

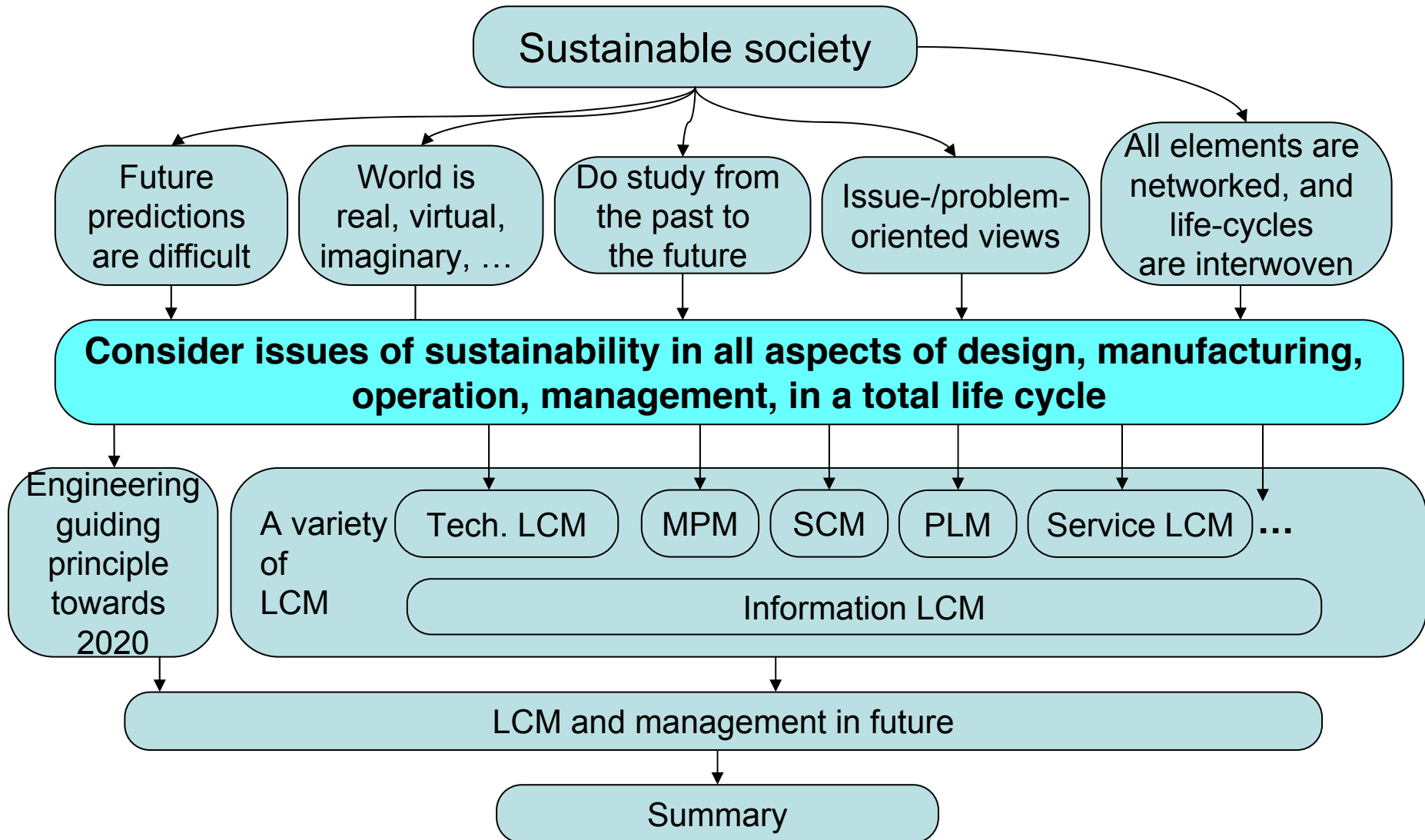
Managing Globally Interwoven Multiple Life Cycles

18 May, 2005

Makoto (Mac) YOSHIDA

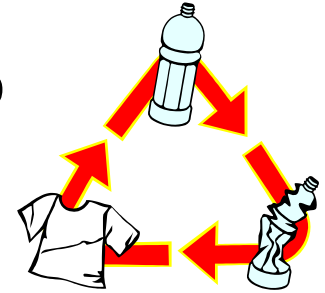
Professor, the School of Engineering
the University of Tokyo
TMF Fellow, Board Advisor
IEICE Fellow

Outline



Sustainable society

From growth-first, mass-consumption society to sustainable future society



👤 Protection of global environment

- 20% rich group consume 80% natural resources
- Even the **two globes** are not enough to let all the people on the earth live a highly industrialised nation's life

👤 Fairness vs. equal footing

- Managing both the growth of developing countries and upgrading industrialised countries requires raising the resource efficiency in industrialised countries more than **ten times**

👤 “The limits to growth” by the Club of Rome (1972)

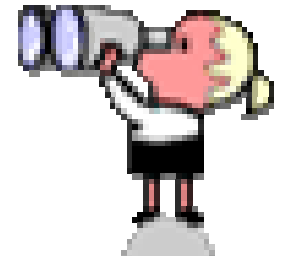
- Resource crisis —consumption results in shortage anyway
- Environmental crisis —even if there remain resources, environmental pollution overwhelms self-cleansing

Cope with a **catastrophic scenario!**

Can you read the five-year future?

A book published in April 1996 forecast the five year future of the Internet having made no mention of the following:

- ⇒ IPv6
- ⇒ xDSL
- ⇒ VoIP
- ⇒ Mobile internet, iMode, 3G, ...
- ⇒ Web services, web business, ...
- ⇒ Microsoft trends (IE, WinXX, cases, ...)
- ⇒ IT/dotcom bubble, telecom slump, ...
- ⇒ Net-game, P-P
- ⇒ Environmental problems and business
- ⇒ Progress of globalisation, ...



Predictions of the future are difficult

Therefore,
scenario-based planning in “The Engineer of 2020”
(the National Academy of Science, 2004), assumed the
following four scenarios:

- (1) *The next scientific revolution*
- (2) *The biotechnology revolution in a societal context*
- (3) *The natural world interrupts the technology cycle*
- (4) *Global conflict or globalisation*

Back to future and back to basics

The world is a mix of **real**, **virtual**, **imaginary** and **false** things/events, which are the outcome of (our) past doings in the present environment, to be connected to the future.

So, you need

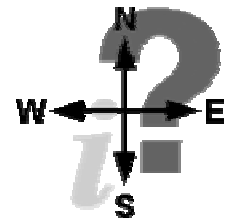
- ⇒ Sense & understand what's happening, then
- ⇒ Decide what to do, and then
- ⇒ Foresee what'll happen, and will have been happening in NEAR future

Basics:

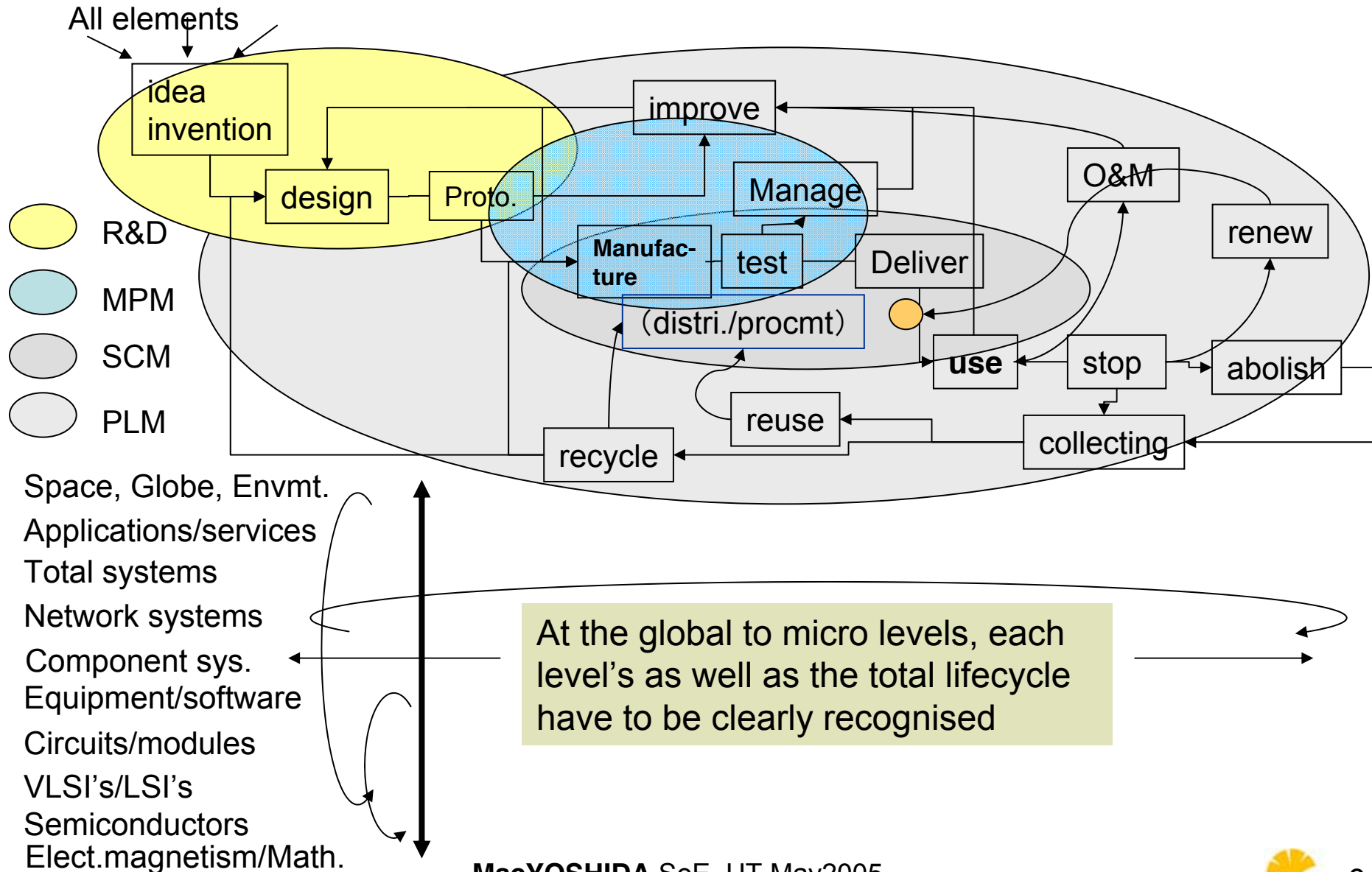
You have to acquire a **capability** to do the above, as an individual/organisation, and we have to grow the number of **people** who can do the above

Recent trends

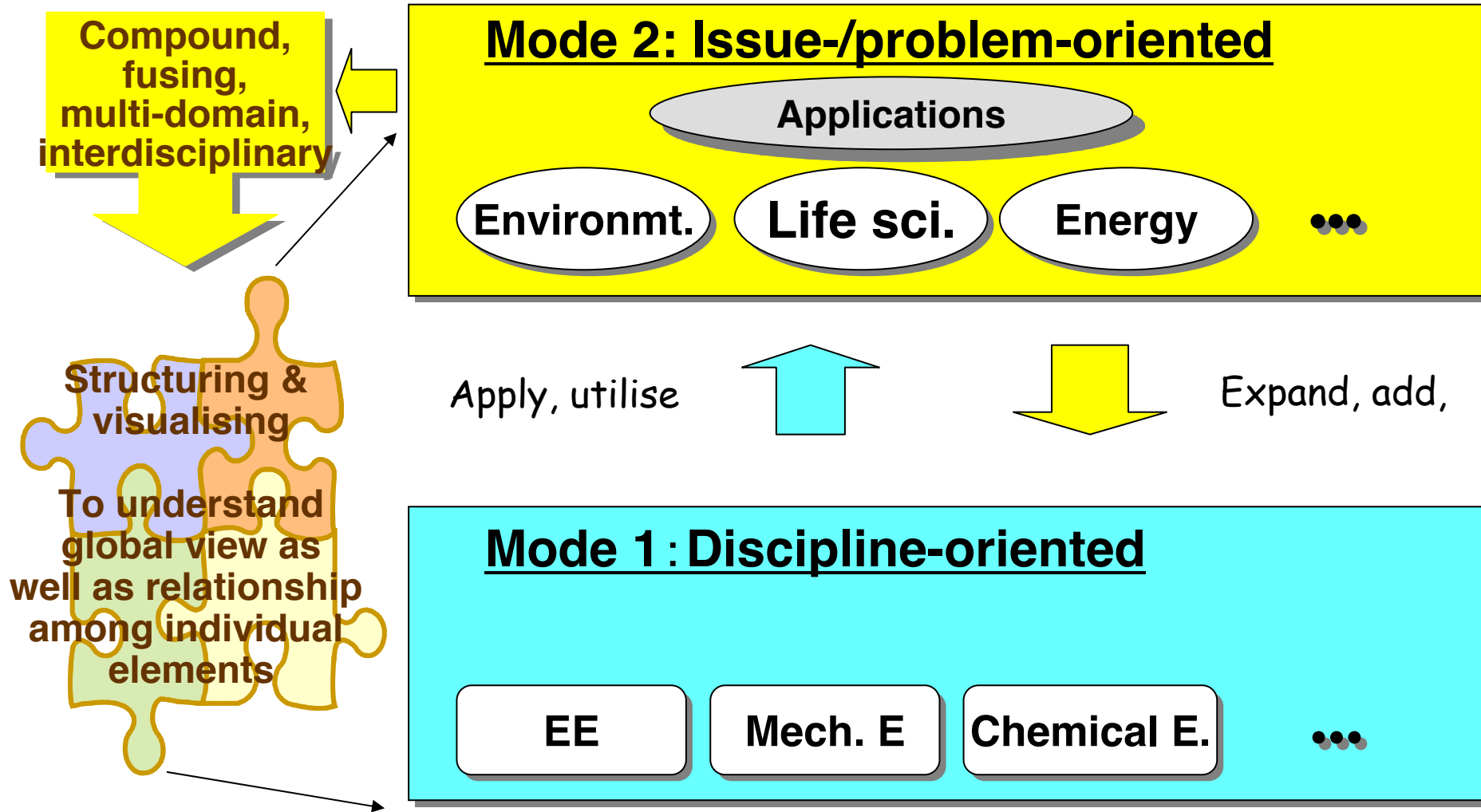
- 👤 Views are becoming broader and broader:
 - Issue-/problem-oriented, multi-domain, field-compound/fusing, ...
- 👤 **Life-cycle management:**
 - especially, multiplex life-cycles networked,
 - requiring design for connecting the future back to the present
- 👤 **Value chain everywhere:**
 - Business/work/task/system collaboration
- 👤 Demand, market, specs, quality are all imaginary, easily change and volatile
- 👤 Projects are **ecosystems**:
NGN, ..., NGN-M too



(Product) life cycle – multiple/fusing views

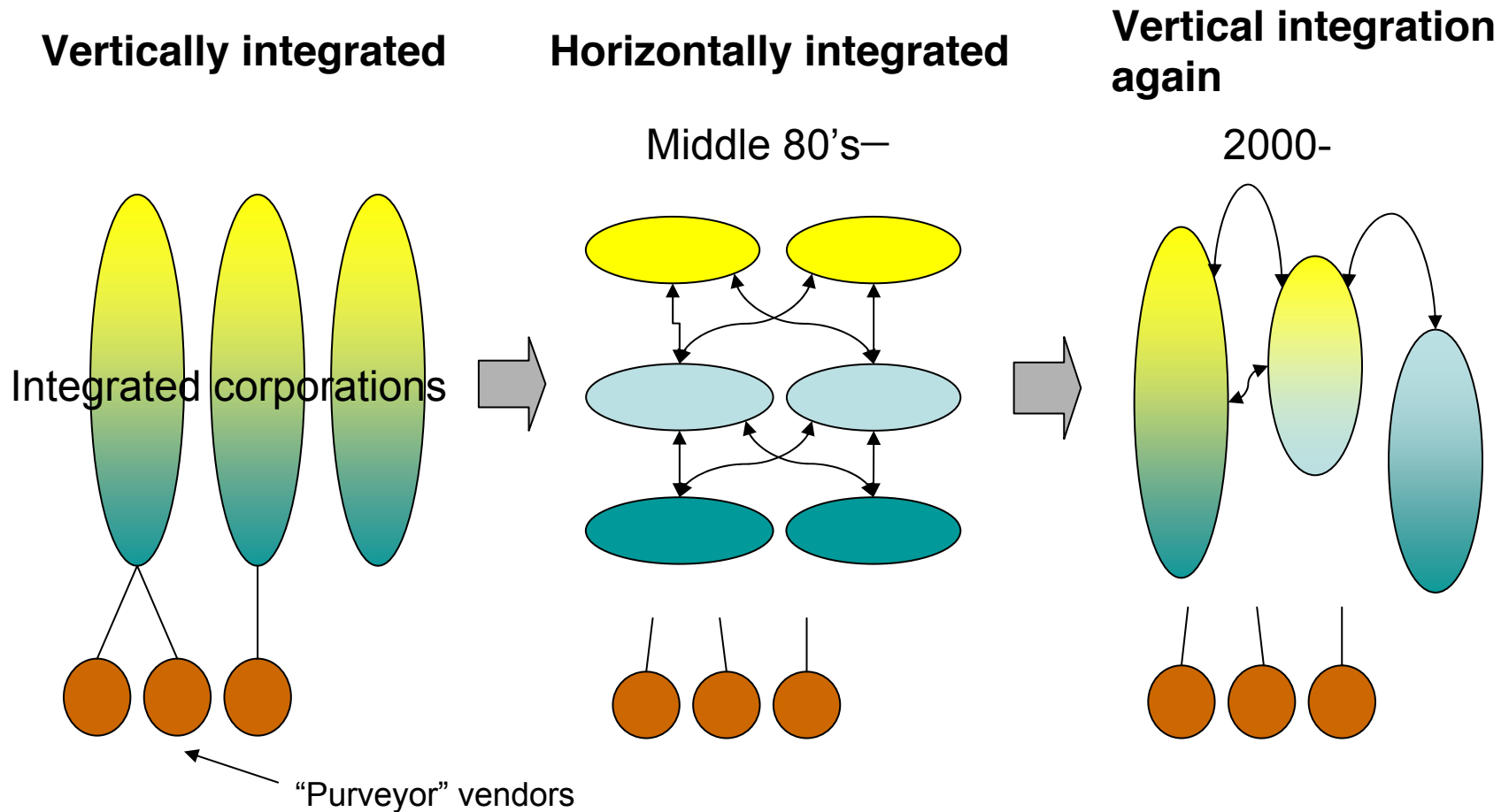


Compound/multiple views



Source: Mac Yoshida, First GSIC Seminar, TiTech., Jan. 2005

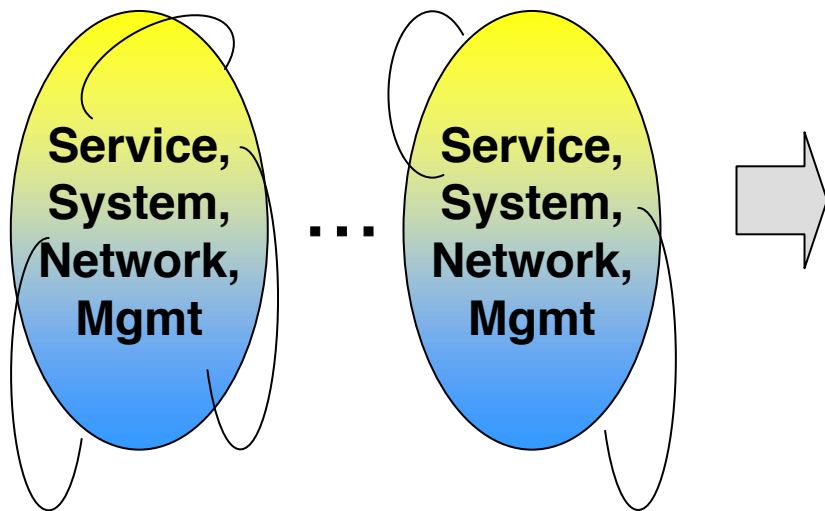
Networked corporation change



LCM in the NGN age

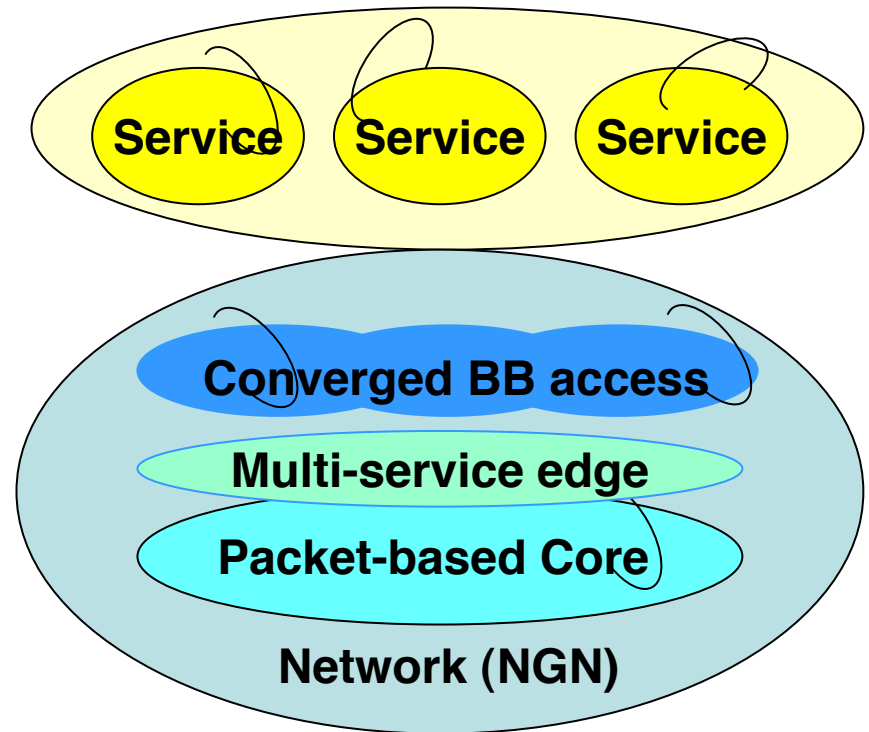
Current/Old Gen. Network:

Service LCM and other LCM activities are tightly connected



New Generation Network:

All aspects of mgmt can be (basically) mutually independent

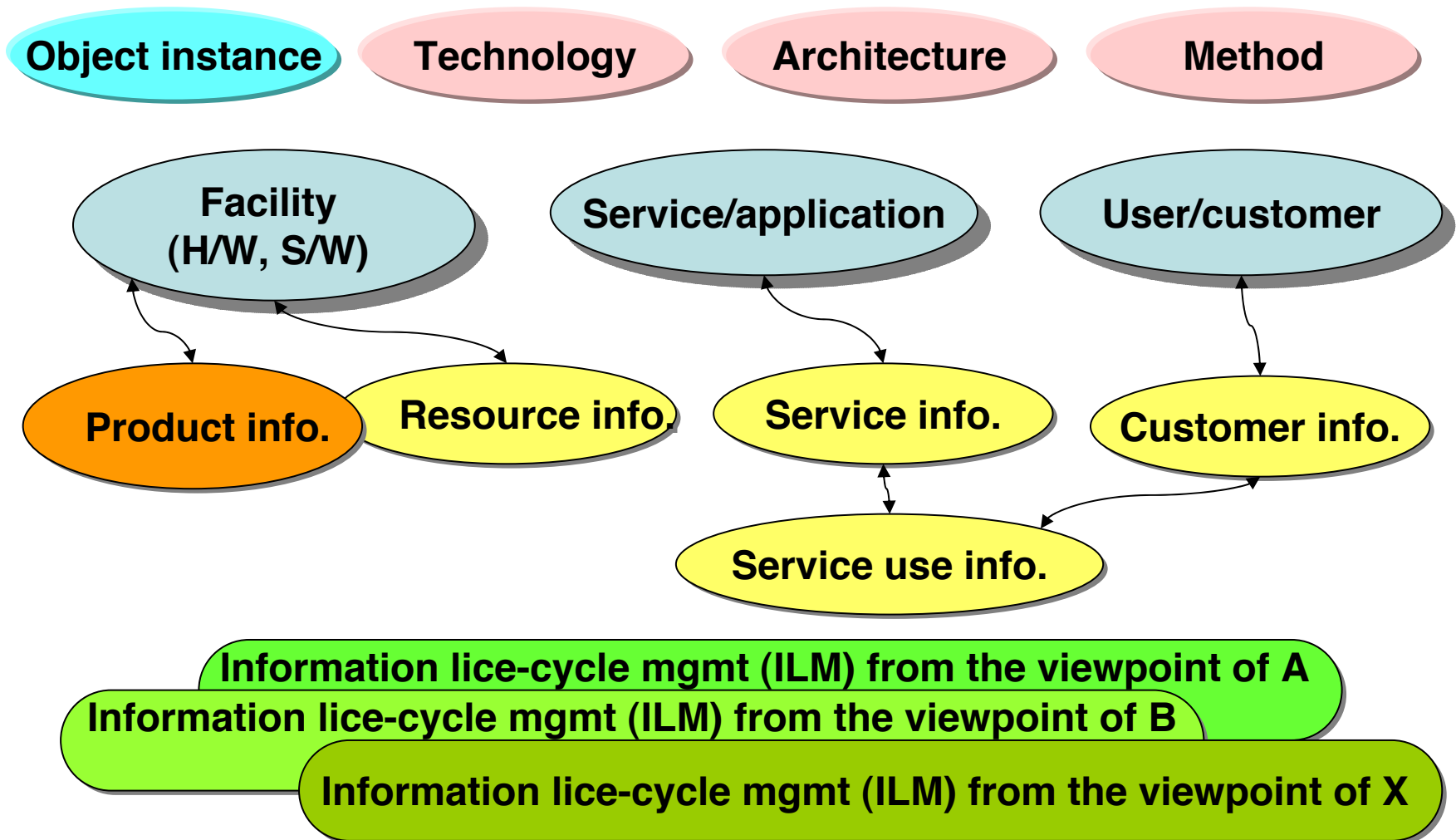


Certain guiding principles that will shape engineering activities

- The pace of **technological innovation** will continue to be **rapid** (most likely accelerating).
- The world in which technology will be deployed will be intensely **globally interconnected**.
- The population of individuals who are involved with or affected by technology (e.g., designers, manufacturers, distributors, users) will be increasingly **diverse and multidisciplinary**.
- Social, cultural, political, and economic forces will continue to shape and affect the success of technological innovation.
- The presence of technology in our everyday lives will be seamless, transparent, and more significant than ever.

Source: "The Engineer of 2020" the National Academy of Science, 2004

A variety of life-cycle mgmt






Info. life-cycle mgmt - definition

- ❏ It's not a storage product, nor simply tiered storage,
 - ❏ It's a journey, a **management process** that requires planning, discipline, communication, and organizational collaboration across the entire enterprise,
 - ❏ Then, the journey further goes beyond the corporate border **traversing the value chain**, and
 - ❏ It has **a variety of viewpoints**, according to where you are and what is your interest.
-
- ❏ "ILM is 90% **process**, 10% technology" (Meta Group)



Modified/added to "ILM for the Terrified," Rick Bauer, ILM Summit, Feb., 2005

Info. life-cycle mgmt – unique nature

Who does what in a value chain:

-  **Vendor** to manage product LC and thus product info. LC
-  **Provider** to manage resource LC, and thus resource ILC, service product/use LC plus service product ILC, and customer (I)LC
-  **User/customer** to manage own resource LC, resource ILC, and own service use LC/ILC

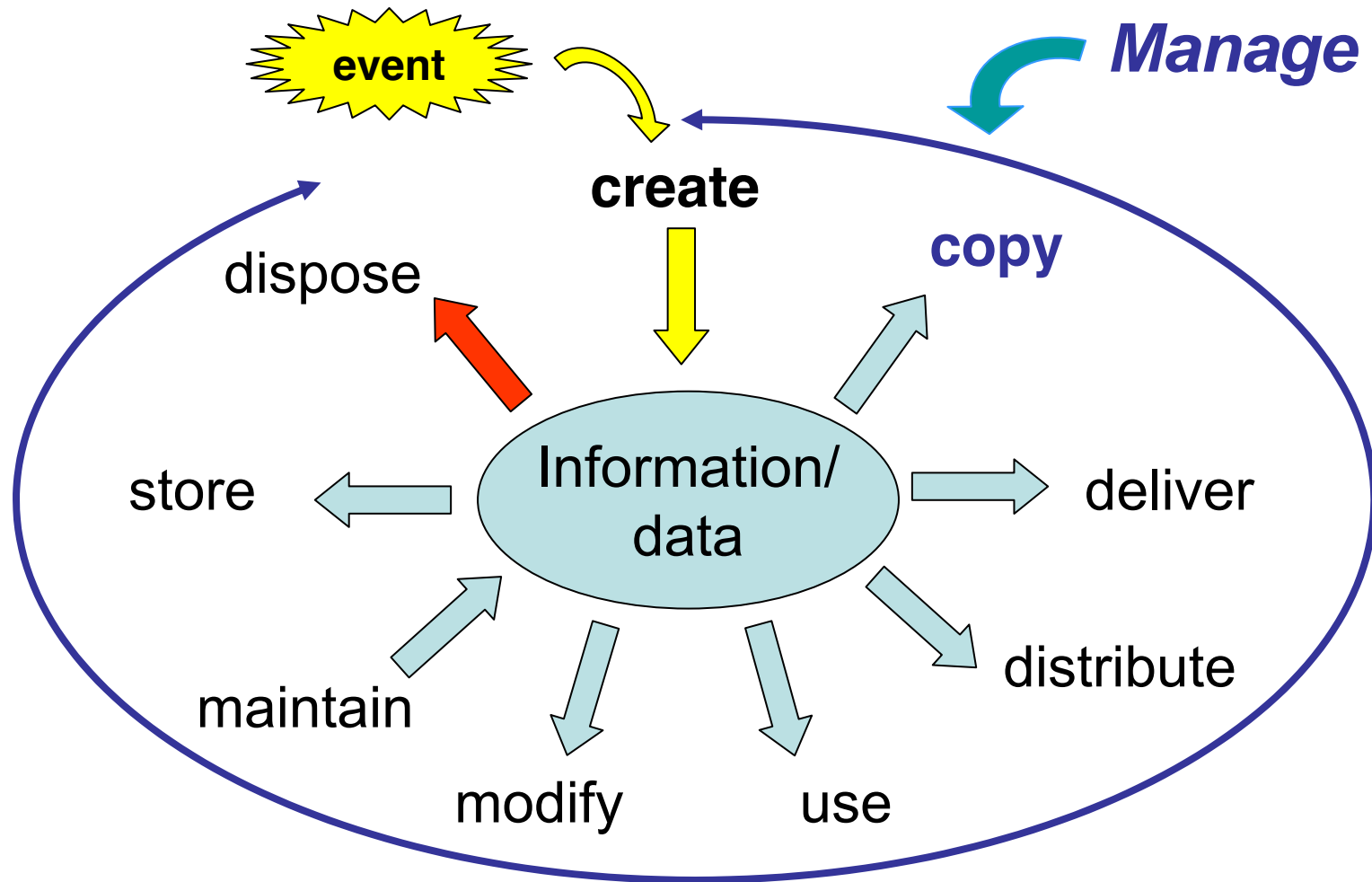
Current information/data LCM tends to be storage LCM:

-  HP: Adaptive Enterprise (resource oriented)
-  IBM: On-demand Business (service oriented)
-  EMC: ILM (data oriented)

Unique nature of Information/data:

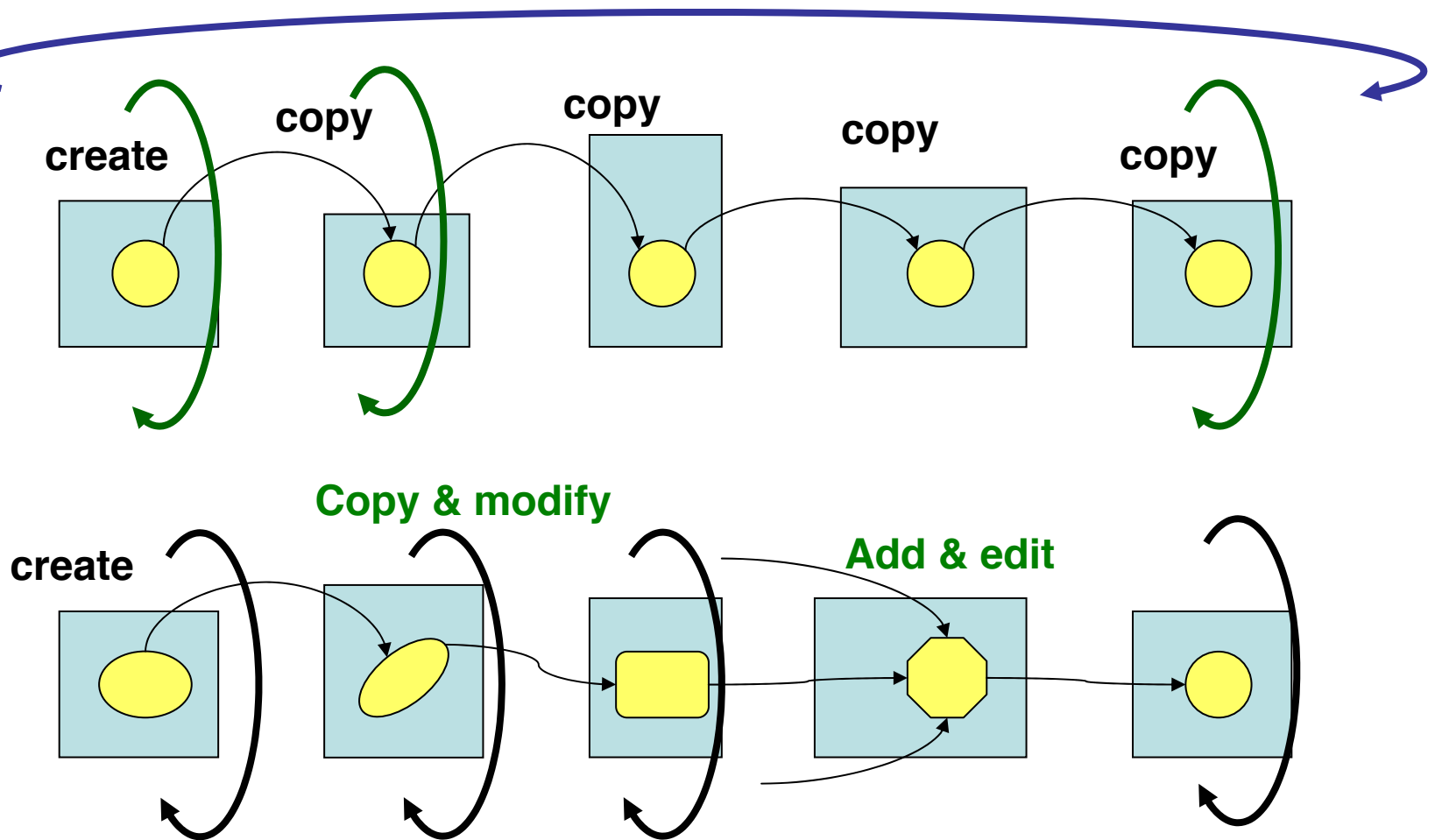
-  “Use” accompanies “**copy**” producing clone, which differentiates Info. LCM from other LCM

Actual view of ILM



Data is inherently reproduced by copying.

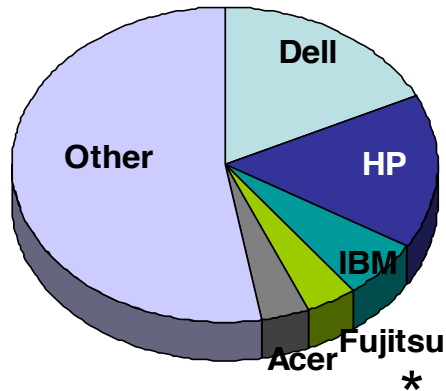
Info. Life-cycles – copy and modify



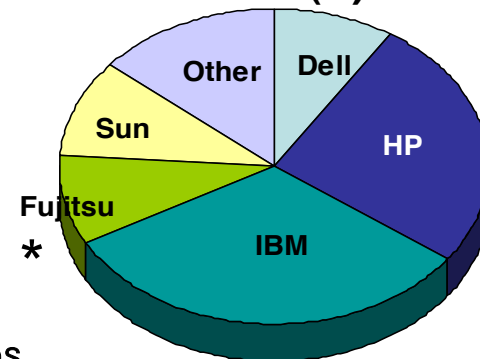
World Market Share (2004)

Cooperation is essential for Information LCM!

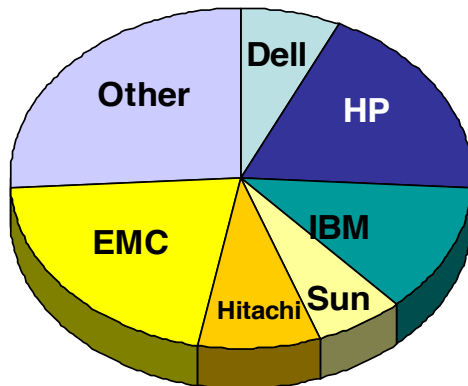
(a) PCs (#)



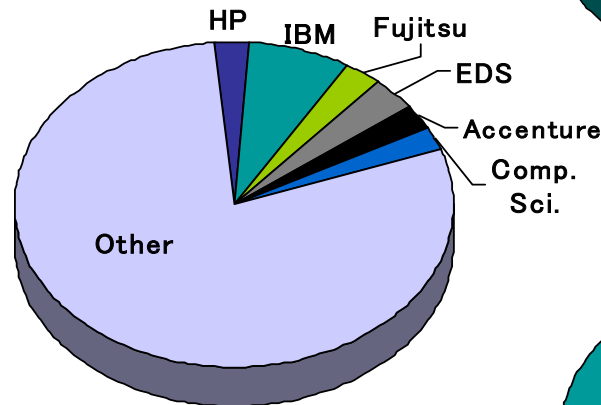
(b) Servers (\$)



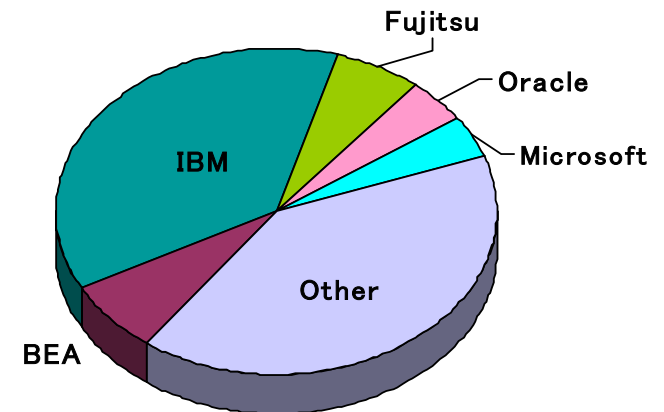
(c) Storage (\$)



(e) IT Services (\$)



(d) App. Integ., Middleware & Portal (\$)

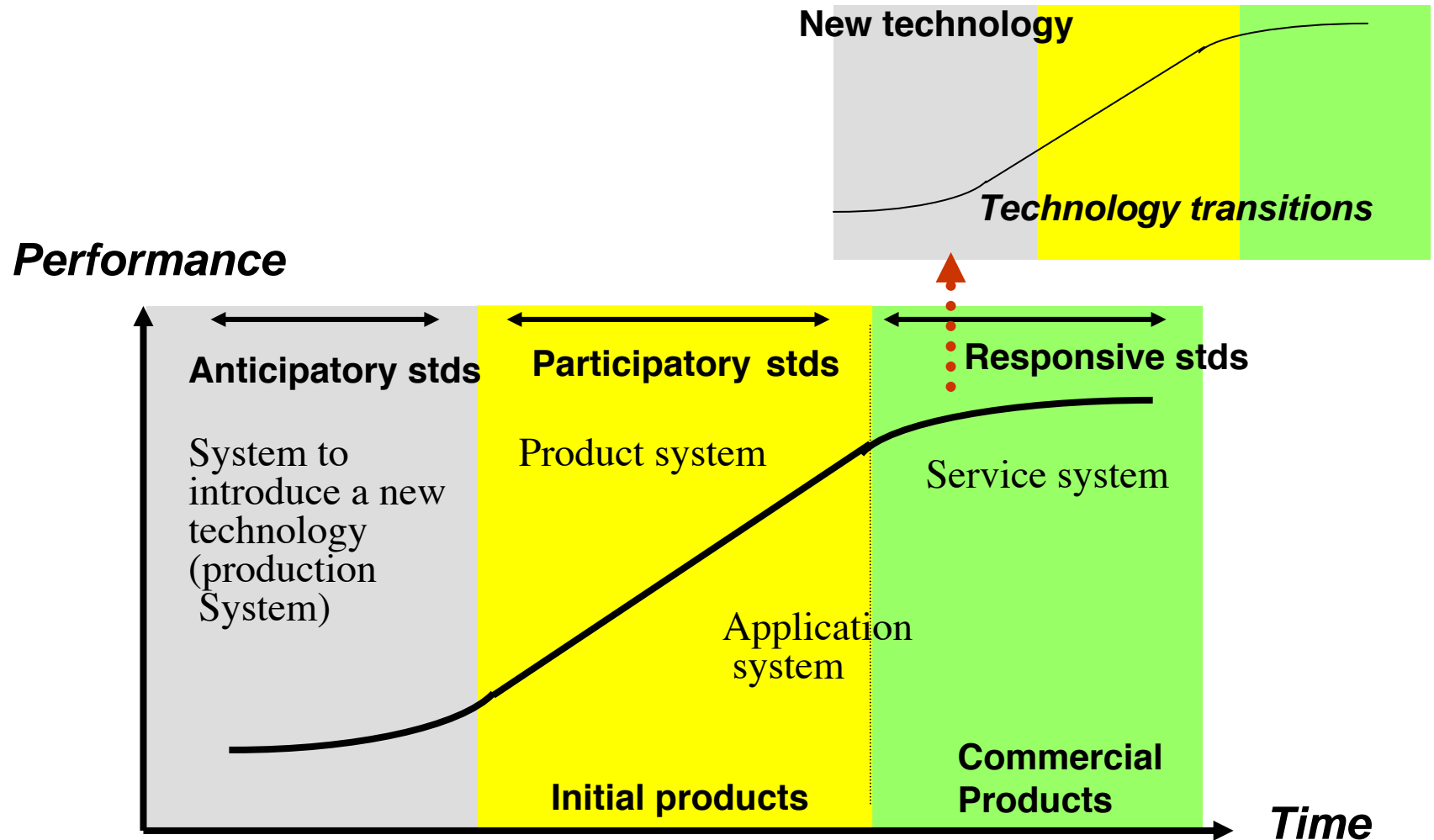


* Fujitsu includes Fujitsu-Siemens

Source: (a)-(c) IDC, 2004

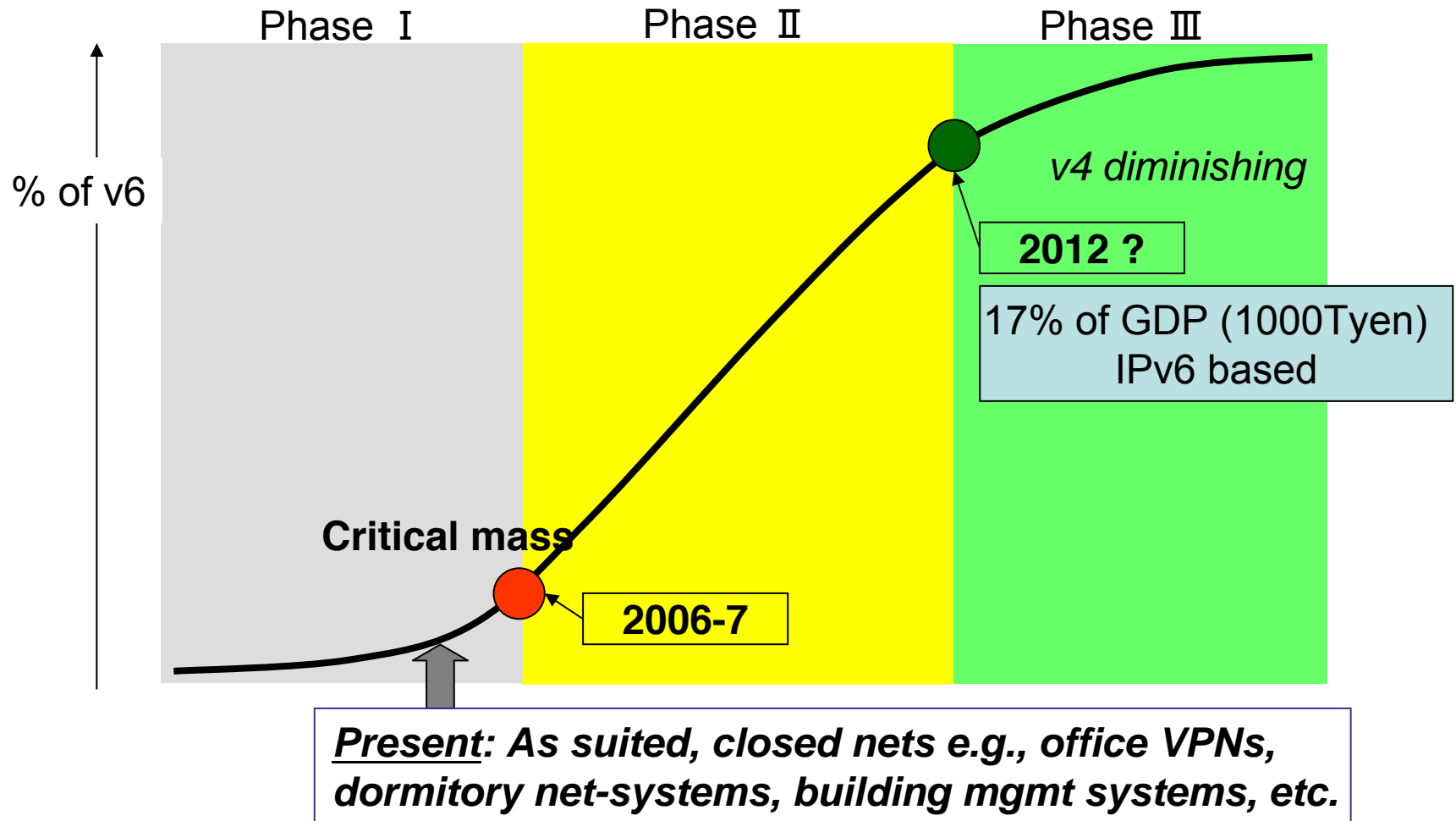
Source: (d) Gartner 2004
(e) Gartner 2005

Timing of standards - tech. S-curve

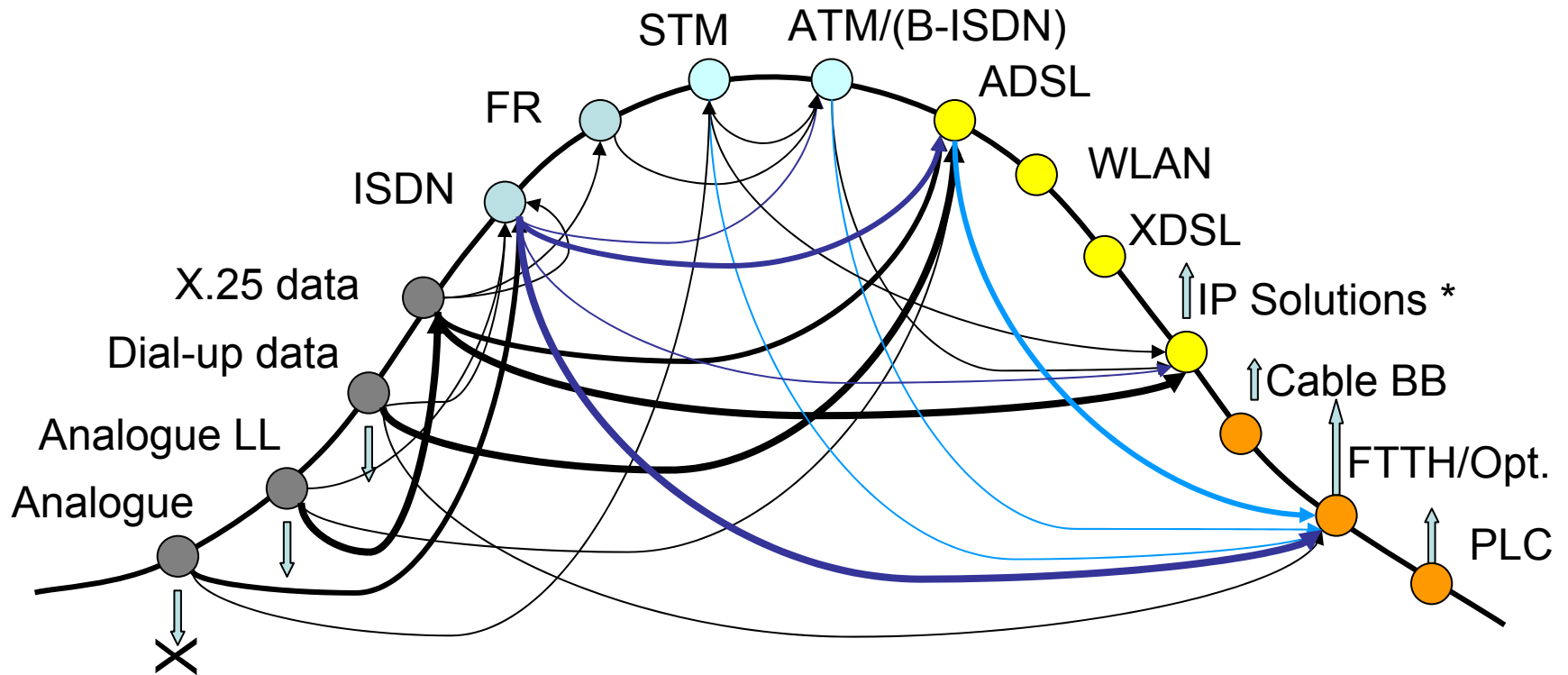


Modified from M.H. Sherif, IEEE Com. Mag., April, 2001

Tech. S-curve – IPv6 in Japan

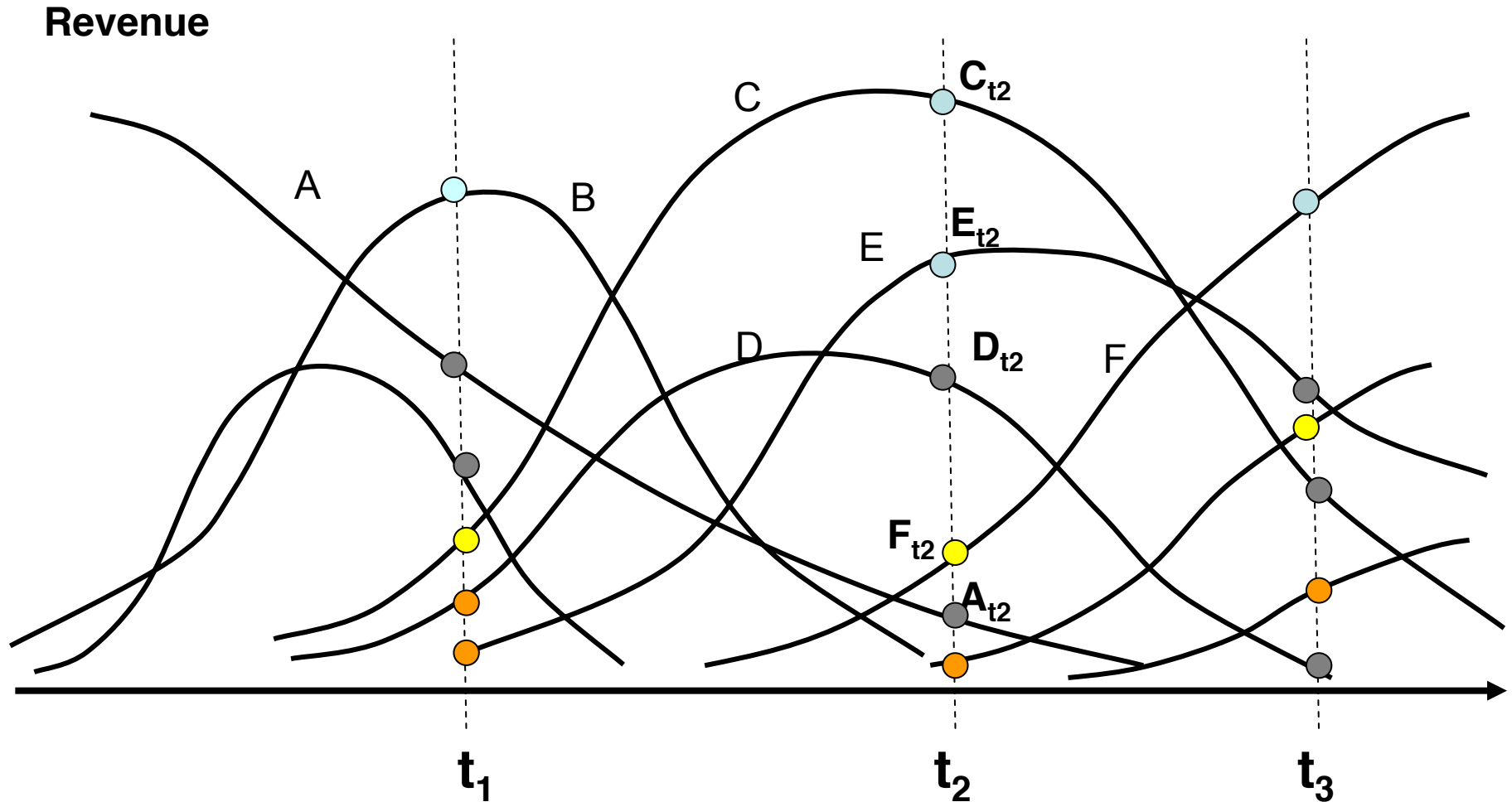


Communication tech. life-cycle

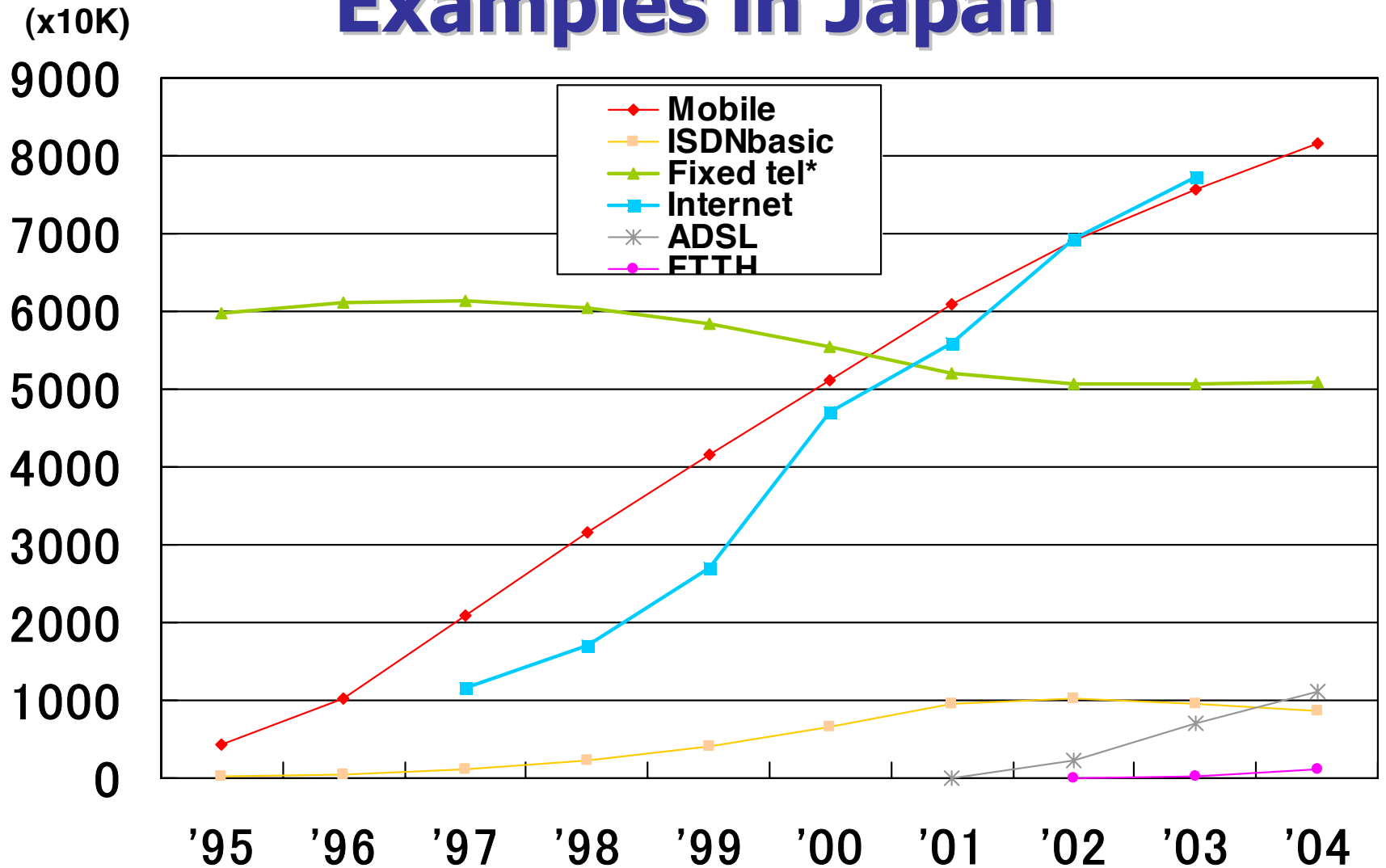


* IP-WAN/Ethernet WAN, IP-VPN, IP Telephony, ...

Technology waves



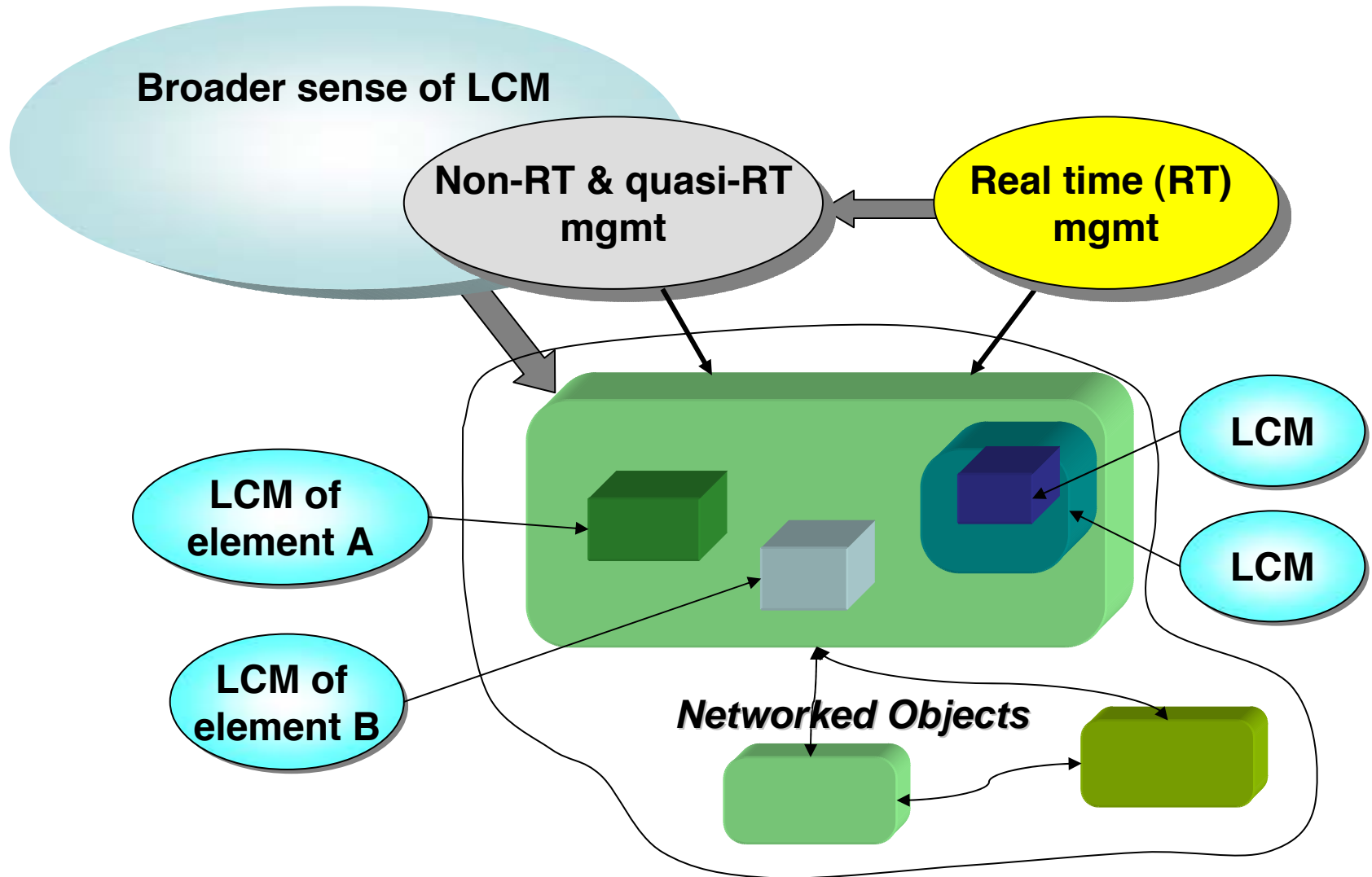
Examples in Japan



* NTT East + NTT West

As of end of March by Ministry of General Affairs

LCM and management



Examples - eTOM

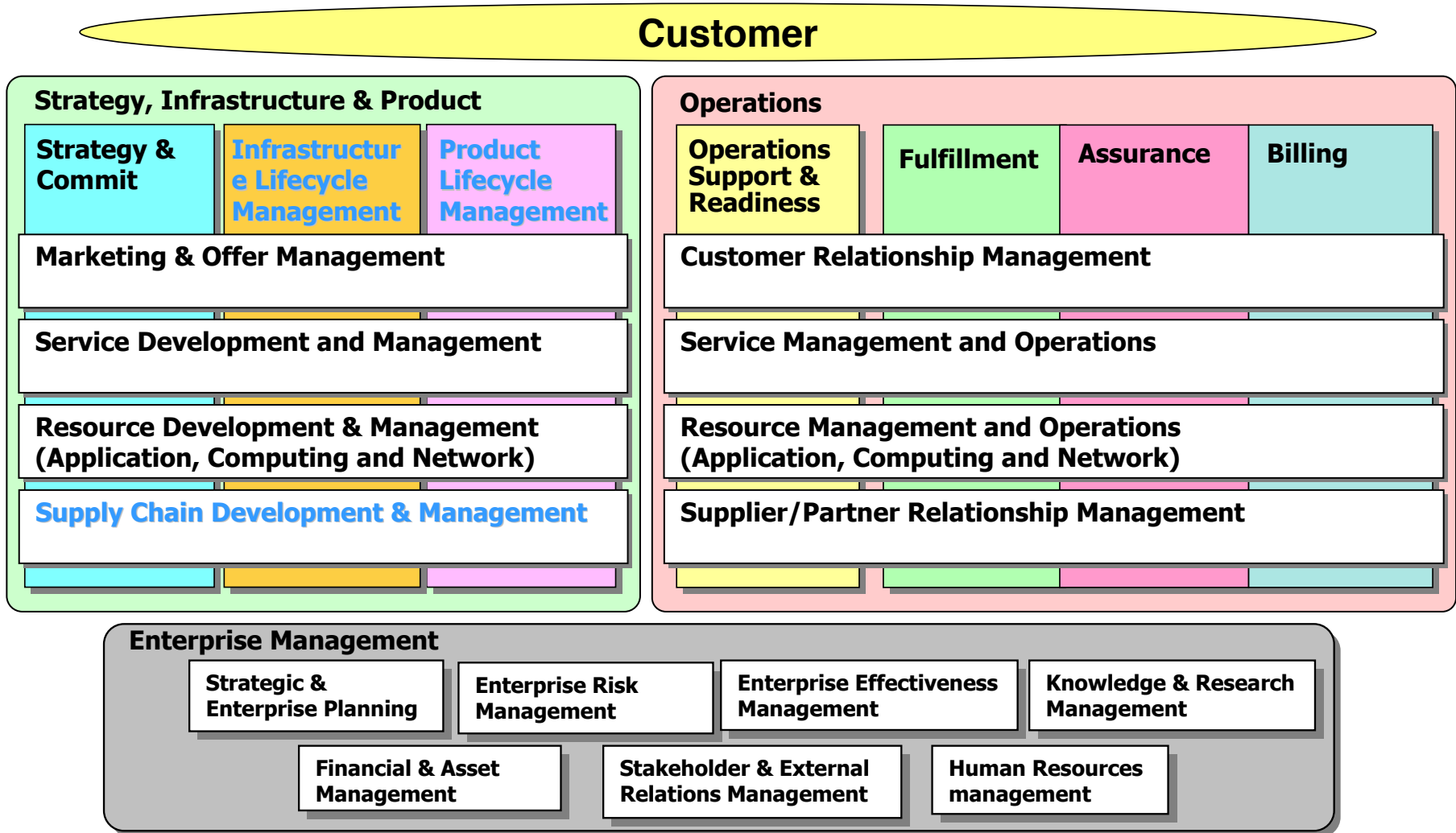


Figure 1.2: eTOM Business Process Framework – Level 1 Processes, Release 4.5, TMF GB921

Management by Nature



It's becoming more and more difficult to know who, what and where we are and where we are going to, because it is impossible to monitor all events and objects in the world:

- Use a rough estimate base
- Use a limited number of most influential factors rather than many pieces of detail information
- Know the whole by using individual available information
- Guess a specific element from the aggregated information
- Structure and visualise the relationships among elements
- Spiral forecasting
- Embedded agent
- Management by Nature

Embedded and “silent” mgmt

Basics: Management by Nature, avoiding unnecessary waste, by ***embedded and “silent” management***

- Seamless and collaboration,
- Pervasive connectivity,
- Information assistance.

This should should Include:

- Automated preprocessing, system operation, monitoring/restoration,
- Auto-discovery, auto-search, retrieval and analysis, and
- Self-healing/self-restoration.


Then,


- Monitoring and control: target-oriented,
- Management: objective-oriented, and
- View: integrating real world and cyber world.

Summary -1





Present issues: Sustainable Future Society

We have to draw a future picture, and manage the sustainable society, composed of globally interwoven things/life-cycles

 All are not professionals in any area: 20-80 rule
No single person/company/group can rule any industry.
Thus, any system should be open and transparent
where and when demanded.

 Professionals should be able to navigate/(control);
while users should care about usability only

Summary -2

-  From “growth-first, mass-consumption” society to “**sustainable**” future society, we need:
 - efficient energy use,
 - networked collaboration: sharing and distributed,
 - pursuing “simple!” and
 - managing closely interwoven “virtual” and “real” worlds.
-  To draw a sustainable future picture
 - back from/to the future,
 - understand reality, foreseeing and dream, ...
-  Do you really wish such a dream or nightmare?
Being monitored and chased 24x7x52, ...
-  Global sense, freedom and self-reflection.

Suggestions

- For the sustainable future society, we will need:
 - the integration of real space and virtual/cyber space, which in a sense the ICT management community has been familiar with, and
 - the integration, where and when necessary, of multiple life-cycle-mgmt activities/elements
- **IM/NOMS** should identify future engineering issues to be tackled from the above viewpoint,
- **TMF** should work with IM/NOMS to present ways to solve these issues.

Do you think you are the only one who wants to be happy?

Sometimes, we misunderstand other people's feelings and

think that we are the only ones who seek happiness and the only ones who ought to be happy.

Therefore, frustration comes to us.

Thank you very much for listening

macyoshida@t-adm.t.u-tokyo.ac.jp