a problem instead of the problem solver it was intended to be.

NPR reported the first issue to appear on the day of election in Kenya is the dysfunctional laptop batteries that were used by election committees in polling stations, and the school buildings that were used as polling locations are not

electrified. Then, the biometric identification system were also broken down, and when the equipments were forced to restart, the polling committees could no longer access the system because they were not provided with the PIN and password.

As a result, rather than simplify and speed up the electoral process, the use of sophisticated tools were actually complicating and slowing down the process. Due to the defunct system and technologies, voters had to line up seven to nine hours under the hot sun before they can cast their vote.

After the voting process was finally completed, the problem was instead getting worse. The computational error in the central computer doubled the number of disqualified votes. It is predicted that there are about a quarter million votes being disqualified. This error clearly angered many voters because it occurred in the midst of tight competition. Moreover, the SMS-relay system was also overloaded, which eventually forced the Election Commission to transport the poll workers by helicopter to Nairobi, to submit the vote counting results directly.

All of these problems resulted in the delay of the election result announcement. Originally, the election result is supposed to be known in real time, but the Election Commission was only able to announce the election result six days after the voting process take place because the vote-counting process had to be done manually. And finally, the winner of the election is the former deputy prime minister, Uhuru Kenyatta, who won with a slight margin of only 0.7

percent. The losing candidate, incumbent Prime Minister Raila Odinga, immediately sued the election results, of which he called full of frauds.

Kenya is lucky that the technological failures does not resulted in casualties. Many Kenyans were worried that the electoral clutter would resulted in a riot like in the 2007

Election that killed 1,200 people and displaced hundreds of thousands.

The failure of election technology implementation is not only happen in developing countries like Kenya, but in developed countries as well. Several years before Kenya implements a variety of advanced technologies, a number of developed countries have already substituted paper ballots with electronic voting (e-voting).

E-voting is not only used for casting vote electronically, but it also comes in a package with voters' data examination via electronic devices such as biometric scanning or chip identification scanning, electronic vote-counting (e-counting), and electronic vote-recapitulation (e-recap). As a result, e-voting is suppose to speed up the electoral process. With e-voting technology, the result of an election can already be known not long after the election committee close down the polling station.

Developed countries such as Germany, the Netherlands, Ireland, and the United States, implemented not only station-based e-voting, but internet-based e-voting mechanism as well, that allows voters to vote without having to be present at the polling station, which is usually known as remote

e-voting or internet voting. For station-based e-voting, these countries used Direct Record E-voting (DRE) touch screen technology.

However, these countries later withdraw from the advanced technology implementation and return to manual method, either because of the insecurity issue that triggered chaos and protests, or because of the public distrust when their vote is fully processed by machine.

The Netherlands finally rejected e-voting mechanism, after a significant amount of 'leaks' was discovered: the radio wave of eight out of nine e-voting machines were discoverable within a few meters from polling station, so the data can be accessed by third-parties. As a result, the public protested, and an NGO called We Do Not Trust Voting Computer Foundation sued the election result to the court. And after the 2007 Election, the government finally decided to return to the manual way of voting.

Ireland also hit by turmoil as a result of dispute over election result. Eventually, Ireland stop using the e-voting system in 2009, and the e-voting machines purchased for tens of millions of dollars were destroyed.

Germany stop using e-voting in 2009 after the Constitutional Court decision. The e-voting system was sued because of the lack of transparency in the implementation. A number of people in Germany argued that voters were led to believe in whatever result is produced by the e-voting machines despite the fact that no one is able to check the validity of the result.

In the United States, the center of technological advancement and the center of democracy, e-voting is also not successful. In fact, Peter Erben of IFES called the implementation of e-voting in the United States as a failure.

In 2000, the US held one of the most chaotic presidential race between two candidates, George Bush and Al Gore. The competition was tight, and each candidate needed just a little more votes to win the presidency. The last and decisive fight for both candidates took place in the state of Florida with 25 Electoral Colleges to be competed for.

But, then, there occurred peculiarity in the number of votes acquired by the two candidates in Volusia County, a peculiarity that later known as the Volusia Error. According to the Washington Post, at 10:00 local time, Al Gore led the race with 83,000 votes, while Bush only acquired 62,000 votes. However, half an hour later, on the official website of the Volusia district administration, the vote acquisition changed. The vote for Al Gore was reduced to 16,000 votes. And, unlike the news report from the mainstream medias back then that said Al Gore won Florida, it turned out Bush won by a margin of 18 thousand votes.

The confusion sparked allegations that the e-voting machines were tampered, but these allegations cannot be proved because there is no way for the election committee to recalculate the votes. So then many people came up with the idea to equip the e-voting machine with Voter-Verified Paper Audit Trail (VVPAT) or verified paper record (VPR) that allow voters to receive a receipt after casting their vote, like when we use ATM machines. This way, the committee

will be able to recalculate the votes whenever problems occur during the voting process. The technology was then applied in the 2004 election.

However, according to IFES, there were only two states apply the DRE technology and the VVPAT, they are Nevada and Utah; seven states applied DRE without VVPAT, including Louisiana, Georgia, and South Carolina; ten states used manual ballots and DRE technology plus VVPAT; four states combined manual ballots with DRE technology with or without VVPAT; seven states integrated manual ballot with DRE but without VVPAT; the rest of the states used manual ballot.

However, in addition to the application of VVPAT or VPR technology, the US government decided to no longer use the Internet voting (remote e-voting) method. Initially, this technology is used to facilitate one hundred thousand Americans who live outside the country. However, the technology, which is formally known as Secure Electronic Registration and Voting Experiment (SERVE), was discontinued in 2004 after officers from the US Department of Defense found that the system is not secure enough to transfer votes.

Despite failures in many developed countries, e-voting technology is currently popular in developing countries. The Executive Director of Perludem, Titi Anggraini, said, “e-voting is experiencing a fall in developed countries, but it has its spring in developing countries.”

Brazil and India are two developing countries that are often referred to as cases of successful implementation



of e-voting. India implement panel-type e-voting machine, and since the 2014 election they also use VVPAT and has tested the technology in eight of the 543 electoral districts. Meanwhile, according to National Democratic Institute (NDI), Brazil is already using DRE touch screen, but members of the legislative are still debating whether to equip the e-voting machines with VVPAT or not. Both countries have implemented station-based e-voting system, but have not implemented Internet voting.

So, then, what kind of technology should be applied for elections in Indonesia? An IT expert from ITB, Suhardiman Basuki, said, “technology is a trivial matter. Technology is just a tool. The question should be: what are we going to do with that tool? The first question we have to answer is ‘why?’. Why do we apply the technology. First we need to address that question completely. Then we can talk about the ‘what’ and the ‘how’.”

According to Basuki, many election experts in Indonesia are investing too much time discussing the ‘what’ and the ‘how’ questions, but they forget to talk about the ‘why’ questions. “Admittedly, the ‘why’ questions will lead to other complicated questions. But for me, every initiative and creation should start with ‘why’ questions analysis,” said the Deputy Director of the Directorate of Information Systems and Technology of ITB.

The ‘why’, ‘what’, and ‘how’ questions, according to Basuki, are actually a unity. “They all should be connected with each other. The most important question is the ‘why’.

The 'why' will lead to the 'what'. If the two questions are answered, then we can freely discuss the 'how' any way we want. We can always go back to the 'what' and 'why' if we found problems when discussing the 'how' question," said Basuki who is a member of the team of designers for the IT application in the 2004 election.

The 'why' question is about the reason why a technology is applied, does the technology appropriate with the current context and needs. As for the 'what' question, it asks what kind of technology do we need that can address the current necessities and challenges. "If the 'why' and 'what' question have been answered, we then talk about the 'how', it is about technical matters such as the setting up of the technology, trainings, and others. These three questions are holistic questions."

This way of thinking, Basuki argued, is applied when designing the electronic tabulation for the KPU in the 2004 election. "Why we created the electronic tabulation system? Because we want to make the vote-counting process more transparent. To properly monitor the votes, we need to answer why the votes have to be monitored? If that 'why' question has been answered, for example: we need to monitor the votes to prevent fraud in the vote-counting process, then we can ask the 'what' question and what we can achieve with it," he said.

Electronic tabulation system is parallel vote tabulation (PVT). This system bypass the multi-layered manual counting process that is time consuming, so the public can see the election result more quickly. The electronic

tabulation system is able to achieve this by providing double vote form at the polling station. There is the regular C1 Form for the manual counting, and there is the IT C1 Form for the electronic counting.

Unlike the regular C1 Form that has to be submitted to the election officials at the village level to be recapitulated step-by-step at the sub-district level, then to regency/municipality level, provincial level, and finally at the national level, the IT C1 Form is directly transferred from polling stations to the sub-district level. At the sub-district, the election officials then input the data to computers, and then digitally transferred to the server at the central (national level) KPU. Once verified, the KPU then displays the data at the National Tabulation Center.

At the National Tabulation Center, the data have already been recapitulated, so that the election results can be achieved immediately. Nevertheless, the data of the manual vote-counting process from polling stations are still available dan to be included in the National Tabulation Center. “We decided to be more open, because we believe we can increase public trust if they can check and verify the vote-counting process for themselves. Moreover, we also provide aggregate data from village level, sub-district level, regency level, and provincial level,” said Basuki.

The result of the electronic recapitulation rendered a significant effect. In the second round of the presidential election of 2004, for example, the result of the e-recap different only by 0.26 percent margin with the result from manual counting process. Based on the result from manual

counting, Susilo Bambang Yudhoyono (SBY) won the election with 60.62 percent of votes acquisition, while Megawati Soekarnoputri received only 39.38 percent. Meanwhile, the result from e-recap process showed SBY won with 60.88 percent of votes while Megawati received 39.12 percent.

Actually, because the e-recap is based on the manual data, the result should not be any different with the result from manual counting. If they are different, then there must be an error or fraud. This is why the e-recap can be used as an instrument for monitoring the election process, despite its actual function as second opinion for the vote-counting officers.

The real reason why the result from e-recap counting and manual counting was different in the 2004 election is because the National Tabulation Center did not receive all of the votes data until the counting process is over. The Chairman of KPU at the time, Nazaruddin Sjamsuddin, said there are about four million votes that were failed to be transferred in time to the KPU's Data Center. There were difficulties in transferring the data. One of the problems was geographical, where election officers had to deliver data from remote area such as villages in the middle of a forrest in Kalimantan.

Supposedly, the e-recap process should be improved in every election so the data delivery process can be faster. In fact, if necessary, the vote-counting result in each polling station should be able to be sent directly to the main server in the central KPU. However, instead of improving the system, KPU implemented a defective e-recap system for the 2009

national election. The hundreds million-worth of devices procured by KPU in the 2004 elections were abandoned, and replaced with new project and tools.

Unlike the 2004 elections, where there were a lot of IT devices being used in thousands of districts, in the 2009 elections KPU only installed IT devices in 504 areas in 471 districts and 33 provinces. The technology was also different. In the 2004 election, the votes data is transmitted from polling stations to KPU at the sub-district level. Meanwhile, in the 2009 election, the data is transmitted to KPU at regency/municipality level. Moreover, the data from polling stations are no longer converted and saved as digital data, but directly sent as IT C1 Form. The main server at the KPU will then 'read' the documents with Intelligent Character Recognition (ICR).

Unfortunately, this method caused a lot of technical problems. There were many occasions where the ICR device is not able to read the C1 documents. This is because many documents were crumpled or disheveled. As a result, the e-recapitulation process at the National Tabulation Center became chaotic and eventually discontinued. "Total failure," said Basuki.

In the 2014 election, KPU no longer implemented the electronic tabulation method. A KPU member, Ferry Kurnia Rizkiyansyah, revealed that KPU had offered a contract to the Agency for Research and Technology Application (BPPT) to create a sort of electronic recapitulation system. It was expected to be a sort of improvement from the previous system, because BPPT was planning to create an

application that enables KPU to transmit data from polling stations directly to KPU's main server to be recapitulated electronically.

However, KPU backed down from applying the technology, and finally chose a very simple method instead,

ie: uploading the scanned C1 Form directly to KPU's website, without recapitulate the documents first. This method, even though can still be categorized as transparency, is actually complicating for anyone who want to read the data. It's hard to imagine anyone would want to check and verify the data, because it would be a Herculean task. This explains why there is barely any discussion about the C1 Form in the 2014 legislative election.

However, in the presidential election, the manually-scanned C1 Forms became useful. The competition between the two presidential candidates was very tight, and many different pollsters published different polling results (some results favored Joko Widodo, while others favored the contender Prabowo). A bunch of IT experts decided to take initiative and mobilize volunteers to recount the scanned C1 Forms in the manner of crowdsourcing. And, because the election only had two candidates, the data are relatively smaller than in the legislative election, and these IT experts managed to recount them all.

## **API, OPEN DATA, SMART CITY, AND SMART ELECTION**

One of the most important characteristics of smart city as discussed earlier in this chapter is city management that

relies on information and communication technology (ICT). ICT has two main concepts: information technology and communication technology.

According to website TechTerms, ICT refers to technology that provides access to information via telecommunications. ICT is similar to IT, but its main focus is on communication technology. This includes the Internet, wireless networks, mobile phones, and other communication mediums.

“In the last decade, ICT has given a new capacity for communication to the public at large. For example, people in different countries can communicate in real time using instant messaging, VoIP, and video-conference. Social media pages like Facebook also allows people in different parts of the world to make contact and communicate regularly. Modern ICT has created a ‘global village’ where people from around the world can communicate as easy as communicate with next door neighbor,” as quoted from TechTerms.

Wikipedia also states that ICT is almost synonymous with IT, but with some expansions. However, the terms ICT is specifically emphasising on the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), the computer and its necessary software, middleware (computer software that provides services for software applications), storage, and audio-visual system, which allows users to access, store, transmit, and manipulate information.

Therefore, all the election technologies that have already exist, such as e-voting, e-counting, e-recapitulation, and data publication via website, can be considered as ICT-

based election management. However, it is not enough to consider election management with such technologies as smart election, because with those technologies, voters are in passive position, and there is a tendency that the electoral process will be taken over by machines.

A smart city – of which concept smart election is based on – is not just a hi-tech city. More than that, it is a city that is open, participatory, and collaborative. A city that opens its data - especially in the form of digital data - to the public and integrate information; it accommodates public participation, and invites them to collaborate in utilizing data with a variety of innovations and creativity, for example by website and mobile application creation; a smart city also interacts with citizens in real time via social media applications and utilizes various ICT devices, especially mobile devices; smart city share responsibility with its citizens, and together they tackle the problems of their city and anticipate unexpected situations.

Nicolas Ruslim, an author of books on Development and Introduction of Smart City, presented an interesting analogy about smart city. He stated, “when we say a city is a smart city, it is actually a figure of speech personifying a city as a human, as if the city can feel, think and act as a response to its internal and external conditions...”

All these characteristics imply that API and open data are two vital elements for smart city. Mark Boyd in his article titled How Smart Cities Are Promoting API Usage wrote that many APIs are made by municipalities around the world as programmatic way for citizens and businesses to interact



with the open data provided by the government.

“The government then holds a hackathon or civic hacking competition to promote the utilization of city-owned dataset. API is discussed in terms of the benefits that the civilians would get through greater transparency, to create a more efficient public service and a new wave of local innovations. The growing interest on smart city - where open data, e-government, and reciprocal real-time monitoring have contributed to the automation and sustainable improvement of the city - is relying on APIs to make many agendas and plans to be more feasible,” wrote Mark Boyd on the website ProgrammableWeb.

Why API is important for smart city? Because API has interoperability feature. API functions like bridges, translators, or the popular children’s toy Lego: it is capable to connect a variety of devices of different technologies and share the data in real time. Interoperability integrates various components to build a large and complex system. Smart city, and also smart election, are large and complex systems of such.

Interoperability, real-time interaction, and broad public participation are what make smart city is not just about a city implementing high-technology. “Smart city in the future will not be the city with the most advance technology, but the most intelligent city,” wrote Jennifer Riggins in her article titled How APIs Are Driving Smart Cities which is published on the website Nordic APIs. “A smart city is inherently a city with high dynamics and mobility.”

API and open data are now like two sides of the same

coin. Applying open data without API is futile. An open data practitioner, Jason Hare, once compared the City of Raleigh in the state of North Carolina with the City of Minneapolis in the state of Minnesota, United States. The city of Raleigh is a smart city that uses API to distribute its government data online, while the City of Minneapolis does not use API and only use ordinary web portal. The difference between those two cities is quite significant. The data provided by the government of Raleigh City are very widely used, while the web portal owned by the government of Minneapolis receives many complaints.

The official website of Raleigh City government was originally only receive 1,115,125 page views in 18 months. However, after applying API platform, the figure has increased significantly. In October 2014, the website received

17,307,822 API calls. “In just a month, we receive 17 times more visits from machine than from actual person,” said Jason Hare in his article titled Open Data Portals Should be API. Meanwhile, the web portal owned by the Minnesota Government receive criticisms.

Regarding the Minnesota web portal, Jason said, “who is supposed to use the data? If the data is for field workers, then the web portal is a major failure, because most field workers are using mobile devices such as tablet PCs and smart phones. The unavailability of applications that use API data constitutes a barrier for data usage.”

In the context of election, one of the advantages of API compared to other technologies is that API can be implemented in all election stages. Starting from voters

registration process to vote counting process, API can be used to enhance the process. In fact, API data are also useful after the election, by facilitating closer relationship between voters and elected officials; facilitating monitoring activities to oversee activities of the politicians; and by facilitating voters to remind the politicians of their promises they had made during election campaign.

In the 2014 legislative and presidential election, Election API provided voters with data about the candidates. In addition, there were also data on campaign finance, electoral districts, electoral regulations, frequently asked questions (FAQ) about election, election violations, news about the election, the result of the legislative and presidential election, and the elected candidates.

In the future, the implementation of Election API is expected to follow the stages of the election. In a discussion on the Election Law Codification hosted by Perludem in mid-2015, particularly within the Election Technology Sub-Committee, there was a proposal to implement Election API in accordance to the stages and phases of elections, especially at crucial stages. In fact, there is legislation that mandates KPU to test the API technology at those crucial stages. Here are the crucial stages and why open data and API are important in these stages:

## 1. REPORTING CAMPAIGN FUNDS.

People will be very likely to participate in checking and monitoring the list of names of campaign donors by name

and by address if the election authority opens the data and makes it easy to access the data via API. Programmers and developers will build applications based on that API, in order to deliver the data into the hand of the members of the society in the way that is interesting and easy to use. So that people can participate in the effort to detect any irregularity in the electoral process.

Campaign fund is an important issue, because in previous elections, the name and address of campaign donors are often become a problem. Sometimes the election committees found fictional data, where there is a donor recored as Company X and is located at Y Avenue, but when the addresses is checked, it turns out that the location is a warehouse, a barbershop, shacks, or a downright fictitious address. In addition, the maximum contribution limit for any individual and legal entities often encourage contributors to divide their contribution into several bulks or enourage them to use other identities or companies.

Other than list of donors, the election commission also has to open the data on the campaign finance reports in the format that contains the detail of income and expenditure of candidates during the campaign period, because such data is important for the public. Such data is also important because the actual campaign spending of candidates is always lead to public suspicion, especially the campaign finances of the legislative candidates that is more difficult to control. The weak monitoring effort at campaign finance has been a persistent disease for the democracy in Indonesia, because it is highly probable that illicit businesses, such as bookies and

drug dealers, are supplying campaign funds to candidates so that their interests can be secured. This issue is one part of the vicious cycle of political corruption.

## 2. POLITICAL PARTIES REGISTRATION

Law No. 8/2012 on Election requires every political party that wants to participate in elections to have branches in every province in Indonesia, in 75 percent of all regencies/municipalities, and in 50 percent of all sub-districts, and the political party also has to have a thousand or hundreds of members in the branches at regency/municipality level as evidenced by the party's membership card. In the past few elections, member verification is done in minimalist manner, by taking data samples like in a polling or a survey.

If the election organizer has to verify each and every member of political parties, it would be a herculean task because the total number is enormous. Currently, there are 34 provinces, 508 regencies/municipalities, and around

8000 districts. Imagine how many officers will have to be deployed and how much time it will take to only check the validity of political parties' branch offices in those areas. The election organizer also has to verify the staffs of the branch offices and all members of the political parties in each regency/municipality, which in average can reach 375.000 names in every party. In fact, besides the political parties, there are also individual candidates for the Regional Representatives Council (DPD) which need to be verified.

Because the election organizer (in this case, KPU) cannot

handle the verification process by themselves, it is reasonable to apply open data initiative and API technology for these data. By applying open data and API, KPU is allowing the public to help monitoring political parties' office at every level. In fact, for the data on political party members, the application of open data and API allows the entire data to be examined by involving many people and parties. Thus, it can be easily verified whether the name of members submitted to KPU by political parties are actually exists or not, whether those members are valid or not, etc.

This can also be applied to individual candidates for DPD election. Especially in DPD election, voters' ID card are often bought and sold to pass the minimum public support requirement. In fact, there are certain vote brokers who trade those voters' ID in bulk. To trace such practice with API is much easier, because it can be tracked down via national identification number.

### 3. VOTERS' DATA UPDATE

Census data and the voters' data are two kind of data that are prone to fraud. In the 2014 election, for example, there are five million voters' data that cannot be synchronized with the data from the Ministry of Home Affairs until the end of the election. In some areas, the amount voters in the voters' list (DPT) is miraculously larger than the total population data from the Ministry of Home Affairs.

In the last election, KPU used Voters Data Systems (Sidalih), that allows voter to check whether he/she has

been registered as a voter or not. However, this web-based application was limited in its scope, and it was not mobile friendly. As a result, in the future, KPU need to build mobile application that facilitates the voters to check whether they have been registered or not, and which can be used as a medium to publicize instructions to the voters on how to do the registration if they have not already registered or if suddenly their name is disappear from the list.

Open data and API allows the public to monitor the progress of the voters' data updating process in real time, starting from the temporary voters' list (DPS), corrected temporary voters' lists (DPSHP), to the final version of the voters' list (DPT). In fact, if necessary, KPU should also open every oddities or irregularities on the voters data - which may be caused by irregularities from the government-owned data sources - so that people can participate to verify and give their input.

With Election API, ahead of the legislative and the presidential election, a number of developers created applications that enable voters to check the voters' data. Some applications use national identification number (NIK) as password, which connected with the Sidalih system at KPU. Developers' decision to use NIK as password makes the application can only be used by registered voters.

## 4. SEATS ALLOCATION AND ELECTORAL DISTRICTS DELIMITATION

The process of seats allocation and electoral districts

delimitation (districting) in Indonesia, are still prone to numerous irregularities and subterfuge. The first kind of irregularity comes from the population data (DAK2), which is also the basis for seats allocation and districting. Based on past experiences, the data are often inflated by government. The government inflates the data to increase the number of chair available in their regional parliament. The inflation often happens right before the election.

In addition, the districting process is often violating the standard principles of district delimitation. Violation, for example, occurred in the case of the merger between Bogor Municipality and the Regency of Cianjur, which often quipped as the 'Superman district', because that merger causes Bogor Municipality becomes surrounded completely by the Regency of Bogor. Also, the districting process in Indonesia is still prone to illegal practices such as gerrymandering.

Before delimit an electoral region, KPU conducts socialization and public testing, as well as publishes the electoral district map on their official website. However, for several elections, public awareness to this problem is so low. It could be because districting issue is not considered as an popular issue and it is somewhat complicated.

However, if KPU implement open data and API for seats allocation and districting process, it is very likely there will be developers who want to use the KPU data to create interesting applications, as often happened in the past where developers integrate the map from Google Maps API with a variety of other information which resulted in exciting



new services. And, if KPU provides an API for district maps, population data, and the vote acquisition data from the previous elections, people will be able to monitor the districting process more carefully. Utilizing and integrating these data will help people to perform simulations, so illicit practices such as malapportionment and gerrymandering can be easily tracked.

## 5. VOTE COUNTING

The open data and API have now also been implemented in the votes counting process. In the United States, for example, the New York Times provides API for election results data, and calls this API as Election Result as a Service (ERaaS). This API was used in the 2008 and 2012 election, and also applied in a number of primaries and caucuses.

The data source that was later turned by the New York Times into API data are coming from the Associated Press (AP). The election result from AP is not the official result. Nevertheless, the information from AP have always been a main reference because the data is real data, not a sample from polling stations like in an exit poll. The AP Data is until now still considered as the most accurate and the most reliable.

AP data is a mainstay for many parties because the election result in the US does not immediately announced by the Federal Election Commission. Although many polling stations in the US use e-voting machines, but there are still many polling stations that use traditional ballots that have

to be manually counted. In addition, the results of the vote counting (the popular vote) for the presidential election, for example, is still have to be converted into electors who later will join the Electoral College.

In the 2012 Presidential Election, the election was held on November 6. However, the complete result of the election in the 50 states and district of Columbia was received on November 10, where Barrack Obama got 332 electoral votes, while Mitt Romney got 206 electoral votes. And, the Electoral College formally elected the president on December 17. The result of the electors' convention, even though majority of people can guess the result beforehand, was calculated by Congress in early January the next year, while the new president was inaugurated on January 20.

To collect information about the votes counting result, the AP deployed its journalists to all districts/cities in 50 states plus the district of Columbia (DC). The journalists were supplied with various election data, ranging from data on demographics, the number of abstentions, and information about various issues that may affect the outcome of the election in the area they cover. The journalists were also supported by team of researchers.

In ap.org webpage, the leaders of the agency explained that there are five steps in collecting the results of the election. Firstly, the data are collected by journalist/stringer in district/city, where the journalist attend the polling station until evening. Secondly, the stringer reports the result by phone. Thirdly, data entry. Fourthly, data verification. Fifthly, the data are sent to AP's clients, the mass media

and electronic media, and continue to be updated every 5-7 minutes. The data for newspapers like the New York Times, for example, are sent via File Transfer Protocol (FTP), and updated regularly.

Jacob Harris, a senior software architect who is also the initiator of ERaaS, said the files coming from AP are metadata which, among others, contain the total results of votes acquisition; election results by state and by county, list of candidates and their background profile. However, to re-display those data from AP on the website, especially the data on election result per candidate, per state, and per county, Jacob Harris said it would be very difficult, because the amount of the data is too much. Elections in the US usually hold simultaneously, although not entirely. In addition to the presidential election, there is also the election to elect the members of the House of Representative and the Senate at federal and state level, as well as elections for governors and mayors.

The government had tried various ways, but it was still difficult to distribute the data. Until the government decided to implement API. “This approach works much better. With ERaaS, developers are allowed to retrieve the election data and then use them for any purpose,” said Jacob Harris in an article titled The New York Times’ Election Result Loader, on the website [opennews.org](http://opennews.org).

In fact, in the US, there is a growing competition between AP and Google in reporting election results. However, the competition has only occurred at the level of the preliminary elections yet, specifically at the caucus held by the Republican

Party in the state of Iowa, in January 2012.

At that time, AP deployed their journalists to the caucus to collect data that will be reported via telephone. Meanwhile, at the same time, John Keefe from WNYC Radio used

Google maps to track the result of the Iowa caucus. There are three reasons why he used Google Election Center API (now Google Civic Information API). First, the Google data can be shared more widely compared to the AP data; second, he can share (the data) on his own application; Third, the Google API is free of charge.

So, when the officers of the Republican caucus enter the result data of 1,774 counting units to the system or web application that has been setup by Google, then the data will be immediately recapitulated. Furthermore, these data also presented in the form of various tables, and everyone can see the results of the caucus by county. And the WNYC-Google data was surprisingly faster than the AP in presenting the data on the caucus results.

“The Google experiment has shown that an innovative technology company is able to defeat a respected news agency, by displaying election results more quickly and accurately,” wrote Steve Myers in his article entitled How Google beat AP with Iowa Caucus Results (and Why It Matters) on a website called Poynter.

Since the success in Iowa, many people insisted Google to stay as a competitor to AP as the reporter of election results. Although AP has undergone so much changes and more experienced, many people perceive Google as an eligible

competitor. Aron Pilhofer from the New York Times said that if Google wants, Google can easily compete with AP. And if what had been done by Google-WNYC in Iowa can be repeated elsewhere, especially in the election, John Keefe said, “it will democratize our real time election results.”

The Guardian, in an article titled Hack the vote: how open elections of data is giving back to the voters, wrote that what happened in the Iowa caucus, and elsewhere, shows that open data has made election data into public property. Guardian sees it as an interesting phenomenon, given the fact that vote counting is a crucial stage in an election. Guardian quoted Stalin who once said, “the people who cast the votes do not decide an election, the people who count the votes do.”

Can Indonesia conduct similar method? Basuki Suhardiman said it can. In fact, he said, if in the 2004 elections the API technology had reached the maturity of its present form, the IT division of KPU would likely to use the technology to conduct the real count because it would be easier to distribute the results and recapitulation data via API. Moreover, the data in the real count process are digital data, which are more easily distributed and reused by third parties.

“When we created the e-recap system in 2004, API technology is already exist, but not popular as it is today. At that time, the API is still in the research stage. This is unfortunate because if we implemented API at that time, people would have easier access to our data, so that information would grow and public participation for control and correction of the election results would increased,” said Basuki.

However, Basuki said that the data from the e-recap system at that time were given to many people, not just transparently distributed on the official website of KPU.

For example, KPU gave the data to, among others, political parties and mass media. And, if there is any update to the data, the receiver will also get the update. “Such method is actually the same with API model. The principle is the same,” he said.

There is still a number of other election stages that can be enhanced by open data and API. Some people have advised the KPU to implement API and open data, so that election data can be easily used and distributed, so that the data can keep growing and be more useful, and increase public participation, creativity, and innovation. Moreover, API technology now has its momentum because of the considerable increase in the number of Internet users, gadget users, and IT startups in Indonesia. “If KPU wants to serve the electorate, then KPU should create such API technology as Perludem created,” said Basuki Suhardiman.

API Election has certainly opened the way to smart election. But, if later KPU really creates API for all their data, does not it mean that Perludem’s API will get an unlevelled competition? Upon hearing this question, the Executive Director of Perludem, Titi Angraini, laughed. Titi said, “Our goal by creating the Election API is to serve the voters. If such goal can be achieved by KPU, then it is a good thing. We do not expect any credit or award for creating the API. We just want to be the pioneer and encourage other people so that they would give their best (for election).”

# GLOSSARY

**Android** : mobile operating system software based on Linux kernel, which is developed by Google. Android is currently the most popular operating system, and is widely used as the operating system of various mobile devices such as tablet computers and smart phones.

**API (Application Programming Interface):** A set of commands, functions, and protocols that can be used by programmers when building software. API allows programmers to use standard functions to interact with other operating systems.

**Open API:** Open API often refer to public API, or an API that the data are freely accessible by developers to create applications.

**Applications:** Softwares designed to perform a specific function. This terminology becomes popular lately, because of the massive manufacture and use of mobile applications and web applications. This term is used to distinguish it from system software.

**Bulk Data:** The data presented (uploaded) in a complete set.

**Civichacking:** a creative approach and often use technology to solve civic problems, ranging from voter registration to public education to help consumers buy a house or select a financial advisor. Civic hacking often involve the use of government data to make the government more accountable.

**Crowdsourcing:** First proposed by Jeff Howe, crowdsourcing is a process of aggregating the contributions and expertise of a large number of individuals who have not previously connected to each other. In the business world, crowdsourcing is an alternative for new businesses (startups) to obtain funding source when starting a business.

**Developer:** This term, on the internet, refers to a person who creates softwares or applications.

**Digital native:** The name for the member of the generation who was born when the Internet has been widely used. They are also commonly referred to as the millennium generation.

**Eligible vote:** The age limit to cast vote in election. In Indonesia the age limit is 17 years old or any person who have been married.

**Endpoint: Specific yet comprehensive information** packages on a topic, which provided by an API. For example, the endpoint of candidates will contain mostly information about candidates' origins and date of birth, education background, occupation, political career, photos, and so forth.

**E-voting:** Casting vote electronically. That is, the casting process is no longer using ballot, but with a touch-screen e-voting machines or certain button.

**Exit poll:** A survey to discover voter's choice as they are coming out of the polling station (TPS). Exit poll uses sampling method.



**First Past The Post (FPTP):** Electoral system from the family of majority/plurality systems, but it is a variant of the simplest, since only one candidate is selected from each electoral district (single district of representation). The FPTP system in Indonesia is often referred to as the district system.

**Gadgets:** Literary means device, which in Indonesia is refer to as 'gawai'. Nevertheless, gadgets or devices are more often used to refer to mobile devices such as tablet computers and smart phones.

**Hackathon (Hacker Marathon): Software, application, or games building competition.** The word hack or hacker for this type of competition is more to highlight a sense of exploration. Meanwhile, the notion marathon does not connote distance, but time. Therefore, a hackathon is a race which should be completed within a certain time, such as 15 hours, 24 hours, or 48 hours. Another term used in a similar context is hackfests, hack day, or code fest.

**iOS (iPhone Operating System):** Mobile operating system software made by Apple, and is used exclusively for Apple devices such as iPhone, iPad, and iPod touch.

**Cloud Computing:** Cloud is a metaphor for the Internet. Cloud computing is a technology that makes the Internet as a central server to store and manage data and user applications.

**Location Based Service:** Location-based services (LBS) application that incorporates maps from various APIs,

such as Google Map API, with a variety of open data, that makes this service useful and popular. Other than to find public toilet location, there are also location-based applications to find the nearest ATM, hospital, direction finding (navigation), tracking, and others.

**Low end:** In the marketing world of gadgets, this term refers to the affordable smartphones, with a range of USD 1-3 million.

**Machine readable format:** Format of data that can be read by machine (computer), usually in CSV and txt. Also commonly referred to as digital data.

**Mashup:** a web page or web application that uses content from more than one sources to create new services.

**Hare quota/largest remainder method:** One of many popular vote counting methods to calculate the number of seats for elected political parties and candidates, which generally consists of two phases. In the first phase, the seats are allocated by a full quota or one hundred percent of voters divisor. In the second phase, the seats are allocated based on the first largest remaining votes, second largest, and so on, until all seats are properly allocated.

**Divisor/Webster Method:** One of many popular vote counting methods to calculate the number of seats for the elected political parties and/or candidates, which was proposed to be implemented in Indonesia with the revision of the election law. It consists of only one phase, without considering remainder votes. Seats

are distributed based on fixed divisor. In the Webster method, the divisor is odd number of 1, 3, 5, 7, and so on.

**Open Data:** The data that is freely used, reused and redistributed by anyone but are generally subject to the provisions of attribution license.

**Open Government Data:** It literally means the openness of government data. Open government data is initiated by a social movement that demanded the government to open up their data to the public - so that the data can be freely used, reused and redistributed by anyone - because legally most government data are public record.

**Open Government Partnership (OGP):** a new multilateral initiative that aims to secure the commitment of countries in the world to promote transparency, increase public participation, fight corruption, and improve the use of new technologies to make government more open, effective and accountable

**Open Source:** Tim O'Reilly pioneered this movement, with the aim to make softwares can be accessed freely, without legal obstacles such as copyright. This movement often use the idiom copyleft as opposed to copyright

**Party Id:** Voter's self-identification with political party.

**REST (Representational State Transfer):** an architectural style or principle in the world wide web that was first introduced by Roy Thomas Fielding. REST is now popular for building web services, because REST is simpler, easier, and not relying on tools. That's

because REST's philosophy is that every principle and protocol that already exist on the web are enough to create a robust web service. In addition, the design and philosophy of REST is also closer to the web, than its predecessor: SOAP (Simple Object Access Protocol) and WSDL (Web Services Description Language), an XML-based protocol (Extensible Markup Language).

**Proprietary:** Locked/closed data format, or not free to use. The opposite is non-proprietary or machine readable data and its access does not require any special application.

**Smart Election:** It borrows the term from smart city, namely the concept of city management that relies on the use of digital technology or information and communication technology (ICT), to solve the problems of the city, such as public services, transport and traffic management, health, water and waste, and others, thus increase the service quality, reduce the cost and resource consumption, and enhance citizens' participation. Smart Election, as the application of technology in the management of elections, is also expected to solve the problems of election implementation, such as facilitating people to easily recognize the huge number of candidates.

**Startup:** Literally means new business, but now more widely used in the field of information technology.

**Web Service:** Web service or webservice is a software designed to interact directly with the computer, (other) software, or other applications on a network, including

with different operating systems and concepts. Web service is created to work on all types of client application/device.

**Web Site:** Web site is a set of web pages that are provided by a single web domain and are usually placed at least on a web server, which can be accessed via the Internet or LAN through Internet address, known as a URL (uniform resource locator). In contrast to web service, web site is created to interact with the user directly which is limited and passive in viewing the content. The combination of all sites on the Internet that is accessible to the public is called the world wide web (www).



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# AUTHOR PROFILE



HARUN Husein is a senior journalist of *Republika* who pursue the issue of democracy, elections, and political parties. He joined *Republika* in 1999, working as a correspondent in Ambon. Mid-2000, he moved to Bandung, and then worked as a reporter for politics desk mid-2001.

During his time as political journalist who always stand by at the DPR/MPR buildings, he closely followed the intense process of amendment of the 1945 Constitution, which then followed by a discussion for a new political laws that were expected to be more suitable with the new constitution. In addition, Harun also closely followed the process of the 2004 election, when he was assigned to cover the General Election Commission (KPU) in 2003.

From 2005 to 2010, among other things, Harun became the editor for political news, op-ed, and editorials, as well as editor for the front page (headline). By 2011, Harun joined the *Republika* senior team, working on more serious issues of democracy, elections, and political party in the rubric *Teraju*.

His experience in the election world, among others, includes working as a member of the team of experts that assisted the Committee for KPU/Bawaslu Members Selection Process 2012-2017. As for published works, Husein wrote a book entitled *Pemilu Indonesia: Fakta, Angka, Analisis, dan Studi Bandung*.