European Commission

National Contact Point in Poland

Poznań Supercomputing and Networking Center

HUB4NGI

The Next Generation Internet workshop
Widen the European space of life and work

Workshop Report

8 June 2017
Poznan Supercomputing and Networking Center
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Poland

Introduction

The European Commission in collaboration with the Polish National Contact Point, Poznan Supercomputing and Networking Center and the Hub4NGI Project organized a workshop in support of the EC Next Generation Internet (NGI) initiative.

Background and purpose

The Next Generation Internet, a key priority in H2020 ICT work programme 2018-2020 will ensure a more human-centric Internet supporting European values of openness, cooperation across borders, decentralisation, inclusiveness, transparency and protection of privacy. The NGI initiative is a broad and long-term initiative, mostly focusing on new technology areas as for example a better protection for private data, new internet architectures, decentralized data systems and new discovery and identification tools. These technologies, developed by people and for people, will widen our space for life and work in future Europe.

Together with (young) researchers, start-ups, SMEs and social innovators the European Commission will push the development of these new Internet technologies based on an agile and flexible programme approach to shape the Internet of the future.

As part of the presentation of the Next Generation Internet, an NGI workshop was organised in Poznan (Poland) on the 8th of June 2017.

The purpose of the workshop was to explore opportunities for research, industry and SMEs/start-ups for collaboration within the scope of the NGI initiative. Renowned speakers, open and multidisciplinary discussions and World Café tables as the key elements of the workshop agenda helped the attendees to better understand the current situation of the NGI initiative and participate in debates prioritizing and shaping the future evolution of the NGI.

Main goals of the workshop were:

- To identify the major opportunities and challenges for society, research and private sectors;
- To identify the three main topics the NGI initiative needs to address in the near future;
- To help formulating expectations from the NGI initiative (as individuals but also as representatives of a certain sector);
- To help establish and grow the NGI ecosystem.

Programme

11:00	The NGI Initiative, context, plans and actions of the European Commission (Speakers: Georgios Tselentis and Nicole Muessigmann, European Commission)
11:30	A start-up's view on NGI: needs and expectations (Speaker: Michał Majewski , CEO PublishSoSimply, startup)
11:45	The research perspective: Trends and topics that NGI should embrace (Speaker: Krzysztof Walas, Ph.D., Assistant Professor, Institute of Control and Information Engineering (ICIE), Faculty of Electrical Engineering, Poznan University of Technology)

12:00	Civil society needs and expectations: What does NGI do for the people (Speaker: Marcin Borkowski, City Development Department, Poznań City)
12:15	HUB4NGI (Speaker: Bartosz Belter, PSNC)
12:30	Q&A Panel
12:45	Buffet lunch
13:15	World Café in 3 subgroups: research, civil society and startups – moderated by Richard Stevens (IDC), Maria Chiara Campodonico (Martel Innovate) and Nicole Muessigmann (European Commission)
14:15	World Café Wrap-up including Q&A
15:00	Closing + optional technology tour
16:15	End of meeting

Presentations from the main track of the workshop

The first five presentations, as part of the main track of the workshop, set the context and provided the material for the following parallel sessions run as World Café tables. The list of points presented here collects the main information given by the presentations (the slide set is available on the Hub4NGI website[1]).

- **The NGI Initiative, context, plans and actions of the European Commission**
  - o Why NGI?
    - ▪ 1) Radically new functionalities, 2) An internet for the people.
  - o NGI Initiative – initial phase in the period 2018 – 2020.
  - o Important input from communities: Open consultation (questionnaire) 10th Nov 2016 – 9th Jan 2017 (60 days), 449 responses.
    - ▪ https://ec.europa.eu/digital-single-market/en/news/ngi-consultation-outcome-report
  - o Implementation of the NGI vision:
    - ▪ 3 initial NGI research nodes (technology domains): 1) Privacy Enhancing Technologies, 2) De-centralised Governance, 3) Discovery and Identification Technologies.
  - o More NGI research nodes will be launched in 2019.
  - o Actions in each node: cascading funds, open calls, pan-European activities.
  - o NGI communication platform: FUTURIUM.
    - ▪ https://ec.europa.eu/futurium/en/next-generation-internet
  - o Comment from the audience: Cascading funding might be difficult to accept by institutions which do not (or cannot because of some reasons) allocate their resources only for short period of time. But on the other hand this kind of funding will force changes in inflexible structures and procedures to be more dynamic and adaptable.
- **A startup's view on NGI – needs and expectations**

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[1] Slide set from the workshop: https://www.hub4ngi.eu/event/ngi-workshop-poznan/?instance_id=17

- o Startups need easy and affordable access to technology hardware (advanced infrastructure), software and clouds.
- o Team work and cooperation are key aspects – startups need partners and trust.
- o Changes are rapid so legislation must adapt.
- o and … funding is always crucial, especially in the context of costs of ICT technologies.
- **The research perspective (Robotics): Trends and topics that NGI should embrace**
  - o Industry 4.0 is a big change – next phase in the digitization of the manufacturing sector.
  - o Industry 4.0 relies heavily on Internet services.
  - o Latest robotic research is getting to the point where knowledge is shared across the network.
  - o Exploitation of the knowledge available in the Internet for faster and better robotic learning.
- **Civil society needs and expectations (City of Poznań): What does NGI do for the people**
  - o Poznań Development Strategy
    - Ongoing actualization process,
    - consultations (workshops, interviews, conferences, debates, panels of experts, high number involved stakeholders, etc.),
    - priorities identified.
  - o Poznań creates an ecosystem of smart city (e-administration electronic services, digital map, on-line transmissions, digital solutions for public transport, public funds, etc.).
  - o Challenges for public services identified and used as an input for planning and actions.
  - o Long and close cooperation with PSNC.
  - o Web site of Poznan: http://www.poznan.pl/mim/main/en/
- **The HUB4NGI project**
  - o Objectives:
    - Contribute to ground the NGI vision, defining research scope and priorities, building the community and engaging key players.
    - Facilitate contributions to the NGI from technological opportunities arising from cross-links and advances in various related R&D fields.
    - Contribute to the NGI roadmap definition to help shaping and defining its future, including recommendations for WP 2018-2020 and FP9.
  - o The HUB4NGI Planned Activities:
    - Encourage engagement of top-notch Researchers and Innovators.
    - Help growing the NGI ecosystem by embracing relevant R&D initiatives.
    - Contribute to shape the NGI R&D agenda and methodologies.
    - Facilitate exchange and promotion of know-how across the community.
    - Assist in the coordination of strategic and technical activities.
  - o The projects builds the interactive online map which will include key projects and actors relevant to NGI.
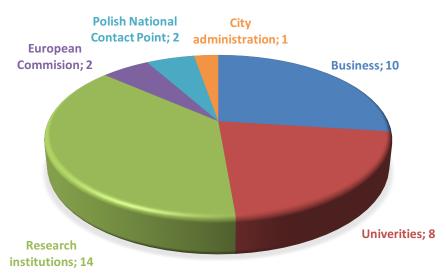 - o Web site of HUB4NGI: https://www.hub4ngi.eu/

World Café Discussions

The workshop participants (37 registrations; see the figure below presenting how many people represented specific stakeholder groups[2]) attended 3 parallel sessions and provided valuable answers and comments during fruitful discussions for 3 questions in the following 3 contexts:

- Research,
- Civil society,
- Startups.

Questions for triggering discussions at World Café tables:

1. What are the most important technologies and themes for NGI?
2. Who are the most important stakeholders?
3. What are the most probable business models?

DISTRIBUTION OF WORKSHOP PARTICIPATION

The workshop attendees were divided into 3 groups. Each group spent 20 minutes at a Café Table, discussing the questions raised by a dedicated moderator. All workshop participants visited all Café

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[2] Among business participants, 2 represented startups.

Tables and were able to express their comments/questions/suggestions on the NGI vision and strategy.

The following section presents the summary of contributions and discussions at the World Café tables.

Research

What are the most important technologies and themes for NGI?

- Machine learning and Artificial Intelligence
- Data mining
- Privacy of data
- Network neutrality
- Automation and robotics
- Legal framework for all technological aspects
- Internet for humans / natural language interaction
- Human-human communication
- GDPR – General Data Protection Regulations
- Compression algorithms for media use cases
- Unified protocols for IoT / IoT security
- Research Infrastructure as a service
- Free access to personal data
- New identification tools
- Post-OSI network models with backward compatibility

Who are the most important stakeholders?

- People
- Specialist
- Students
- Customers
- Community driven
- SMEs (not only big companies)
- Tech-transfer centres
- Incubators
- Industry 4.0
- Smart cities
- Clusters
- Max-Plank Institutes
- Data holders (Google, Facebook)
- Research units
- Civil Society
- Citizen's science (e.g. Wikipedia)

What are the most probable business models?

- Fair trade
- Standards
- Support from the government
- Federated model
- Data as currency (exchange of data)
- Bartering (exchange of resources)
- Open innovations (big companies with external resources)
- Knowledge as a service
- Competence centres

Civil society

What are the most important technologies and themes for NGI?

- The first group of attendees emphasised privacy, transparency and security. People have the right to know where the data collected by service providers are stored and who has control over them.
- Legislation must be adapted. Data should be protected the same way in each EU country.
- "Privacy is a value!"
- People want to feel secure and can even accept limitations of their privacy (within reason) to achieve that.
- The second group of attendees focused on inclusiveness.
- All EU citizens (including persons with disabilities, seniors, etc.) have the right to benefit from modern ICT services. The services should be designed in a way to be simple to use by all.

- Apart from modern ICT services, one should not forget about traditional ways of communication, especially in local communities.
- We need efficient technologies to protect our children from dangerous contents and services available in the Internet. Nevertheless, education plays the key role.
- The third group stressed that ubiquitous access to the Internet is/should be the right of each EU citizen (just like access to clean water or energy infrastructure).

Who are the most important stakeholders?

- Citizens! Their needs should always be put first.
- Teachers – they will educate the new society of the EU.
- Regulators (regional, national, European) and standard bodies – we need appropriate legislation, frameworks and common ways of interoperability.
- Legislation is an issue (see the problem with UBER in our cities – conflicts with taxi drivers).

What are the most probable business models?

- PPP, B2B, B2C, B2B2X
- crowd funding
- A2C (AdministrationToCitizens)

Startups

What are the most important technologies and themes for NGI?

- Blockchain – we have to adapt and understand this technology (so trainings for better skills are important). It can be a concept of future Internet (especially mobile). Very important will be better compression algorithms (some companies in USA already work on this).
- Virtual reality and augmented reality – important because it is very possible that in a few years everybody will have it at home.
- Decentralised Internet concept – it is important not only to enable cell phones but also storage… inside our phones.
- Peer-to-peer and ad-hoc networks
- 5G connectivity and accessibility – access to already existing technologies is also very important for startups. For example: in some places like small villages there can be a problem to use High Quality Video Conference.
- Protecting individuals (human protection) – people are not aware how deep they are in the Internet. Not only data protection problem but also people protection (device level & data use protection).
- Open public data – discoverable and easy to process linked to other data sources (private/personal). For example: we have already all data on our mobile device (like: weather forecast, public transport data, city bikes, etc.) but they have different data formats and we have to manually check everything one by one so there is a need for some automation which could link all this data together as some "open link". Open data is important to link them between and with other data sources.
- Multi-partner bartering – the possibility of exchange of (electronic) resources should be available and important instead of paying only with money.

Who are the most important stakeholders?

- SME and start-ups
- Private capitals
- EU policy makers
- Researchers
- Civil society (who represents people…)
- Innovators
- Accelerators
- Living labs

What are the most probable business models?

- Reduced intellectual property (IP) protection window – start-ups should not have to wait 50 years for some patents to expire. The participants also mentioned that they do not think that the reduction of duration for patents will be possible, because there are still some patent-wars between big companies (like Apple and Samsung) and there are differences between patent law in USA and in Europe. For example, in USA we can patent some code and in EU it is not possible. The reduction of IP protection window for sure would increase the innovations, because startups don't have enough money to buy expensive patents. The economy is here also a problem because open-source does not give so much money. There should be a legal system change needed to encourage SMEs but big players are not interested in this so it is rather impossible to happen.
- Always in front of competition. There should be legal protection for first mover, legal/policy protection – first publisher and knowhow should be protected by (changed) legal system.
- Startup as a Service (SUaaS) – for example: we have a team ready to work and other resources available but we have no brilliant/new idea so e.g. big companies can give us an existing idea and pay us to perform work for them. Such a startup can have/offer various specialists to choose for different projects. It can be also a Virtual Startup which should be managed as a project. The other name proposal for this business model was "Rent an Innovator".
- Open funding – e.g. social innovation incubators to give donations for startups' development.
- Granted on regional regardless of who you are – there should be some kind of small regional specialisation to support startups regardless of who they are if they are doing a good job.
- FIRE/NGI experimentation - sometimes checking if something works OK in practice can be very expensive so the possibility for startups to inexpensively simulate this on computers should be easy available.

Conclusion

The workshop in Poznań was an occasion for representatives of the EC, the Polish National Contact Point, startups, business, local authorities, universities and research institutions to exchange the views and formulate the expectations from the Internet of the future. The presentations and discussions during World Café sessions outlined many topics and related challenges that the EU countries and the rest of world are facing now. The activity of attendees indicates that this kind of meeting is needed and the EU citizens are deeply interested to participate in the technological revolution and transition to the Next Generation Internet era. Although the vision of the future is still not clear and well understood, the participants and represented communities are aware of the

emerging potential, opportunities as well as corresponding issues and threats. The changes are happening not only in the technological domains. They influence the people and the way they live, work, entertain themselves, behave and communicate. New services and applications which are planned to be built on top of existing infrastructures and services will create a new human-centric environment, giving new functionalities and tools for better well-being of individuals and societies.

The discussions in the workshop touched many aspects of the Next Generation Internet and raised the question how the EU may and should go towards this vision. The previous section presenting World Café sessions provides a valuable input for further discussions and analysis   As part of final conclusions the authors of this report want to emphasise a few general messages:

- The EC would like to help with the establishment of a new NGI ecosystem with optimal conditions for innovations and further development of novel applications and services, therefore it acknowledges that such workshops help to collect, categorise and analyse inputs from a wide range of stakeholders and transform the outcomes into concrete actions and programmes.
- The EU citizens would like to actively take part in the digital revolution. Although trust, privacy and security issues are underlined as key priorities for the NGI, the direct benefits for citizens are expected as an immediate result.
- New stakeholders are taking part in the digital revolution, exposing new requirements on the underlying infrastructure, services and applications. There is a need for new business models and changes to legislation to address emerging technological and socioeconomic challenges.