TO: API@business.govt.nz

Result 9 Better APIs for Business
Ministry of Business, Innovation and Employment
New Zealand

Public opinion about providing better APIs (Application Programming Interfaces) for integrated digital services in New Zealand (and abroad)

First of all, a lot of thanks to the Ministry of Business, Innovation and Employment (Ministry) for organising this important consultation about providing better APIs.

This opinion represents an opinion of an individual citizen, not any legal entity.

This opinion does not contain:
- any business secrets
- any trade secrets
- any confidential information.

This opinion is public.

Ministry of Business, Innovation and Employment can add the PDF of this opinion to a relevant web page.

Annex 1 holds information about previous consultations.
Annex 2 holds information about disclaimers and copyright.

Best Regards,

Jukka S. Rannila
citizen of Finland (Europe)
signed electronically

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Importance of different APIs (Application Programming Interfaces)

As a general note it can be concluded all relevant information systems provide different APIs to be used by other systems. Generally speaking it can be concluded, that the number of different APIs is increasing – not decreasing.

However, it can be also concluded, that there are serious problems with some/different APIs, and this consultation may give us different solutions (national, regional and global) for mitigating problems with APIs.

Limitation: Opinion of an individual citizen – not any legal entity

Since this opinion is created by an individual citizen, the knowledge base for this consultation is naturally rather limited, since there has not been a group of experienced experts writing this opinion.

European Union (EU) context / Finnish context

At the moment it can be said, that also in European Union and in Finland there is ongoing some serious work related to different aspects of computerisation of different public sector services.

Possibly we can learn something (EU and Finland) from New Zealand based on this consultation.

The current reality in many cases

Here we can conclude that generally speaking we use some systems which are stand-alone solutions and there is not a need for integrating different systems.

However, real added value of different systems is based on actual cooperation between different systems. Then we face the question different integrations / integration strategies.
One problem is naturally complex system-to-system connections, and this can lead to very serious problems in the maintenance and development. The next figure tries to describe this situation. I suppose that also in the New Zealand context there can be different interlinked / interconnected systems.

One obvious solution is to have a contact point, and different (national) systems could be connected. In reality having one contact point can lead to a situation with too many connections, and this can lead to different IT havocs when the contact point is facing different problems. I suppose that there are similar situations in New Zealand, and connecting a selection of state systems to a (national) contact point can mean a lot of integration efforts, which mean using time and resources.

I suppose that there are similar situations in New Zealand, and connecting a selection of state systems to a state-level contact point can mean less integration projects.

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Here we can note that systems can be also hierarchically organised and then then there is less pressure for different central systems.

Note: The situation with New Zealand (public sector) information systems is naturally between these different extremes.

Some basic features of different information systems

Like the following figure indicates, there are databases in different information systems. Then there are different documents for transmitting data between different system.

Here we can note especially following standardisation needs for different parts of the proposed IT platform:

* communication standards
* data standards (also document standards)
* database standards
* display / interface standards.

Proposal: There could different standardisation efforts for communication, data, document, database, display/interface standards.

Proposal: Assessing previously developed standards could be done seriously.

One comprehensive list for different standard developing organisations (SDO) is provided \(^1\) ConsortiumInfo.org. It may possible to use previously developed standards.

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\(^1\) [http://www.consortiuminfo.org/links/linksall.php](http://www.consortiuminfo.org/links/linksall.php), List of different standard developing organisations

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Here we can note that there can be direct system-to-system connections, which can mean some standardised interfaces. Also we can note that different document formats can be used when there is system-to-system connections.

**Managing different viewpoints**

Here we can conclude, that there can be several viewpoints to be handled when developing different information systems. There can be several viewpoints: e.g. (case) law, time, environment, waste, quality, effectiveness, outsourcing, different technologies, information technology in specific, money, security, internationalisation, anti-trust, competition, process models, etc.
Proposal: The Ministry could collect information based on different viewpoints.

Parts of interoperability in a system are based on different viewpoints. This consultation about APIs is naturally one way of collecting information based on different viewpoints. Generally speaking, many processes are quite easy to model, but some viewpoint means rather long learning processes; e.g. understanding parts of medical information (expertise) can demand a lot of learning.

Note: Implementing interfaces based on all possible viewpoints in a system can take some time.

Different interfaces based on different viewpoints

It is possible that some information systems can provide only one interface. However, I have noted that different viewpoints can mean different interfaces for an information system. Here we can note that there can be more than one interface for a system.

Here we can note that this consultation is about different APIs. It can be noted that there will be different interfaces for different purposes (viewpoints).

Proposal: There could be serious assessment of different viewpoints.

Proposal: After serious assessment of different viewpoints there can be proposals for

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different interfaces.

Standardising (SPEX) different parts of processes

Based on the previously proposed actions there can be a clear understanding of different processes. It can be noted that describing different processes can mean a lot of work for different stakeholders. It can be noted here that describing different processes are implement in information systems which are hierarchically structured. So there is always some possible mismatches between actual process models and actual hierarchy of system.

Here we can note, that in a process some objects change their state in different stages.

Proposal: After some serious assessment there could be some serious work for standardised (SPEX) interfaces and displays.

Proposal: Some parts of the processes could be standardised for interfaces (SPEX) for different stakeholders.

Proposal: Some standardised customer interfaces (SPEX) could be used for having better service processes for different stakeholders.

It can be noted, that several systems could implement (SPEX) the same parts of different processes, even though the technology in different systems can be totally different.

Actual reality / Different standards and standards versions

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Previously (different consultations) I have advocated open standards for different information systems.

It is quite normal situation in the information technology field that there are competing standards for some application field. Therefore there are all the time ongoing “standards wars” or “format wars”. The information technology standards tend to be interrelated and one “standards war” or “format war” can lead to another similar situation.

Note: It is always possible that some wrong standards are selected.

I have advocated open standards, even though in some cases open standards are not de facto standards. In practice public sector has very important role, when some standards are competing in the market place. Public sector has a considerable power when buying/developing information systems, and therefore public sector can sometimes direct markets to certain standards. Therefore, there should be serious vigilance when assessing different standards and “standards” in some application fields.

Proposal: There could be a roadmap for implementing different open standards in different timeframes.

This roadmap for open standards can mean cataloguing different (all?) information systems. Then it could be possible to have a description of life-cycles of different information systems. It may be possible to enforce open standards when a “old” system is to be terminated and there is considerations for a “new” system.

Note: This enforcement of different open standards can mean some work for years based on the nature of current information systems.

Horizontal standards and vertical standards for system-to-system communication

In previous opinions I have advocated developing different horizontal standards.

Proposal: The could be some assessment(s) for comparing different horizontal standards.

Proposal: The could be some assessment(s) for comparing different vertical standards.

One example of an horizontal standard is the email standard, since there are several vertical systems, which comply with email standards, and email messages can be transmitted between different email systems based on very different technological solutions.

Proposal: Developing different horizontal standards could be favoured.

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Discussion about SOAP and REST – what must be implemented?

There was some considerations of SOAP and REST on the “Better APIs for Business” web page.

It may be possible that there has to implementation of both standards since different receiving systems outside the government are implemented with very different technologies. Then these receiving systems have different life-cycles and this affects possibilities for implementing different standards – e.g. SOAP and REST.

Layered systems – the hard reality

Next figure tries to describe the reality of layered systems. In reality the added value for users (citizens and different legal entities) is achieved by combining different systems to provide different services.

In reality this consolidation of different systems mean a lot of work with different stakeholders.

Proposal: The Ministry could collect information about different chains of different information systems.

Note: Some of these chained information systems are CLOSED systems.

Note: Some of these chained information systems are OPEN systems.

Next figure tries to explicate different standards/formats between different systems. Some
standards/formats are closed and some standards are closed.

More and more different codes and/or identifiers (ID)?

From the previous consultations we can conclude the importance of different identifiers (ID). More IDs is one of the consequences of digitalisation (of everything). The ID is identifier in an information system.

Like the previous figure indicated, there can be several formats (FA-FD and FI-F6) to be used in different information systems. Different information systems have also internal identifiers (ID) and external identifiers (ID) for (possible) public usage. The added value for different stakeholders is provided by combination of different identifiers (ID) in a specific information system.

Proposal: The could be some assessment(s) based on different versions of different identifiers (ID).

It can be possible, that there are some legacy identifiers (ID) in the near future. It can be possible, that gradually some legacy identifiers (ID) can be consolidated for more standardised identifiers (ID), but this consolidation means some serious technical and administrative actions.

Proposal: Legacy identifiers (ID) could be assessed seriously.
Proposal: Consolidating different legacy identifiers (ID) could be assessed seriously.

It could be said, that consolidation to one format (A in the figure) can be hided to different background systems (B-G in the figure); in this way there could be one well-defined and public API, which uses just one identifier (ID).

Proposal: The number of different identifiers (ID) should be assessed critically.

Proposal: There could be a systematic project to collect relevant information of different identifiers: e.g. global, regional and national.

When information about relevant identifiers is collected, there could be a serious assessment of possible (near) monopoly situation of some identifiers. Depending on the nature of an identifier, there may be a need for serious (anti-trust?) negotiations with providers of some identifiers.

Proposal: The nature of different identifiers (ID) could be assessed.

Proposal: There could be serious negotiations with some providers of identifiers (ID).

In the European Union there has been different anti-trust cases which are related to different private sector identifiers (ID), since some of those private sector identifiers (ID) have been used in several other systems. Some private sector identifiers (ID) can mean a (near) monopoly situation and this kind situations can be also in the New Zealand context.

About brokered systems – actual usage of identifiers (ID)

Here we can conclude that there are different broker (can be called also as “trusted third parties”) system, e.g. with electronic commerce there are some trusted third parties to handle monetary transactions between a buyer and a seller.

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Proposal: Different broker systems (“trusted third parties”) could be assessed.

Owner, member or agreement?

Here we can note the difference between owners, agreements and members. In reality ownerships agreements and memberships cause very complex networks, and those networks are changing all the time: divisions, mergers, ownership changes, agreement changes, cooperation with other entities, life-cycles, etc.

Here we can note the difference between owners, agreements and members. In reality ownerships agreements and memberships cause very complex networks, and those networks are changing all the time: divisions, mergers, ownership changes, agreement changes, cooperation with other entities, life-cycles, etc.

Question: Can different APIs take care of changes with ownership, agreement(s) and membership?

Here we can note that ownership, agreement and membership are interlinked in different ways. Generally speaking average usage of a system means an unique combination of ownership, agreement and membership. When everything works fine there are not problems.

However changes with ownership, agreement and membership can result difficult situations.
Proposal: There could be some considerations for assessing possible / future changes in
ownerships, agreements and memberships.

Next table gives us some possibilities for assessing possibilities for open solutions and closed
solutions.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>AGREEMENT</th>
<th>MEMBER</th>
<th>OWNER</th>
<th>OBJECT (feature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEN</td>
<td>CLOSED</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner?</th>
<th>Member?</th>
<th>Agreement?</th>
<th>OPEN</th>
<th>CLOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Device / Machinery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Operating system</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3. Program(s)</td>
<td></td>
<td></td>
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<tr>
<td>4. Data models / Conceptual models</td>
<td></td>
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<td></td>
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<tr>
<td>5. Documents</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6. Databases</td>
<td></td>
<td></td>
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<tr>
<td>7. Communications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Retrieve / Interface / Display</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Add / Interface / Display</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>10. Remove / Interface / Display</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Change / Interface / Display</td>
<td></td>
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</tr>
</tbody>
</table>

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In practical reality, different (digital) objects are used by different actors, and there can be several interlinked agreements, ownerships and memberships. When everything is working well different interlinked agreements, ownerships and memberships do not constitute any problems. However, different changes during the life-cycle of an information can be based on interlinked agreements, ownerships and memberships.

**Different timeframes for different information systems**

Like the next figure indicates, there is a difference between realtime systems and other systems.

Proposal: There can be different realtime systems, and the need for different realtime systems could be assessed.

Proposal: There can be different systems with other timeframes, and the need for systems should with different timeframes could be assessed

In some cases there is a clear need for different replicated information systems. There may a need for several/different interfaces based on timeframes in systems.

Proposal: Replicating some systems could be assessed critically.

Proposal: Possibly there could be several/different interfaces based on timeframes in different systems.
An example is the difference between desk-top computers and mobile devices. It may be feasible to provide different interfaces for desk-top computers and mobile devices.

**Event, states, processes and lifetime**

Systems can be terminated in some timeframes. Also some new systems can be created to have more functions than the previously terminated systems. With a state-level contact point these integration solutions can be consolidated in different state-level timeframes.

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**Proposal:** There could be some efforts to cataloguing state-level systems and federal systems.

**Proposal:** Based on the mentioned catalogue there could be some development efforts in the near future and in distant future.

It can be also noted, that different state systems have different life-cycles. One option is naturally enforcing different open standards, which could be implemented gradually to all relevant information systems. These efforts can mean work for several years in the near future and in the distant future. Then we can go back to different APIs.

**Proposal:** Based on previous proposals could different OPEN APIs could be gradually implemented in different systems.

**Different requirements**

I have advocated following solution as the maximum solution for different information systems:

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* public sector institute owns the machinery and processor of the information system
* the machinery and processor are based on relevant open standards
* the operating system is based on an open-source solution
* public sector institute owns the source code of the information system
* public sector institute owns the database of the information system
* the database is based on open-source solution and on relevant open standards
* public sector institute owns all data in the information system.

Note: It is possible, that the maximum solution is not implemented for different reasons.

Here we can note, that the IT platform can be realised with different technologies – some of those technologies are closed and open.

One option is to create a detailed roadmap for different phases of the proposed IT platform. With this roadmap it could be easier to develop the proposed IT platform.

Proposal: Detailed roadmap could be created.

Proposal: Detailed roadmap could part of more technical and more detailed consultation.

Note: In some consultations I have proposed a roadmap, which could gradually move to the previously explicated maximum solution for different information systems

Note: Actually enforcing different open technologies in different systems can take years since there are different commitments with current/different systems.

Creating highly readable documents for different purposes

In previous consultations I have advocated creation of highly readable documents – especially different legal documents. Legal texts in many cases can be presented with very readable text.

Proposal: The Department could support work, which would develop highly readable documents in different application fields (of net innovations) – e.g. licences, (standard) agreements, user documentation, technical references, etc.

An example 2 of readable documents / Creative Commons

Here we can have an example of readable documents, i.e. Creative Commons. On a dedicated web page 3 it is possible to choose a licence. Based on selections there can be different figures of different licences.

2  http://creativecommons.org/, Creative Commons
3  http://creativecommons.org/choose/, Creative Commons – Choosing a licence

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Like the links show there can be three levels for selecting a licence: a figure, short description and finally the actual legal (complicated?) text.

Proposal: All legal texts should be very readable.

Proposal: There can be different ways for describing licences: e.g. a figure, short description and actual legal text.

Organising more technical consultations?

Proposal: The Ministry could organise more technically oriented consultations based on results of this consultation.

One idea is distributing questionnaires for 4 different IT expert associations, and members of those associations could assess different IT standard proposals. Nowadays a lot of questionnaires can be distributed and answered using different electronic measures.

Proposal: Part of the evaluation could be organising (electronic) questionnaires for members of different stakeholder/expert associations based on the application field.

The questionnaires can be very structured or very free-form. The advantage of very structured questionnaire is naturally the ease of processing the results of an questionnaire. Answers to free-form questionnaires can result a lot of documents, and their assessment can mean a lot of manual processing.

One example

In the previous consultations I have used web feeds as an example.

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4 http://www.tivia.fi/in-english, e.g. The Finnish Information Processing Association, FIPA (Tieto- ja viestintäteknikan ammattilaiset ry)
To be precise, there are some standards for web feeds: RSS 2.0 standard and Atom standards. There are different systems, which comply with these example standards (RSS and Atom) differently.

It can be noted, that different back-office systems (with a wide variety of different technologies) can implement RSS standards, and these RSS feeds can be used in the front-office systems. With this kind solutions front-office systems dont need direct system-to-system communications with back-office systems.

Good luck!!!

This opinion is quite limited. Hopefully, there are other constructive ideas presented in other opinions. This remains to be seen.

Best Regards,

Jukka S. Rannila
citizen of Finland (Europe)
signed electronically

5  http://en.wikipedia.org/wiki/Web_feed, Web feed
6  http://www.rssboard.org/rss-specification, RSS specification

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ANNEX 1

I have constructed different opinions about different issues, and on the following web page are all written (PDF files) opinions:

http://www.jukkarannila.fi/lausunnot.html

I have constructed specifically opinions related to information systems – both in English and in Finnish.

Here is the list of opinions related to information systems

EN: Opinion 8: European Interoperability Framework, version 2, draft
http://www.jukkarannila.fi/lausunnot.html#nro_8

http://www.jukkarannila.fi/lausunnot.html#nro_9

http://www.jukkarannila.fi/lausunnot.html#nro_13

EN: Opinion 14: SFS discussion paper / SFS:n keskusteluasiakirja
http://www.jukkarannila.fi/lausunnot.html#nro_14

EN: Opinion 17: Opinion to Antitrust Case No. COMP/C-3/39.530
http://www.jukkarannila.fi/lausunnot.html#nro_17

EN: Opinion 18: Opinion Related to the Public Undertaking by Microsoft
http://www.jukkarannila.fi/lausunnot.html#nro_18

EN: Opinion 19: Official Acknowledgement by the Commission
http://www.jukkarannila.fi/lausunnot.html#nro_19

EN: Opinion 20: SECOND Opinion Related to the Public Undertaking by Microsoft
http://www.jukkarannila.fi/lausunnot.html#nro_20

EN: Opinion 21: Opinion about the European Interoperability Strategy proposal
http://www.jukkarannila.fi/lausunnot.html#nro_21

EN: Opinion 23: Public consultation on the review of the European Standardisation System
http://www.jukkarannila.fi/lausunnot.html#nro_23

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EN: Opinion 24: ISO/IEC JTC 1 / SC 34 / WGs 1, 4 and 5 in Helsinki 14-17 June 2010
http://www.jukkarannila.fi/lausunnot.html#nro_24

FI: Lausunto 29: Avoimen demokratian avoimen datan avaamisen detaljit (ADADAD)
http://www.jukkarannila.fi/lausunnot.html#nro_29

EN: Opinion 30: Internet Filtering
http://www.jukkarannila.fi/lausunnot.html#nro_30

FI: Lausunto 31: Terveydenhuollon tietotekniikasta
http://www.jukkarannila.fi/lausunnot.html#nro_31

http://www.jukkarannila.fi/lausunnot.html#nro_32

FI: Lausunto 33: Julkishallinnon tietoluovutusten periaatteet ja käytännöt
http://www.jukkarannila.fi/lausunnot.html#nro_33

EN: Opinion 34: REMIT Registration Format
http://www.jukkarannila.fi/lausunnot.html#nro_34

EN: Opinion 37: CASE COMP/39.654 - Reuters instrument codes
http://www.jukkarannila.fi/lausunnot.html#nro_37

FI: Lausunto 38: SADe-ohjelman avoimen lähdekoodin toimintamallin luonnos
http://www.jukkarannila.fi/lausunnot.html#nro_38

EN: Opinion 39: Registry options to facilitate linking of emissions trading systems
http://www.jukkarannila.fi/lausunnot.html#nro_39

EN: Opinion 41: AT.39398: observations on the proposed commitments
http://www.jukkarannila.fi/lausunnot.html#nro_41

EN: Opinion 43: Publication of extracts of the European register of market participants
http://www.jukkarannila.fi/lausunnot.html#nro_43

EN: Opinion 45: About ICT standardisation
http://www.jukkarannila.fi/lausunnot.html#nro_45

EN: Opinion 46: Review of the EU copyright rules
http://www.jukkarannila.fi/lausunnot.html#nro_46

EN: Opinion 47: Sharing or collaborating with government documents
http://www.jukkarannila.fi/lausunnot.html#nro_47

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I have constructed different opinions about different issues, and on the following web page are all written (PDF files) opinions:

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Use of broken English
This text is in English, but from a person, whose is not a native English-speaking person. Therefore the text may or may
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The English explanation is on the following web page:
http://creativecommons.org/licenses/by-nc-nd/4.0/legalcode

⁹ Based on the Finnish three-party system there is a phenomenon called extreme-centre in Finland. The 2011
parliamentary elections in Finland challenge the three-party system, since three “old” parties were not traditionally
as the three largest parties. The is now a “new” party as the third largest party. We all must remain being interested
about this new development in Finland.

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