

ICTがもたらす新たな社会
CRDSシンポジウム

超サイバー・システムがもたらす
現代社会の変容
- 幾つかの視点 -

2016年2月26日

有本建男

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科学技術イノベーションの
公共政策：
決定と実施における
多層構造

Evidence based
Policy making

科学助言組織
シンクタンク

アカデミア、学
術会議、学協
会

政策決定レベル

各省レベル
ファンディング機関

実施組織レベル
大学、企業、国研など

個人レベル：科学者、エンジニア、マネジャーなど

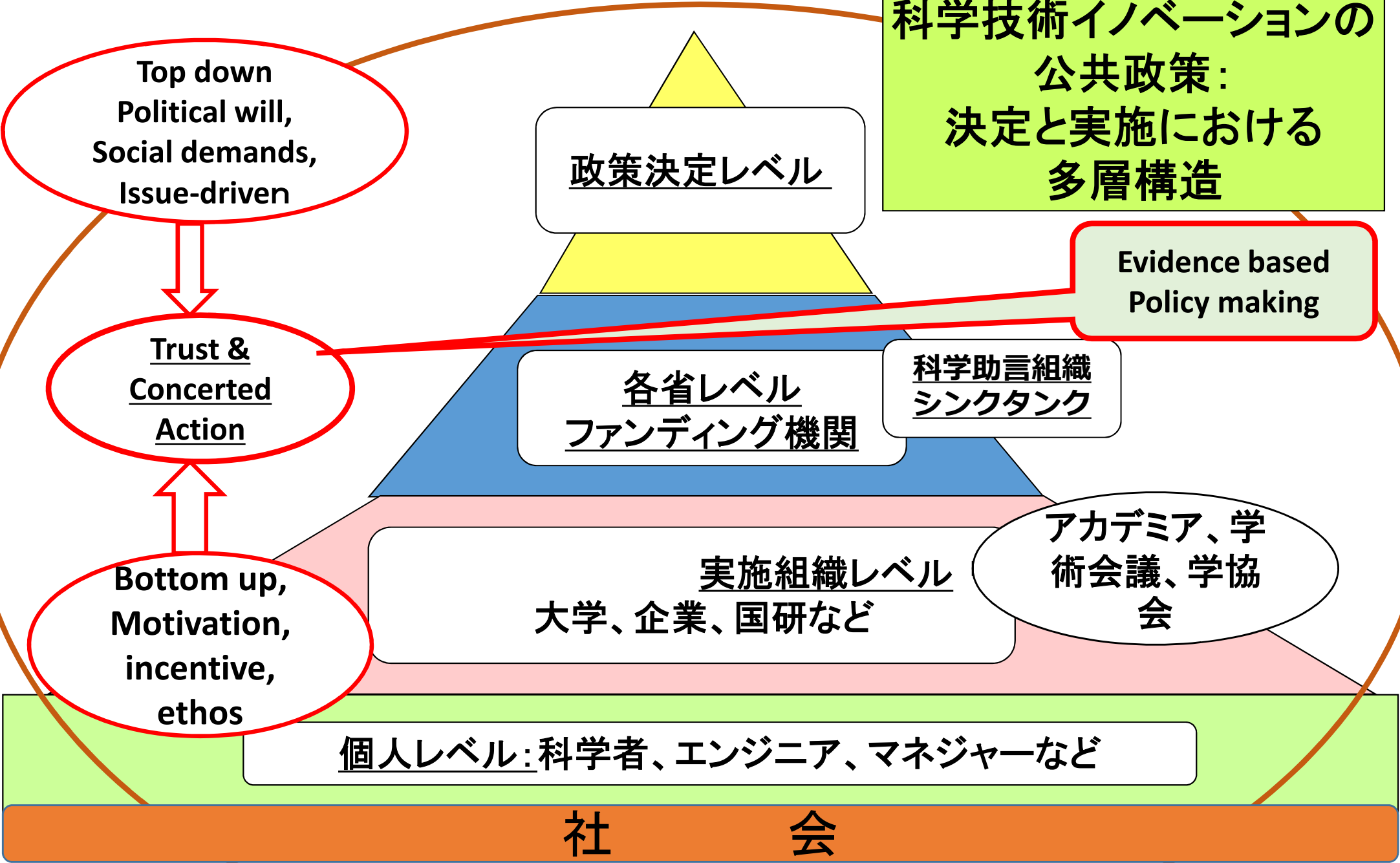
社 会

Reshaping STI system to meet the changing world

Top down
Political will,
Social demands,
Issue-driven

Trust &
Concerted
Action

Bottom up,
Motivation,
incentive,
ethos



CRDS : 研究開発戦略作成の枠組み

Priority setting, Reform of R&D system,
R&D investment etc

Strategic Proposals

Networks Academia, Industry
Government, Public

S/T discipline

Bird's eye View
Map

Important R&D
subjects

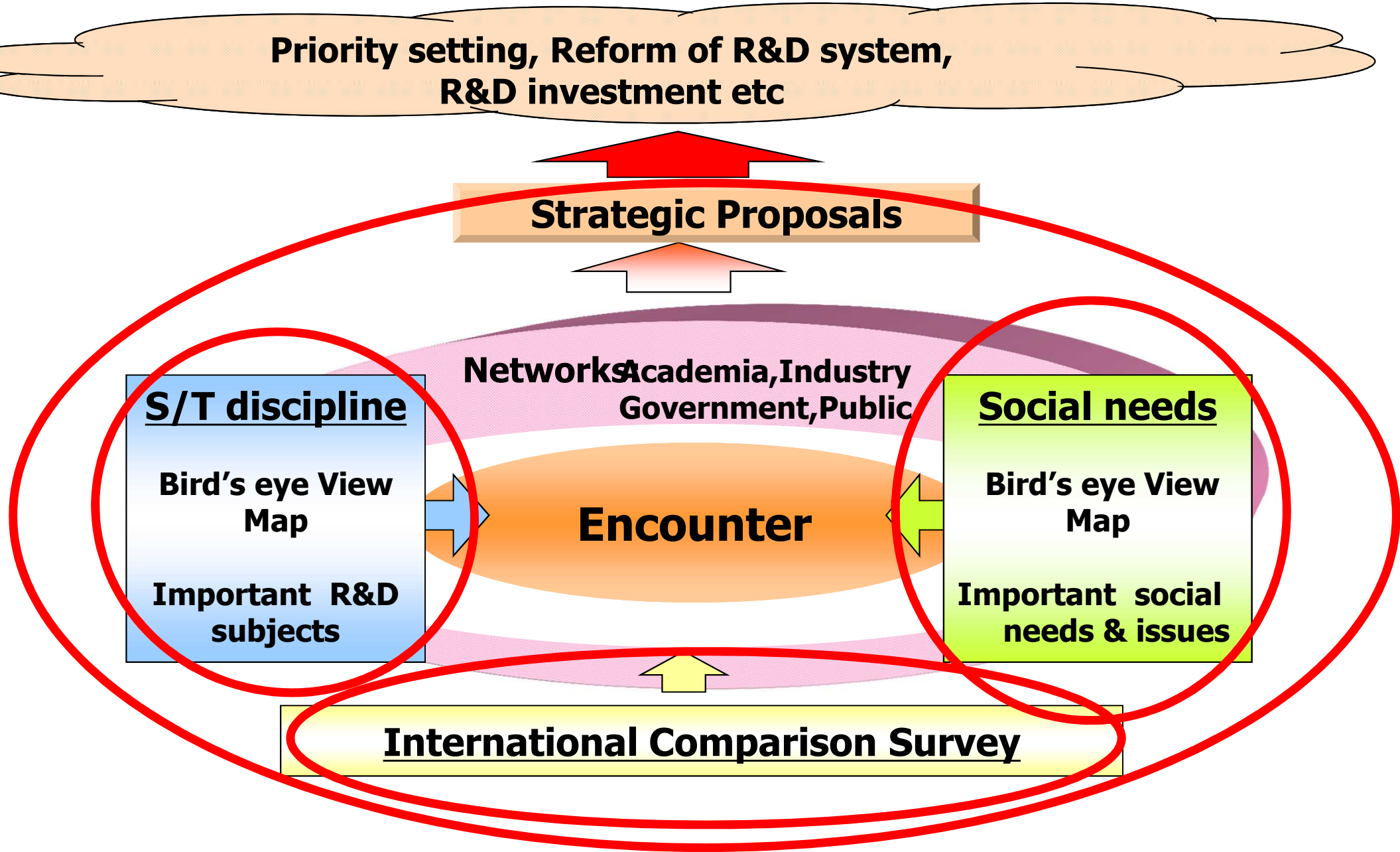
Encounter

Social needs

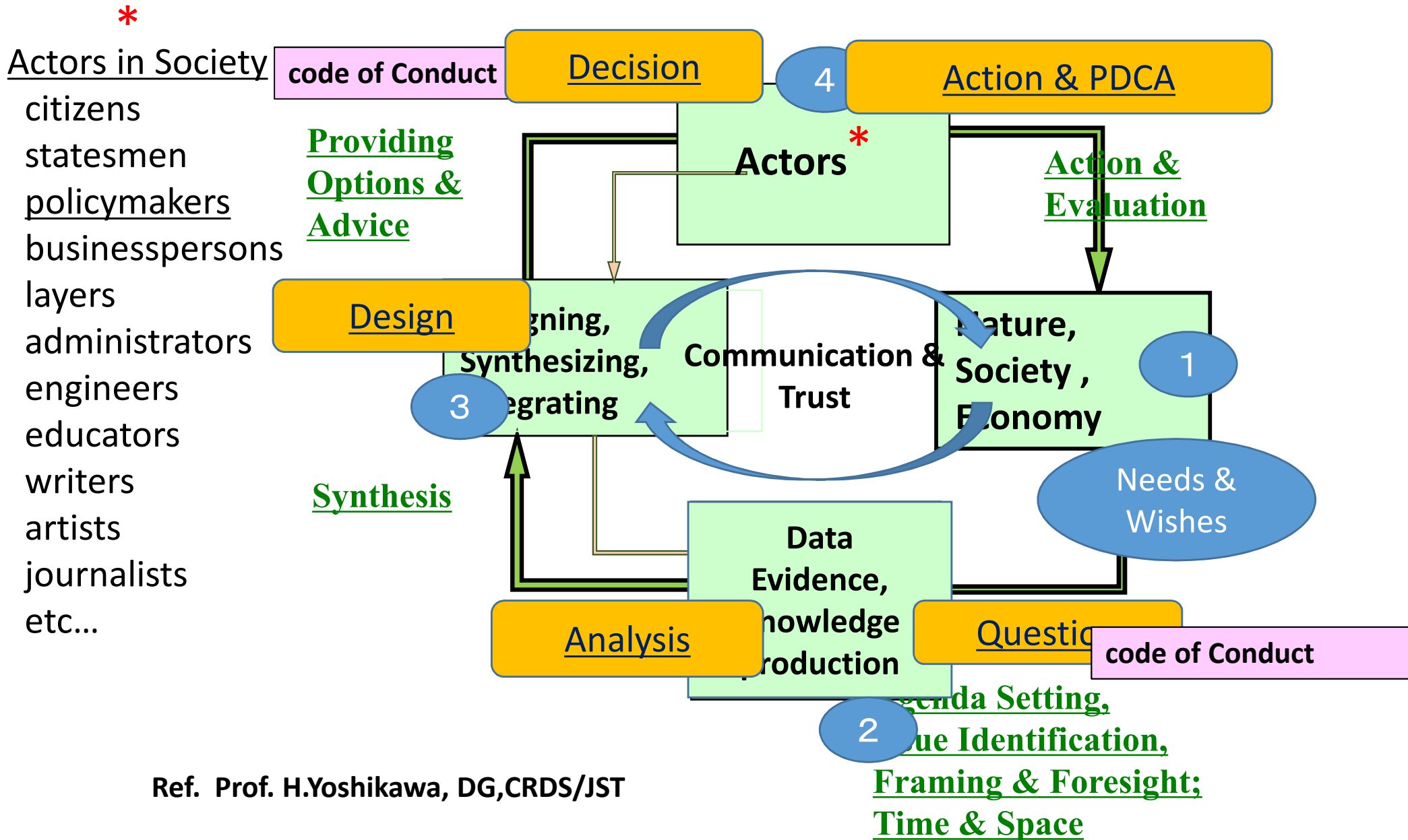
Bird's eye View
Map

Important social
needs & issues

International Comparison Survey



科学技術イノベーション政策・戦略の 作成と実施のプロセス



The process is as important as the Strategy

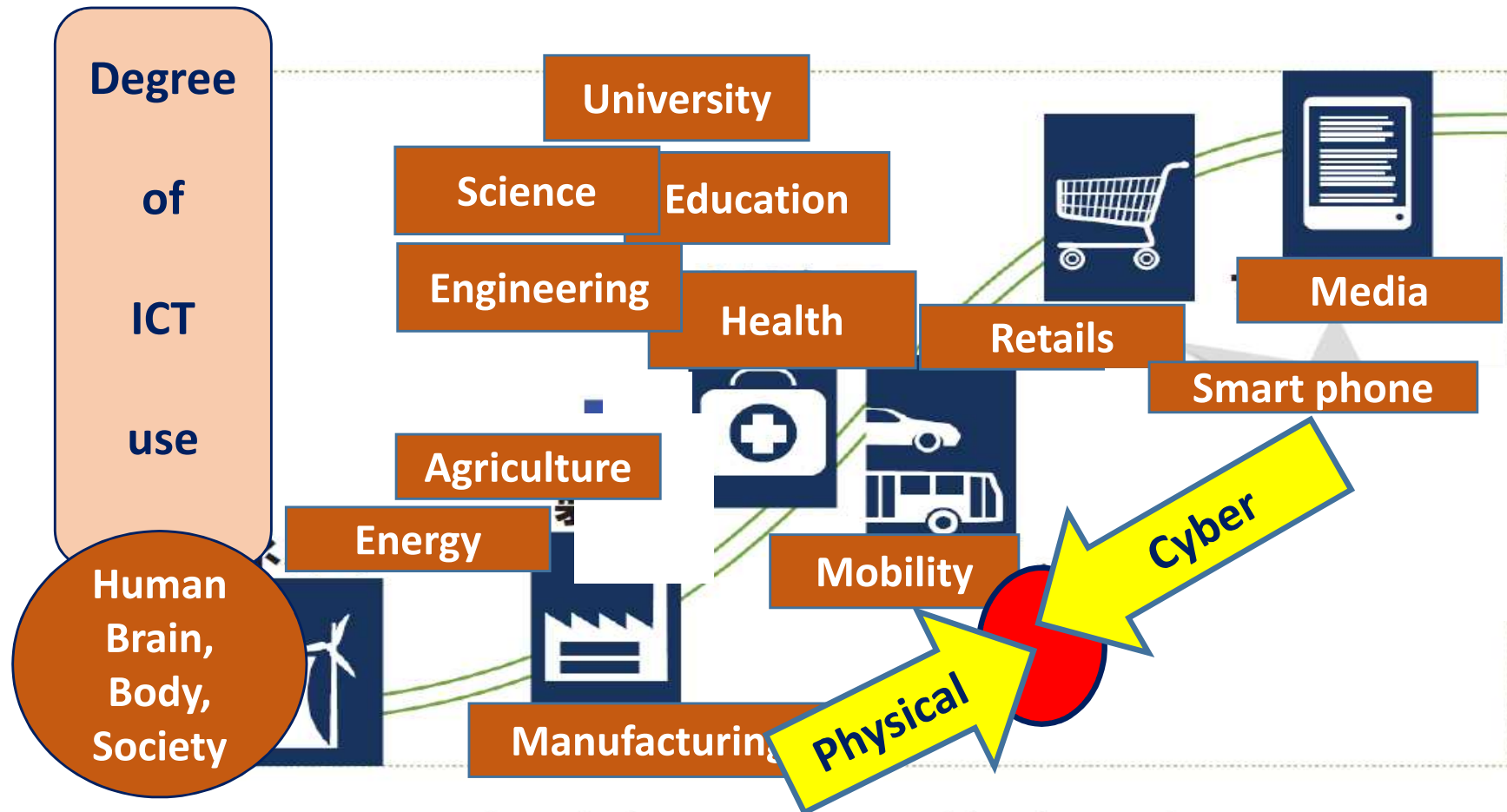
The process of making an innovation strategy is perhaps more important than the product

multi-stakeholder
approach

- Animates a discussion among stakeholders regarding priorities => might help building consensus
- Improves the co-ordination of other policies that impact on innovation
- The process can reveal problems and barriers and challenge the status quo!





**Dirk Pilat, Deputy Director, Directorate for STI, OECD,
International Symposium on STI Policy for the Future,
OECD-MEXT-GRIPS-JST, 19 November 2014**

“Reality 2.0”; Transforming modern society system (industry, academia, government, people...) by Cyber Physical System(CPS)



Building new social & economic system ; Sustainable, Readiness, Trust, Legal & Ethical, Diversity, Culture

Navigating the next industrial revolution

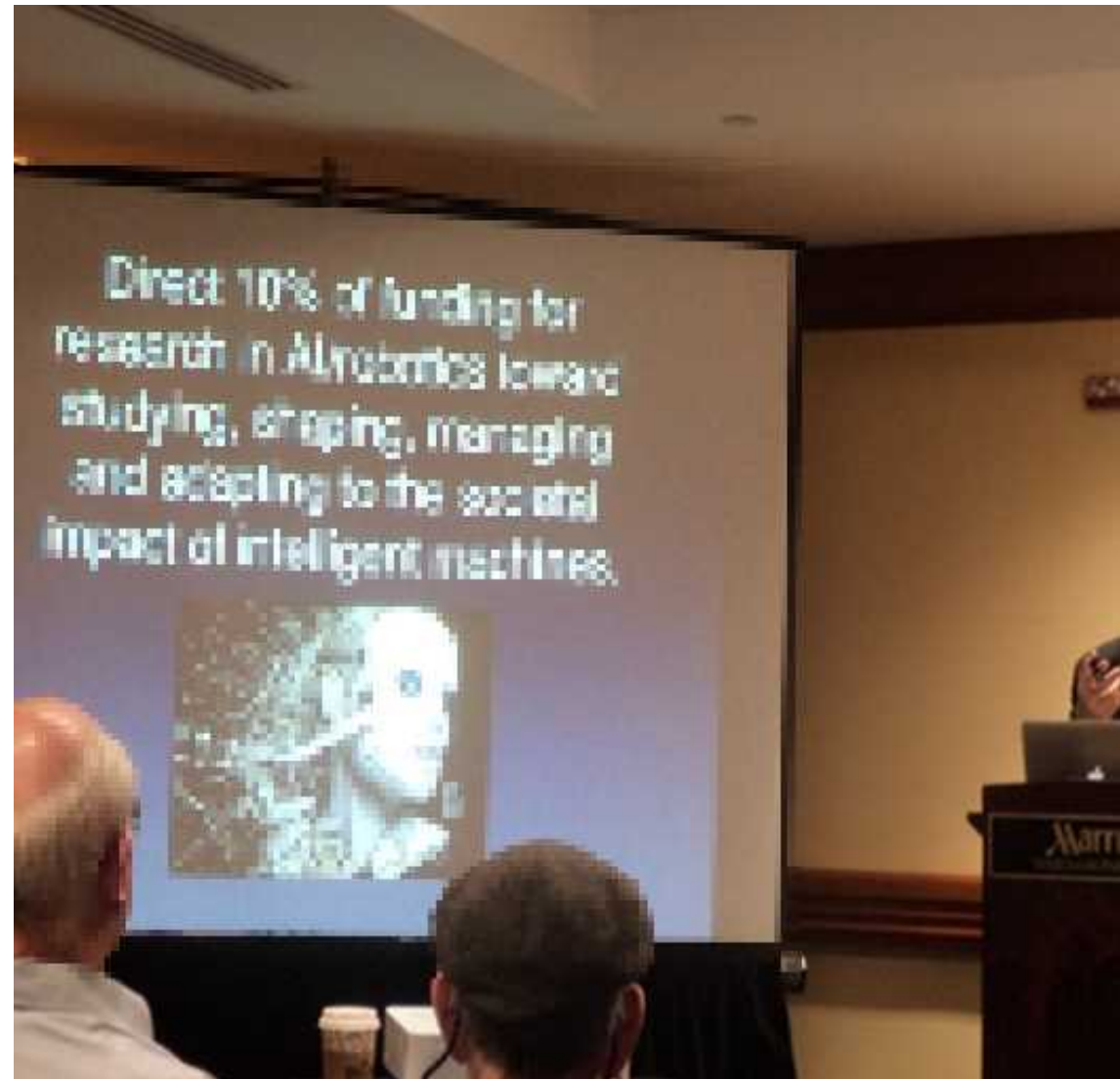
Revolution	Year	Information
	1 1784	Steam, water, mechanical production equipment
	2 1870	Division of labour, electricity, mass production
	3 1969	Electronics, IT, automated production
	4 ?	Cyber-physical systems

AAAS 2016 "Emergence of Intelligent Machines: Challenges and Opportunities" (February 14, 2016)



Speakers:

- **Bart Selman, Cornell University**
"The Future of AI: Reaping the Benefits While Avoiding Pitfalls"
- **Wendell Wallach, Yale University**
"Robot Morals and Human Ethics"
- **Moshe Vardi, Rice University**
"Smart Robots and Their Impact on Employment"



第5回 日・EU 科学技術政策フォーラム : in Kyoto on 4 October, 2014.
Summary of Proceedings

“Science 2.0: Science in Transition” (Open Science)

‘Science 2.0’ describes the on-going evolution in the modus operandi of doing research and organising science. These changes in the dynamics of science and research are enabled by digital technologies and driven by the globalisation of the scientific community, as well as the need to address the Grand Challenges of our times. They have an impact on the entire research cycle, from the inception of research to its publication, as well as on the way in which this cycle is organised (European Commission 2014).

*The historical centrality of the printed page in communication has receded with the arrival of **digital technologies**. Large scale data collection and analysis creates challenges for the traditional autonomy of individual researchers. The internet provides a conduit for networks of professional and amateur scientists to collaborate and communicate in new ways and may **pave the way for a second open science revolution, as great as that triggered by the creation of the first scientific journals (Royal Society 2012).***

現代科学技術システムの構成

21世紀

- “科学者 (scientist)”、“技術者 (engineer):
professional jobs 専門職業人の確立
specialization of knowledge 知識、技術の専門分化
- “Publish or Perish”: Ethos of scientists
peer review system
- professional society and associations
学協会、専門誌、国際会議・学会
- modern university system : experiment lab., seminar
近代教育・訓練制度、近代大学制度: 実験研究室、ゼミナール
- national and company laboratory 公立・企業研究所
- intellectual property right system 知財制度
- research & development supporting system grant, contract,
fellowship, prize
研究開発支援・褒章制度
- 科学技術政策決定・助言システム

科学技術
システムの
の
変革

“19th century is the century that invented the methodologies of inventions” by Whitehead, 1931
「19世紀最大の発明は、諸発明の方法の発明であった。」

**Thank you very much
for your attention!!**

Questions:

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