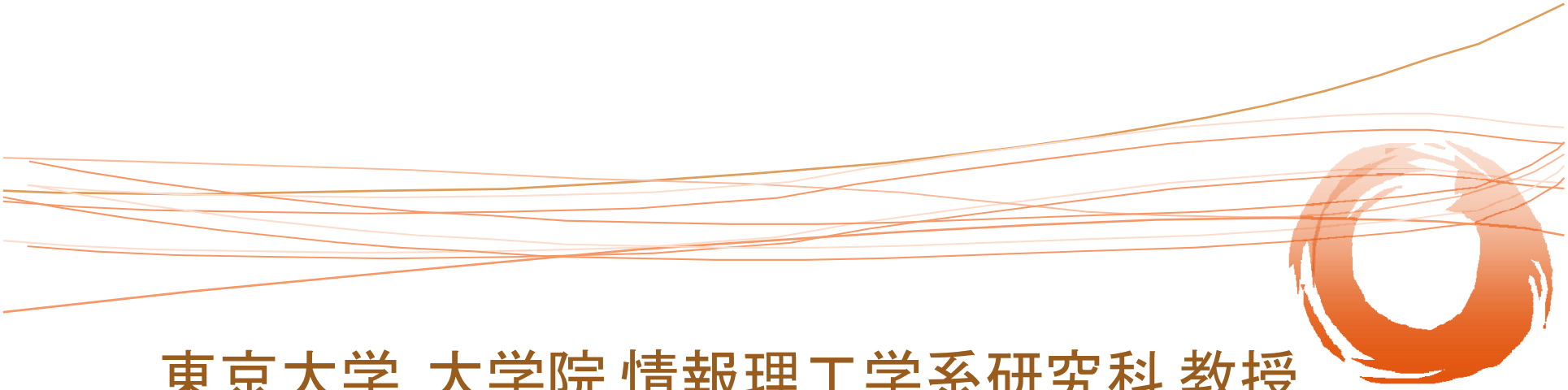
情報通信システムにおける「進化のシナリオ」



東京大学 大学院 情報理工学系研究科 教授
ISOC BoT(Board of Trustee)
江崎 浩(Hiroshi ESAKI)

Issues and Challenges for the Internet

- Improve QoS
  - Connectivity
  - Latency and loss
- Improve reliability

Agree with the importance, but realize which is important i.e., bearer vs connectivity

Real issues are;

- **Openness (i.e., connectivity)**
- **Global (not international)**
- **Intelligence in routing**
- **Mobile and multi-homing**

日本における GDPの構成

- 農業　：　1.9%
- 工業(含エネルギー)　：　22.8%
  - 情報通信サービス(60%程度)　：　(約13%)
- 建設　：　6.2%
- 運輸、流通　：　19.7%
- 金融・証券　：　26.3%
- 行政、その他　：　23.3%

What is our goal ; toward the "Eco-System"

- Back-Ground (i.e., concerning and thread)
  - There are many systems/networks with IP
  - Still, there are many non-IP systems/networks
  - Networks and Systems are tend to be **Fragmented**…
- Objective and Goal
  - **Avoiding the fragmentation** of IP systems/networks
  - Encourage the **collaboration among sub-systems**
  - Explore the "Eco-System", that deliver **the cheapest system** deployment , while delivering **innovations**.

Major Strategic Initiative by ISOC

Resolution on December 8, 2007 at Vancouver, Canada

- **"Trust and Identifier"**
  - An Internet transaction between two or more **verified or verifiable personae** should be **predictable** within the context, and when appropriate traceable, auditable, and non-repudiable.
  - Two or more personae that consider themselves to be in the same context should be able to perform relevant transactions. The choices available to connected personae in the Internet include **anything they agree on**.
  - Maintain "**Layer"(Horizontal)** service/business model

Our “Internet” should;

- Be “multi-culture”
- Has “liberty” and “anonymity”
- Has “fairness”, no discrimination
- Reacts “predictably”
- Be “safe”
- Provides “commons”
- Provides “opportunity”

Internet and ICT have change the world
- some legacy and old conventional wisdoms -

1. User and end-station is poor and stupid
2. Users' terminal only turns on, when it's needed
3. Fixed terminal is far major and superior than mobile nodes
4. "Service" must be provided either by provider or by enterprise.
5. Cost of transmission, store and copy, is not little, but negligible.

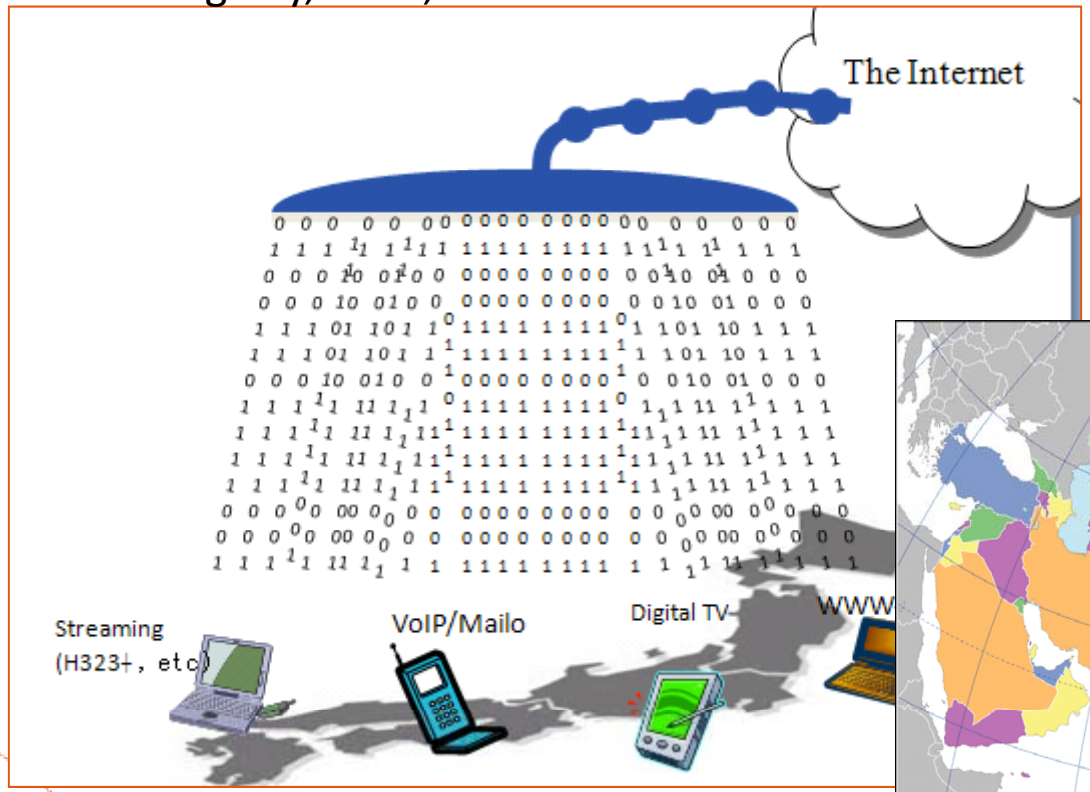
How the real network looks like ?

1. Covering our "Earth" with high speed network
2. Uni-Directional (unwired) Digital Link
3. Design the "earth" scale computer system
4. Impossible to accommodate earth with single technology
5. Investment and operation is always autonomous
6. We have large area, where we could not wire
7. We have large area where, even, wireless would be hard to use
8. Real integration between "logistics"

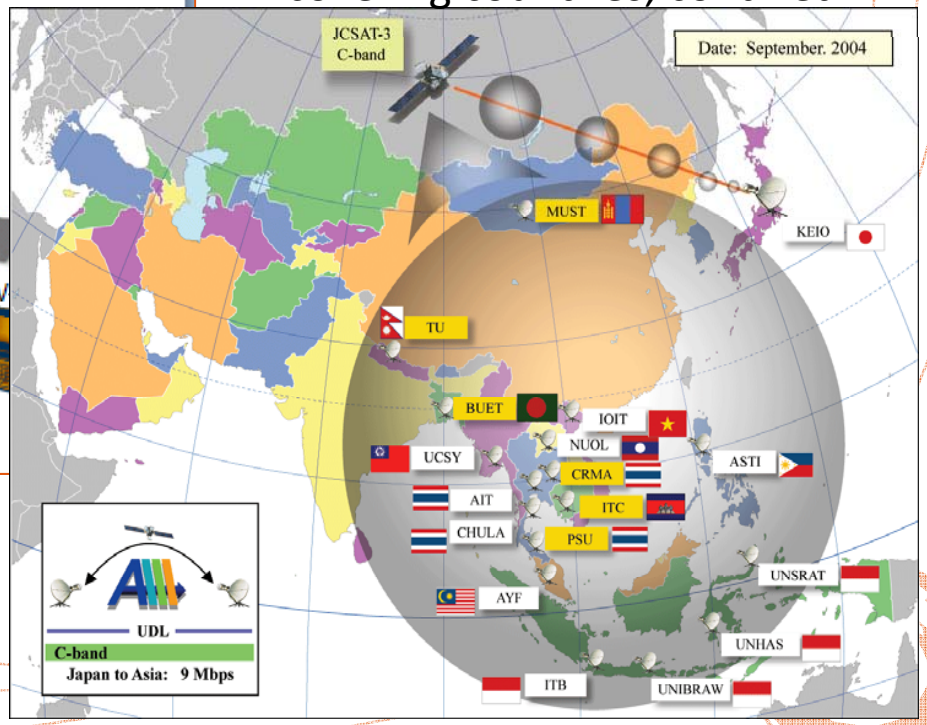
IP over (Digital) Broadcast, aka UDL(Uni-Directional Link)

<Short range>
push to Cell-Phone

<Wide range>
covering city, state, nation



<International range>
covering countries, continet



{Existing} Net-Neutrality

1. Must be able to access the lawful Internet content of their choice.
2. Must be able to run applications and use services of their choice, subject to the needs of law enforcement.
3. Must be able to connect their choice of legal devices that do not harm the network.
4. Must be able to participate in the competition among network providers, application and service providers, and content providers.

Adding Net-Neutrality Principles proposed by New FCC chair (USA)

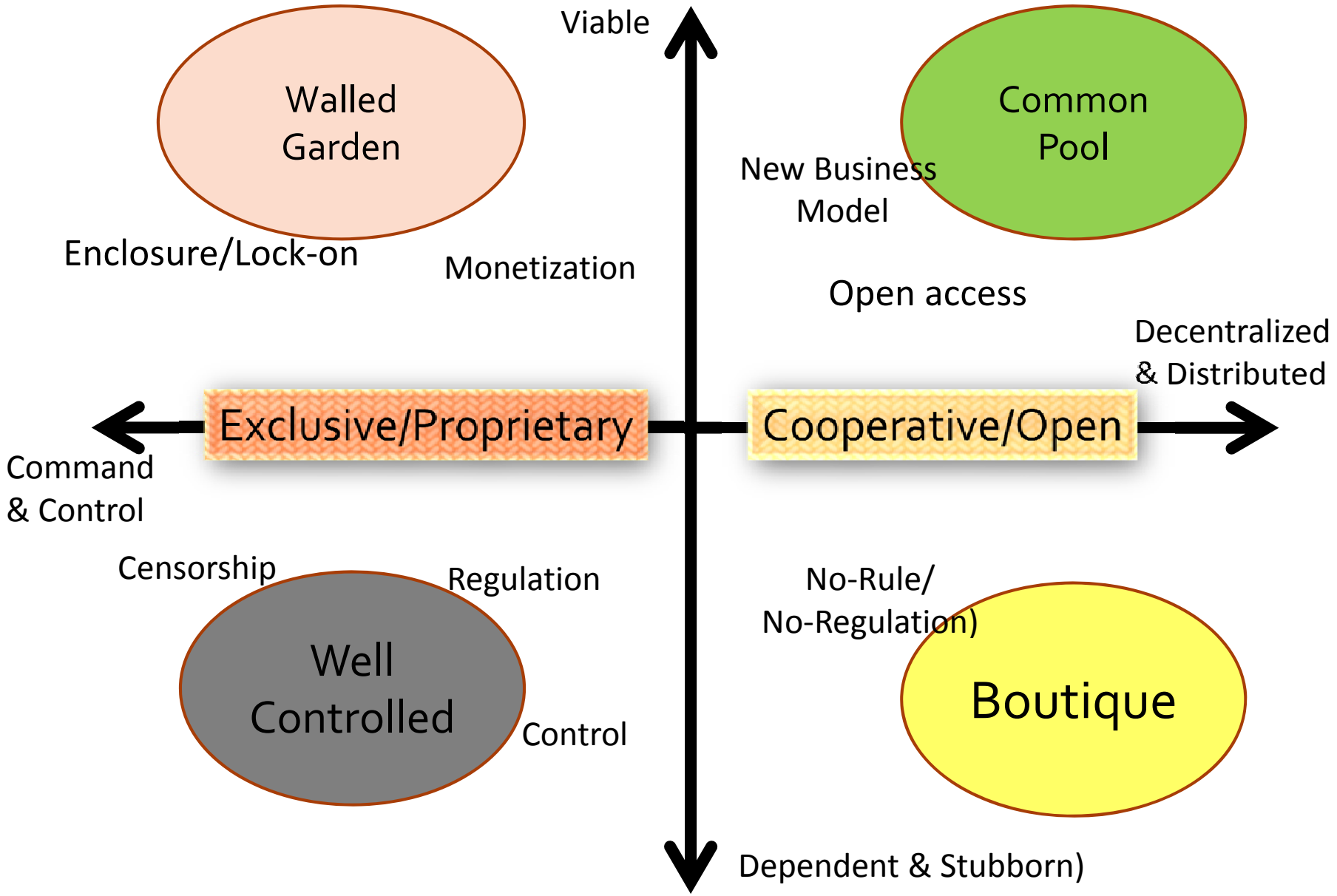
5. **Non-discrimination**

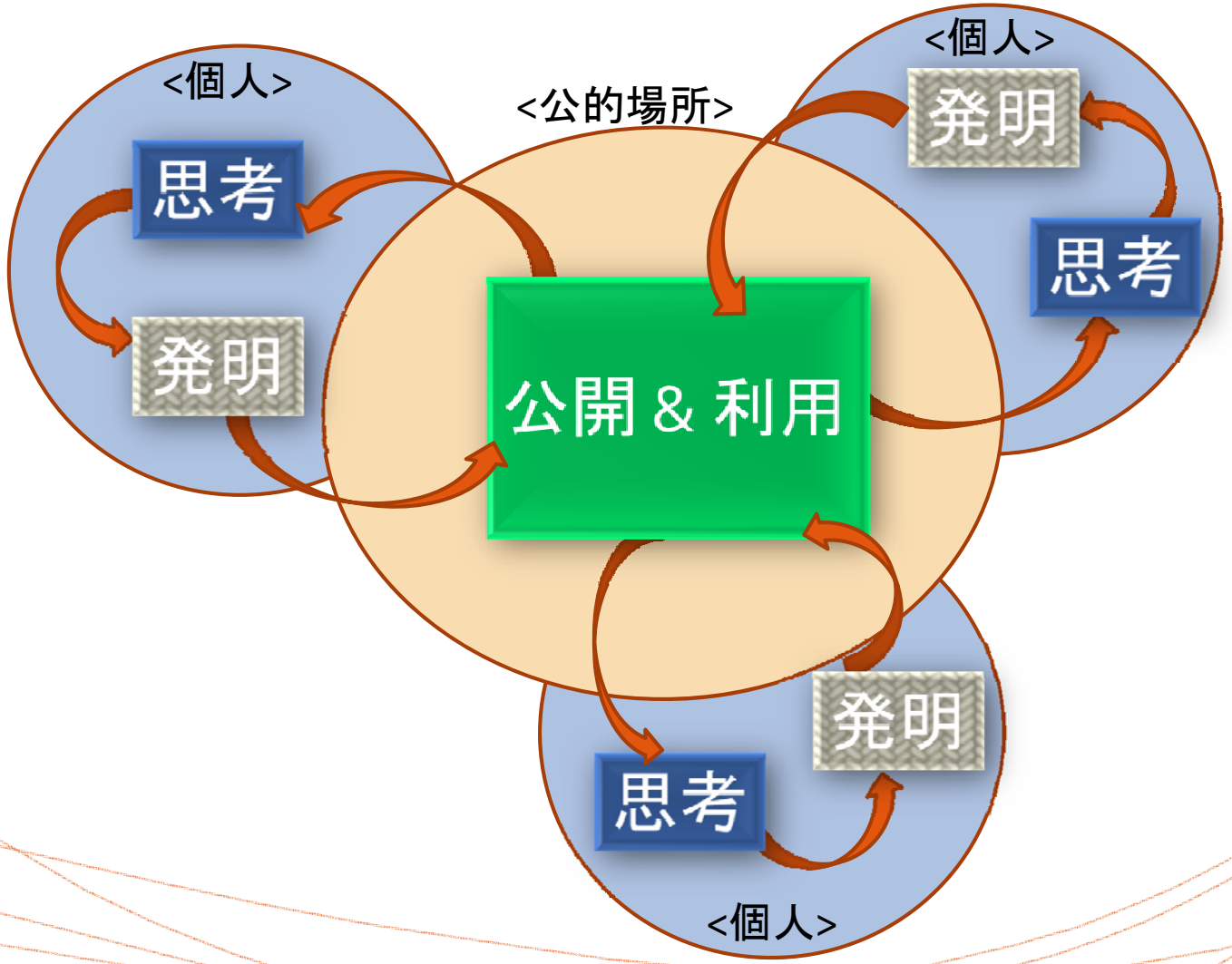
- ✓ broadband providers cannot discriminate against particular Internet content or applications. They cannot block or degrade lawful traffic over their networks, or pick winners by favoring some content or applications over others in the connection to subscribers' homes.

6. **Greater transparency**

- ✓ Internet access provider must be transparent about their network management practices.

Where should we go ?

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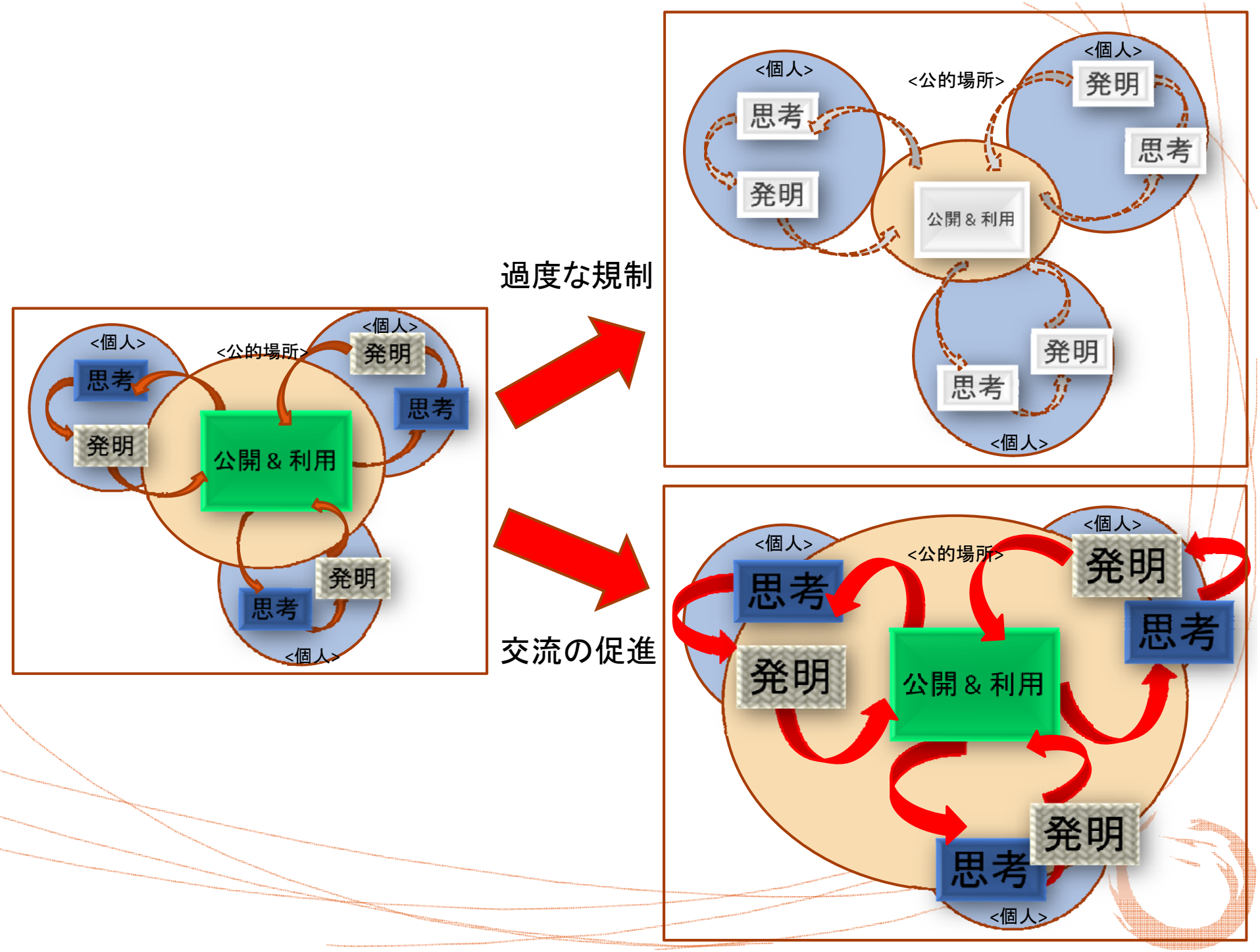
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インターネット“アーキテクチャ”
“Eco-System” for Sustainability

1. Independency(自立性)
2. Autonomous(自律性)
3. Interactions(交流),

   i.e., connectivity(接続性) and cooperation (協調・協力)