



Open Standards in Practice — OGC China Forum Activities

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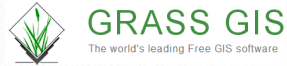


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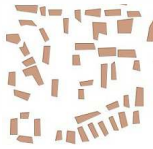
Numerous tools



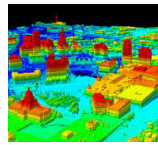
Various vendor



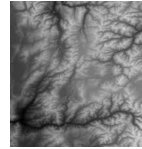
Spatial Databases



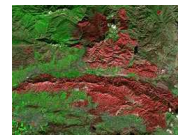
Vector



LIDAR



DEM



Raster

Heterogeneous forms of spatial data
Large volume of distributed data

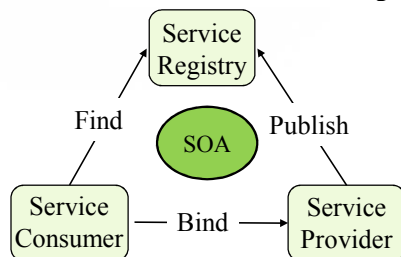
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Introduction



How to make distributed data and numerous tools more **sharable** and **interoperable**, and work **collaboratively** across various organizations?

Service oriented architecture and open standards could help address such issues.



Open Standards



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Introduction



ISO/TC 211 - Geographic information/Geomatics is responsible for ISO series of standards in geographic information.



Open Geospatial Consortium makes open standards for the global geospatial community.



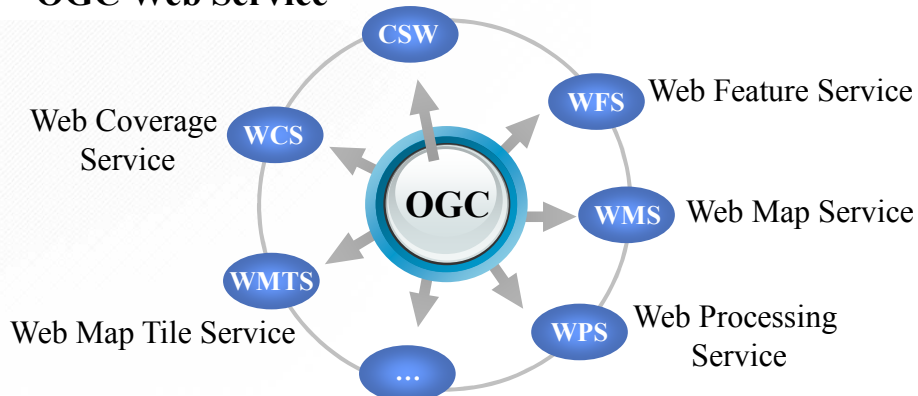
Open Modelling Interface provides standard interfaces to support data exchange between environmental models at runtime.

W3C, OASIS, ...

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OGC Standards

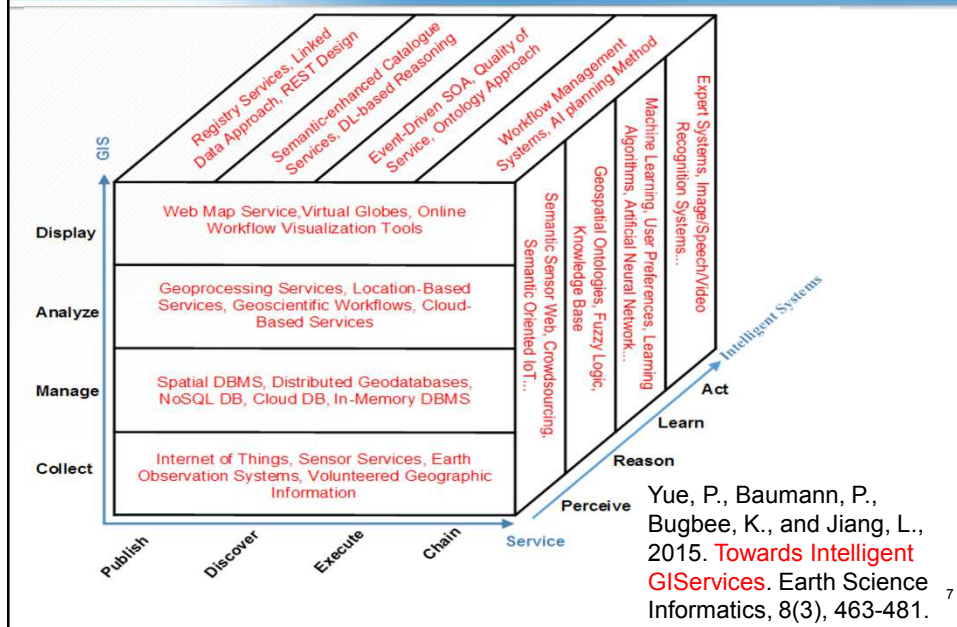
➤ OGC Web Service Catalogue Service for Web



➤ OGC Sensor Web Enablement

- Information Models and Schemas
- Sensor Observation Service (SOS), Sensor Planning Service (SPS), etc.

Intelligence GIServices



Using standards in different contexts

➤ Scientific Workflow

Distributed services could be composed using scientific workflow technologies.

➤ Integrated Environmental Modelling

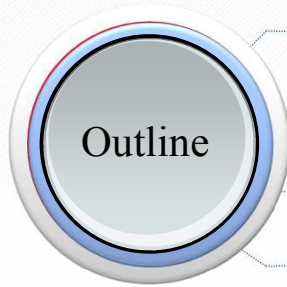
Coupling component and Web Services for IEM

➤ Combining scientific and social data

VGI as sensor data

...

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- Introduction
- **The role of OGC-China Forum**
- OGC-China Forum initiative
- Conclusion and future work

OGC-China Forum

- More than **one hundred** universities in China have Geoinformatics programs



.....

- Geospatial information industry in China has been developing strongly

The total industrial output value in 2017 is about 518 billion yuan, expected to exceed **620 billion yuan** in 2018, keeping an annually increase of **20 percent**

OGC-China Forum: Milestones

2007

OGC China Symposium

Introduces OGC to the **geospatial community** in China and initiates **effective communications** concerning geospatial standards development.

2011

Asia Forum of the OGC

China is one of the **founding members**. The OGC Asia Forum aimed to address OGC **outreach in the Asia** region.

2016

2017

OGC China Forum phase 1

- OGC session in **6th Digital Earth Summit**. Digital Earth in the Era of Big Data.
- OGC China session in the **annual conference of the 2016 China GIS society**.
- OGC China forum initiative in the **Technical and Planning Committee Meeting**.
- OGC China Forum **is chartered** in 2017

2018

OGC China Forum phase 2

OGC China forum co-organizes the **International Workshop on Big Geospatial Data and Data Science (BGDDS 2018)**.

OGC-China Forum: Members



Wuhan University



Tsinghua University



Fuzhou University



Yunnan University



Zhengzhou Institute of Surveying & Mapping



Nanjing Normal University



Institute of Remote Sensing & Digital Earth Chinese Academy of Sciences

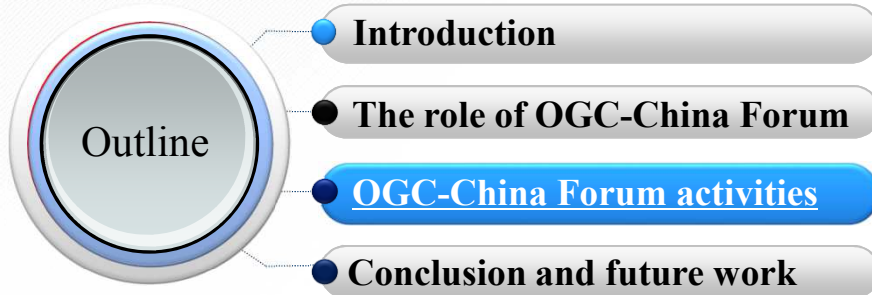


SuperMap GIS



Terra IT

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OGC-China Forum Activities

OGC China Forum work report in 2016

OGC session in 6th Digital Earth Summit. Digital Earth in the Era of Big Data.



July 2016
Beijing, China

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OGC-China Forum Activities

OGC China Forum session in 2016

OGC China session in the annual conference of the 2016 China GIS society. OGC China forum reports the latest work from its members



September 2016
Shenzhen, China

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OGC-China Forum Activities

OGC China Forum initiative report in 2016

OGC China forum initiative report in the Technical and Planning Committee Meeting.



December 2016
Taichung, Taiwan

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OGC-China Forum Activities

OGC China Forum was chartered in 2017



About ▾ Standards ▾ Innovation ▾ News & Events ▾ Membership ▾ Resources ▾

Chartered in 2017

OGC China Forum

The China Forum of the Open Geospatial Consortium (OGC®) was chartered in 2017 with the goal of addressing the OGC outreach and education needs of government, academic, research and industry organizations in China. The Forum also provides a coordination mechanism to prioritize Chinese interoperability requirements and communicate these requirements into the OGC standards process. Finally, the Forum will establish and maintain coordination with the Asia/Pacific region OGC members on issues relevant to the broader Asia/Pacific regional interest in the OGC international process.

The OGC China Forum is a grouping of the OGC members in China, set up to promote the use and understanding of open standards for geospatial software and data in China, and to influence the definition of these standards. The objectives of the China Forum are to increase the profile and awareness of geospatial interoperability standards in China, with national and local government as well as industry, academic, and research organizations, to provide a forum for the collaboration of developers and users of spatial data products and services, and to assist in the definition of a set of standards to meet the requirements of China. The Forum will assist organizations in understanding the tangible benefits of implementing geospatial interoperability standards, to identify the relevant standards, and to plan for success in realizing these benefits through use of compliant products.

The members are committed to the use of the open interoperable standards defined by the Open Geospatial Consortium (OGC). The China Forum will work with the global and Asia/Pacific regional structures of the OGC. The OGC China Forum will also strive to work with other relevant industry and government bodies to achieve its vision which is the realization of the full societal, economic and scientific benefits of integrating electronic location resources into commercial and institutional processes.

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OGC & IEEE ESI TC working on Data Science

- IEEE-OGC Intl Workshop on **Big Geospatial Data & Data Science (BGDDS 2018)**, September 22-23, 2018, Wuhan, China

September 22-23 2018
International Workshop on Big Geospatial Data and Data Science
Wuhan, China

The 2018 International Workshop on Big Geospatial Data and Data Science will be held in Wuhan, China. This conference is co-organized by Wuhan University, IEEE Geoscience and Remote Sensing Society Geospatial Consortium (OGC) China Forum, and hosted by School of Remote Sensing and Information for Intelligent Geoprocessing.

Geospatial data are growing faster than ever due to the development of sensor technologies and cyber increased complexity due to their very special characteristics of volume, variety, velocity, value, veracity and informatics professionals and students to present and discuss state-of-the-art technologies for concepts and applications.

More information will be coming soon! Please visit this page again.
For further information, please contact: bigdatacon2018@ieee.org

Yue, P., Ramachandran, R., Baumann, P., Khalsa, S., Deng, M., and Jiang, L., 2016. **Recent Activities in Earth Data Science**. IEEE Geoscience and Remote Sensing Magazine, 4(4): 84-89.



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Earth Science Informatics



- Advance application of informatics to GRSS
- venue for ESI professionals to exchange information & knowledge
- technology advice to major national & international ESI initiatives
- Areas of Interest: Data & information policies, data stewardship, Earth system modeling, datacubes, sensor web, cloud computing, emerging technologies,...

▪ **Currently ESI TC has more than 100 members**

▪ **Countries/Areas represented:**

- | | | |
|-------------|----------------|---------------|
| - Australia | - Germany | - Switzerland |
| - Belgium | - India | - Mexico |
| - Brazil | - Italy | - Turkey |
| - Canada | - Japan | - UK |
| - China | - New Zealand | - USA |
| - France | - South Africa | |



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OGC China Members' Activities

- **Tsinghua University:** Defining the relationship of 19130-3 to OGC SensorML
- **Zhengzhou Institute of Surveying & Mapping:** Defining the Discrete Global Grid Systems (DGGS) code conceptions, quantitative operation, and coding the algebraic operation
- **Nanjing Normal University:** Formulating the metadata of the geographic model(draft) and Geographic Model Service Description Language (GMSDL)
- **Institute of Remote Sensing & Digital Earth Chinese Academy of Sciences:** Working on China Data Cube and other mashup systems based on OGC WMS, WFS, WCS, WPS, DGGS and Sensor Web standards
- **Terra IT:** Helping Shanghai Police establish CityGML Application Domain Extensions (ADE) for population and address Management
- **Fuzhou University:** Defining the OGC GML coverage implementation schema, and working on ISO 19123-2

OGC-China Forum: Members' Activities

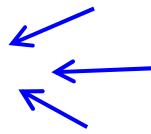
➤Wuhan University:

- Organizing OGC China Forum
- Published the first China-led international standard on geographic information, ISO/TS 19163-1 Content components and encoding rules for imagery and gridded data -- Part 1: Content model
- Working on the big data infrastructure enabled location-based service Web and disaster management service systems
- Coordinating OGC China Forum mashup projects

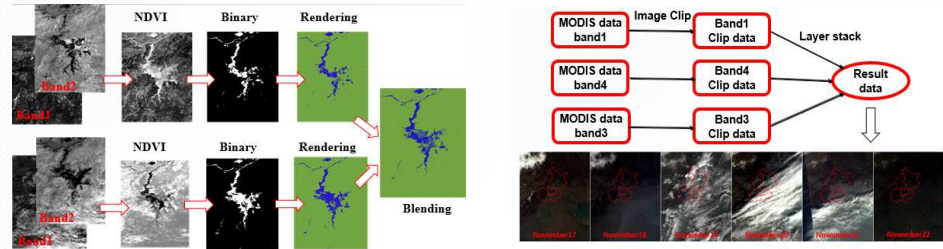
Mashup: Environmental issues in China



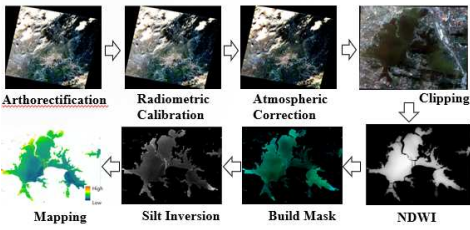
Floods Hit Central China,
Wuhan, July, 2016



Various Processing Flows

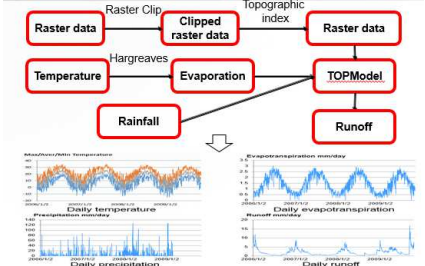


Change extraction of water coverage area



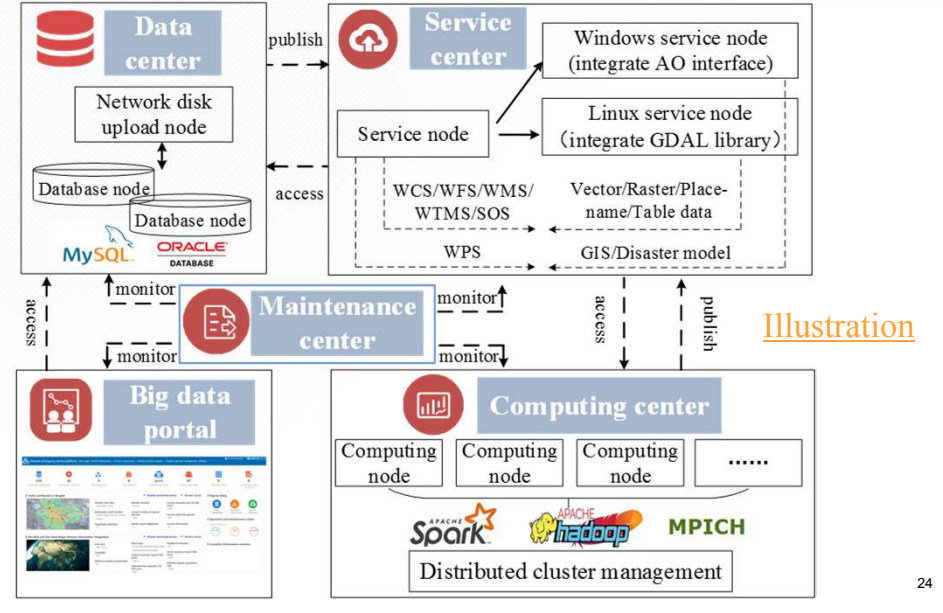
Turbidity extraction

Haze detection

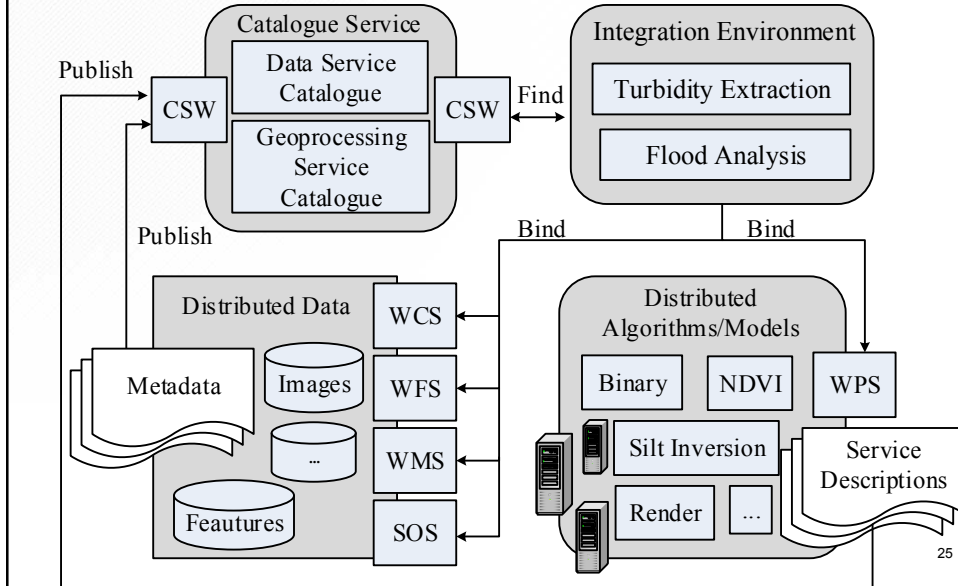


Watershed runoff simulation

Big Data Infrastructure for GIServices



Service-oriented architecture using OGC standards

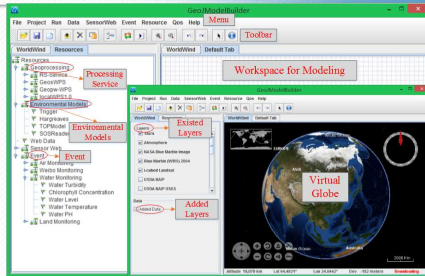


OGC China Forum Mashup: Services provided by six organizations

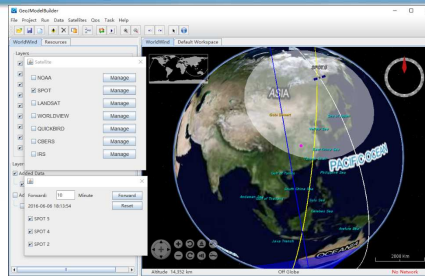
Data/Processing functions	Type of services	Organizations
Silt inversion, mask building, clipping, etc.	WPS	WHU
Service registry	CSW	WHU
NDWI, Binarization, Rendering	WPS	RADI
Images	WCS	FZU
Features	WFS	ZISM
MapWorld	WMTS	NGCC
Observations	SOS	GEOSTAR

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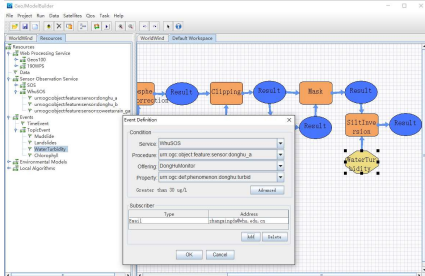
Integration Environment: GeoJModelBuilder



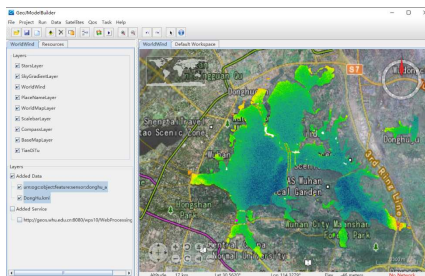
System Interface



Real-time simulation of satellites



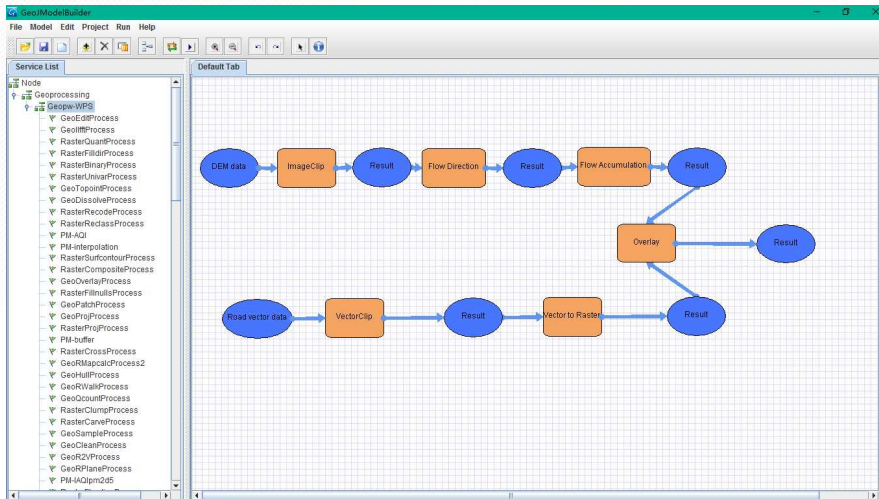
Workflow design and resource binding



Data visualization

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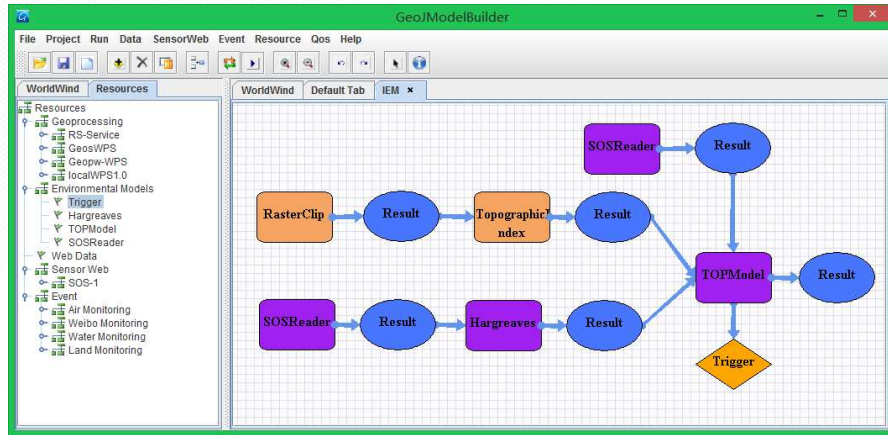
Various Processing Workflows



Urban waterlogging in GeoJModelBuilder

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Various Processing Workflows



Watershed runoff simulation in GeoJModelBuilder

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Big Data Infrastructure Applying to Smart City

Platform status Platform menu

首页 资源中心 计算中心 服务中心 运维中心

2 数据源总数(个)	5.1 数据总量(TB)	61.6 位置对象总数(万个)	8 计算模型总数(个)	12 服务发布总数(个)	5 正在处理任务数(个)	良好 设备连接状态	13 今日访问量(次)
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不动产综合分析系统 进入系统

已接入不动产节点总数(个) 2136	已获取数据总量(GB) 2.2	系统使用服务数(个) 1
关联人员总数(个) 0	平均监控时间间隔(秒) 300	系统占用计算资源量(%) 5%
关联事件总数(个) 0	数据流平均接入速率(MB/秒) 0.3	系统平均响应时间(秒) 0.2

医药智慧销售位置服务平台 进入系统

已连接药店节点总数(个) 3877	已获取数据总量(GB) 3.1	系统使用服务数(个) 2
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快速通道

注册数据 计算定制 发布服务

服务器概况

单位: 个

4 正常 2 繁忙 0 异常

异常信息

暂无异常信息

Various smart city projects Platform information

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Vehicle Management Case

The dashboard, titled "位置服务网车辆管理示范系统", features a central map showing vehicle locations. Key data panels include:

- Primary Concerned Information:** A top-right panel showing counts of 52616, 82162, and 61157, along with a weather widget for 25°C.
- Vehicle Overview:** A left-side panel with circular gauges for vehicle status (61%, 38%, 0%) and a table of vehicle types: 运行车辆 (5200), 私家车辆 (32698), 出租车辆 (14897), 公共车辆 (4746), and 其他车辆 (305).
- Transportation Status:** A bottom-right panel displaying "连接状态" (98.9%) and "交通状况" (157), including a line graph and a table of traffic metrics.

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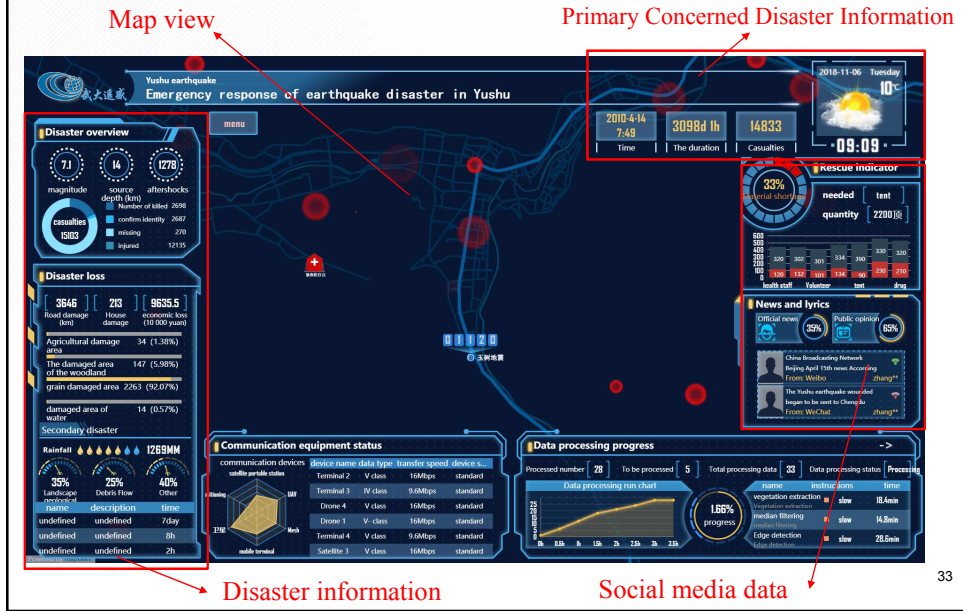
Big Data Infrastructure Applying to Disaster Services

The dashboard, titled "Disaster emergency service platform", features a top navigation bar and several data panels:

- Platform status:** A top-left panel with icons and numbers: 232 (Disaster data capacity), 32 (Total number of tasks), 5 (Being processed), 8 (Ended disaster), good (Communication status), 47 (Decision report), 0 (Visit today), and 0 (Total number of data sources).
- Disaster cases:** A central panel showing details for "Yushu earthquake in Qinghai" (June 17, 2015) and "Guanting flood disaster" (2019-02-11). It includes maps, start times, durations, economic losses, and casualty counts.
- Platform information:** A right-side panel with "Express Entry" options (Data registration, Calculation customization, Service publication) and an "Operation and maintenance center" with status indicators (normal, busy, exception).

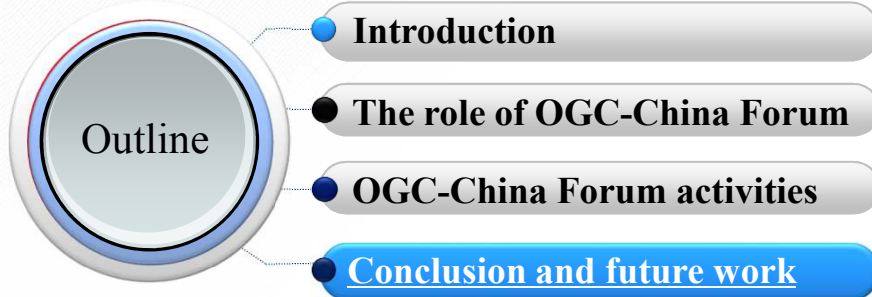
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Yushu Earthquake Case



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Conclusion



Collaborations using infrastructure services:
initiatives, demos, applications, meetings, ...

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Thanks !



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