

# A Proposal toward Open Science from a viewpoint of collaboration with business

オープンサイエンスに向けた  
ビジネス連携の観点からの提案

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# Outline

1. Our standing point
2. Record Continuum Diagram, Open Data Ecosystem and Shaping type business strategy
3. Individual efforts on Data Providers
4. Inter-disciplinary Common Data Platform
5. Inter/ trans-disciplinary Collaboration Platforms for Social Problems
6. Incentive for Data Providers

# 1. Our stand point

## - Our past presentations

#1: Action Items for Open Science from the view point of Inter/Trans-disciplinary Collaboration on Environmental Issues

#2: Cross-disciplinary collaboration platform -ubiDIAS

#3: Cross-disciplinary collaboration platform using MMORPG technology – Virtual museum of Art and modern history.

#4: Today

(#5: Desirable Data Policy for Open Science – Case study of environmental data) -> next WS

# 1. Our Standing point

## - Differences of view points

- Traceability/  
Transparency
- Data Management  
Plan of Data  
Depository
- Open Access
- Open Publication
- Reuse of research  
data
- Citizen Science



- Social Problems/ SDGs
- **Social ripple effect** of  
research outputs
- Business is needed to  
**role successful cases out**
- **Seeds-needs matching**  
between researchers  
and private sectors
- **Incentive** for Open Data  
/Evaluation of researcher

**So, our proposal is not including  
many topics discussed yesterday.**

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4. Inter-disciplinary Common Data Platform

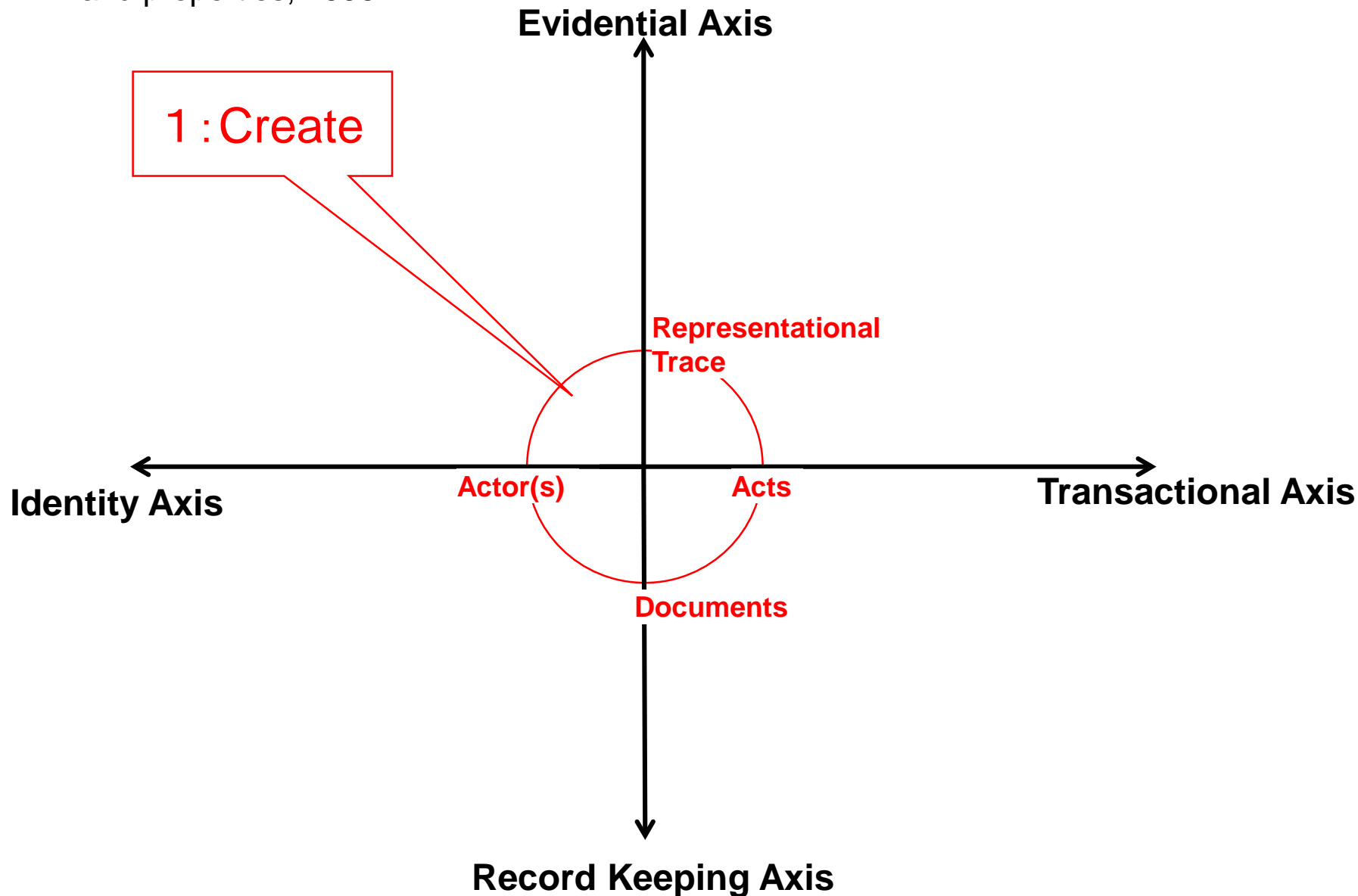


5. Inter/ trans-disciplinary Collaboration Platforms for Social Problems

6. Incentive for Data Providers

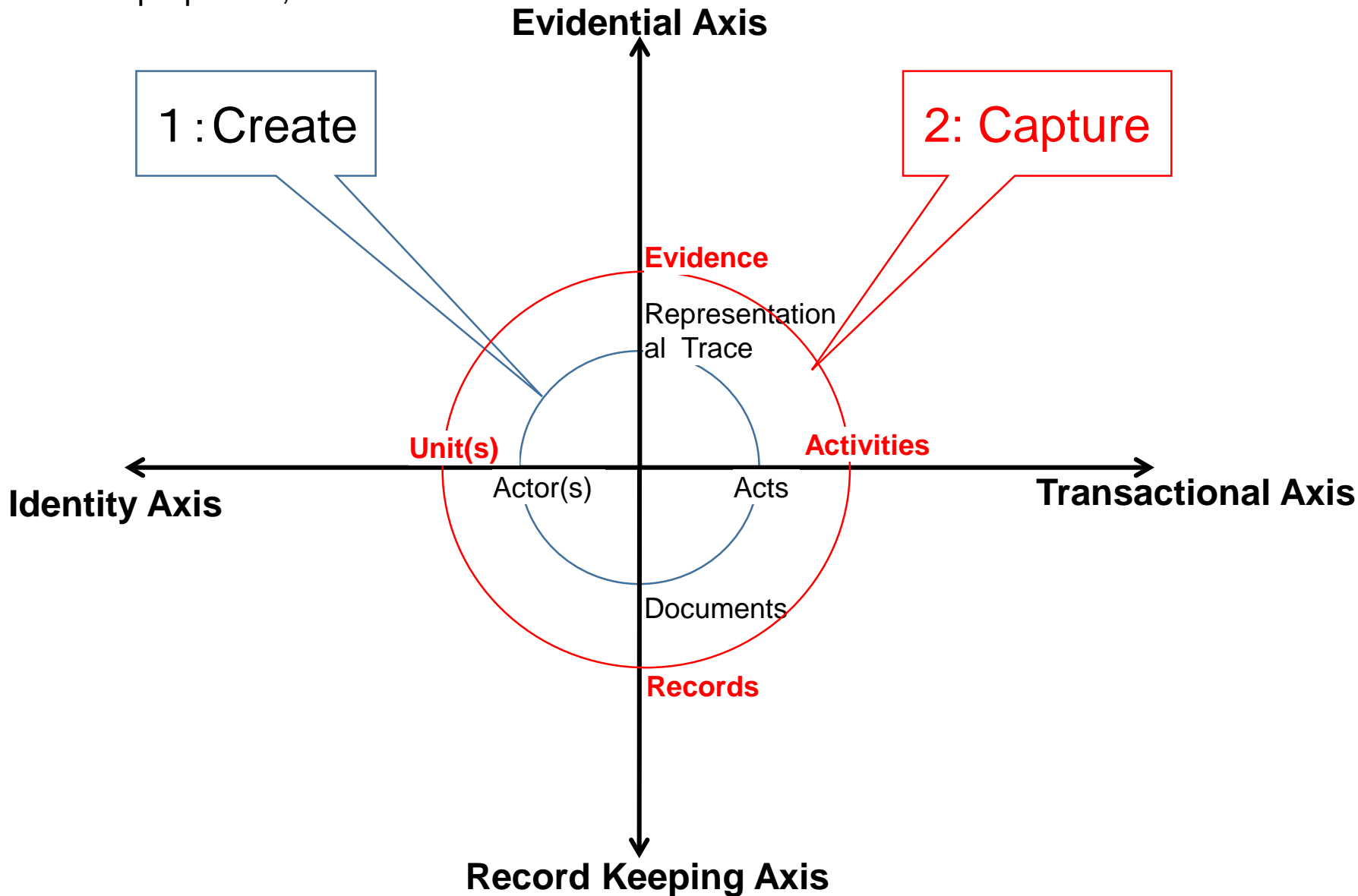
# Records Continuum Diagram

Frank Upward, Structuring the Records Continuum - Part One: Postcustodial principles and properties, 1996



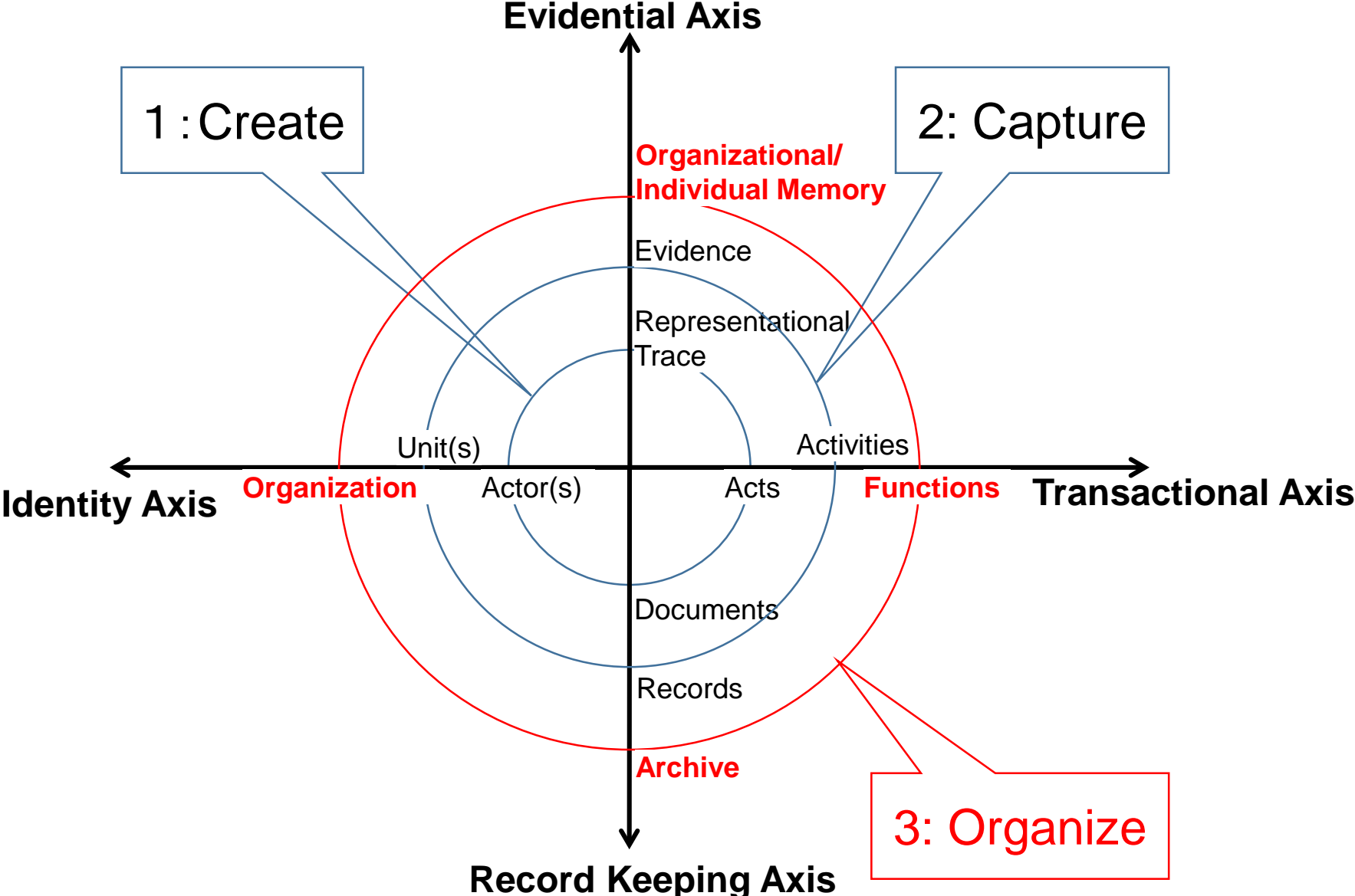
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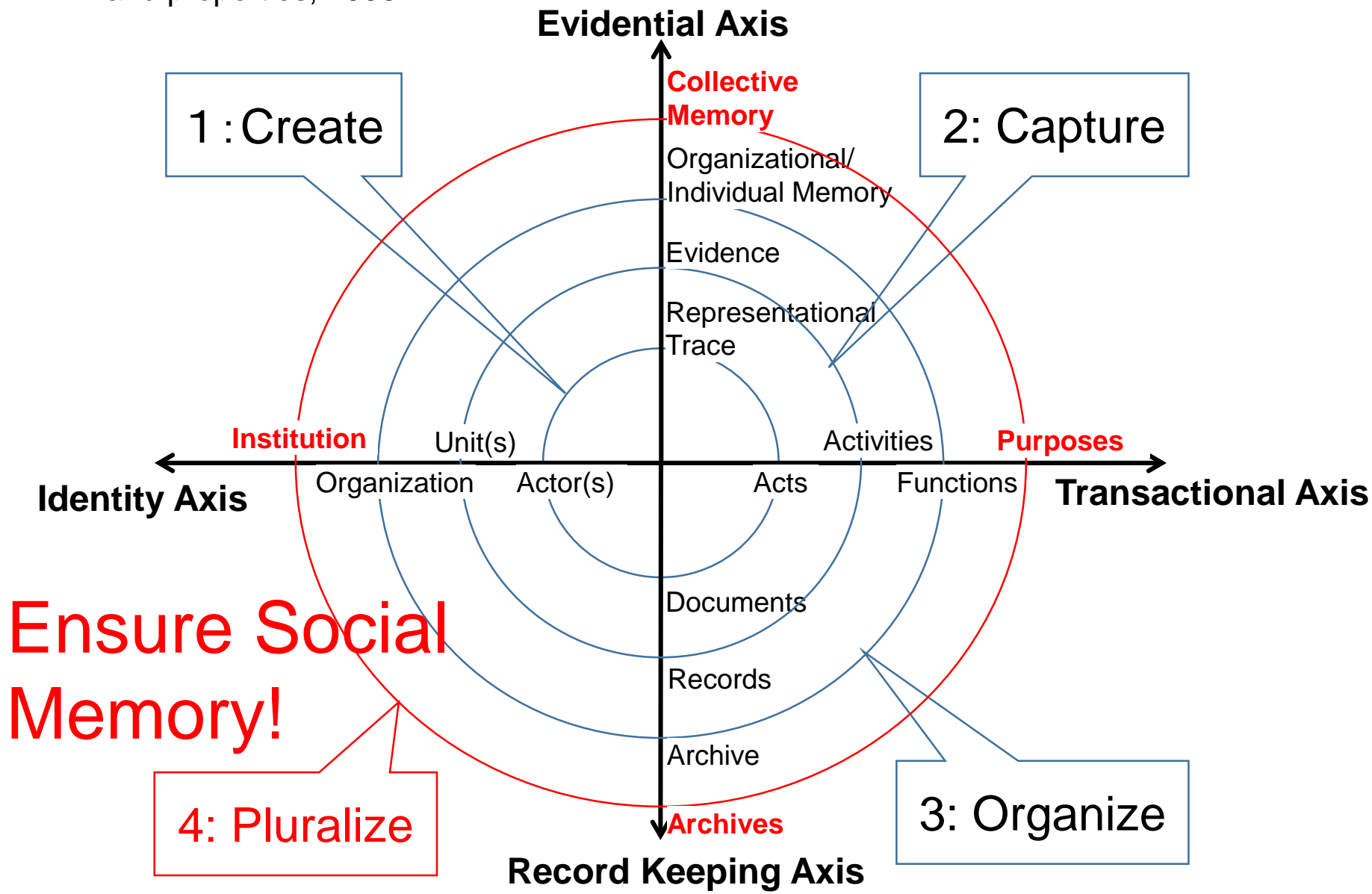
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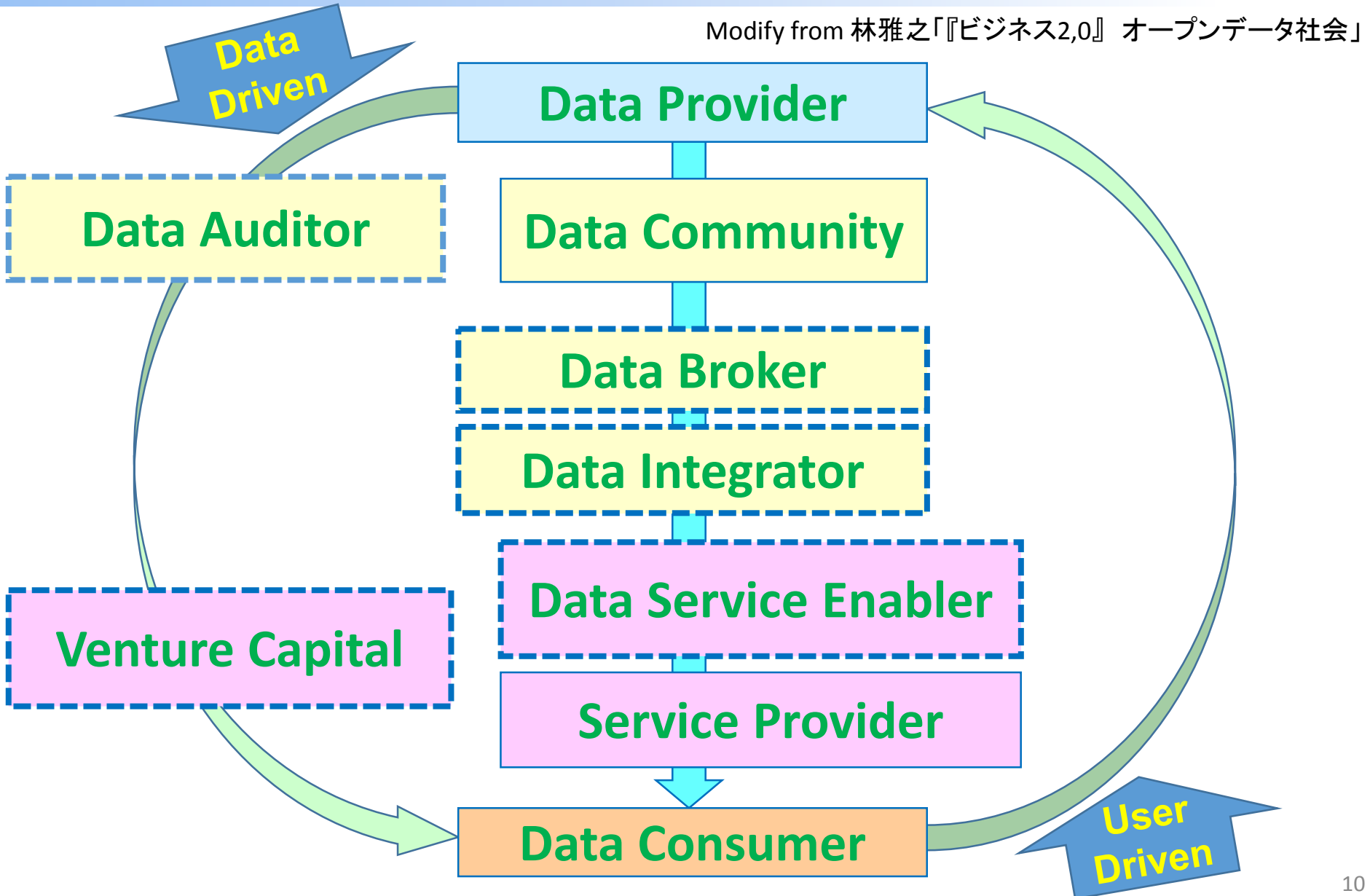
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# Players and Platforms in Data Ecosystem

Modify from 林雅之「『ビジネス2.0』 オープンデータ社会」



**Ecosystem:** Healthy revenue circulation by interaction between Players

# Players and Platforms in Data Ecosystem

- Various **players** gradually grown up in accordance with growth of open data utilization.
- **Data Driven**: Two big data providers of meteorology data and geospatial data developed big data market. But from business view point, almost **public research data** are not provided for business use.
- **User Driven**: Users don't know solutions but needs. So there are so many **small Service Providers** who close to each User.
- Above two driving forces are not enough for self-sustaining circulation of data utilization. **Common platforms** are need to improve efficiency of data utilization.
- How to initiate new **inter/ trans-disciplinary data market**?

# Shaping type business strategy

Business Strategy Pallet

Martin Reeves, et al., Your Strategy Needs a Strategy, 2012

\ Malleability	Low	High
Predictability \		
Low	Adaptive	Shaping
High	Classical	Visionary

**“Predictability”**: How far into the future and how accurately can you confidently forecast demand, corporate performance competitive dynamics, and market expectations?

**“Malleability”**: To what extent can you or your competitors influence those factors?

Shaping type: Low Predictability but high Malleability

- A shaping strategy focuses beyond the boundaries of their own company, often by rallying a formidable ecosystem of customers, suppliers, and/or complementors to their cause by defining attractive new markets, standards, technology platforms, and business practices.
- They propagate these through marketing, lobbying, and savvy partnerships.

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# 3. Individual effort of Data Providers

- **Dataset document page** which can be found by web search engine is essential than **Data DOI**.
- Use **common language** and provide **visualization tools** for users in other disciplines or educational use.
- Not only indexing but also **structuralization/ curating** of own datasets based on **community's discipline**.
- **Data Policy** considering for private sectors' use.  
(-> next WS)
- Use **cloud service** or **common data platform which developed DMP** for data storage to avoid technical problem as for security.

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# 4. Inter-disciplinary Common Data Platform for social knowledge

- Individual efforts on **Data Portal** in various fields using meta-data should be encouraged.
- Mutual recognition between relating Data Portals for **single sign-on** is necessary.
- Wikipedia is already one of models of **common knowledge platform** using common language/ citizen language.
- **Structuralization/ curating** using Academic Disciplines of Wikipedia is one of ideas due to it is sometime dramatically updated.



# Academic Disciplines (Wikipedia- 2017)

[https://en.wikipedia.org/wiki/Outline\\_of\\_academic\\_disciplines](https://en.wikipedia.org/wiki/Outline_of_academic_disciplines)

**Arts:** Performing arts, Visual arts

**Humanities:** Geography, History, Languages and literature, Philosophy

**Social sciences:** Economics, Law, Political science, Psychology, Sociology

**Sciences:** Biology, Chemistry, Earth and space sciences, Mathematics, Physics

**Applied Sciences:** Agriculture and agricultural sciences, Computer sciences, Engineering and technology, Medicine and health sciences

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# 5. Inter/ trans-disciplinary Collaboration Platforms

- Inter/ trans-disciplinary collaboration will be initiated in depend on **social urgency**.
- **Learning from past, overview present, modeling and future projection** is basic strategy useful for various problem.
- **Communication and information sharing platform** is needed to collaborate Inter/ trans-disciplinary beyond existing community.
- **Private sectors** also think open own data, standard, tools, etc. is useful for **forming new community**.



Where do we come from?

What Are We?

Where are We Going?

Paul Gauguin 1897-98

# Top-down/ Bottom-up approach for Environment Issues

**Top-Down Approach  
using new technology**

• Satellite Data  
• In-situ Data

① Planning

CMIP5 models selection/  
Multi-model ensemble prediction

• Global Climate Simulation  
• Socio-economic scenario

Re-analysis Data/  
Data assimilation

Initial/  
Boundary  
condition

Global Short Term –  
Seasonal –  
Annual Prediction

③ Downscaling and  
Bias correction

Now Cast –  
Short term  
forecast

Seasonal –  
Inter Annual  
Prediction

Downscaling and  
Bias correction

Big-data  
Analysis

Impact evaluation/  
prediction model  
Hazard maps

Impact Evaluation  
Hazard Maps  
Unpredictability Evaluations

Early Alert

Resource management, Risk management.....

② Social Data  
(economic activities, disasters)

④ Past Decadal Years

⑤ Daily to Annual

⑥ Future Decadal Years

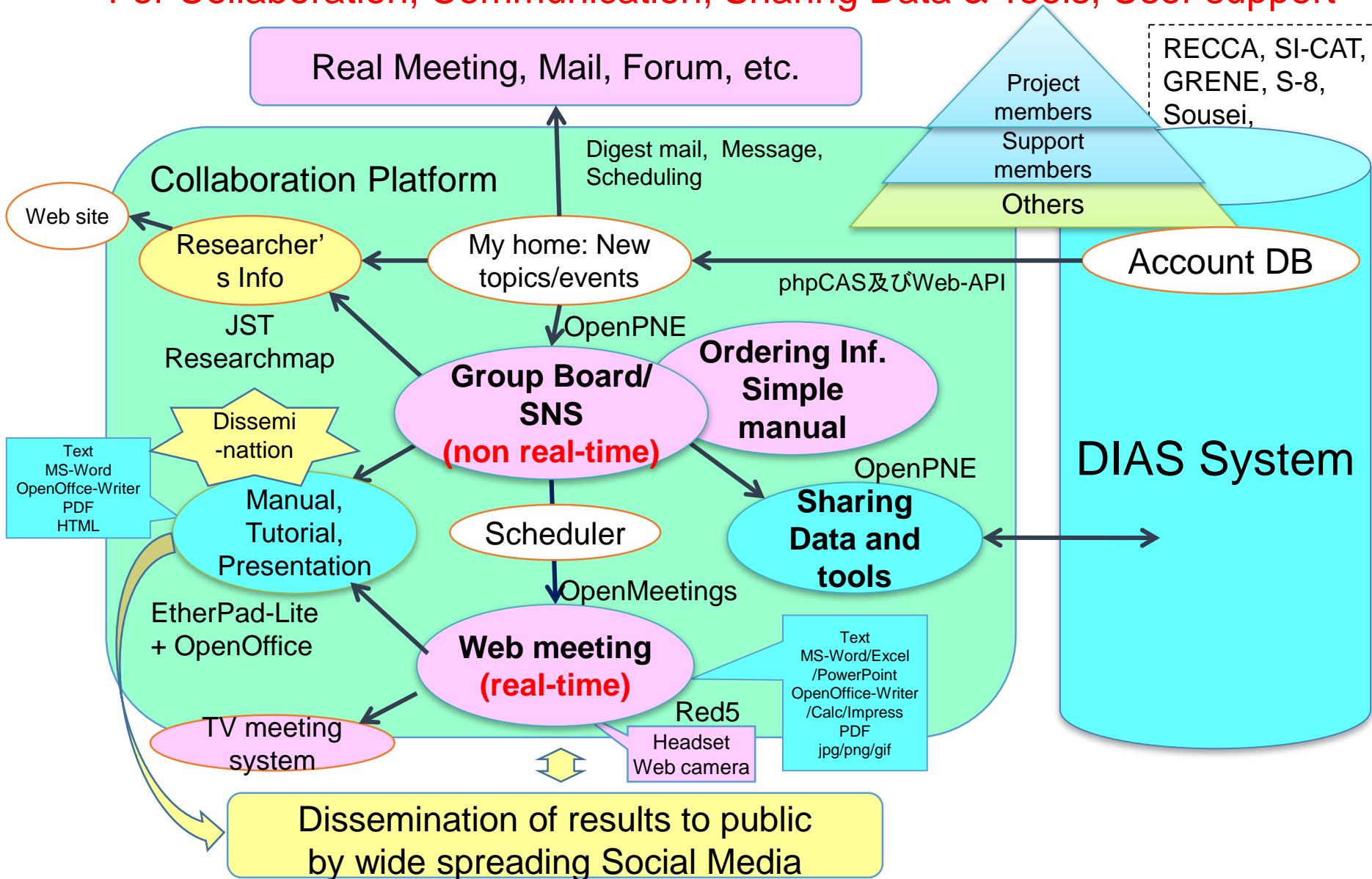
**Bottom-Up Approach  
from domain field**

⑦ Information Portal for Decision-Making

# Cross-disciplinary Collaboration Platform: ubiDIAS

Ubiquitous (anytime, anywhere, anybody) + DIAS

For Collaboration, Communication, Sharing Data & Tools, User support





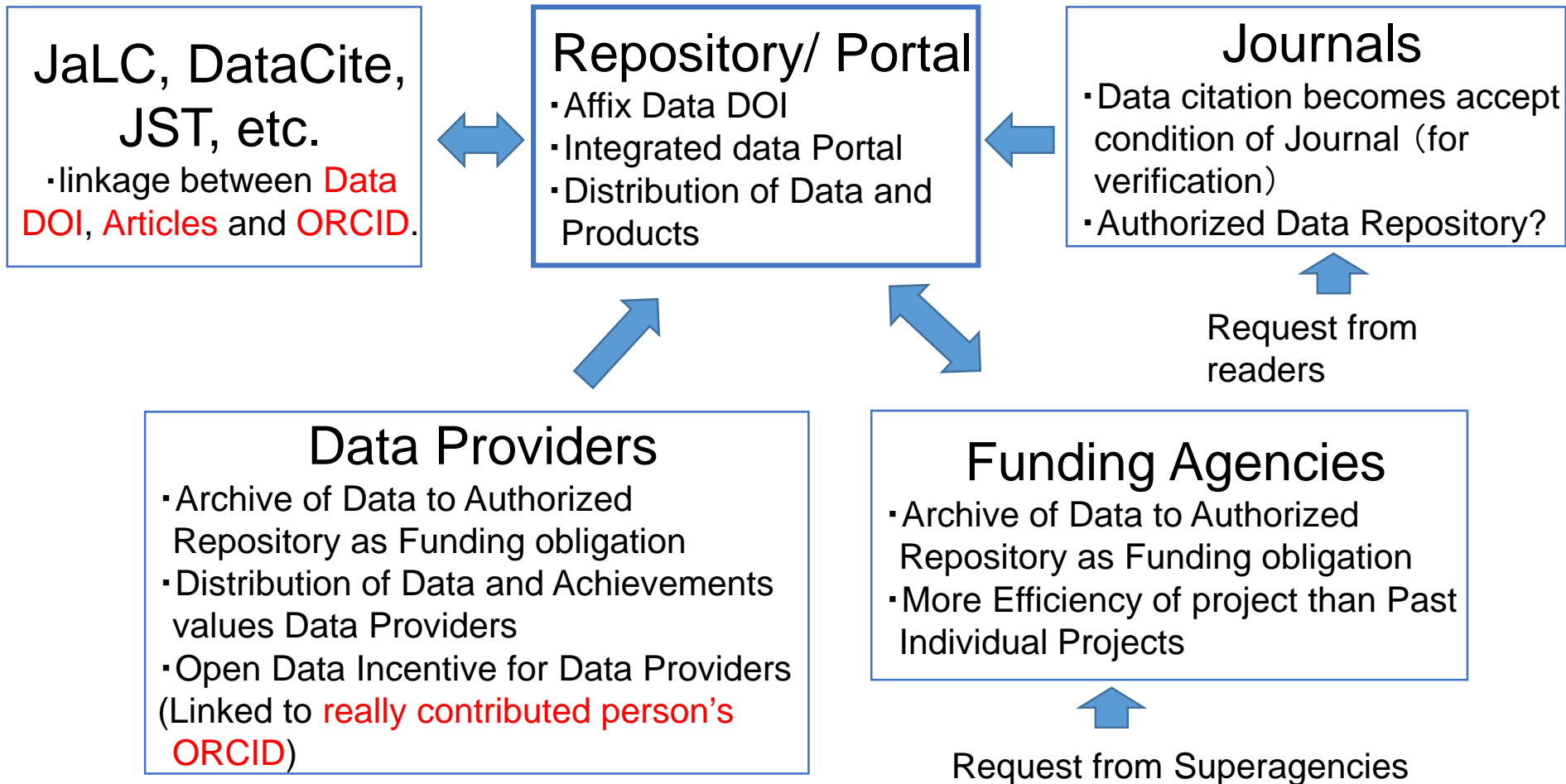
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# Data DOI is only start point

— Players' role on open data incentive for Data Providers

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# 6. Incentive to Data Providers

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- **Data DOI** is only useful for data cited by academic papers. **Social Ripple Effect** should be evaluated not only by academic value but also other value.
- Seeds-needs matching platform including following functions is necessary;
  - getting **contribution/ donation** from private sectors
  - representative **charging** system.
- There are **private sectors** who think to open own data is a chance to **form community**.

# Conclusions

1. We proposed strategies from standpoint of **socio-economic ripple effect** in consideration with players of data ecosystem.
2. **Data providers and data portals** need to use common language, visualization and structuralization toward forming social knowledge.
3. **Inter/ trans-disciplinary collaboration platforms** for communicating, sharing information, matching seeds-needs, getting private sectors' contribution and forming community.
4. Data DOI is only start point and **socio-economic contribution** also should be evaluated.

Thank you!