

# Using Internet of Things data for policy

## Data variety is the real policy challenge

### Presentation proposal

Type: Impact contribution

Title: *Using Internet of Things data for policy: Data variety is the real policy challenge*

### Summary

Big data from the Internet of Things (IoT) provides new societal and business opportunities, and has potential to become highly valuable input for evidence-based policy development. In practice however, seizing such opportunities is limited by several factors: (1) the lack of a regulatory framework to tackle privacy issues and define permitted applications, (2) hesitation by and lack of incentives for market parties to share data, (3) lack of standardization, and (4) large differences in data quality. We present roles different layers of government should take in order to enable the opportunities for public and private organisations provided by IoT data.

### Contributor names and short CVs

#### *Tommy van der Vorst MSc*

Tommy van der Vorst (1988) is a researcher/consultant at Dialogic. His expertise lies mainly in the areas of software platforms, intellectual property (patent analysis, appropriation strategy, standardisation), Big Data and (technical aspects of) telecommunication and broadband access. Through experience in multidisciplinary projects and his academic training, he has gained substantial and deep knowledge of computer systems and architecture, programming and software design. As consultant, Tommy has worked for various (semi-)public and private organisations, including many Dutch ministries and provinces, various universities, the OECD, TeneT TSO, ABN AMRO, ITU and Eurostat.



Contact details: [vandervorst@dialogic.nl](mailto:vandervorst@dialogic.nl), [dialogic.nl/en/vandervorst](http://dialogic.nl/en/vandervorst), +31 30 21 50 593

#### *Arthur Vankan MSc*

Arthur Vankan (1988) is a researcher/consultant at Dialogic, active in the fields of innovation policy, data strategy and ICT. Arthur specialises in combining data with policy. He has developed innovative ways to use data as input for policy evaluation and policy development, and is working on the role that governments can take in the (public) data arena. He has years of experience in the domain of innovation policy, with specific topics such as sector- and cluster analyses, innovation-related tax measures and sector-specific public innovation policy. As a consultant, Arthur has regularly worked for many Dutch and Flemish ministries, the European Commission, OECD, provinces and universities.



Contact details: [vankan@dialogic.nl](mailto:vankan@dialogic.nl), [dialogic.nl/en/vankan](http://dialogic.nl/en/vankan), +31 30 21 50 589.

## Extended abstract

The Internet of Things (IoT) is the network of traditionally unconnected devices that are now equipped with connectivity in order to provide better or additional services. Typically these devices communicate over the internet, are uniquely identifiable, and interoperate with existing internet services. Smart cars, watches, thermostats and meters are examples of IoT devices. Gartner (2013)<sup>1</sup> estimates there will be nearly 26 billion IoT devices by 2020.

Big data from smart devices connected to the IoT provides new societal and business opportunities, and has potential to become highly valuable input for evidence-based policy development. In practice however, seizing such opportunities seems to be limited by several factors:

- (1) *The lack of an appropriate regulatory framework.* Such framework is needed in order to tackle legal, privacy and information security-related issues. It should also define and recommend particular applications in evidence-based policy.
- (2) *Hesitation by market parties to share data.* Platform owners are the primary collectors of IoT data, but are hesitant to share it with others because the data is privacy- and/or competition sensitive. In addition there is little strategic incentive for market parties to share data for the benefit of other (unrelated) private organisations or government.
- (3) *High variety.* While the big data discussion is often centred around volume, we suspect the real problem with IoT data will be variety. The landscape of IoT devices is still highly fragmented. There is also a lack of standardization of methodologies and definitions for evidence-based policy based on IoT data.
- (4) *Large differences in data quality.* Traditional frameworks for quality are rigid and are difficult to use in the context of high-variety IoT data. In addition assessing the quality of IoT data is more difficult than for data collected using more traditional methods.

Bongers et al. (2015)<sup>2</sup> argue that a government can fulfil four different broadly-defined roles with respect to big data. In the context of IoT data specifically, we recommend the following, in order to enable the opportunities for public and private organisations provided by IoT data:

- Governments at the *supranational level* should set (policy) guidelines and perimeters for using and handling IoT data. This mitigates issues (1) and in part issue (2). Institutions involved in statistics at the supranational level can help by setting methodological standards (issue (3)) and developing frameworks for data quality (4).
- Governments at the *national level* should facilitate implementation. A particular way to do this is to set up clearing houses for relevant IoT data. This lowers the barrier for platform owners to share data and mitigates issue (2).

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<sup>1</sup> Gartner (2013). *Gartner Says the Internet of Things Installed Base Will Grow to 26 Billion Units By 2020*. See [\[gartner.com\]](http://gartner.com)

<sup>2</sup> Bongers, F., Veldkamp, J. & van der Vorst, T (2015). *Big data: een zoektocht voor beleid ('a quest for policy')*. See [\[dialogic.nl\]](http://dialogic.nl)

- Governments at *all levels* should set an example by opening up own data sources ('open data'). In addition, they should invest in using and integrating IoT data in their policy development processes. Governments should be 'launching customers' of IoT data.

The following figure summarizes the key lessons and key recommendations for different layers of government with respect to the use of IoT data for policy development.

Government roles for IoT / big data				
	Use	Produce	Encourage	Regulate
Supra-national				
National				
Regional				
Local				
Key lessons	<ul style="list-style-type: none"> <li>• Data variety is the real policy challenge</li> <li>• Focus on medium rather than big data</li> <li>• Balance data supply and data demand</li> </ul>	<ul style="list-style-type: none"> <li>• Open data (nothing new)</li> <li>• Improve operational standardisation</li> </ul>	<ul style="list-style-type: none"> <li>• Give a boost to data economy</li> <li>• Lead the way by being launching customer</li> <li>• Remove barriers for usage</li> </ul>	<ul style="list-style-type: none"> <li>• Secure public interests</li> <li>• Improve conceptual and technical standardisation</li> <li>• Devise frameworks for data quality</li> <li>• Devise regulation for sharing in privacy- and market-sensitive contexts</li> </ul>