

Internet Architecture and Innovation Future Internet Assembly

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*Disclaimer: This presentation is a summary of the paper "Internet Architecture and Innovation".
It does not represent the view of the European Commission or any of its officials.*



Introduction and disclaimer

- This presentation is based on a paper prepared by a task force from the Future Internet Architecture Group. It contains information about different, and sometimes contradictory, view points about the evolution of the Internet Architecture.
- Disclaimer: This paper has been written jointly by their authors but it does not imply an agreement of all authors on all sections of the paper. This paper reflects the, sometimes, contradictory views on the relation between Internet Architecture and Innovation. The authors are a subset of the Future Internet Architecture Group under the umbrella of the Future internet Assembly. The views expressed are those of the authors and not necessarily those of the European Commission or any of its officials.



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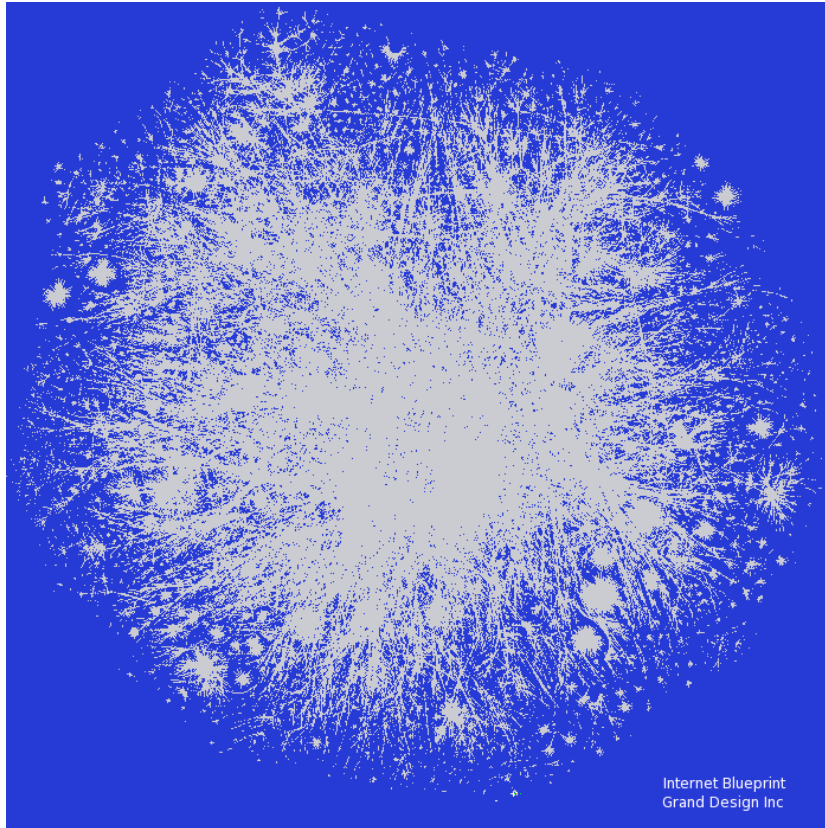


Key message

- the Internet Architecture is a new policy tool (no longer only a matter of techies).
- It could be used by policy makers to shape the future EU economy by favoring some industry sector while perhaps hindering others.



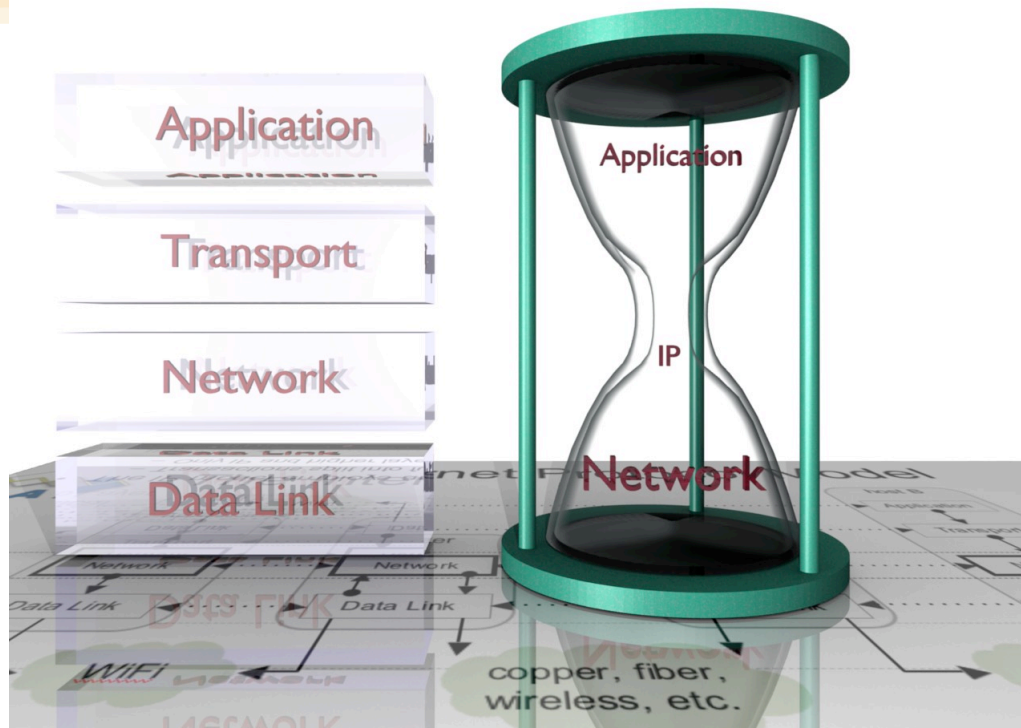
Internet Architecture



- The Blueprint does not exist
- Instead
 - A set of Principles
 - Open Standards
 - Collaboration
 - Evolution



IA principles



- Layers separation.
Hourglass

- End to End principle: whenever possible, operations should be defined to occur at the edge of Internet, or as close as possible to the resource being controlled.



Examples of innovation in EU (1/2)

Category	Name of Company/Service
Telephony	Skype, Fring, SIPGate
eCommerce	Barrabes, Tiscover, Virgin, PixMania, Huoto, Geizhalsbilliger.de, geizkragen.de, comparis.ch (Insurance comparisons)
Social Networks	Hyves, Tuenti, Badoo, Netlog, StudiVZ, dailyMotion, XING, iwiw, AKA-AKI, IRC-Galleria
Community-driven Content	SAP Developer Network, ciao.de (and other product review sites)
Collaboration environments	BSCW, Alfresco, SAP StreamWorks
Content players, webTV	iPlayer, Joost, Internet TV of most cable companies
Web-based business services and applications	Enterprise Services – SAP
Cloud-based Enterprise Computing	SAP ByDesign, Atos Sphere, Strato, Host Europe, JiffyBox



Examples of innovation in EU (2/2)

Search	FAST, Exalead, Autonomy
On-line banking	EU banks and insurance companies
Online payments system	Atos Worldline
Internet radio	Spotify, Last FM, Wimp,
Gambling	BWin, BetFair, Veikhaus
Online gaming	Zed, playfish, Digital Illusions
Security	Avira, F-Secure



IA and entrepreneurship (1/2)

- The most dynamic entrepreneurship and innovative business models, however, are yet to come.
- It should combine dynamic links and transformation of partnerships with technological enablers such as ad-hoc composition of shared services for ICT support.
- The existence of “dynamic e-service markets” in the future Internet will enable hybrid value proposition.



IA and entrepreneurship (2/2)

- Particular challenges to create an ecosystem which fosters entrepreneurs and innovation:
 - management and measurement of distributed architectures (Increased complexity and scale of modern business networks)
 - Accountability
 - Flexibility and adaptability, which are necessary precondition to execute innovation within entrepreneurship networks.
- Challenges such as scalability, privacy concerns and distributed security management need to be overcome to ensure that innovation can flourish.



Innovation hindered by current IA (1/3)

- **Flexibility is perceived by some stakeholders as something that has hindered security**
 - For example, recently a man-in-the-middle attack from a Chinese company had caused Internet traffic to be rerouted through servers in China.
 - **DoS** (Denial of Service) and **DDoS** (Distributed Denial of Service) attacks are serious problems that plague the Internet



Innovation hindered by current IA (2/3)

- **End to end approach is seen by some stakeholders as having seriously hinders scalability of service ecosystem, network service standardization and QoS.**
 - There is no end to end common messaging service and there are no standard P2P file sharing facilities
 - These services will always need to be created from the ground up again and again because there are no intermediary common services that you could use.
 - The 'de facto' communal functions are starting to appear (think of Facebook, Google docs, Skype, in-network storage systems like Amazon S3, ... and the many applets written to cooperate with them)



Innovation hindered by current IA (3/3)

- **Compulsory Collaboration and lack of global public authorities is seen by some stakeholders as having hindered deployment of Internet and critical public services and applications**
- *critical example* we may consider DNS and peering (peering as a Telco concept means cooperate to create a traffic exchange).
 - **DNS** will never work if companies did not manage cooperation at a global scale.
 - **Peering** at the traffic level makes it possible to have a global Internet.
 - The **lack of authorities** that support core services in the Internet result in companies relying extensively on cooperation which leads to an unreliable playing field for a business web.



Principles to Inspire FI Architectures to Foster Innovation

- A set of topics for debate:
 - **Measure and comprehend before considering modification of successful principles**
 - **Quality of Service for Critical Applications**
 - **Relaxed Layering and Security**
 - **Framework for Intermediary Common Services**
 - **Transport Layer Innovation**
 - **Application Component Eco-System for Continued Application Innovation**
 - **Long-Term Disruptive Approaches**



Thank you for your attention

- Paper is available at:

http://ec.europa.eu/information_society/activities/foi/research/fiarch/index_en.htm

