

Engineering the Internet and Its Governance

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Who am I?

- MAEMURA Akinori
 - Started IP career in NEC Corporation to build “BIGLOBE” IP Network in 1994
 - Designing the backbone network, Interconnecting with other ISPs and IXes
 - In 2000 moved to *Global One*, which was later reorganized into a part of *France Telecom Group*
 - taking care of *Opentransit Internet AS5511* in Asia
 - *Opentransit Internet* left from Asia in 2005
 - Now with *France Telecom Research & Development Tokyo*
 - Specialized in IP networking and Operation

Who am I, from a different side?

- MAEMURA Akinori
 - Started IP career in NEC Corporation to build “BIGLOBE” IP Network in 1994
 - Designing the backbone network, Interconnecting with other ISPs and IXes
 - Involved in the deployment of the Commercial Internet in Japan
 - Involved in JANOG <http://www.janog.gr.jp/>
 - Then involved in JPNIC activities
 - Committee Member since 1997, Board member since 2002
 - Then involved in APNIC activities
 - EC Member since 2000, EC Chair from 2003
 - More time for the coordination and governance of the Internet

Today I am talking about...

- Who I am (I've just talked about)
- Sharing my experience with the Internet Operations
 - How the Internet amazed me in the beginning
 - Looking back on my 13 years with the Internet
- The Internet Coordination and Governance
- Designing the Information Society

Sharing my experience with the Internet Operations

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How we started an ISP in 1994

- Got IP networking technique, *culture* and *human networking* from researchers in the company
- Designed our backbone network with help of those researchers
- Joined the NSPIXP Project and its mailing list
 - ISPs there at that time – WIDE, AT&T Jens, Fujitsu and IIJ
- Joined several other mailing lists
 - Every practical knowledge was obtained from ML
 - No Japanese literature and documentation
 - Routers were not working as they were designed ☹

Who was I before 1994?

- A Network Engineer for X.25 packet switching network.

Referring CCITT Recommendations
Sometimes complies to NTT's Specifications
A few interconnections with X.75 protocol
Coordination is all done by/via Ministry
Wearing a tie

Difference between X.25 and the Internet

- The Internet was totally different from X.25.

X.25	The Internet
Referring CCITT Recommendations	Referring bunch of RFCs and Internet Drafts
Sometimes complies to NTT's Specifications	Practices are created and shared among the operators
A few interconnections with X.75 protocol	Interconnection is the nature of the Internet
Coordination is all done by/via Ministry	Coordination is all done in the Internet Community
Wearing a tie	Never wearing a tie

The Internet was totally new to me.

- Everything was *experimental* and *in progress*
- “Rough consensus and running code”
 - Not believe in the formality but in the practice
 - “No tie” culture – not only clothing but everything
- Competitors collaborate for the Internet’s good
- Operations are as important as development
 - To accommodate the exploding traffic and routing table entries
 - Configuration is not just setting but programming of the routers

Operators need to ***participate in the Internet Operations***
and to ***contribute benefit*** to run the Internet

Then my contribution went to...

- The early Internet in Japan needed more and more contributions from the operations field
 - NSPIXP Project
 - IX architecture to accommodate exploding traffic
 - Forming the Operators Community – JANOG
 - Tips in IGP/BGP design
 - Tips on USENET servers
 - ... other technical things
 - IP resource management: IP address and Domain names – JPNIC

Things among ISPs, which cannot be done with ISPs alone

Not so technical, but still necessary to run the Internet

Internet Coordination and Governance

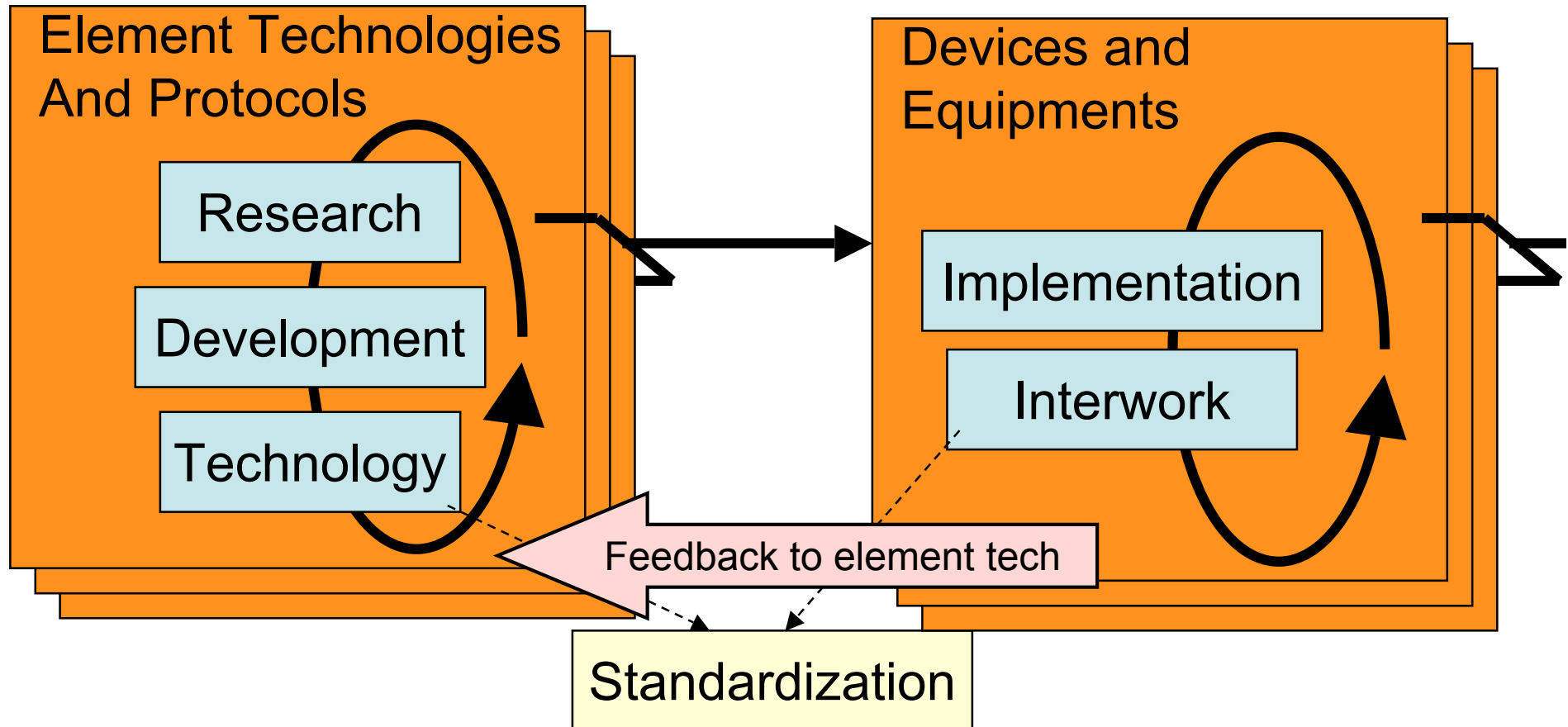
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As the Internet grew up...

<u>Period</u>	<u>The dawn</u>	<u>~1995</u>	<u>~2000</u>	<u>~2005</u>
Internet Users	Developer community	Developers, professional users	hobbyists	Ordinary people
Backbone link	kbps	1.5Mbps	100Mbps	10Gbps
What the Internet is	Computer programs inter-connected	Tools on computers and circuits	PCs, access providers and service providers	Infrastructure of Information Society
scheme of coordination	Consensus within the community	IAB-IESG-IETF IANA-InterNIC	IAB-IESG-IETF IANA, NSI, RIRs NANOG	IAB-IESG-IETF ICANN-IANA, Domain Name Registrars, RIRs, NOGs Gov't concerns

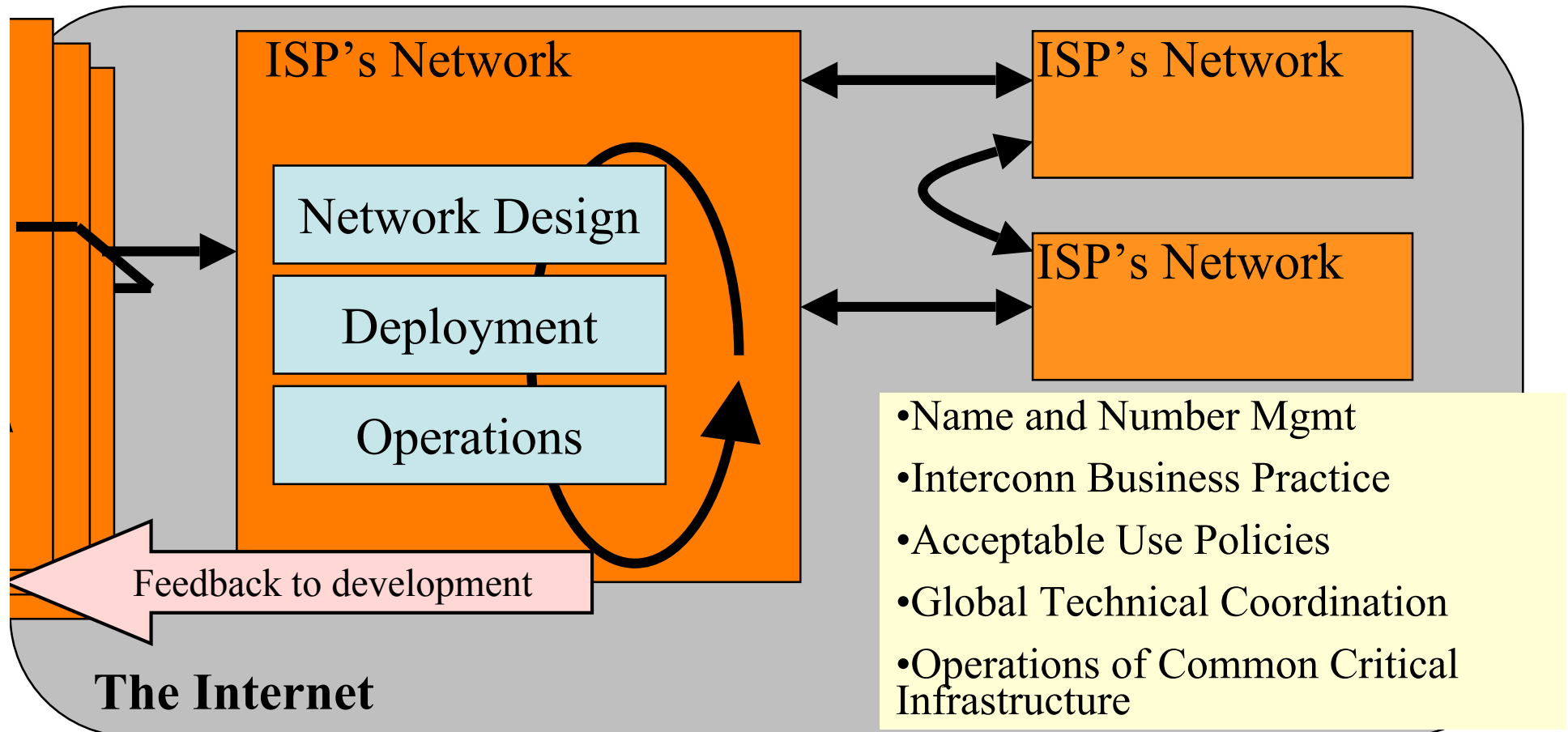
How the Internet is formed and operated (1/3)

- The Internet is not only thanks to technologies and equipments



How the Internet is formed and operated (2/3)

- But thanks to a lot of coordination to realise its sustainable operation



Running the Internet needs...

- A broad cooperation among researchers, developers, operators, policy coordinators, and even non-techie people.
- Among these, the Internet Operators are responsible to deliver the Internet to the users, integrating these all.
- Your contribution is indispensable.

As the Internet grew up, its governance needs improvement

- --1995 Forming the administrative bodies
 - ISOC, IAB-IESG-IETF, IANA

- --2000 Adapting the Net to the business practice
 - Domain names are trademarks which are business critical
 - IAHC to form ICANN to resolve that
 - Dispute Resolution in Domain Names
 - Securing the fairness
 - Also in the IP address administration

The Internet now needs an governance as well as public policy

- 2005 Adopting the Net to the public policies
 - WSIS – World Summit on the Information Society
 - Criticism to ICANN, argument from ITU and Sovereign States
 - Internet with its Governance becomes a diplomacy item
 - Concerns on the Internet deployment in terms of public policies
 - Preparation in WGIG (Working Group on Internet Governance)
 - Establishing IGF (Internet Governance Forum)

How the Internet is formed and operated (3/3)

- The Internet has become a global social infrastructure and gathers public concern

Infrastructure of
The Information Society

Terminal Applications

Information Services
And Technologies

The Internet

• Adaptations in

- Laws and Regulations
- Treaties
- Public Policies
- Business practices
- Norms

Internet Coordination and Governance

- The overall coordination effort for the sustainable operation of the Internet
 - Technically
 - Operationally
 - Socially
 - politically
- Standardization
 - Name and Number Management
 - Interconn Business Practice
 - Acceptable Use Policies
 - Global Technical Coordination
 - Operations of Common Critical Infrastructure
 - Adaptation in
 - Laws, Regulations
 - Treaties, Public Policies
 - Business practices
 - Norms

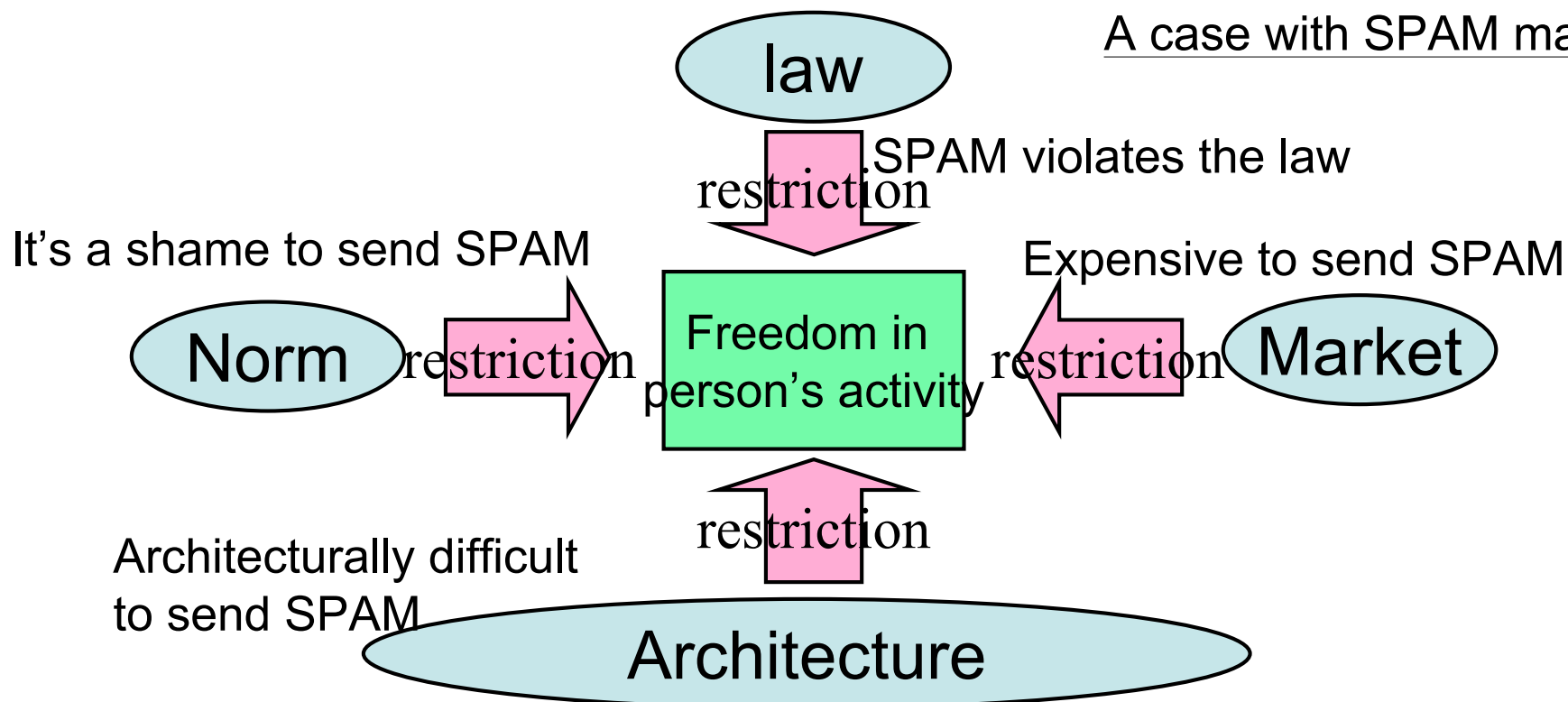
Designing the Information Society

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Laurence Lessig says

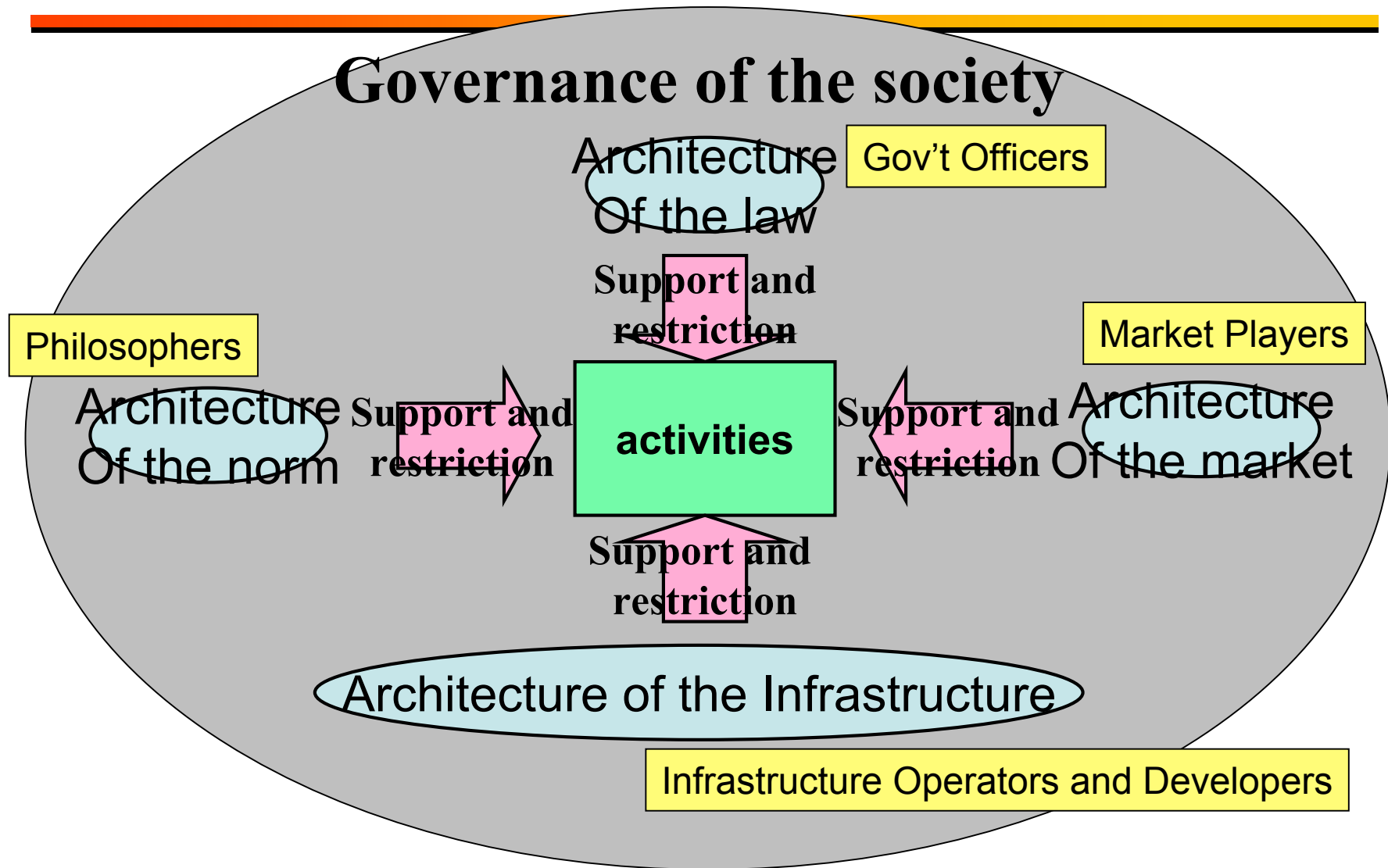
Four items which restrict the freedom of a person – in “*CODE*”(1999)

A case with SPAM mail



In the Internet, the architecture is flexible enough
The code (program) dominates the code

(My) Enhanced Lessig Chart



Let's engineer the Internet...

- which is the infrastructure of the information society
- and maintain its sustainable operations
 - With developers and policy coordinators
- to design the coming Information Society!
 - With various Non-techie people who engineer their own architectures
 - They might need your expertise
 - We have a bigger responsibility to maintain a bigger architecture

Thank You !

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