



ITU Kaleidoscope 2013
Building Sustainable Communities

A Model for Creating and Sustaining Information Services Platform Communities: Lessons learnt from Open Source Software

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This Research in Brief

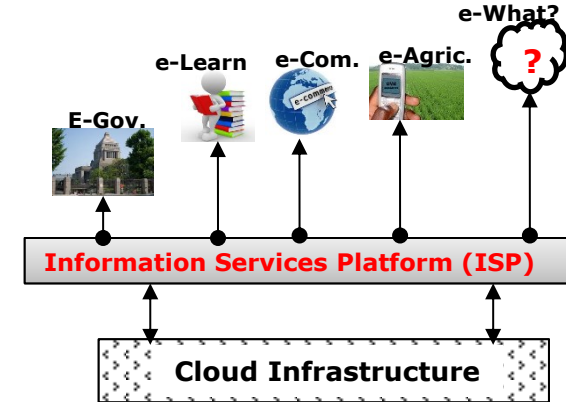
- Anything as a Service (XaaS)
 - Infrastructure as a Service (IaaS)
 - Software/Data as a service (SaaS/DaaS)
 - Platform as a Service (PaaS)

- Big Data and the Cloud:

- Data deluge (2.5×10^{30} bytes of data/day!)
- Public or Private or both (Hybrid).

- Community dynamics in the cloud

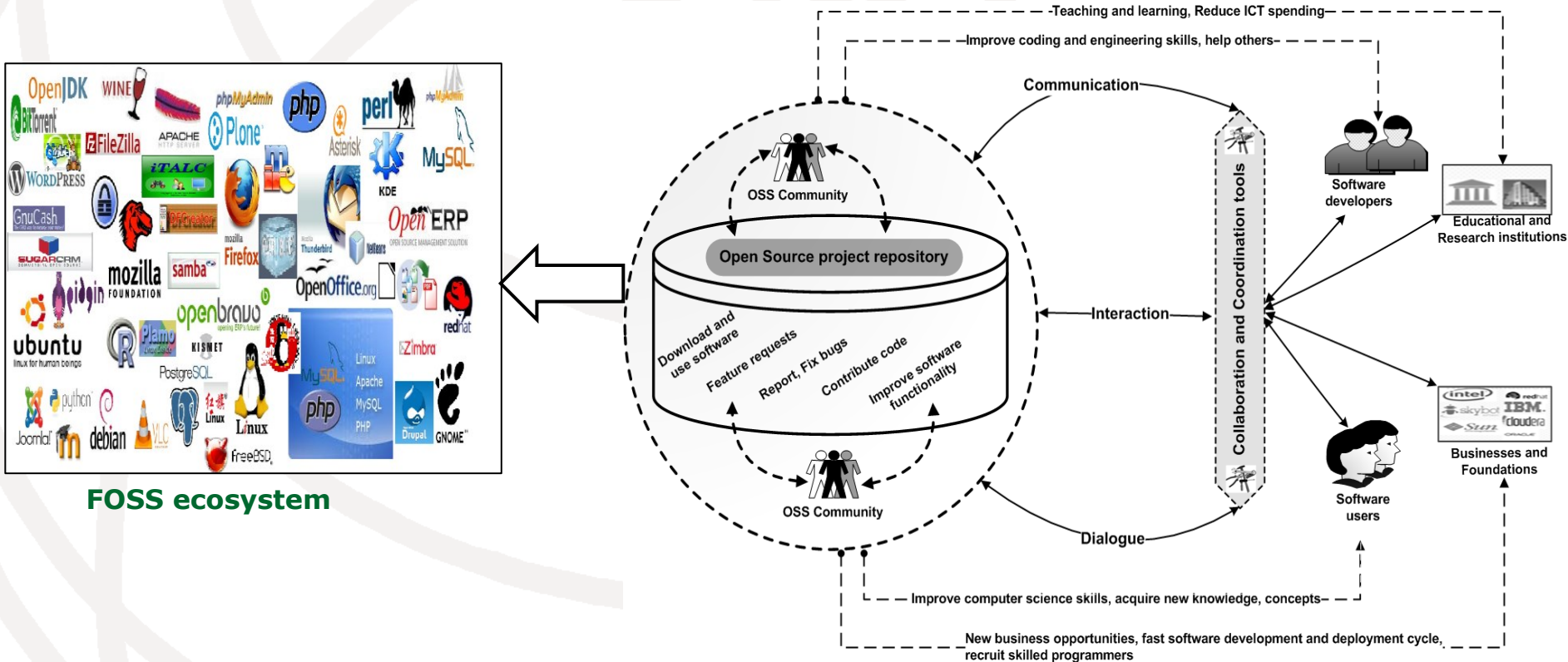
1. What lessons/best practice can we learn from Free and Open Source Software (FOSS) communities?
To help us
2. Create sustainable ISP communities?
3. Support collaboration and experience sharing in ISPs?



Lessons and best-practice from FOSS

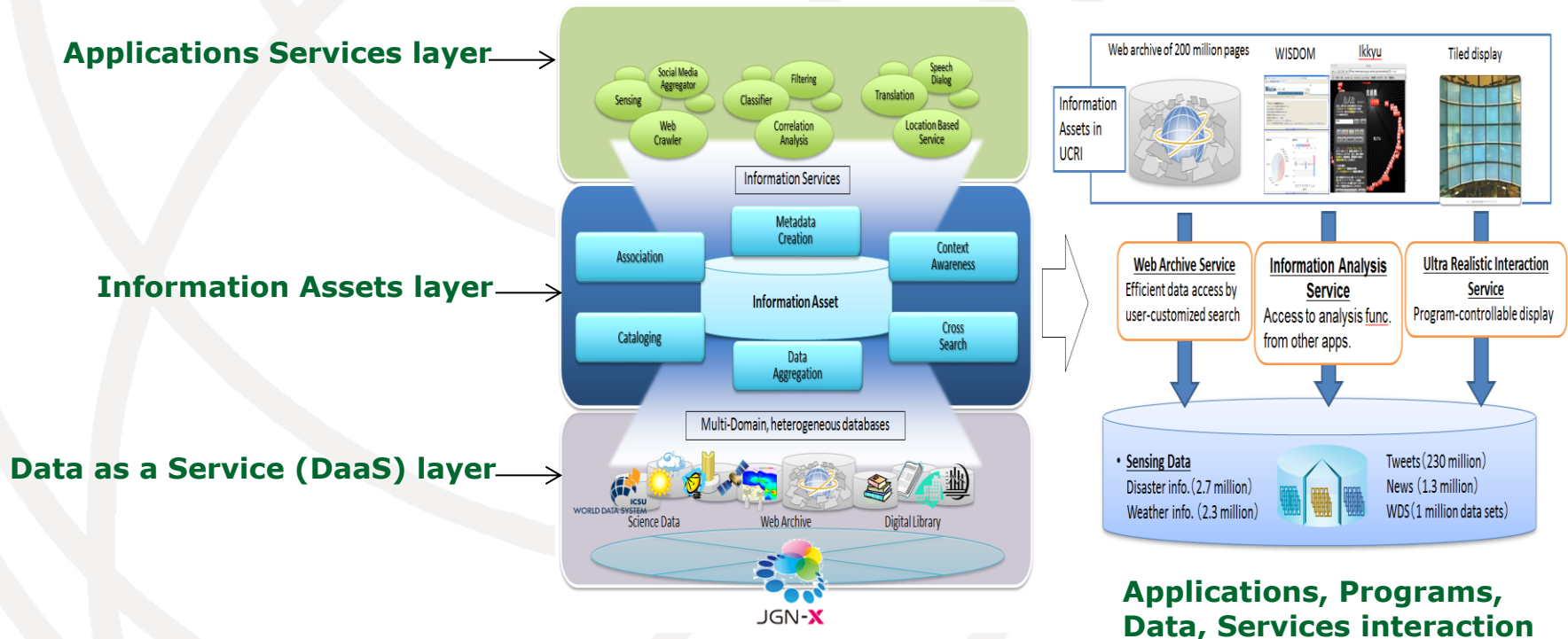
- FOSS communities (e.g. Apache) characteristics:
 - Mostly volunteer contributions, meritocratic, open collaboration, knowledge sharing, and peer-production of software products.

Collaboration and coordination in FOSS projects



Research Setting

- Information Services Platform (ISP) Laboratory of NICT, Japan.
- Infrastructure:** Cloud and High Performance Grid Computing, Next Generation Network testbed (JGN-X), Virtualization technologies.
- Technology:** Knowledge language Grid (KLG), Cyber-Physical Sensing System (CPSens), Search and Data citation systems (WDS)
- Data and Metadata assets:** Over 10^{21} (ZB) already archived.

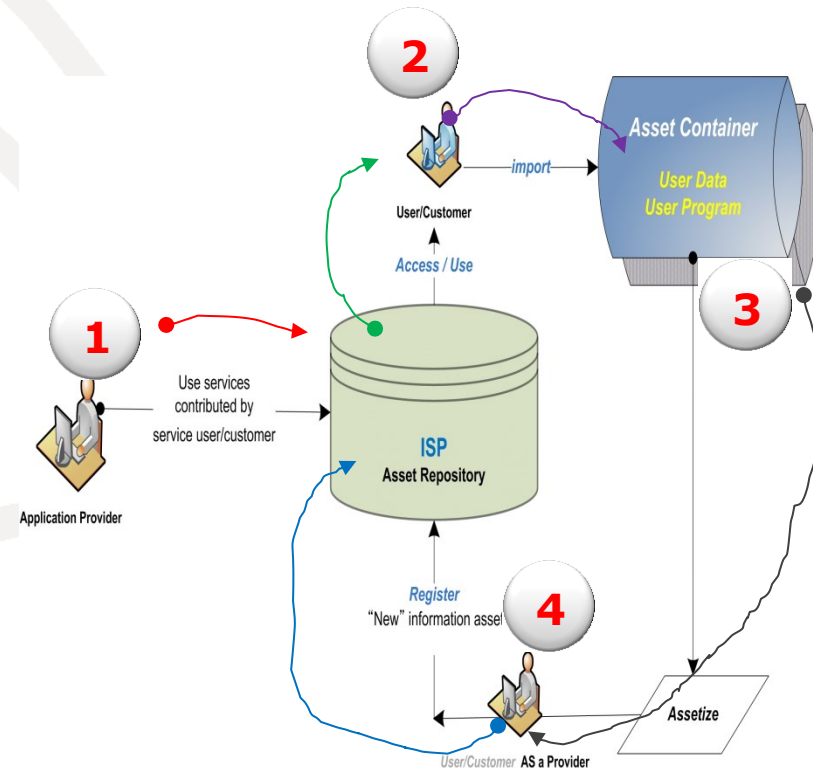


Cloud Platform Community Vision

A **sustainable** information services platform **community** is one that creates and systematically archive **information assets** (data and services) so that the present and future members can find, utilize, share, and improve the assets with minimal effort.

The **community assets cycle**:

1. Application developer, data, or service provider contributes assets to the platform repository;
2. A consumer/user can search, bind, download, use the assets as is.
3. She/he can assetize available data using programs available on the platform.
4. He/she can register the assetized assets to the platform repository for others to use.

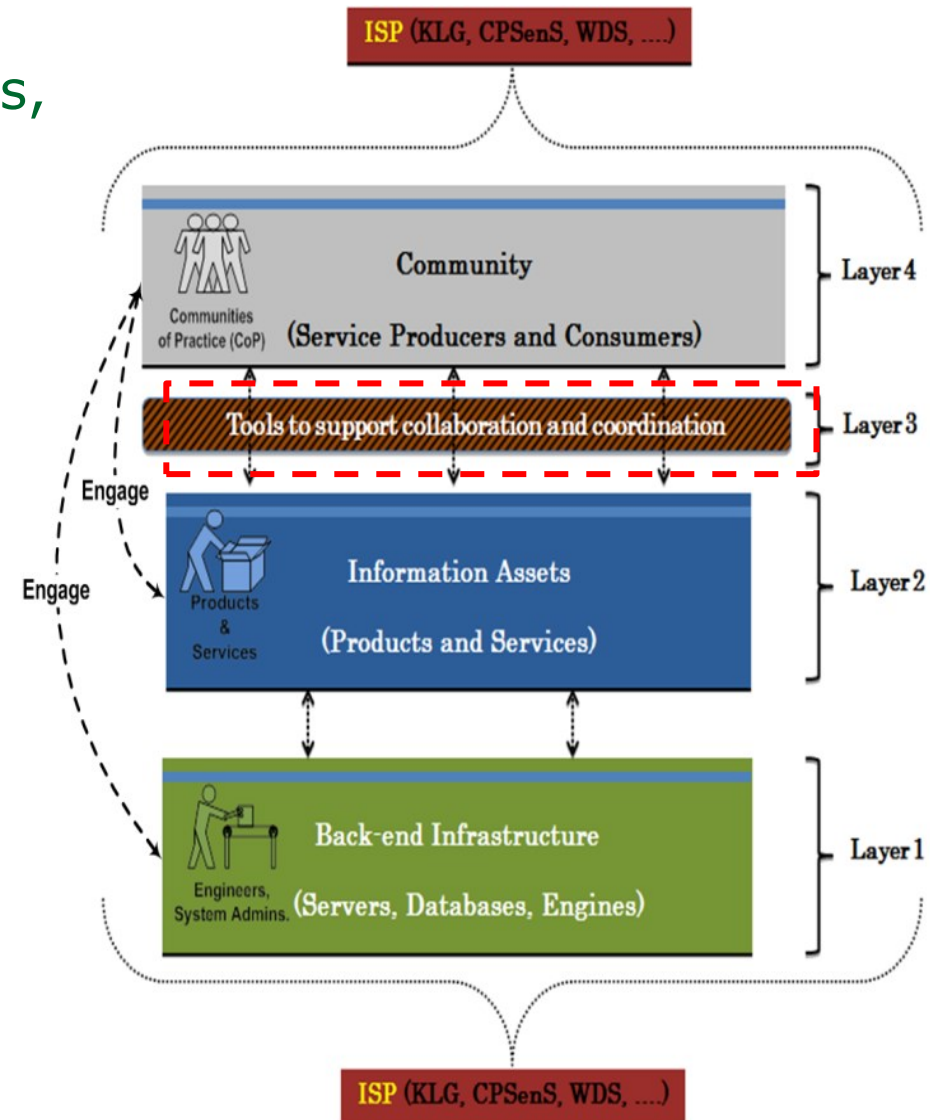


Conceptualizing the ISP community

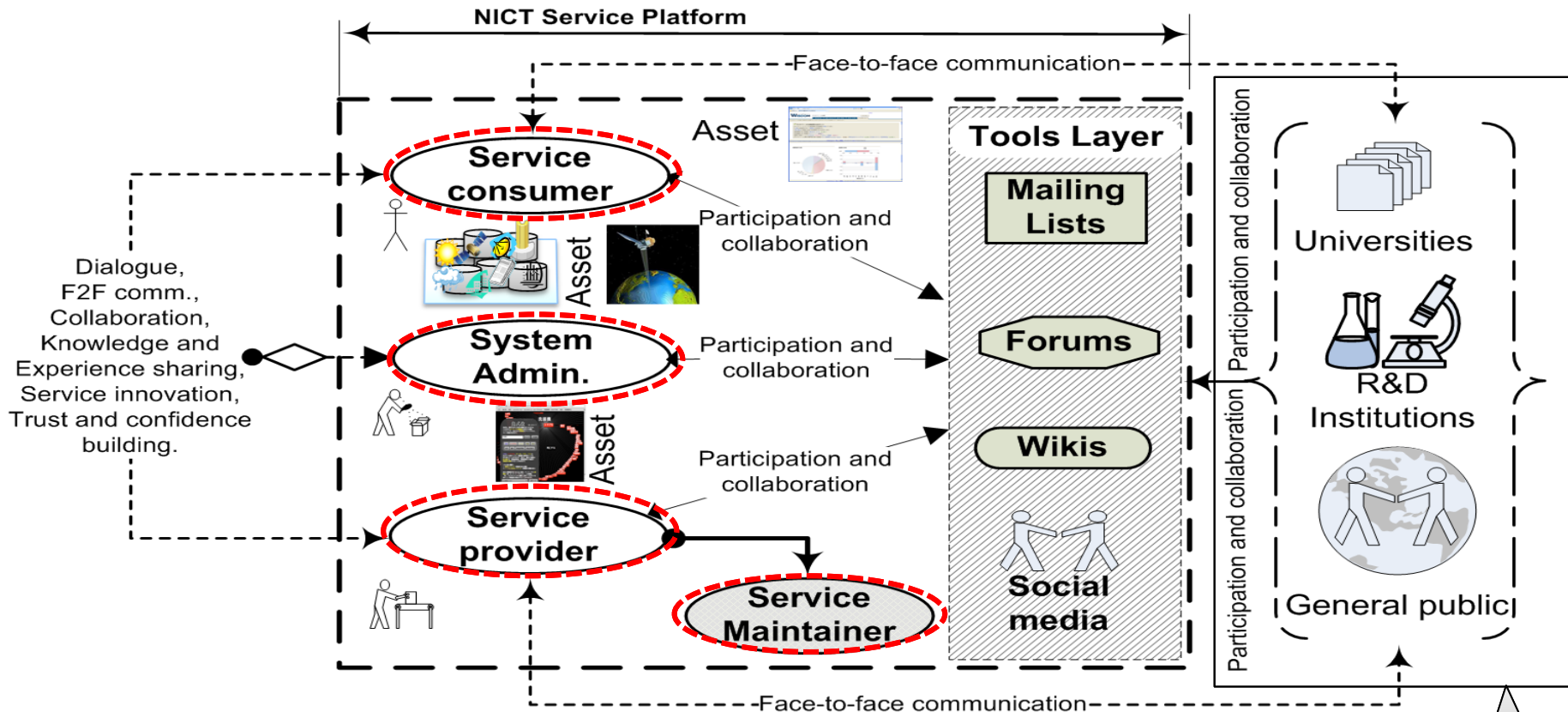
Collaboration and coordination in the ISP community

□ Community

- use infrastructure, products, services on platform;
- use tools (forums, wikis, mailing lists, etc.) to coordinate activities;
- provide feedback to engineers to improve infrastructure;
- provide feedback to improve products and services.



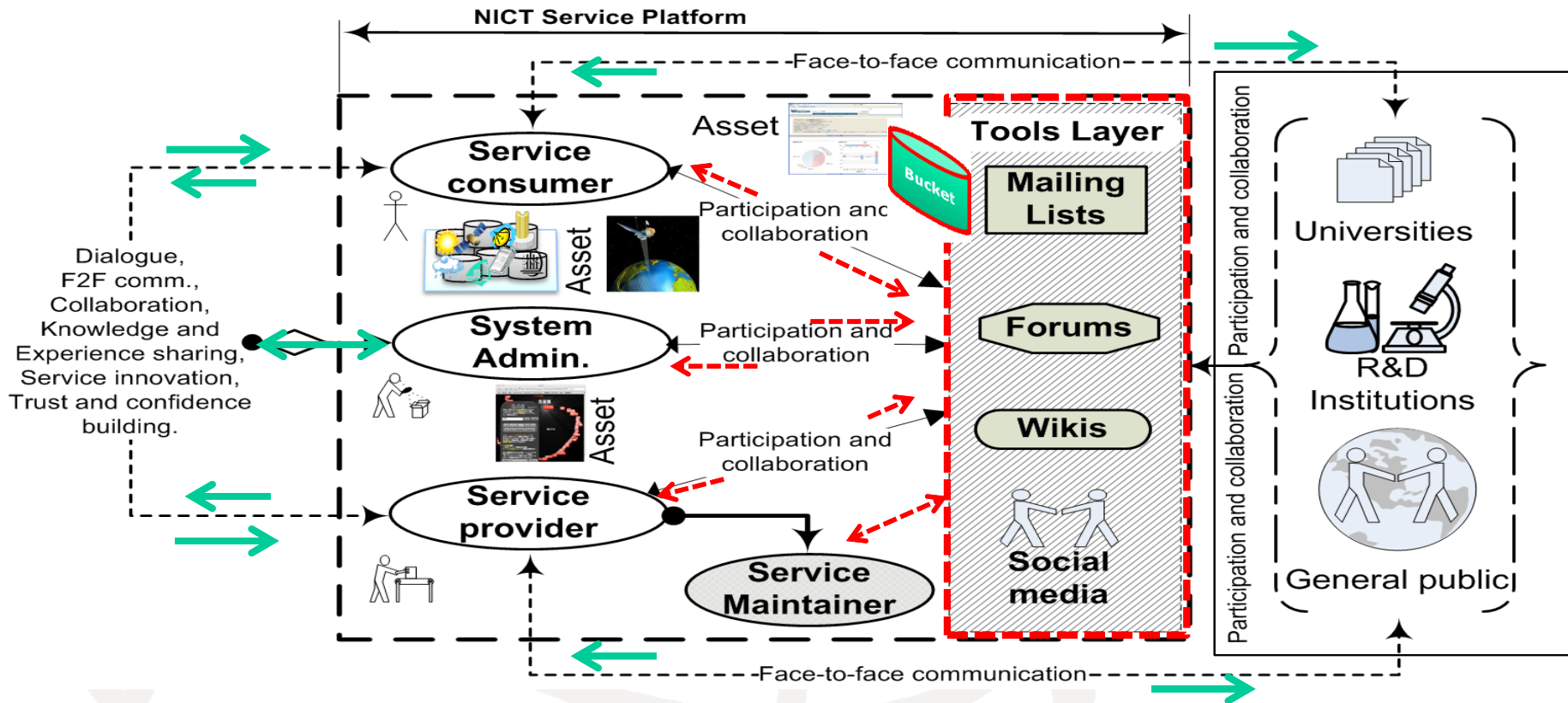
The ISP Community Model - Stakeholders



- **Service consumers use information assets on the ISP**
- **System administrators administer services on the ISP**
- **Service providers provide, recombine services on/off the ISP**
- **service maintainer coordinate development, maintenance, and usage of a service on the ISP.**

3rd Phase

Enabling Participation & Collaboration



Tools to

- Enhance community participation and collaboration, support dialogue, trust, and confidence building.
- Tool bucket stores user profiles and recommends community experts, alerts about available services, etc.

The ISP Platform Implementation: Demo at Event Showcase

Main Page



Category **Discussion** Create account Log in

Read **View source** View history

Disaster Response Information Asset Group

Recently changed pages

- Testpage for development
- Meteor strike in Russia-Part 2
- PM2.5 Influence
- Test2
- Particulate Matter (PM) Pollution - Part 2
- Meteor strike in Russia

Pages with most citation

rank	count	title
1	9	Testpage for development
2	8	Meteor strike in Russia
3	4	Meteor strike in Russia-Part 2
4	4	Particulate Matter (PM) Pollution - Part 2

Most cited datasets

rank	count	title	update	updater	source
1	2	Distribution of euphausiids (Crustacea) in water samples of the Great Meteor Seamount, Atlantic Ocean (Appendix)	2013-03-28T19:10:01+09:00	Teruhiro Shozen	PANGAEA
2	1	User Registered Dataset	2013-03-18T15:21:39+09:00	Teruhiro Shozen	ISP-REGISTRY

Download and package IAs

From User Registry

- meteoritesize by osm2
- User Registered Dataset

Downloading...

1. Data Citation: Monthly mean air temperature at me...
 2. Data Citation: Barium borate and excess comparison...
 3. Data Citation: T4t basin (from Pangaea) @Zer...
 4. Data Citation: Barium deformation features and interpretation of sediment core M096-2094 (Table 1) (from Pangaea) @Zer...
 5. Data Citation: Ages determination of sediment core M0002 and M0004 of the ACEX (Exp302) expedition to the Arctic...
 6. Data Citation: Tropical Atlantic SST during the mid-Pleistocene transition (MPT) of ODP Hole 175-1071B (from Pangaea) @Zer...
 7. Data Citation: Bulk sediment analysis on sediment core CRP-2 from the Ross Sea, Antarctica (from Pangaea) @Zer...
 8. Data Citation: Environmental analysis of osm2 (from User Registered Datasets) @Zer...
 9. Data Citation: meteoritesize by osm2 (from User Registered Datasets) @Zer...
 10. Data Citation: User Registered Dataset (from User Registered Datasets) @Zer...

Buttons: Select All, Clear Selection, Download Datasets, Curate Datasets

Page **Discussion** Sulayman K. Sowe Talk Preferences Watchlist Contributions Log out

Search Cross-DB Search WDS Register Dataset Read Edit View history

Editing Particulate Matter (PM) Pollution - Part 2

Customized Datasets search Functionalities

Rich text editor toolbar and content area.

Zodiac File

Map viewer

Assets:

- デジタル台風
- 地震情報
- 地すべり情報
- 感染症流行情報
- 花粉量データ
- Radioactivity Sensing Data
- 降水量/降雨量データ
- 降雪量データ
- 気温データ
- Twitterアーカイブ
- 台風情報
- 風速情報
- 河川雨量データ
- 台風データベース
- 河川水位データ

Data Curation in the Cloud

```

    graph LR
      A[台風情報] --> B{Select}
      C[風速情報] --> D{Select}
      B --> E[Result:台風情報]
      D --> F[Result:風速情報]
      E --> G{Join}
      F --> G
      G --> H[Map:台風情報:風速情報]
    
```



Thank You for Your Attention

Questions & Comments

welcome