2010 Esri 中国区域用户大会

ArcGIS10中的OGC服务

行业技术部　李宗倍

GIS–让人类认知世界

esri China BEIJING

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   - –Web Feature Service (WFS/WFST) + Demos
   - –Web Coverage Service (WCS) + Demos
4. 小结

OGC简介



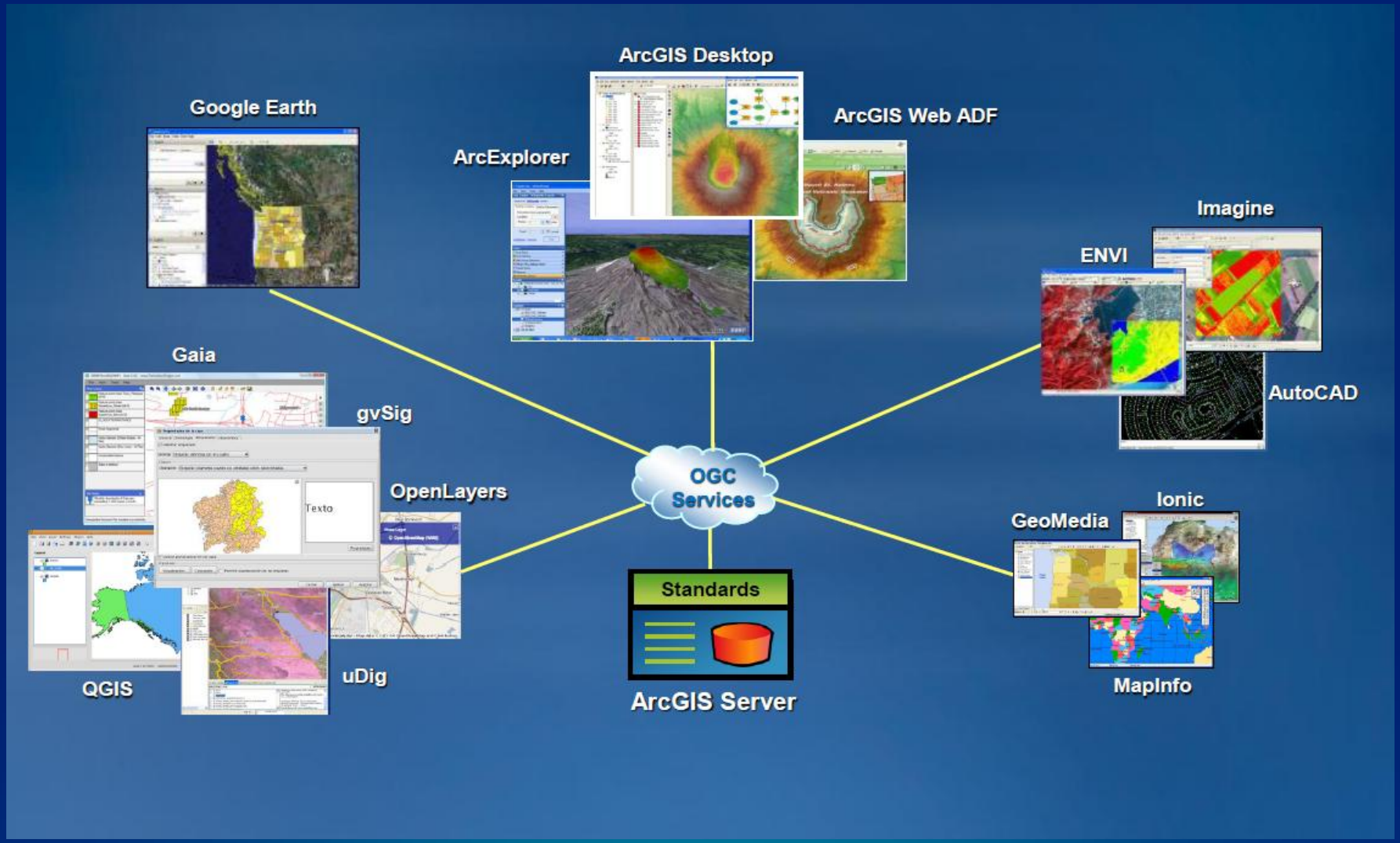
OGC相关背景

- OGC的全称?
  - Open Geospatial Consortium.
- OGC是个什么样的组织?
  - 非盈利的、国际化的、自愿协商的标准化组织
- OGC标准的职责是什么?
  - 促进GIS行业的开发商和用户之间的合作
  - 积极推进地理信息国际标准的发展

OGC标准的意义

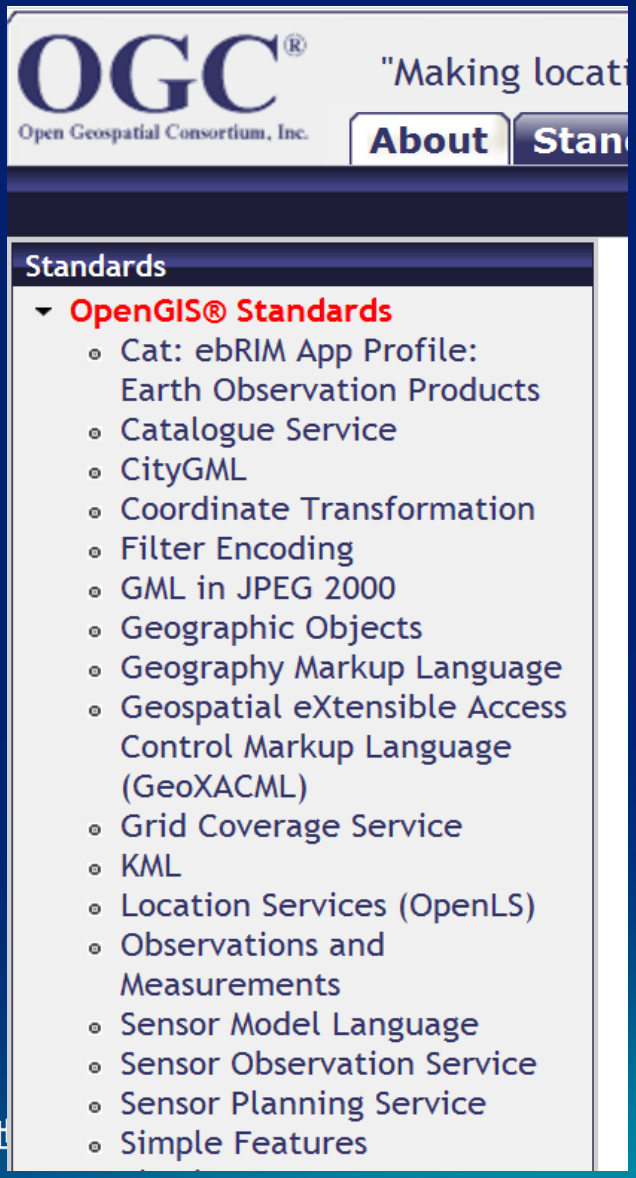


OGC标准的意义



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OGC标准


OGC®
Open Geospatial Consortium, Inc.
"Making locati
About
Stan
Standards
OpenGIS® Standards
Cat: ebRIM App Profile: Earth Observation Products
Catalogue Service
CityGML
Coordinate Transformation
Filter Encoding
GML in JPEG 2000
Geographic Objects
Geography Markup Language
Geospatial eXtensible Access Control Markup Language (GeoXACML)
Grid Coverage Service
KML
Location Services (OpenLS)
Observations and Measurements
Sensor Model Language
Sensor Observation Service
Sensor Planning Service
Simple Features
Simple Features CORBA
Simple Features OLE/COM
Simple Features SQL
Styled Layer Descriptor
Symbology Encoding
Transducer Markup Language
Web Coverage Processing Service
Web Coverage Service
Web Feature Service
Web Map Context
Web Map Service
Web Map Tile Service
Web Processing Service
Web Service Common

OGC标准分类

数据描述
- SFS
- CSW
- GML



数据处理
- WPS
- WCPS

数据可视化
- WMS
- KML

数据交换
- WCS
- WFS

OGC & ESRI

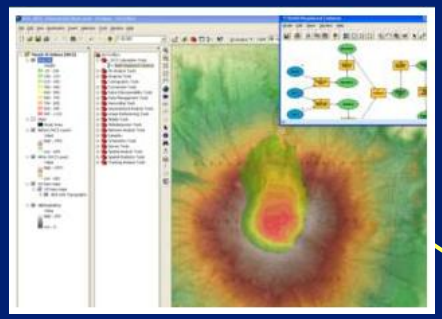
- ESRI是OGC的活跃成员，是15个首席会员（Principal Member）之一。
  - 参与所有的委员会和主要的OGC项目
  - OGC标准的主要作者
- [illegible]台对O[illegible]完美的支持。

ArcGIS对OGC的支持

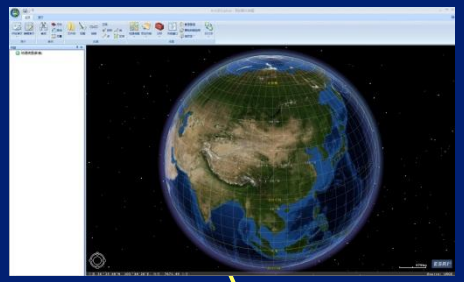


ArcGIS对OGC的支持

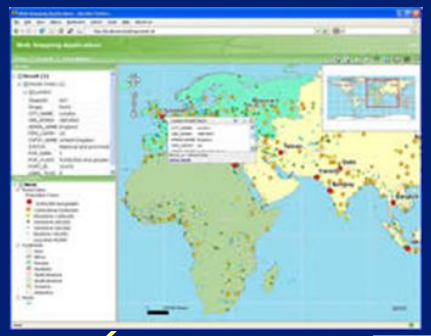
ArcGIS Desktop



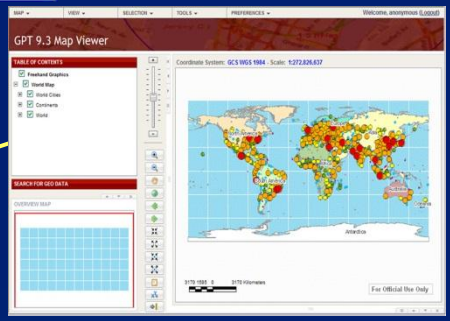
ArcGIS Explorer



ArcGIS Web ADF
REST API



GeoPortal



OGC标准



- 数据可视化
  - WMS
  - KML
- 数据交换
  - WCS
  - WFS/WFST
  - KML
- 数据描述
  - CSW
  - SF

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ArcGIS Server对OGC的支持

- Map Services
  - WMS，WFS，WCS，KML
- Image Services
  - WMS，WCS，KML
- GeoData Services
  - WCS，WFS，KML

- ArcSDE
  - Simple Features

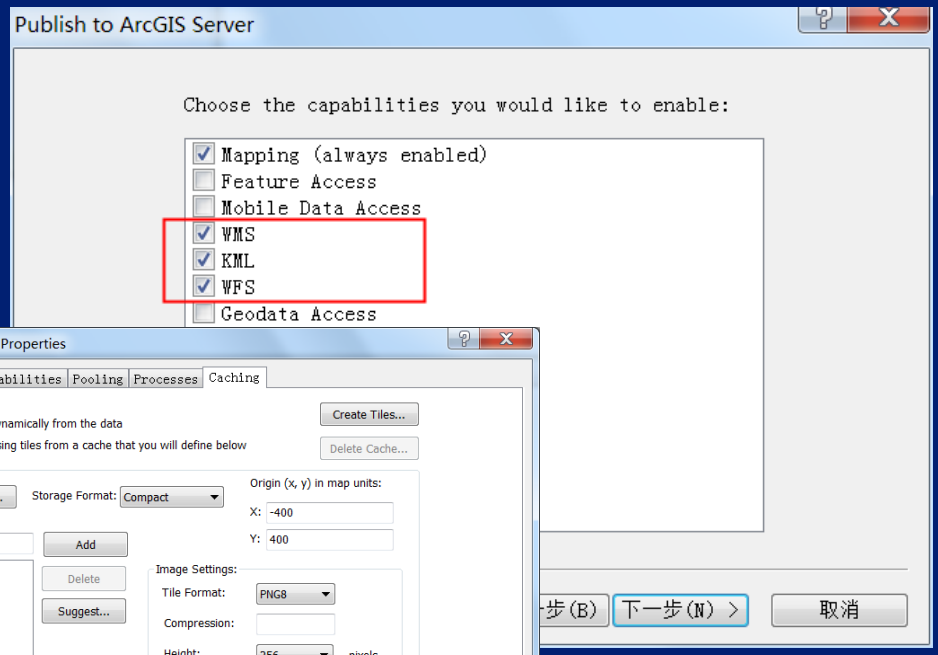
ArcGIS Server对OGC的支持

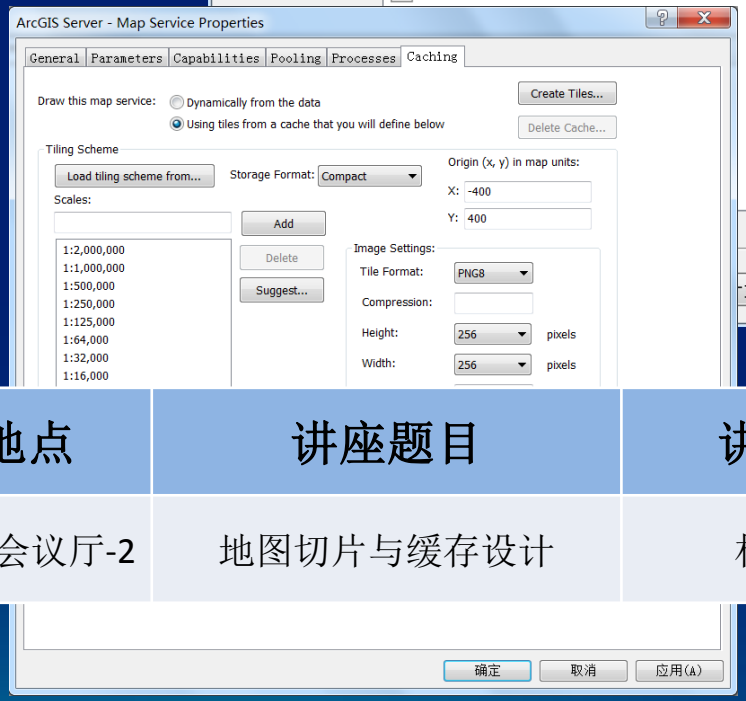
ArcGIS Server的OGC服务

–便捷的服务创建、发布流程

–高效地图服务

–完善的安全机制



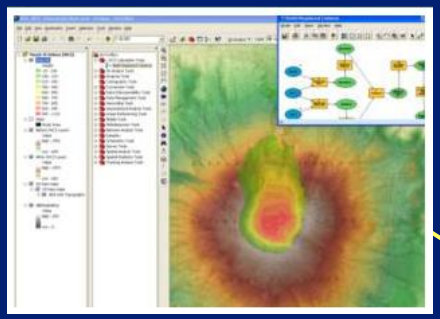


日期	时间	地点	讲座题目	讲座人
9月16日	9:00-9:50	二号会议厅-2	地图切片与缓存设计	林雪淋

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ArcGIS对OGC的支持

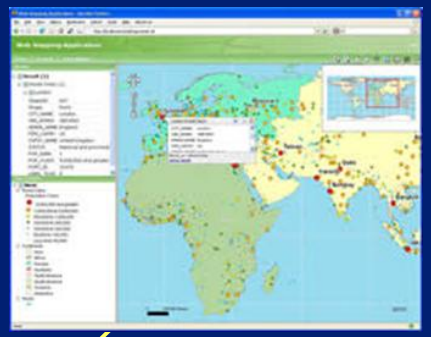
ArcGIS Desktop



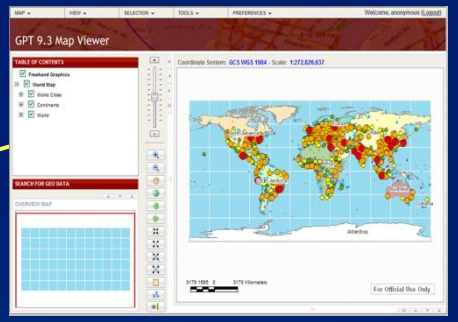
ArcGIS Explorer



ArcGIS Web ADF
REST API



GeoPortal



OGC标准

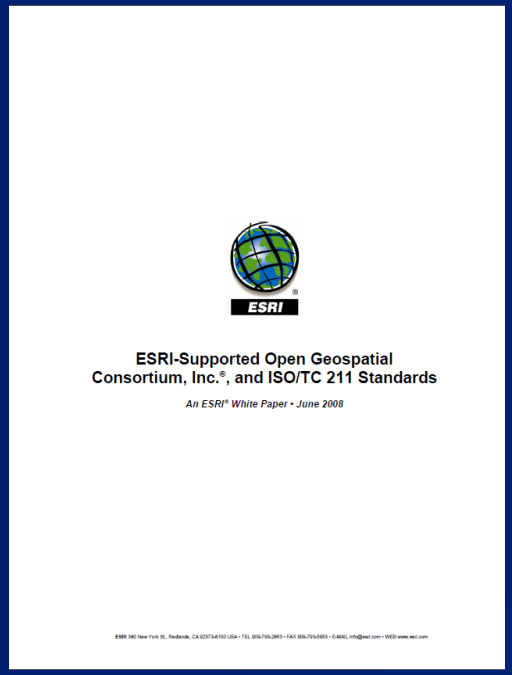
ArcGIS Server

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ArcGIS客户端对OGC的支持

- **ArcGISDesktop**
  - –WMS, WFS, Simple Feature GML, WCS, KML
  - –CSW, WMC (GeoPortalToolbar add-on)
  - –WFS, GML (Data Interoperability Extension)
- **ArcGIS Explorer**
  - –WMS, KML
  - –CSW, WMC (custom tasks)
- **ArcGISWeb ADF/REST API**
  - –WMS
- **GeoportalExtension MapViewer**
  - –WMS, WFS,WCS

ArcGIS & OGC

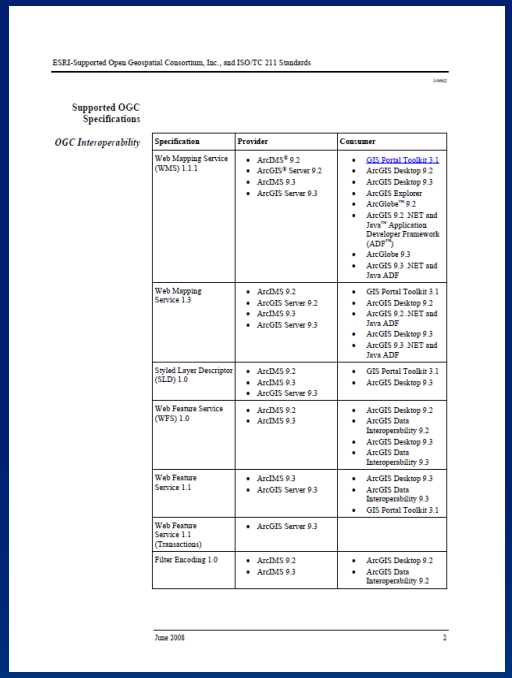


ESRI

ESRI-Supported Open Geospatial Consortium, Inc.®, and ISO/TC 211 Standards

An ESRI® White Paper • June 2008

ESRI 380 New York St., Redlands, CA 92373-8100 USA • TEL 909-793-2853 • FAX 909-793-5953 • E-MAIL info@esri.com • WEB www.esri.com



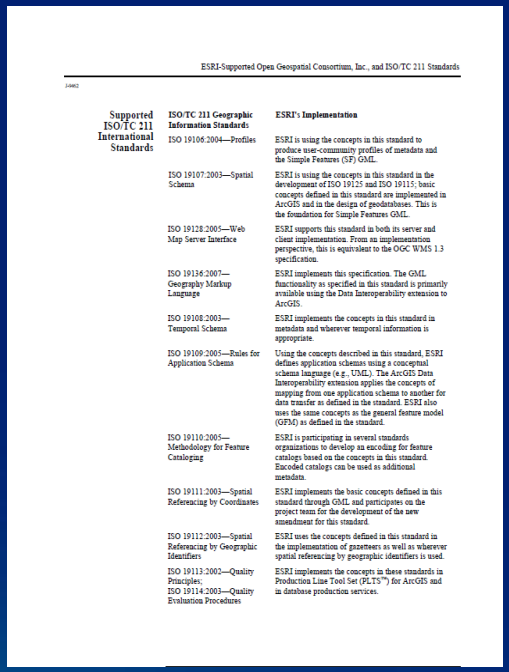
ESRI-Supported Open Geospatial Consortium, Inc., and ISO/TC 211 Standards

Supported OGC Specifications

OGC Interoperability

Specification	Provider	Consumer
Web Mapping Service (WMS) 1.1.1	• ArcIMS® 9.2 • ArcGIS® Server 9.2 • ArcIMS 9.3 • ArcGIS Server 9.3	• GIS Portal Toolkit 3.1 • ArcGIS Desktop 9.2 • ArcGIS Desktop 9.3 • ArcGIS Explorer • ArcGlobe™ 9.2 • ArcGIS 9.2 .NET and Java™ Application Developer Framework (ADF™) • ArcGlobe 9.3 • ArcGIS 9.3 .NET and Java ADF
Web Mapping Service 1.3	• ArcIMS 9.2 • ArcGIS Server 9.2 • ArcIMS 9.3 • ArcGIS Server 9.3	• GIS Portal Toolkit 3.1 • ArcGIS Desktop 9.2 • ArcGIS 9.2 .NET and Java ADF • ArcGIS Desktop 9.3 • ArcGIS 9.3 .NET and Java ADF
Styled Layer Descriptor (SLD) 1.0	• ArcIMS 9.2 • ArcIMS 9.3 • ArcGIS Server 9.3	• GIS Portal Toolkit 3.1 • ArcGIS Desktop 9.3
Web Feature Service (WFS) 1.0	• ArcIMS 9.2 • ArcIMS 9.3	• ArcGIS Desktop 9.2 • ArcGIS Data Interoperability 9.2 • ArcGIS Desktop 9.3 • ArcGIS Data Interoperability 9.3
Web Feature Service 1.1	• ArcIMS 9.3 • ArcGIS Server 9.3	• ArcGIS Desktop 9.3 • ArcGIS Data Interoperability 9.3 • GIS Portal Toolkit 3.1
Web Feature Service 1.1 (Transactions)	• ArcGIS Server 9.3	
Filter Encoding 1.0	• ArcIMS 9.2 • ArcIMS 9.3	• ArcGIS Desktop 9.2 • ArcGIS Data Interoperability 9.2

June 2008 2



ESRI-Supported Open Geospatial Consortium, Inc., and ISO/TC 211 Standards

Supported ISO/TC 211 International Standards

ISO/TC 211 Geographic Information Standards	ESRI's Implementation
ISO 19106:2004—Profiles	ESRI is using the concepts in this standard to produce user-community profiles of metadata and the Simple Features (SF) GML.
ISO 19107:2003—Spatial Schema	ESRI is using the concepts in this standard in the development of ISO 19125 and ISO 19115; basic concepts defined in this standard are implemented in ArcGIS and in the design of geodatabases. This is the foundation for Simple Features GML.
ISO 19128:2005—Web Map Server Interface	ESRI supports this standard in both its server and client implementation. From an implementation perspective, this is equivalent to the OGC WMS 1.3 specification.
ISO 19136:2007—Geography Markup Language	ESRI implements this specification. The GML functionality as specified in this standard is primarily available using the Data Interoperability extension to ArcGIS.
ISO 19108:2003—Temporal Schema	ESRI implements the concepts in this standard in metadata and wherever temporal information is appropriate.
ISO 19109:2005—Rules for Application Schema	Using the concepts described in this standard, ESRI defines application schemas using a conceptual schema language (e.g., UML). The ArcGIS Data Interoperability extension applies the concepts of mapping from one application schema to another for data transfer as defined in the standard. ESRI also uses the same concepts as the general feature model (GFM) as defined in the standard.
ISO 19110:2005—Methodology for Feature Cataloging	ESRI is participating in several standards organizations to develop an encoding for feature catalogs based on the concepts in this standard. Encoded catalogs can be used as additional metadata.
ISO 19111:2003—Spatial Referencing by Coordinates	ESRI implements the basic concepts defined in this standard through GML and participates on the project team for the development of the new amendment for this standard.
ISO 19112:2003—Spatial Referencing by Geographic Identifiers	ESRI uses the concepts defined in this standard in the implementation of gazetteers as well as wherever spatial referencing by geographic identifiers is used.
ISO 19113:2002—Quality Principles; ISO 19114:2003—Quality Evaluation Procedures	ESRI implements the concepts in these standards in Production Line Tool Set (PLTS™) for ArcGIS and in database production services.

-http://www.esri.com/library/whitepapers/pdfs/supported-ogc-iso-standards.pdf

ArcGIS 10

- 增强了对已支持OGC标准的支持力度
  - -WMS、WFS、WCS
- 增加了新的OGC服务类型
  - -Web Map Tiled Service (WMTS)
  - -Web Processing Service (WPS)

ArcGIS 10中OGC的应用



GIS-让人类认知世界

WMS

- Web Map Services（WMS）
- 一种地图服务，利用具有地理空间位置信息的数据动态的制作地图。
- 渲染后的图片(png, jpeg, etc.)

ArcGIS Server中的WMS

(V9.3.1 V10.0)

- –支持的版本
  - •1.0.0，1.1.0，1.1.1，1.3.0
- –实现的接口
  - •GetCapabilities
  - •GetMap
  - •GetFeatureInfo
  - •GetStyles
  - •GetLegendGraphic
- –亮点
  - •支持SLD 1.0
    - •Filter encoding、Symbology encoding
    - •“SLD”、“SLD_BODY” (demo)
    - •GetStyles、GetLegendGraphic
  - •TIME(demo)
  - •XSLT(demo)
  - •安全机制(http basic, digest and token based)

WMS Demo 1

Map Navigation and Identify

WMS Demo-Map Navigation and Identify

地图文档(MXD)

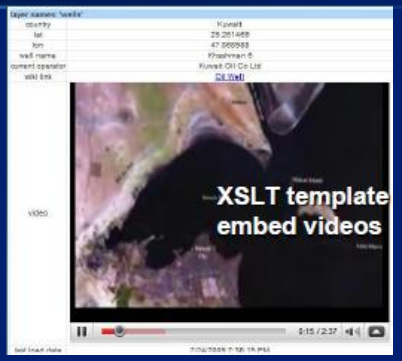




ArcGIS Servers

OGC WMS

Internet

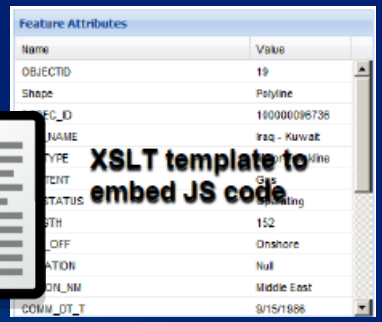






GeoExt
+
OpenLayers





通过XSLT定义查询结果的展示样式

layer names: 'fields'

OBJECTID	Shape	FIELD_NAME	ALT_FLD_NM
5	Polygon	Greater Burgan	Null

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WMS Demo 2

Styled Layer Descriptors (SLD)

SLD

- 地图样式表（SLD）

  –地图样式表是一个OGC的规范。其在WMS服务中加入特定的XML用于描述要素或者图层的风格。

  - 可以定义指定图层的特定地图要素符号表现
  - 一个样式可以有多种规则
  - 每个规则可以有多种符号和筛选方式
    - Filter Encoding
    - Symbology Encoding

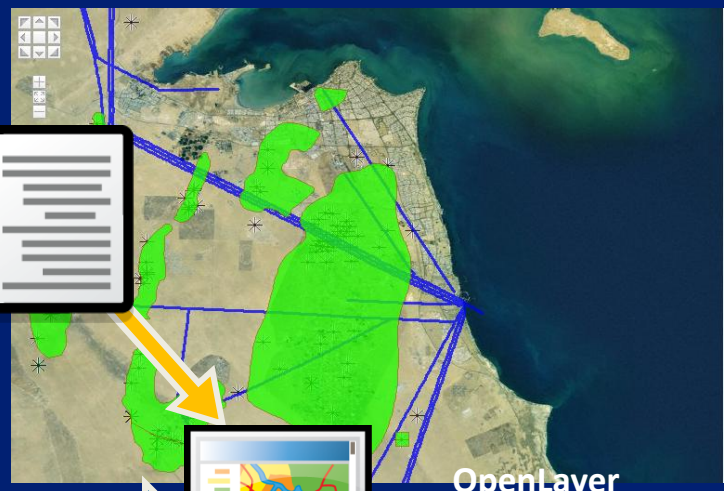
WMS+SLD

- 通过WMS服务 发布一个SLD样式文件
  - 为一个WMS 图层 定义了多个渲染方式
  - WMS服务将在他的 capabilities 文件中声明 SLD 文件里的所有渲染样式
  - 客户端可以在这些样式中请求所渲染的样式
- 客户端也可以通过GetMap请求的 URL中定义自己SLD 文件
  - “SLD”
  - “SLD_BODY”

WMS Demo-Styled Layer Descriptors(SLD)

地图文档(MXD)

“SLD_BODY”





ArcGIS Servers

OGC WMS

Internet

OpenLayer
Clinet

“SLD”

GetStyles



基于XML

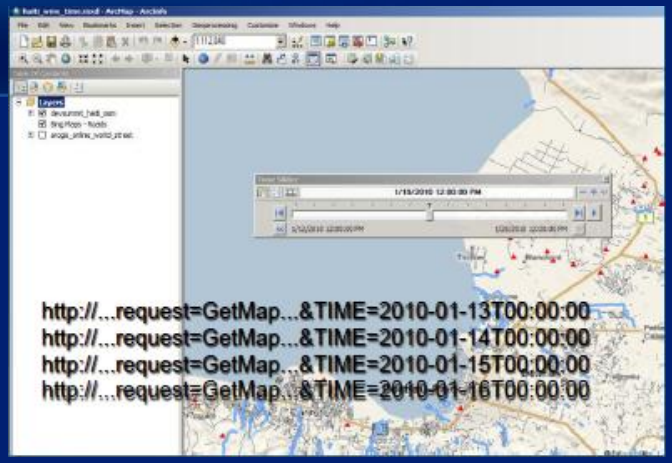
```
<?xml version="1.0" encoding="UTF-8"?>
<sld:StyledLayerDescriptor version="1.0.0" xmlns="http://www.opengis.net/ogc" xmlns:e
http://www.opengis.net/gml" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
http://schemas.opengis.net/sld/1.0.0/StyledLayerDescriptor.xsd">
  <!-- layer "fields" -->
  <sld:NamedLayer>
    <sld:Name>fields</sld:Name>
    <sld:UserStyle>
      <sld:Name>fields_type</sld:Name>
      <sld:FeatureTypeStyle>
    </sld:UserStyle>
  </sld:NamedLayer>
  <!-- 'pipelines' layer -->
  <sld:NamedLayer>
    <sld:Name>pipelines</sld:Name>
    <sld:UserStyle>
      <sld:Name>pipelines_blue</sld:Name>
      <sld:Title>pipelines_blue</sld:Title>
      <sld:FeatureTypeStyle>
        <sld:Rule>
        </sld:FeatureTypeStyle>
    </sld:UserStyle>
  </sld:NamedLayer>
</sld:StyledLayerDescriptor>
```

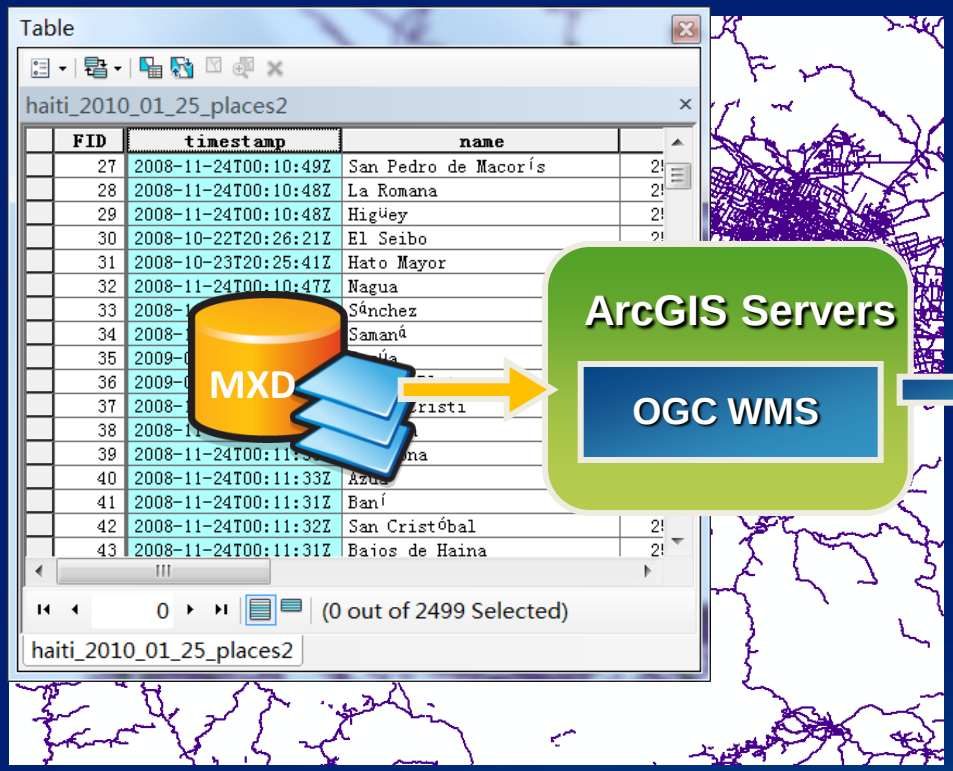
WMS

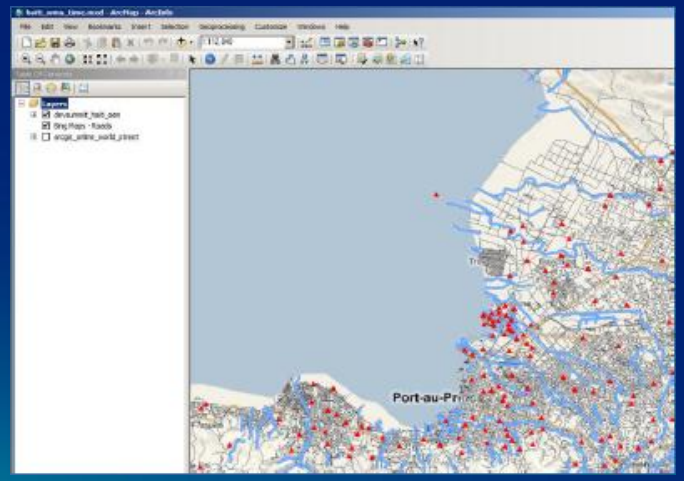
WMS Demo 3

TIME

WMS Demo-Time







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WFS

- 一种地图数据服务
- 通过GML进行数据传输
  - Simple Features GML(GML3.1子集)
- 通过Feature Type组织要素
  - 等同于ArcGIS中的Feature Class

- WFS – T（Transactions）
  - 地图数据可以被客户程序编辑

WFS-T的优势

- 多用户并发编辑
- 无状态
- 池化的配置
  - –不需要每个编辑人都占用一个soc进程(非池化)
- 客户端不需要ESRI 软件

WFS-T注意事项

- 需要安装ArcSDE
  - ArcGIS10之前需要注册版本
- 需要发布一个数据以供客户端通过WFS-T服务进行编辑
  - 默认情况下 WFS不支持事件处理，仅为只读服务

ArcGIS Server中的WFS

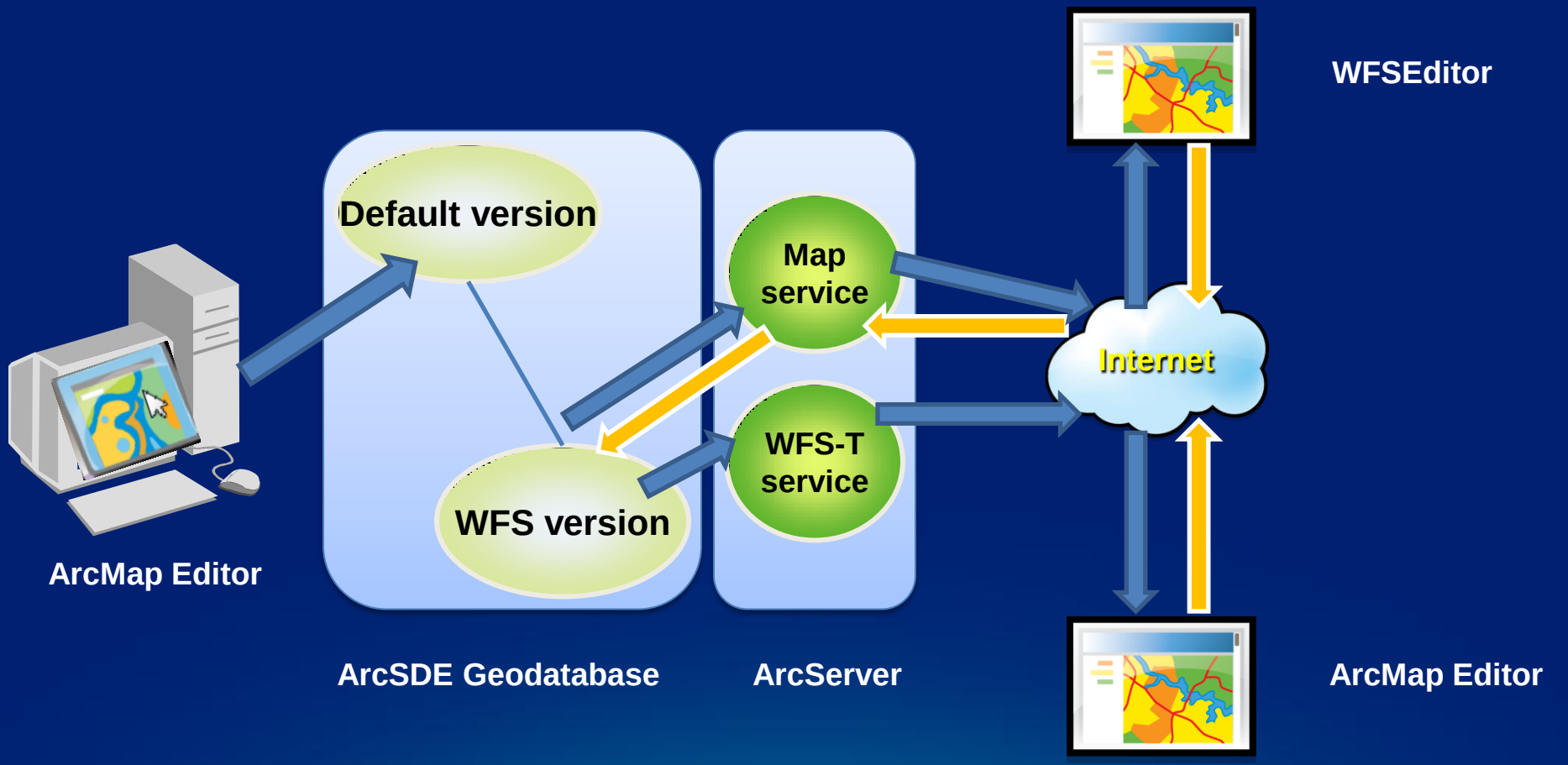
(V9.3.1 V10.0)

- –支持的版本
  - •1.0, 1.1
- –实现的接口
  - •GetCapabilities
  - •DescribeFeatureType
  - •GetFeature
  - •GetFeatureWithLock
  - •Transaction
- –亮点
  - •提供GP工具获取WFS
  - •支持版本、非版本编辑（Demo）
  - •支持Query Layer（WFS）
  - •支持设置字段别名和可见性
  - •安全机制(http basic, digest and token based)

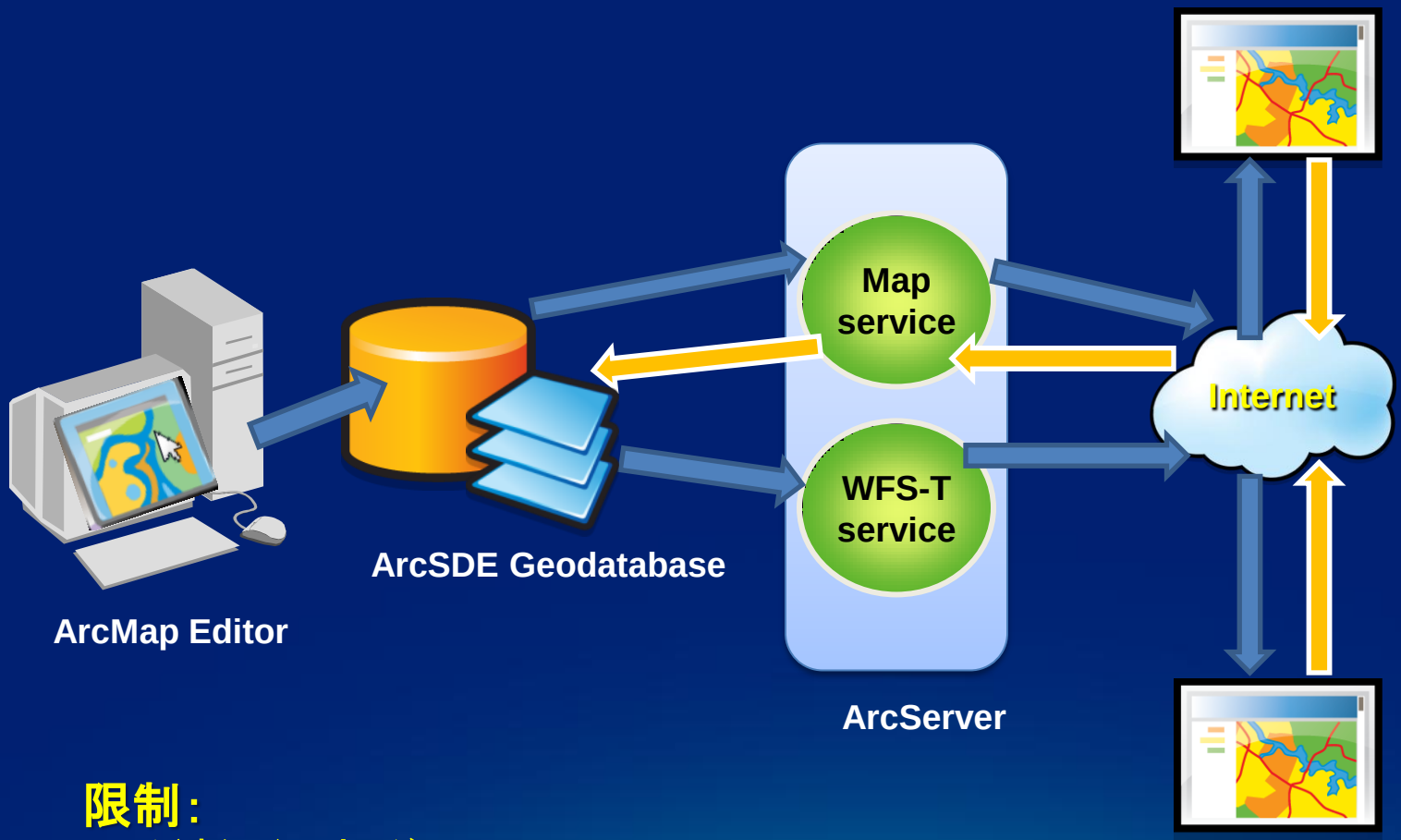
WFS-T Demo 4

Non-Versioned Data

WFS-T 基于版本编辑的工作流程



WFS-T 基于非版本编辑的工作流程



限制：

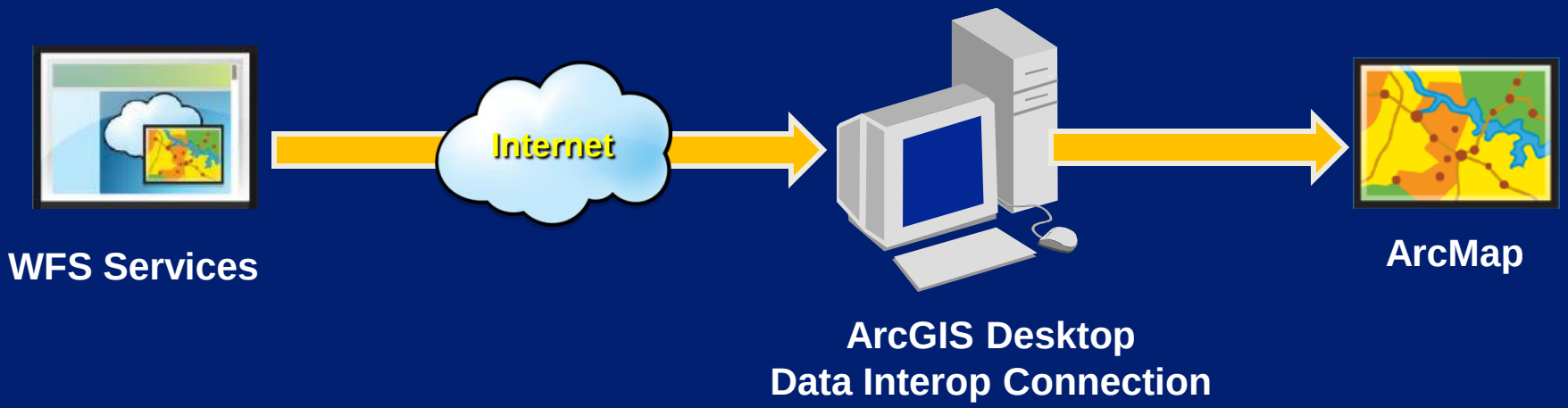
1. 历史记录**无法回滚**；
2. 仅**支持**简单**要素**编辑。

WFS Demo 5

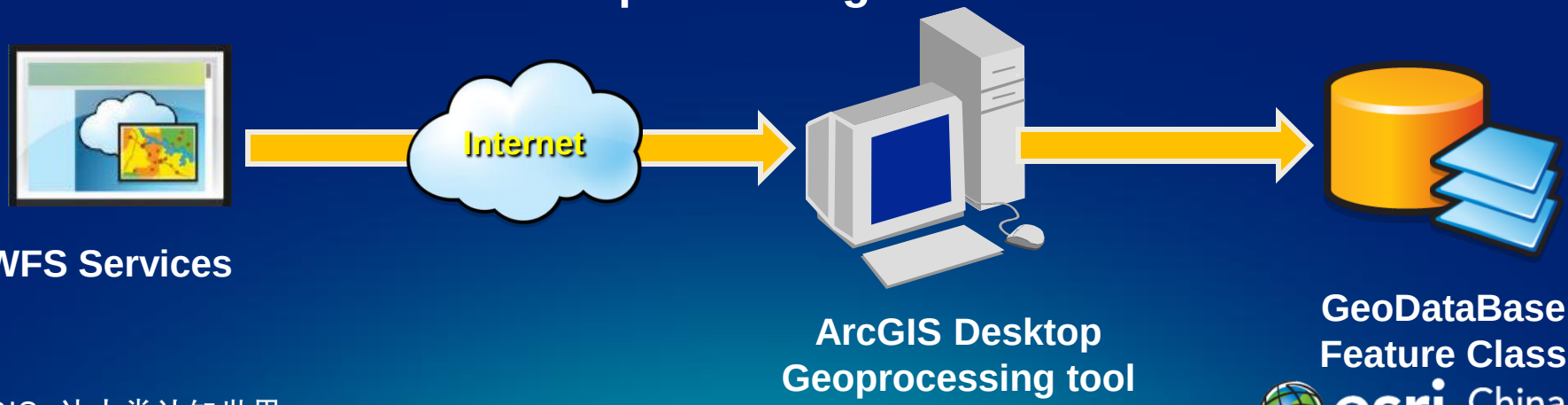
ArcGIS as a WFS Client

WFS Demo-ArcGIS

☐The Data Interoperability Connection



☐WFS to Feature Class Geoprocessing tool ArcGIS



WCS

- WCS 是一种数据服务，其允许客户端访问发布 的 Coverage（栅格数据）
- 客户端可以获得相应的数据的子集，以对其进行 resampled, reprojected 以及返回特定格式的栅格数据
- 输出图片格式
  - **GeoTIFF, NITF, HDF, JPEG, JPEG2000, PNG**

ArcGIS Server中的WCS

(V9.3.1 V10.0)

- 支持的版本
  - 1.0.0, 1.1.0, and 1.1.1
- 实现的接口
  - GetCapabilities
  - DescribeCoverage
  - GetCoverage
- 亮点
  - 支持的数据格式: GeoTiff, NITF, HDF, JPEG, JPEG2000, PNG;
  - TIME
  - “IMAGE”
  - 安全机制(http basic, digest and token based)

WCS Demo 6

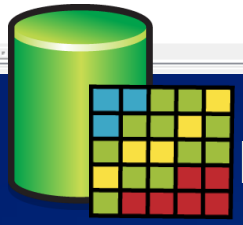
Time

WCS Demo-Time



Contents | Preview | Description

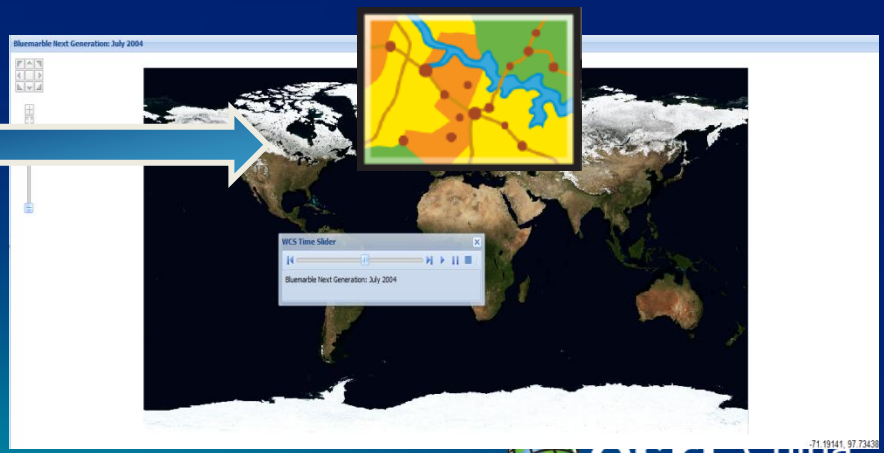
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world.200408.3x5400x2700.jpg	2	1997
world.200409.3x5400x2700.jpg	3	1998
world.200406.3x5400x2700.jpg	4	1999
world.200405.3x5400x2700.jpg	5	2000
world.200404.3x5400x2700.jpg	6	2001
world.200403.3x5400x2700.jpg	7	2002
world.200412.3x5400x2700.jpg	8	2003
world.200402.3x5400x2700.jpg	9	2004
world.200411.3x5400x2700.jpg	10	2005
world.200401.3x5400x2700.jpg	11	2006
world.200410.3x5400x2700.jpg		



Mosaic Dataset

ArcGIS Servers

OGC WCS



esri China BEIJING

相关资源

- OGC 网站

  http://www.opengeospatial.org
- ESRI 网站
  - 白皮书
  - 产品支持
  - 对于OGC服务的支持

  http://www.esri.com/standards
- 产品帮助
  - Metadata

    http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=Metadata_standards_and_the_ArcGIS_metadata_format
  - Data Interoperability

    http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=An_overview_of_Data_Interoperability
  - GML 支持

    http://webhelp.esri.com/arcgisdesktop/9.3/index.cfm?TopicName=An_overview_of_GML_support_in_ArcGIS

总结

- OGC标准是数据共享、交互操作的基础
- ArcGIS产品对OGC标准提供完美支持
  - 产品级别的支持
  - 涵盖全面：数据描述、数据可视化、数据交换、数据处理
  - 支持力度：时态OWS、协同OWS

下面的讲座更精彩！

ArcGIS Server部署策略与性能优

吴泳锋



谢谢！