E-Rium:

a Web Portal for Publishing & Accessing Observation Data from Geographically Distributed and Heterogeneous Sources

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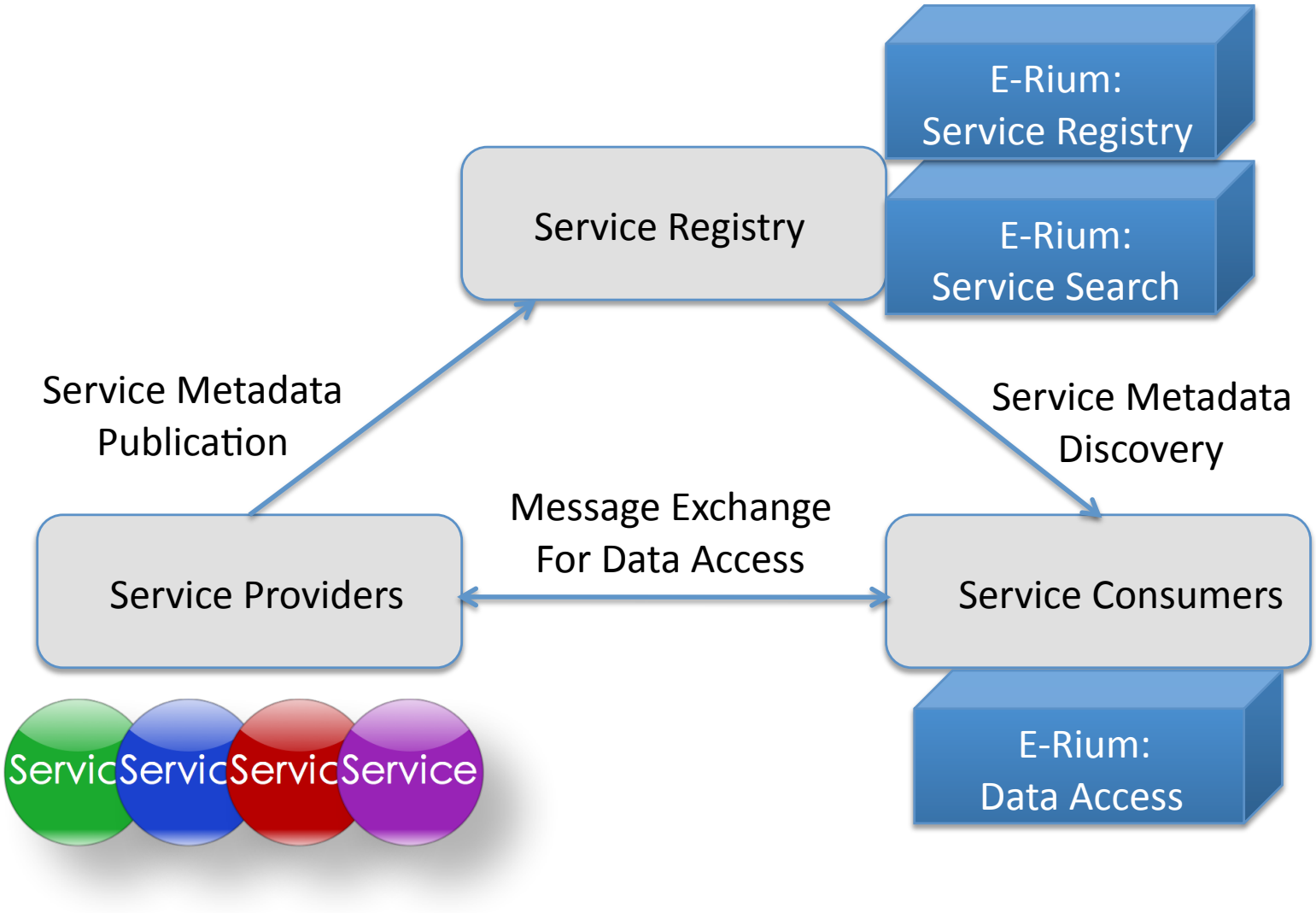
E-Rium: Environment Informatorium



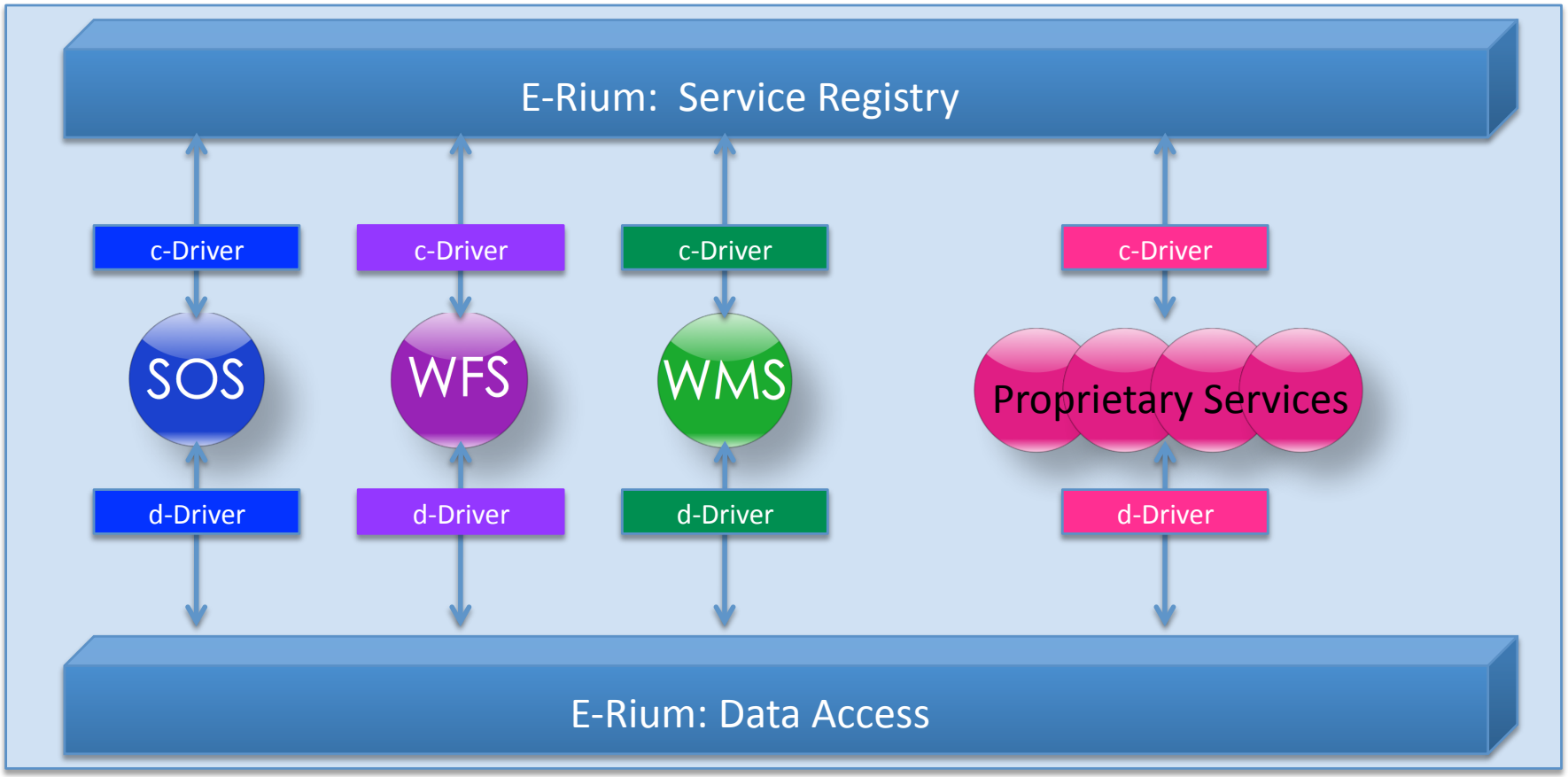
Two Major Concerns

- Heterogeneous Services
  - Different APIs
  - Different Capability Profiles
  - Different Data Models
  - Different Data Type Classification Schemes
- D

1. The registration of various services cannot be done in a semi-automatic manner
2. The data access from different services cannot be performed in a one-stop service

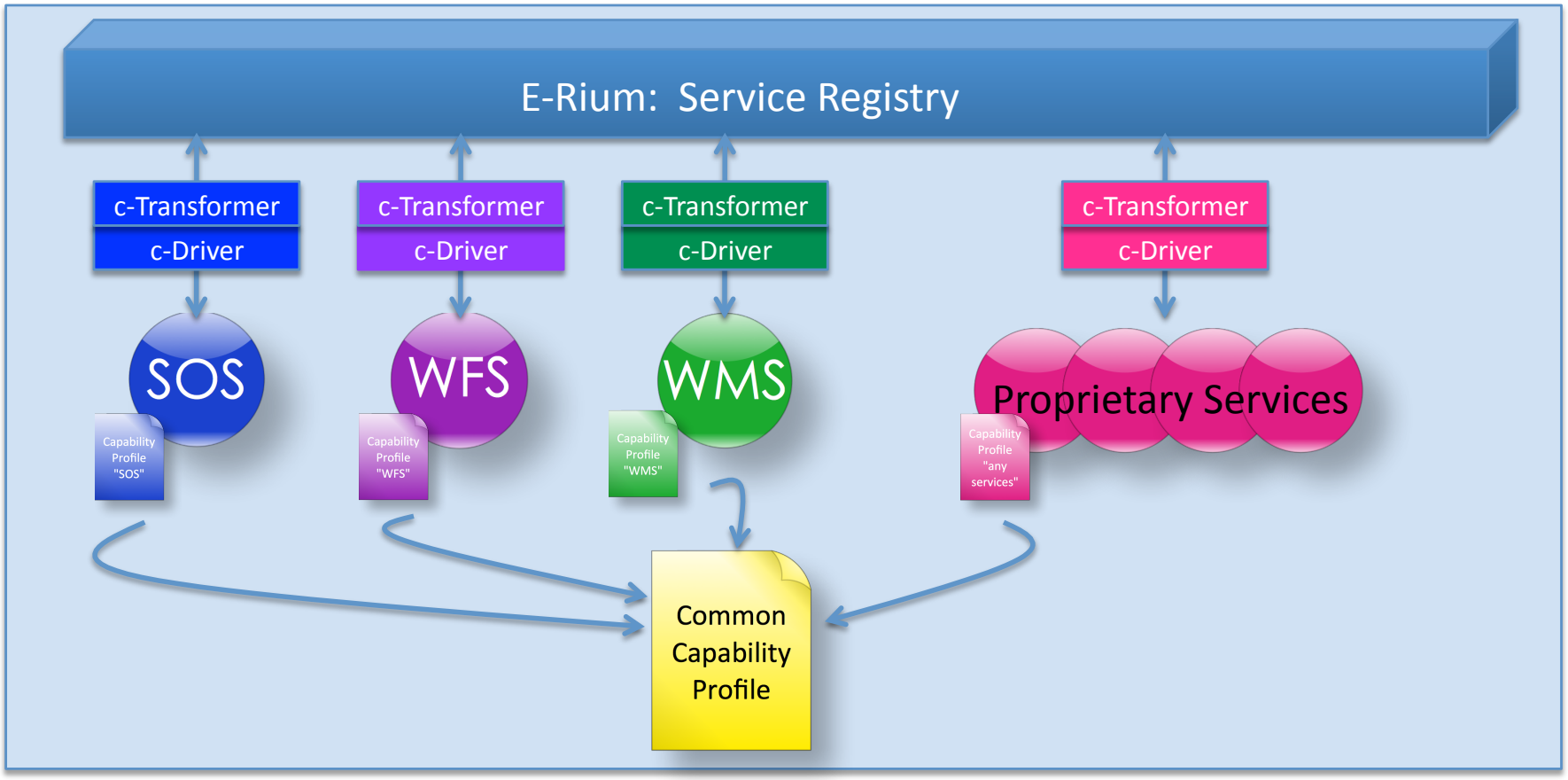
Heterogeneous Services

1. Different APIs



Heterogeneous Services

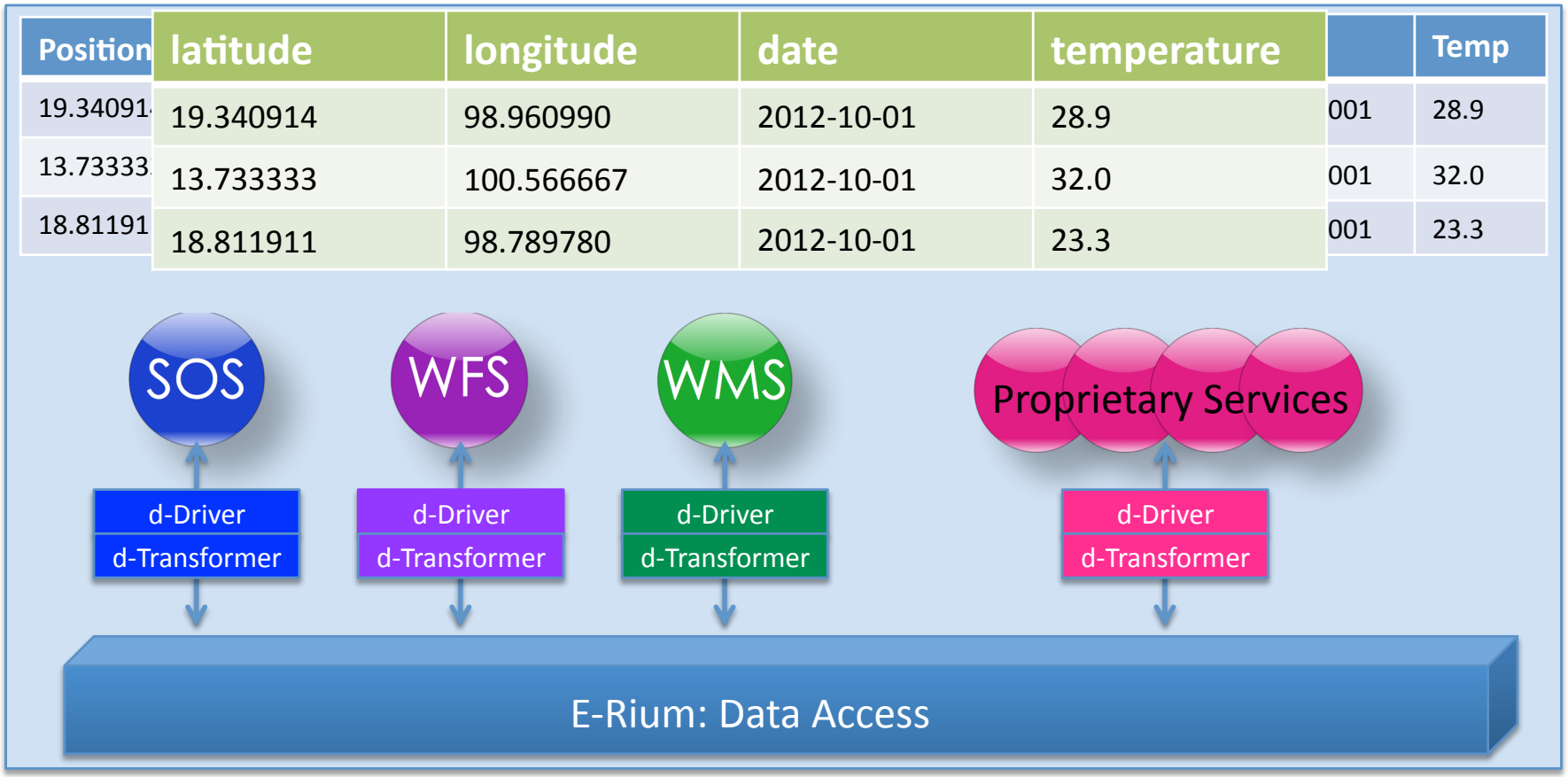
2. Different Capability Profiles



Heterogeneous Services

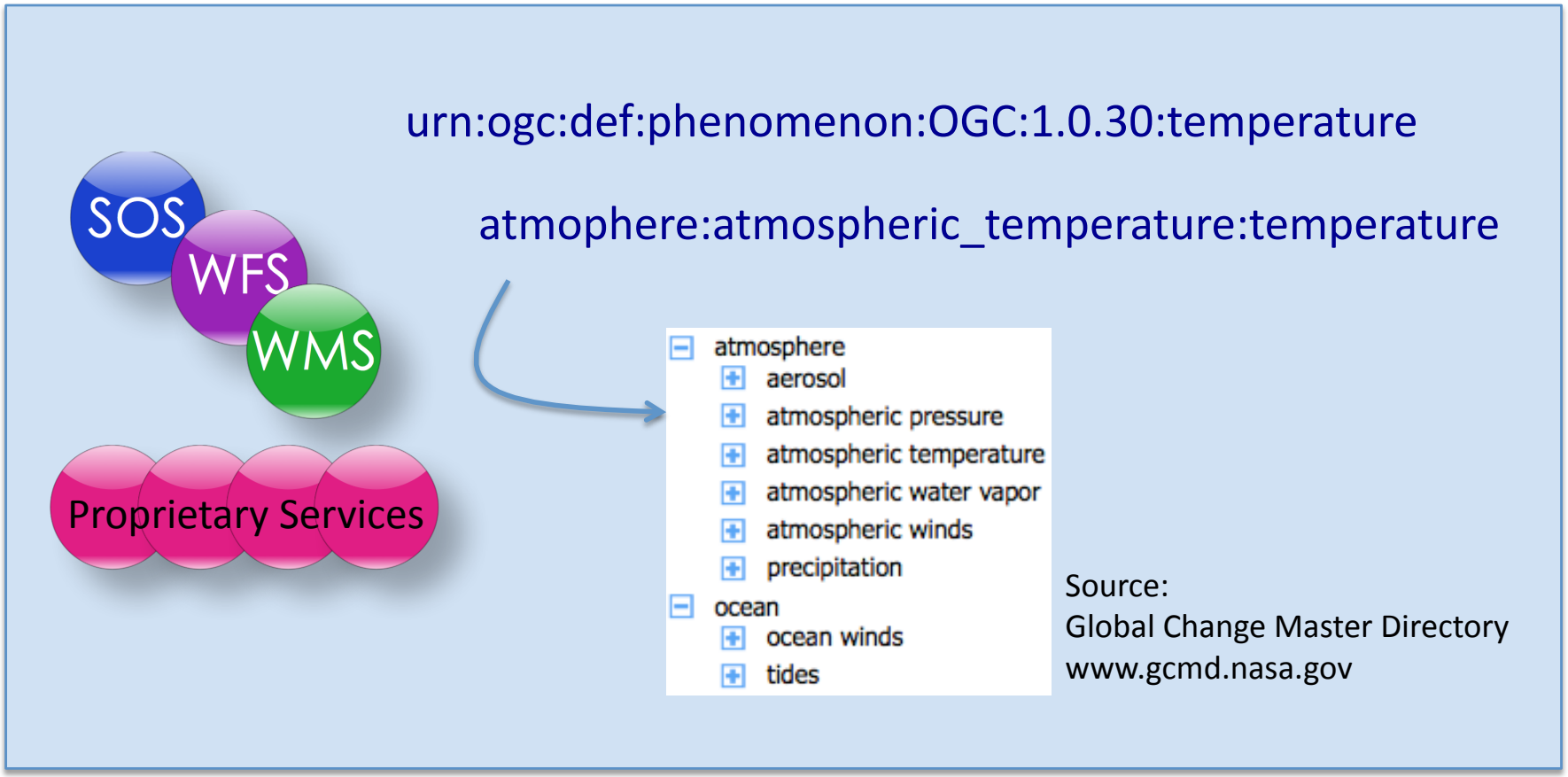
3. Different Data Models

Position	latitude	longitude	date	temperature		Temp
19.34091	19.340914	98.960990	2012-10-01	28.9	001	28.9
13.73333	13.733333	100.566667	2012-10-01	32.0	001	32.0
18.81191	18.811911	98.789780	2012-10-01	23.3	001	23.3



Heterogeneous Services

4. Different Data Type Classification Schemes



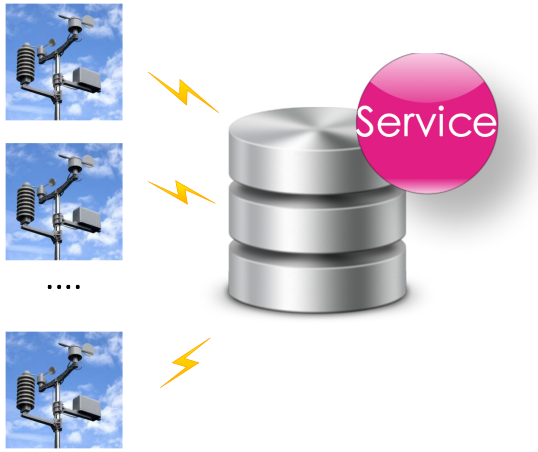
Two Major Concerns

- Heterogeneous Services
  - Different APIs
  - Different Capability Profile
  - Different Data Models
  - Different Data Type Classification
- Difficulty in Servicing Data from Legacy System

Difficulty in Servicing Data from Legacy System

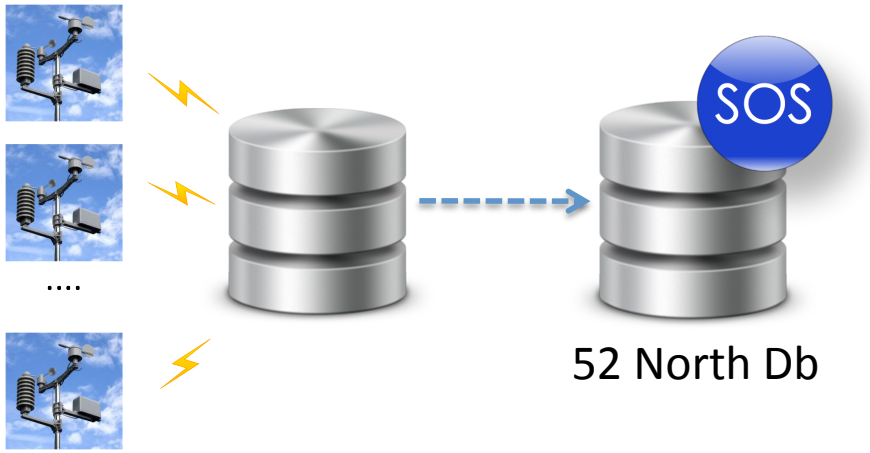
Development from scratch:

1. Understand Web Server
   -- Apache & Tomcat
2. Understand XML
3. Understand how to develop Web Service

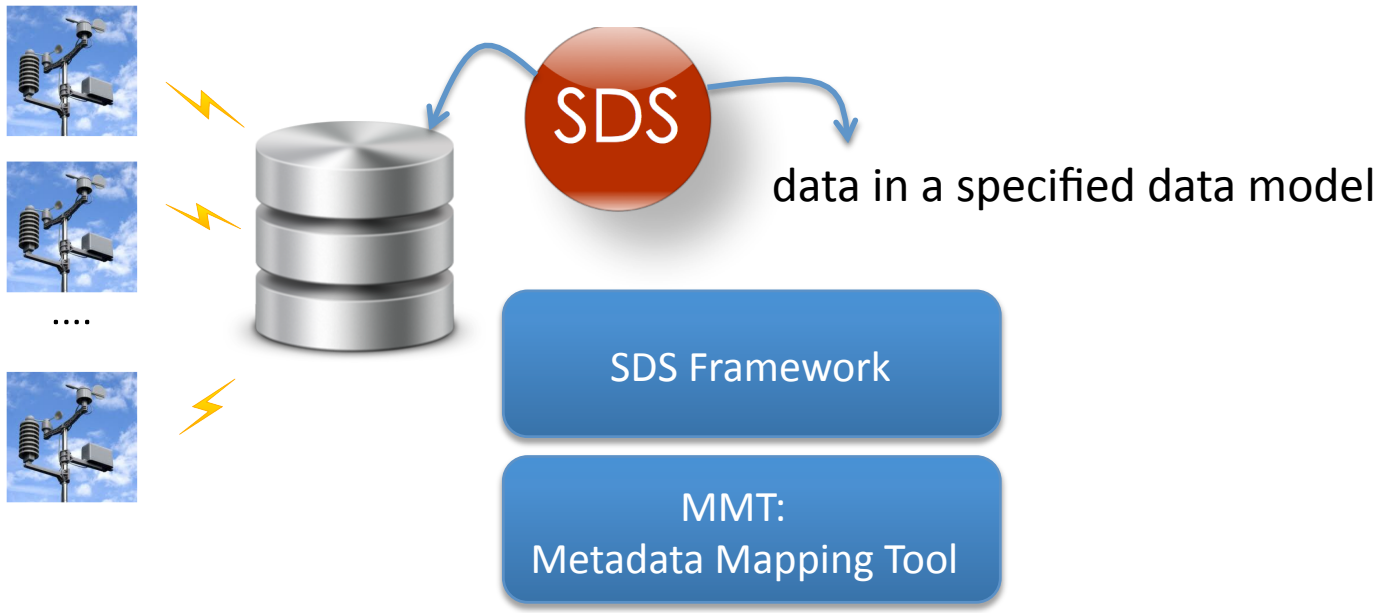


The application of tool (i.e. 52 North) :

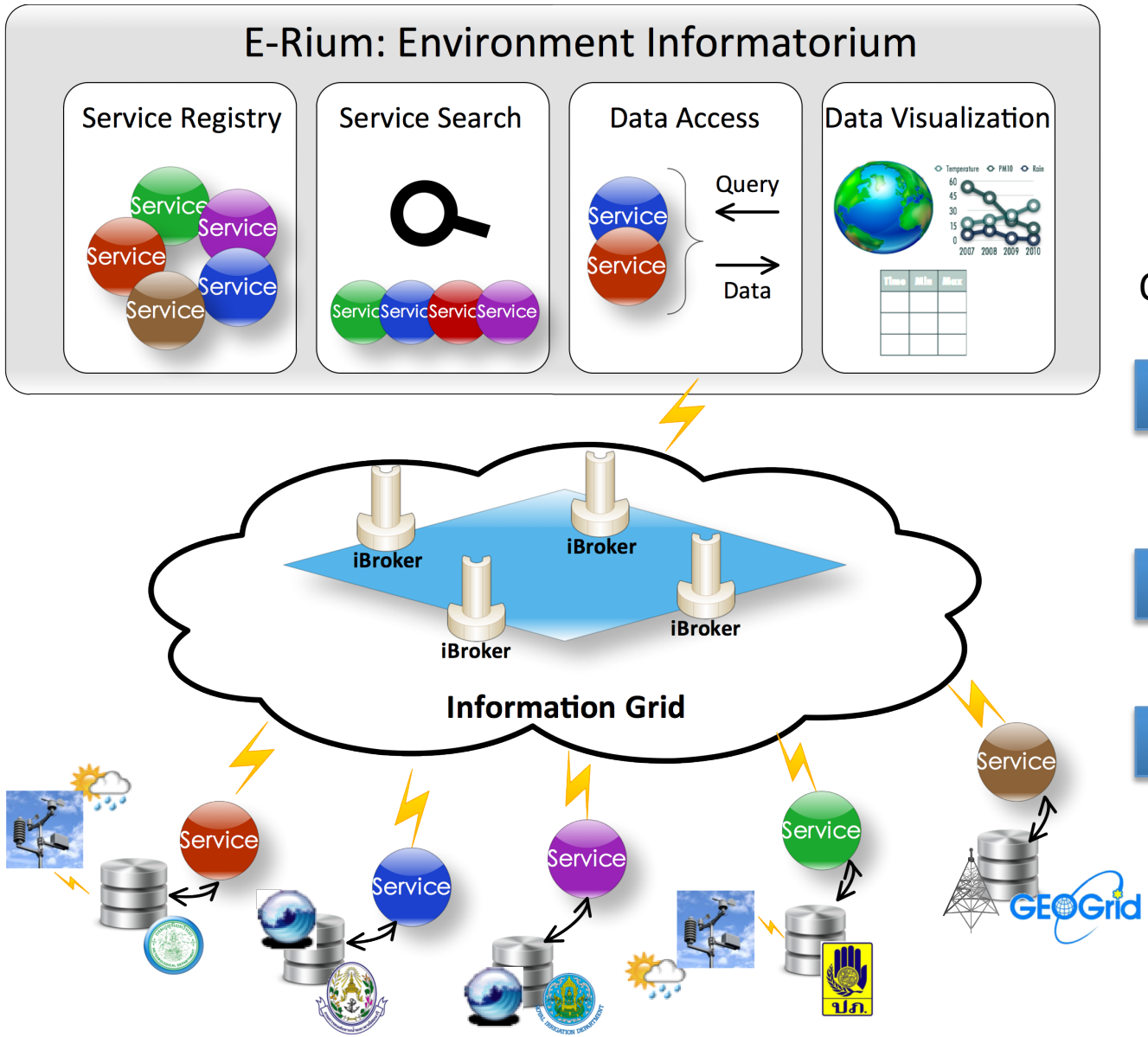
1. Understand Web Server
   -- Apache & Tomcat
2. Understand its data model
3. Understand how to transform data from a legacy system into its data model (may be complex) in a continuous manner



Difficulty in Servicing Data from Legacy System



E-Rium Architecture

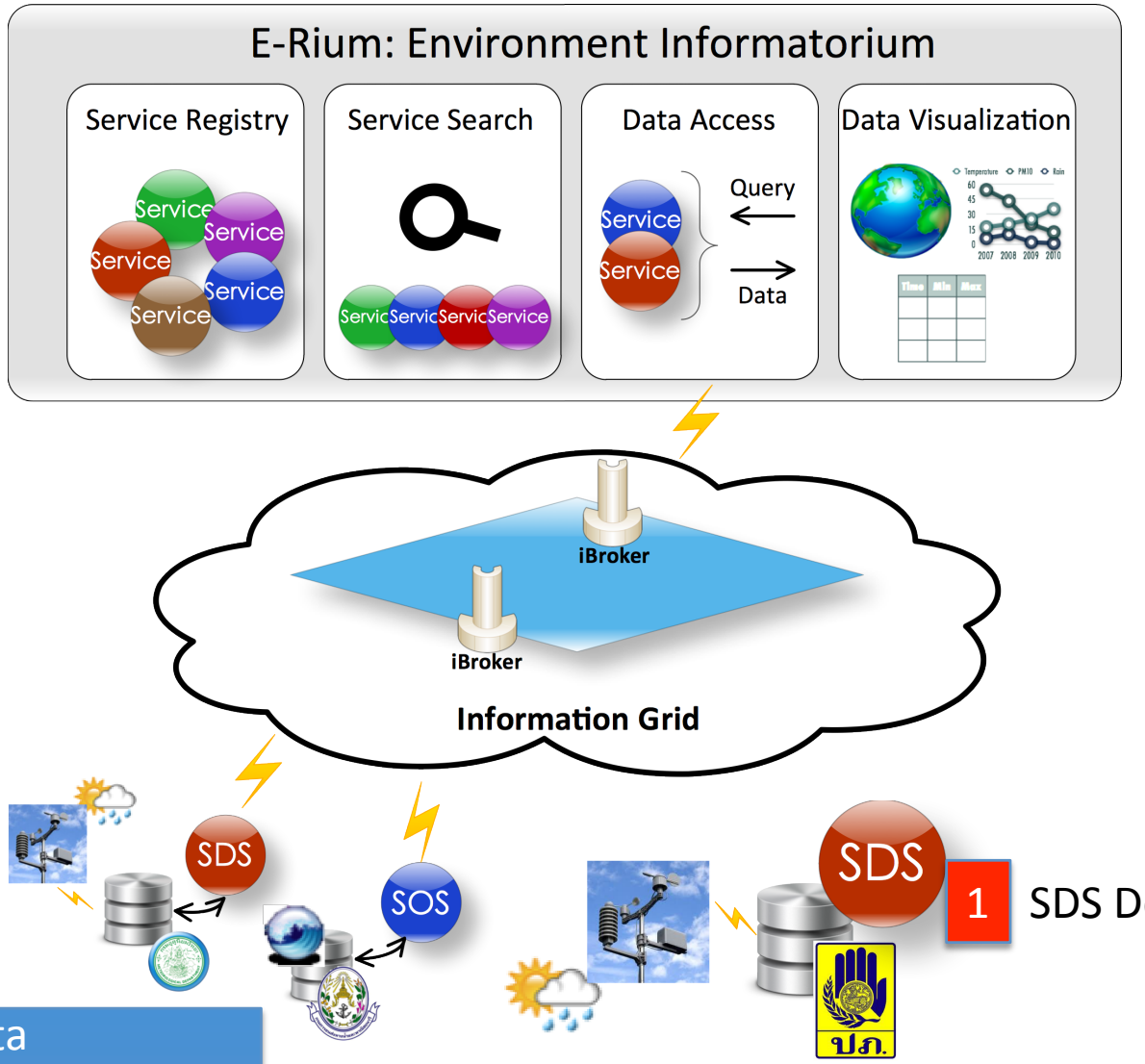


Overall Capabilities:

1. Catalog for two kinds of heterogeneous services: OGC-SOS & LSR-SDS
2. Simple data access across geographically distributed and heterogeneous services
3. Basic visualization of different data types via map, graph and table

E-Rium Demonstration

E-Rium Demonstration



List of Available Data
- Temperature data from TMD
- Tidal height from MD

1

SDS Development

Data Model Mapping

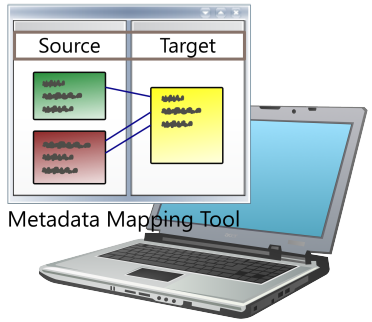
SDS Configuration

SDS Start Up

SDS Framework
(SDS-1.0.0-beta.tar.gz)

Endpoint: 192.168.100.41

MMT



by providers

1 SDS Development

Data Model Mapping

SDS Configuration

SDS Start Up

by providers

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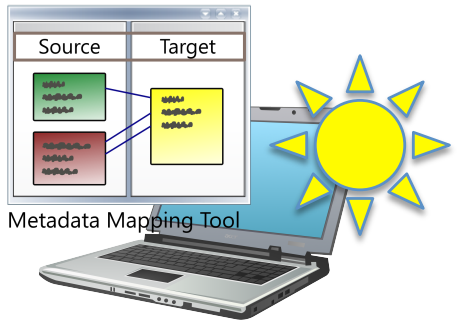
MMT



ams_iotype table

ams_ioreg table

ams_mapping table

master_alldata table

Temperature Data Model
serviceid
latitude
logitude
observeddatetime
distance
Geompoint
air_temperature

1

SDS Development

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by providers

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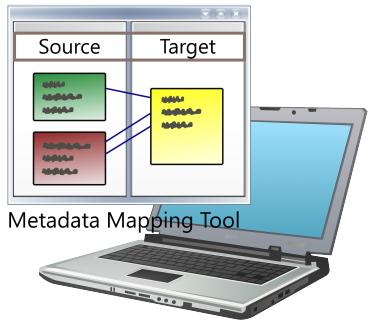

Four simple steps @server:

```
# tar zxvf SDS-1.0.0-beta.tar.gz
# mv temperature.smdx $SDS_HOME/mapping
# vi $SDS_HOME/conf/iServiceConfiguration.xml
# vi $SDS_HOME/conf/getCapability.xml
```

1

SDS Development

Data Model Mapping

SDS Configuration

SDS Start Up

by providers

SDS Framework
(SDS-1.0.0-beta.tar.gz)

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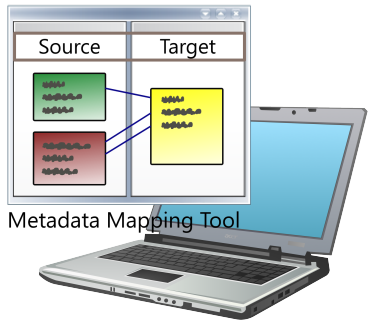


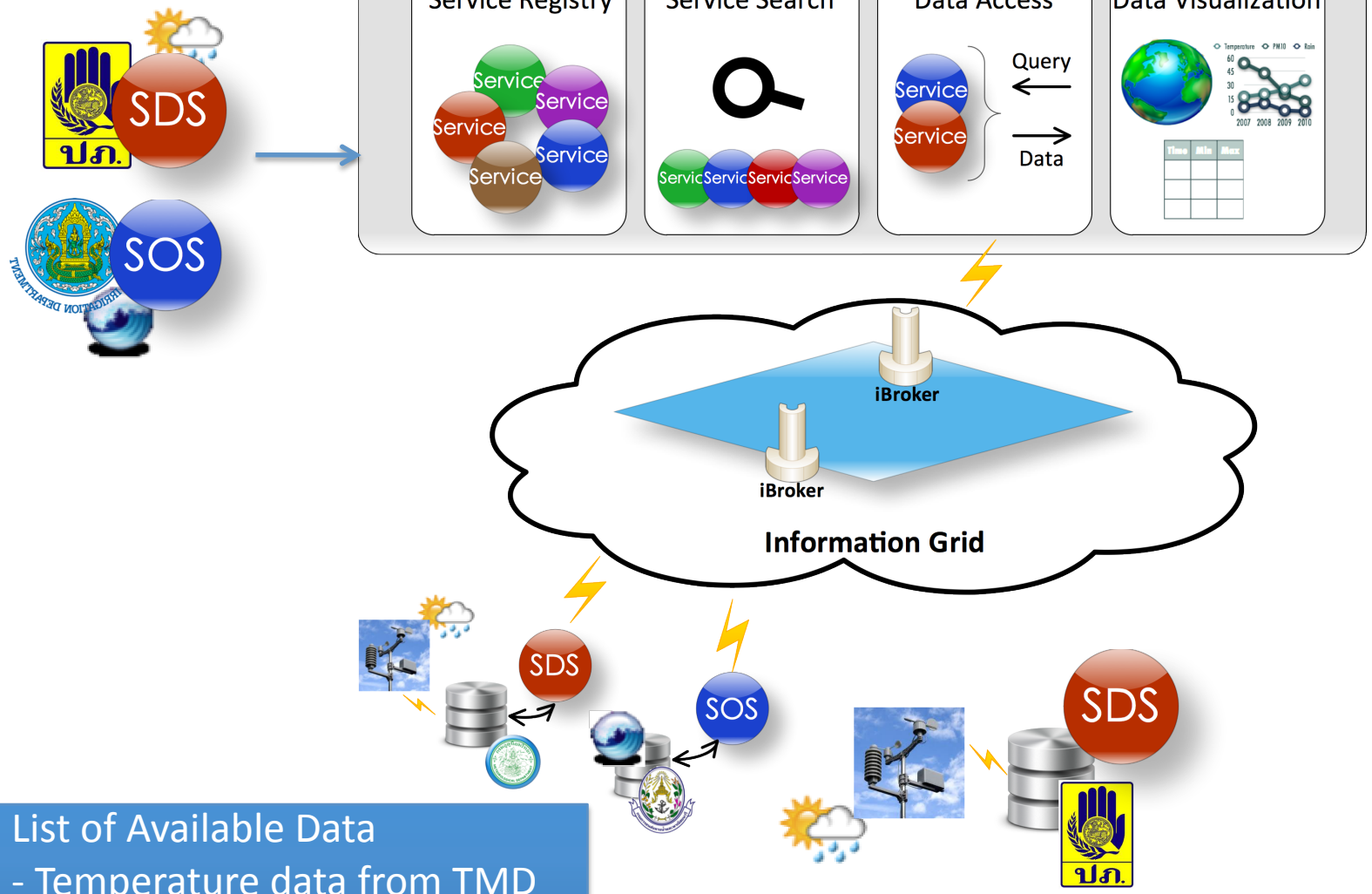
Start SDS @server:

./$SDS_HOME/iservice.sh start

192.168.100.41:1978/InformationGrid/services/SDS

E-Rium Demonstration

2 Registry
SOS & SDS



List of Available Data
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2 Register SOS & SDS

Service Specifying

Data Type Mapping

Service Registry

by providers

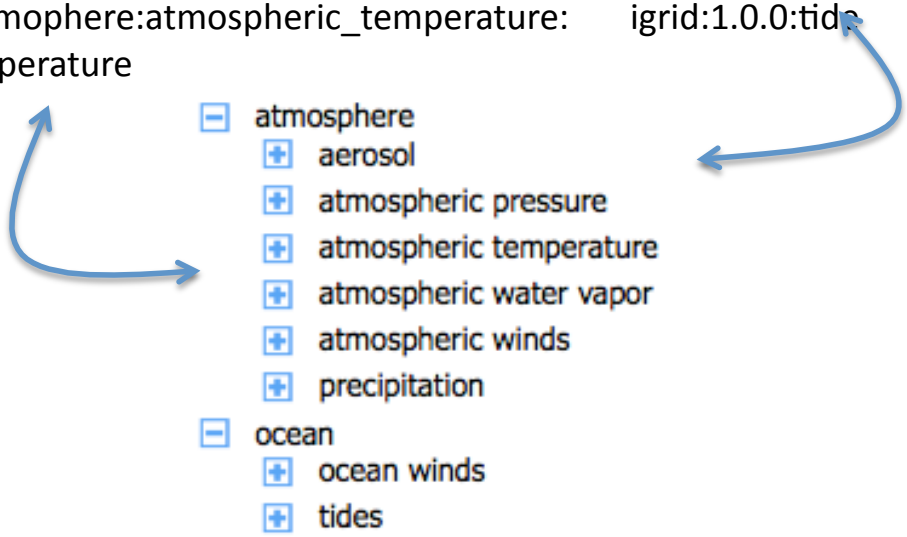
by E-Rium

Endpoint:
192.168.100.41:1978/InformationGrid/services/SDS

Data Type:
atmophere:atmospheric_temperature:temperature

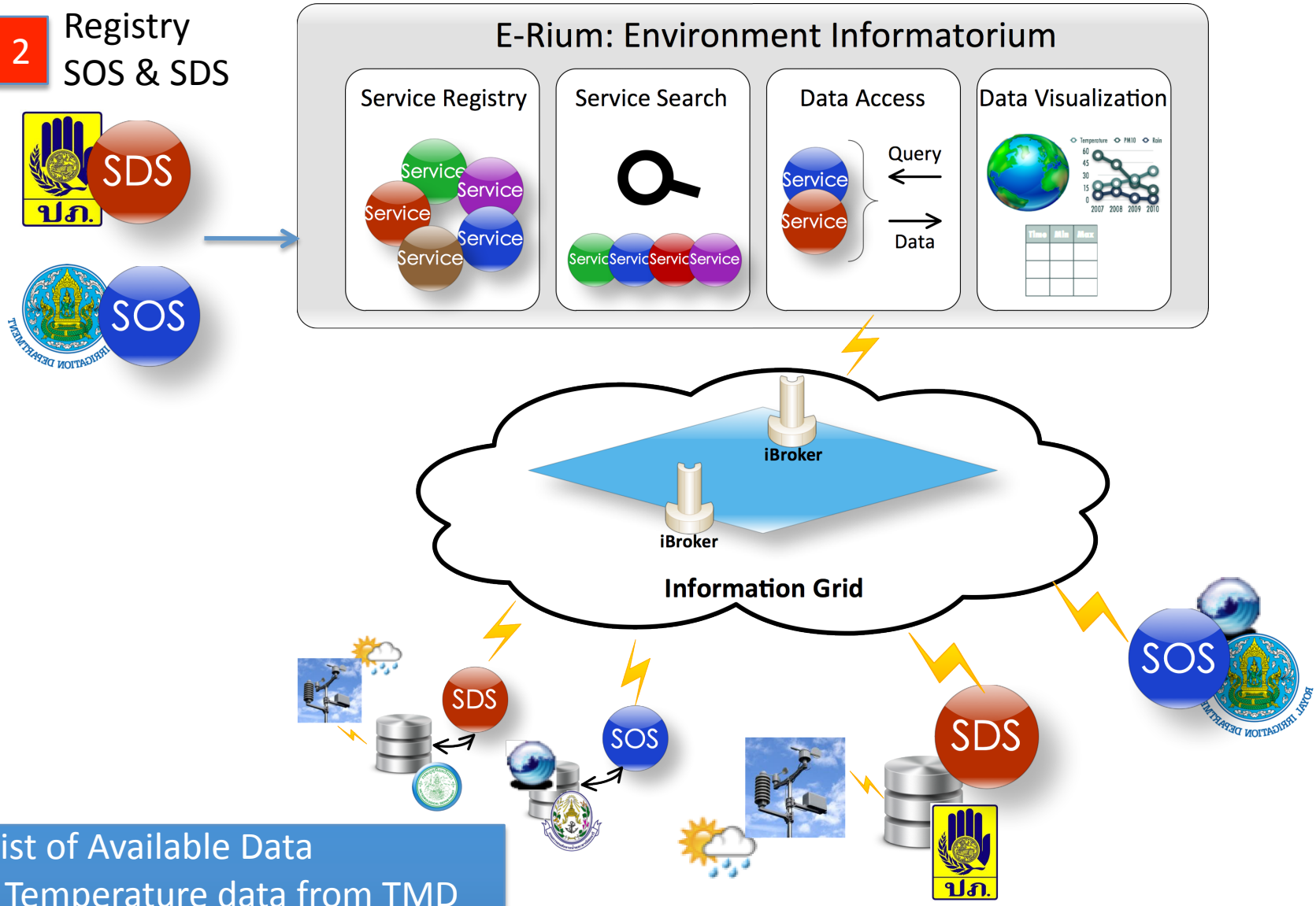
Endpoint:
192.168.100.21/RIDSOS/sos

Data Type:
urn:ogc:def:phenomenon:igrid:1.0.0:tide



E-Rium Demonstration

2 Registry
SOS & SDS



List of Available Data
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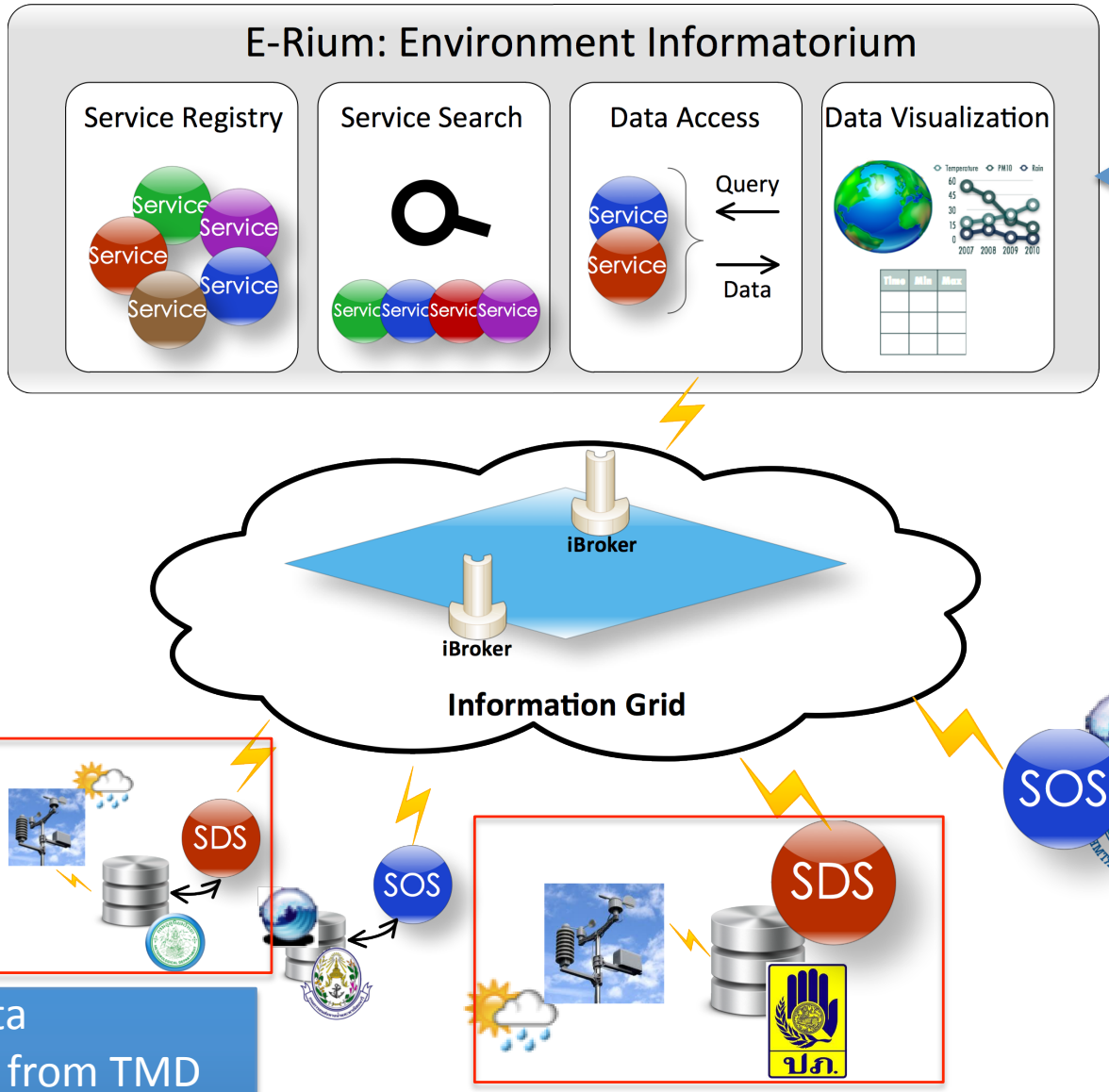
- Tidal height from MD
- Temperature data from DDPM
- Tidal height from RID

E-Rium Demonstration



3

Access temperature data observed in Thailand from Aug – Oct, 2012

List of Available Data
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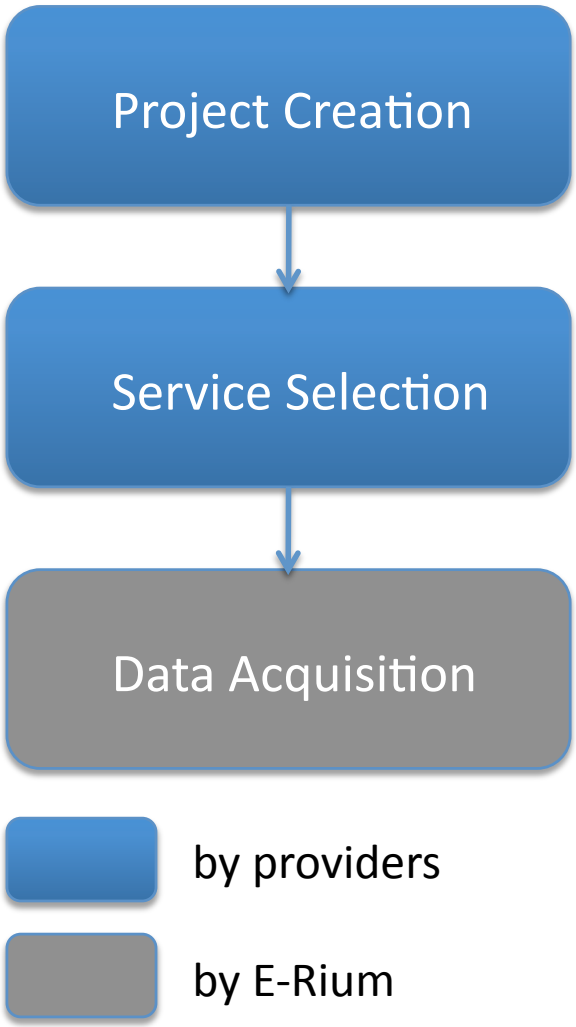
- Tidal height from MD
- Temperature data from DDPM
- Tidal height from RID

3 Access Data from two SDS



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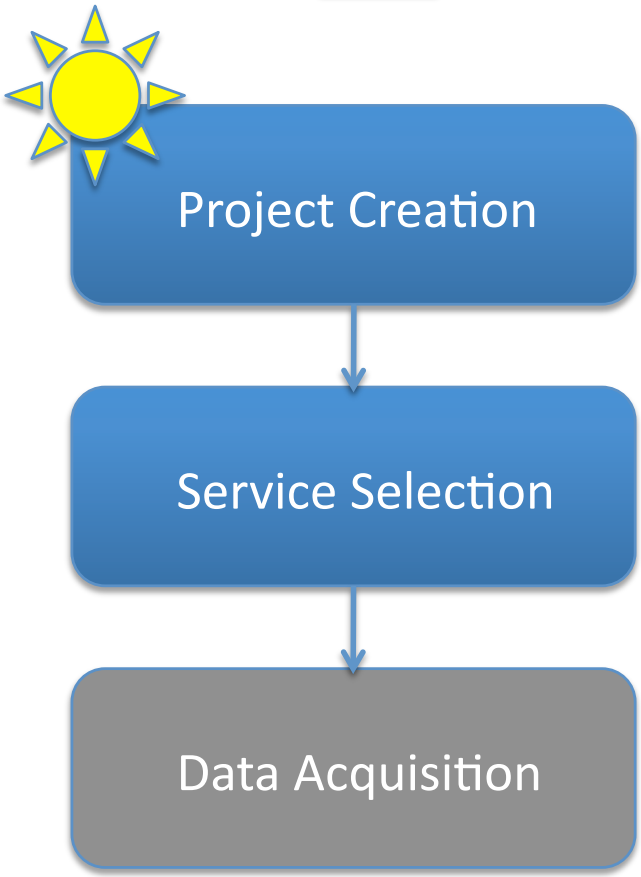
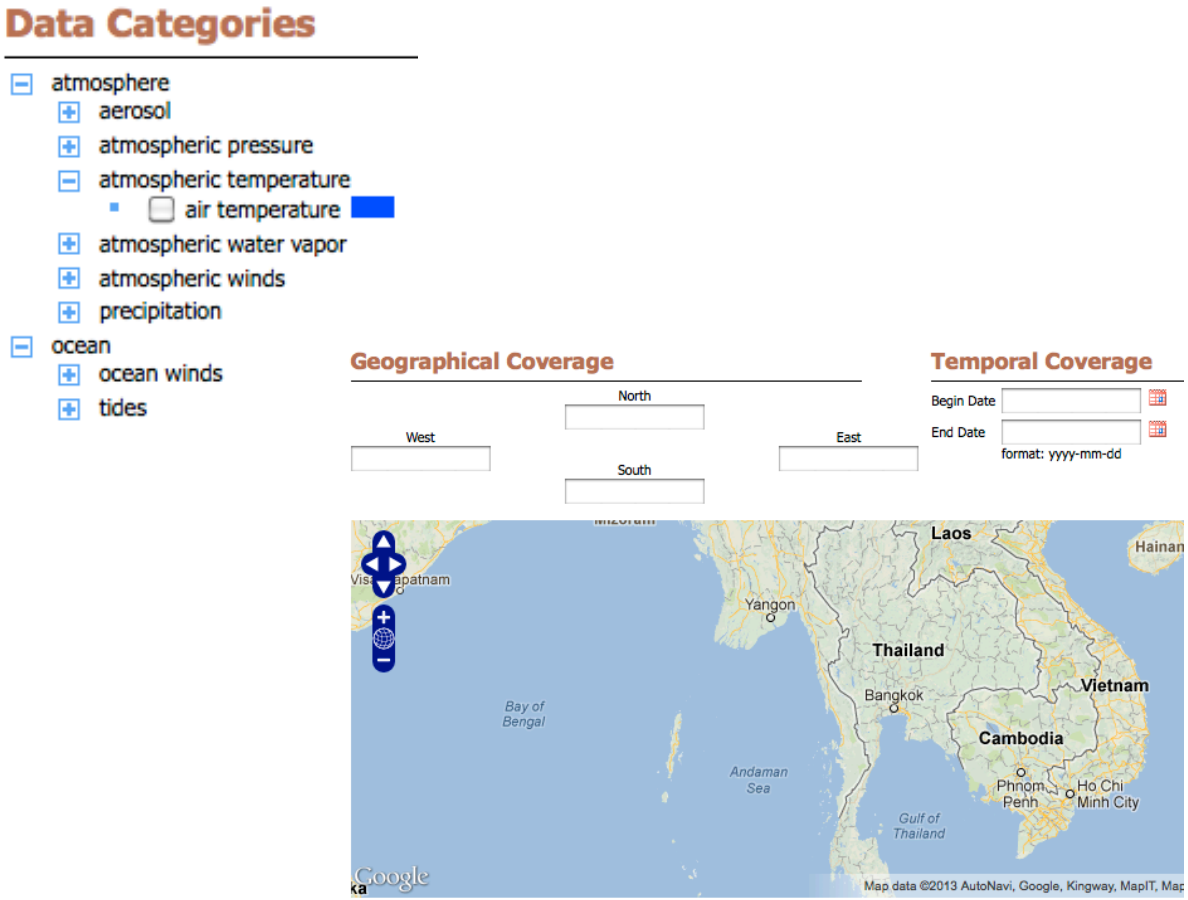


by providers

by E-Rium



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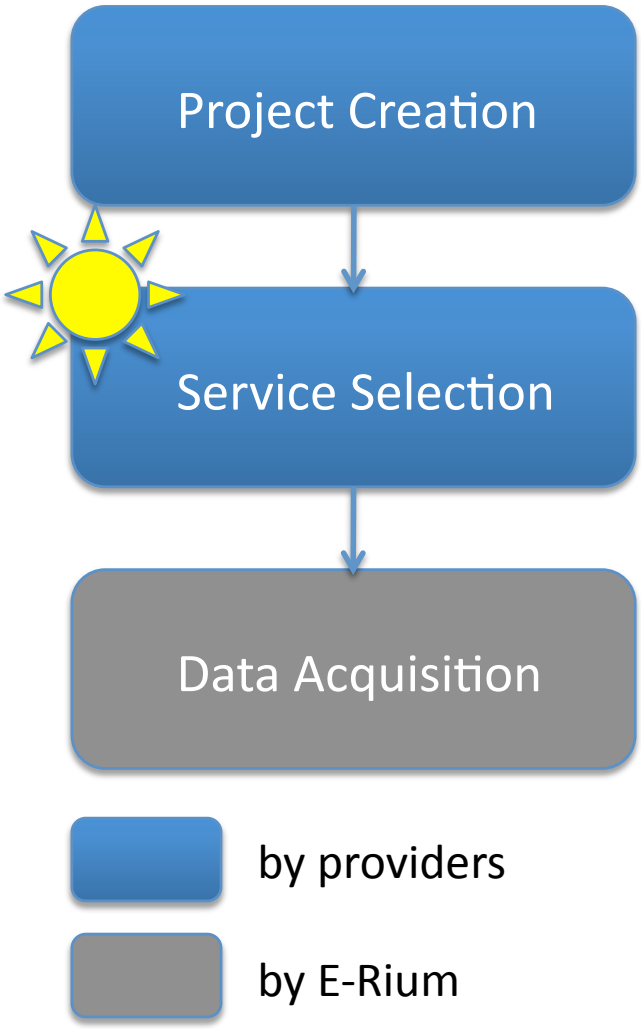

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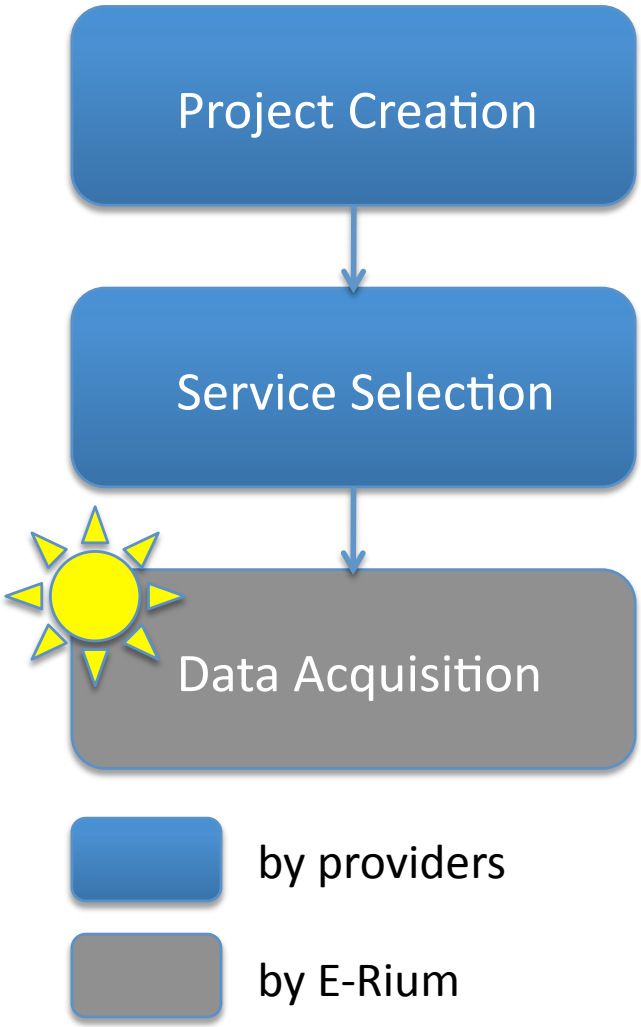

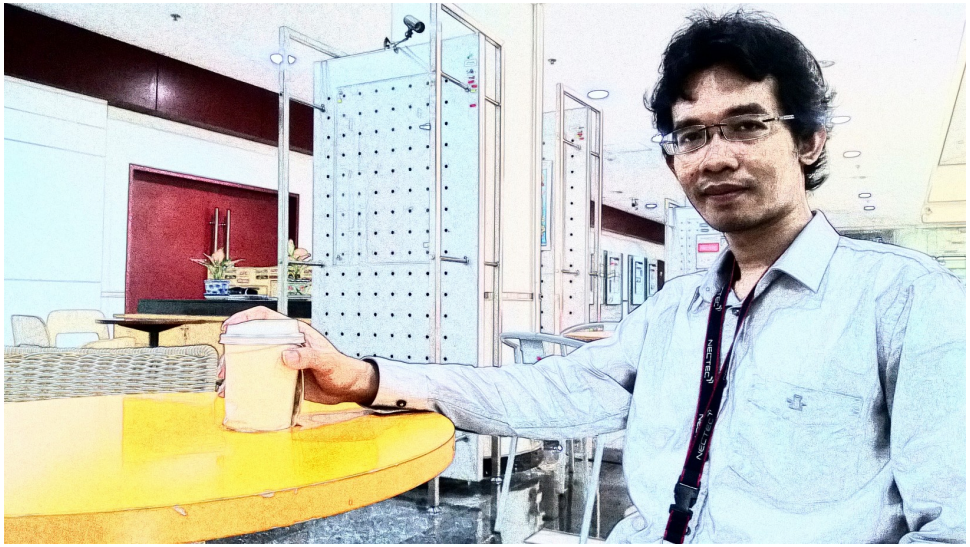

Conclusions & Future Works

- E-Rium Usage by Pragma Community
- Future Works
  - The Scalability Improvement of E-Rium
  - Two applications
    - Landslide Monitoring
    - Coral Reef Bleaching Monitoring