Workshop on Next Generation Internet (NGI) - 17 November 2017, 11:45 – 14:00
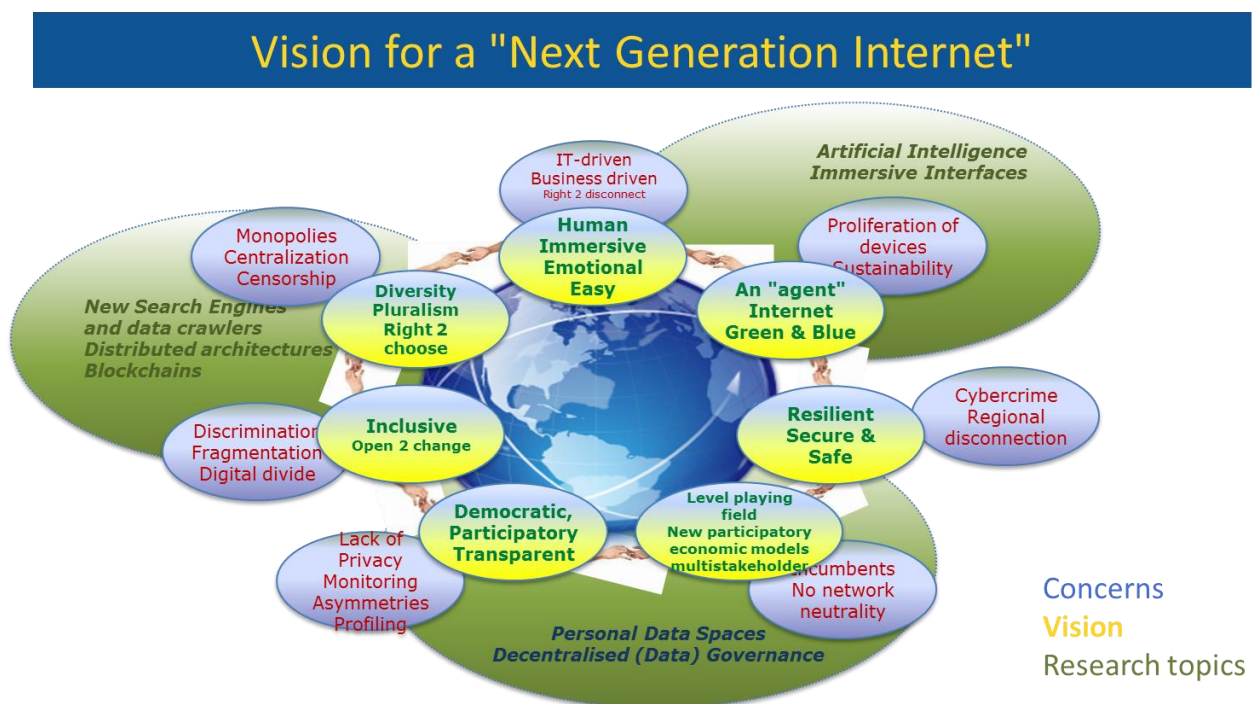**Barcelona, Smart City Expo World Congress 2016**

Summary by Leandro Navarro
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Based on contributions from Monique Calisti (Martel Innovate, CH), Carles Sierra (CSIC, ES),

The workshop, with nearly 100 participants, was opened by Fabrizio Sestini (EC, DG Connect), with a short presentation of the NGI initiative, encouraging the audience to play an active role in the following discussions.

The first part of the discussion focused on the vision for an NGI, commenting on the following slide:

General remarks on motivation and ethical aspects:

There was broad consensus on the transdisciplinary elements of the Human centric vision which were presented, as well as on the bottom-up approach presented by the EC in order to identify research topics. Specific remarks addressed the needs for:

- Radical network neutrality;

- Strong encryption supported by governments;

- Preserving the Open source nature of the key components.

- Balancing the asymmetries in the networks, which reflect the tension between citizens and providers.

- A central role of Data ownership.

- A more effective and outreaching education (data literacy, coding skills, as well as to create understanding of issues such as privacy or data ownership).
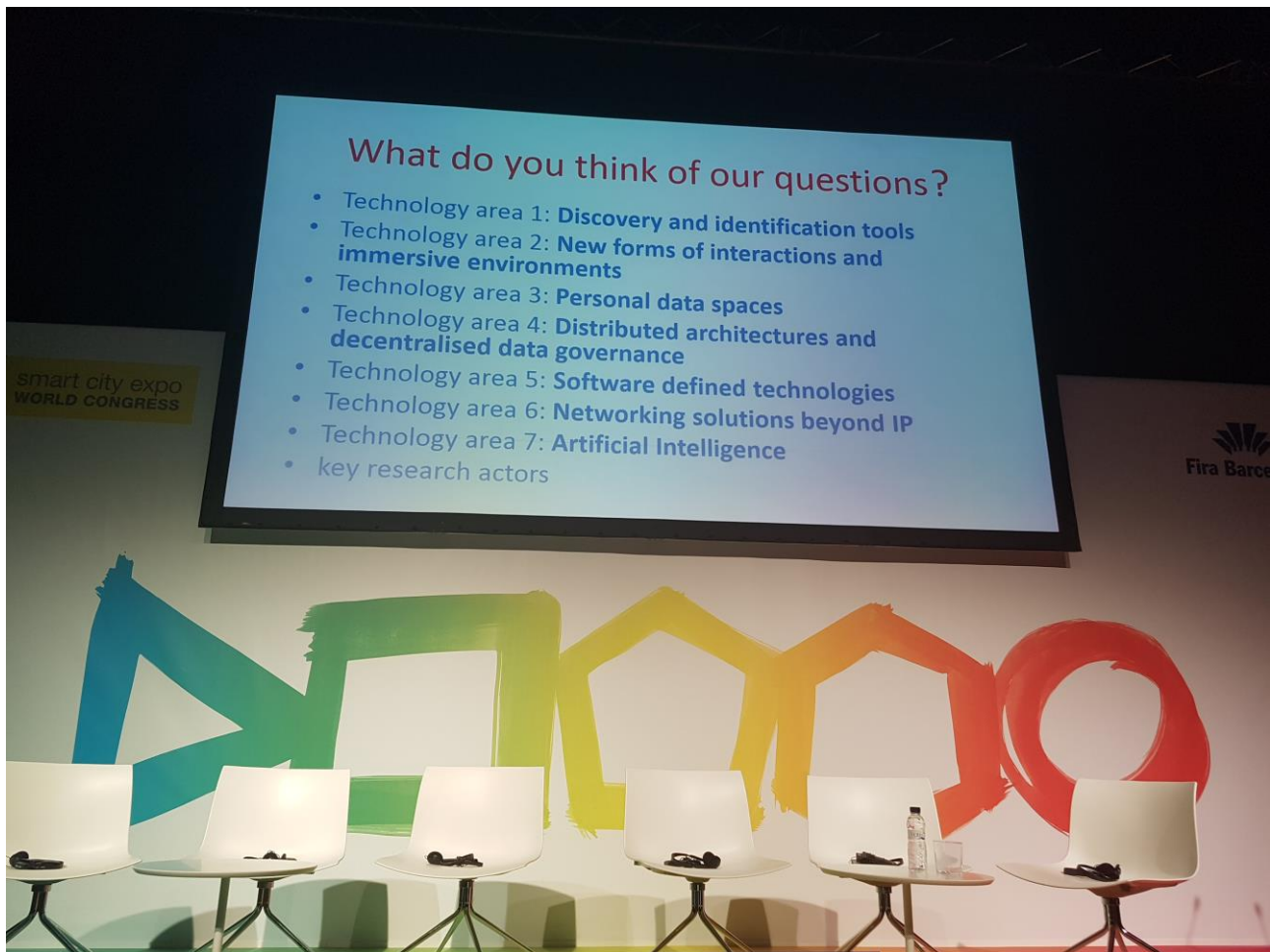
The discussion then pointed to the basic ethical dimension related to the development of a next generation Internet: what problems do we want the NGI technologies to solve? Do we need a network that can evolve serving the needs of citizens, and can ensure technological sovereignty? NGI should fundamentally capture values such as privacy as well as solidarity, which are at the basis of societies. It should aim at building and sustaining platforms and architectures that shall empower citizens in all challenges related to sustainability, not just environmental sustainability, for instance by supporting a new decentralized management of the commons. Explore limits to autonomy of devices, considering societal values. In general, ethics should be a cross-cutting issue all over the topics.

The title "next generation Internet" was questioned. It was felt "**Open Inclusive Internet**" would better reflect the above needs. Democratizing Internet and the digital society is the biggest challenge, given the increasing dominance of few commercial actors.

Comments on connections/coordination:

- The initiative can benefit from stronger links with structural regional funds, other EC programs, national funds.

- Several questions pointed to the apparent shift of Internet policies from DG Connect to DG Growth (e.g. on the Sharing Economy, or Social Innovation), is this contradictory with the NGI plans? How to make sure that the vision for NGI is shared at Commission level?

- There should be clear links with standardisation activities from organisations such as ETSI, IETF, etc.

- Involving young people is very important, both in the definition and the implementation of the NGI. This "multigenerationality" can be obtained, for example, through:
  - Science education projects
  - Link with Erasmus+
  - European school network
  - European youth forum (Combining tech events with them)

The discussion then was shifted to the specific technology areas for the next 10/15 years of Internet research which are currently open for consultation:

General remarks on the technology areas:

- The word "technology" may be misleading or restrictive. Why are they called "technology" areas instead of "research" areas? Each tech area is strongly linked to social and economic areas and questions. There should be a stronger innovation push. And a clearer link to the communities who will benefit from these "technologies". In general, this approach seems <u>inadequate</u> to cope with the high-level social aspects pointed out in the vision, which require a more open and multidisciplinary approach.

Following the above remarks, the chairperson inquired about the composition of the *audience in the workshop:* half of participants have a technological background. Less than half have a non technological background, mostly in either social sciences or economy.

- Take inspiration from the issues mentioned in the GIPO website, as for hot topics in Internet research;

- It's not clear what will be the importance of multidisciplinarity: contributions from social sciences, economists, lawyers, philosophers, etc. should be key for NGI research.

- All the projects should be based on open software, open hardware, open data, and strongly support gender balance.

- Decentralization and re-centralization are seen as key areas, which can be supported also by fostering bottom-up infrastructures and community networks.

- It is possible that just one architecture will not be able to solve all requirements. Multiple network architectures might coexist and multiple protocols run in parallel.

- Areas 5 and 6 could be merged: Software defined technologies and networking solutions beyond IP.

- Personal data spaces should be put more in relation with open data platform, as an element to create a Web of trust.

Missing areas, to be considered:

- Business models and technological platforms for commons collaborative economy (also as co-creation frameworks of EU policy). In particular, this research area can contribute beyond the technology centric focus, on "non-technological" innovation.

- Pilots of the above technologies with real communities, focused on concrete sustainability issues.

- Market-design in the new Internet for social good.

- Next Generation Mobile Internet: mobility as an aspect that will radically influence the way NGI will be engineered.

- Internet of Things moving to the Web of Things (W3C).

- The next blockchain, open blockchains. Computational contracts.

- Algorithmic transparency. Transparency of algorithms is crucial. People should have a say not just an opinion.

- Privacy-enhancing technologies.

- Quantum computing.

Participation in the NGI:

- How participation can be enforced? We need to be more inclusive. EU grants make it difficult to fund some participatory activities. This shall also be tackled by public authorities.

- How to correct the gender imbalance/gap.

- How to involve not just the tech but constituencies (e.g. social, political actors).

- How to reward participation in EU projects, beyond consortium members.

- How to support advocacy for ethical or civil concerns, e.g. through open calls.