Standards are the Bones of Global Applications, but Where’s the Beef?

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The vendor’s opportunity is to approach standards compliance from the user’s point of view.

How can we design products that allow users to complete their workflows reliably and easily, and so that adherence to important standards enhances those workflows and does not introduce technical hurdles?
Agile/Scrum development means that stakeholders play a primary role in defining exactly what development efforts will provide the greatest customer value.
Customers WANT standards: they think standards assure multi-vendor interoperability, they have to meet legal requirements, or they think standards “are the right thing to do(!)
Standards -- *de jure & de facto* (including “rules” & “specifications”)
Interlocking; interdependent; serial dependencies
Where’s the Beef?

Our Approach:
1. Compliance through Testing/Certification
2. Providing Friendly and Flexible Data Display Formats
3. XML Stylesheeting
4. Supporting Multi-Lingual Display & Data Entry
5. Assuring Compliance at Data Entry
6. Moving Beyond Mandatory Provisions in Standards
7. Anticipating and Implementing Extended Workflows (Beyond Standards)
Overview

This test suite is based on the following OGC specifications:

- OGC Catalogue Services Specification, version 2.0.1 [OGC 04-021r3]
- OpenGIS Web Services Common Specification, version 1.0.0 [OGC 05-008c1]
- Filter Encoding Implementation Specification, version 1.1.0 [OGC 04-095]
- Geographic information -- Geography Markup Language [OGC 03-105r1]

The conformance tests provided here are not intended to be used in a stand-alone manner, but to be incorporated into profile-specific test suites; they apply to all CSW-based catalogue implementations.

What is tested

- GetCapabilities, GET method
- DescribeRecord, POST method
- GetRecordById, GET method
- GetRecords, POST method
Intergraph efforts focus on Customer Workflows; figure shows the “Discovery” use cases in the INSPIRE literature.
Stylesheeting example: **GetCapabilities** -- user wants to see information about a web service: Who provides the services, what sorts of data are served, and what are other details?.

![Catalog Service for Web - GetCapabilities](image)
• Intergraph adheres to Microsoft standards and practices for globalizing and localizing our applications, supporting release on operating systems of all languages.
• We provide out-of-the-box localization for locales in which there is high demand for specific products, and
• We use an architecture and advanced tools that make further localization projects as efficient as possible.
Intergraph builds applications to utilize XML strings for initializing user interfaces, we provide administrators with opportunities to modify the code-lists, input tags, HELP phrases, and other elements in different languages.
Intergraph uses the flexibility inherent in XML to present a UI in the language based on the Windows user preference, and configurable to allow the user to select an alternate language and character set for data input, as illustrated by the figure above.
Standards Compliance in Data Entry:
1. Standardized naming of each element, including visual indicator for “Mandatory/Optional,”
2. “Hover Help” that includes the definition, format and a sample value for the element,
3. Element-level automatic error-messaging, highlighted visually and
4. Drop-down code lists.
## Where's the Beef?

### DataTypes

#### CI_ResponsibleParty
- individualName [0..1] : String
- organisationName [0..1] : String
- positionName [0..1] : String
- contactInfo [0..1] : CI_Contact
- role : CI_RoleCode

#### CI_Contact
- phone [0..1] : CI_Telephone
- address [0..1] : Address
- onlineResource [0..1] : CI_OnlineResource
- hoursOfService [0..1] : String
- contactInstructions [0..1] : String

#### CI_OnlineResource
- linkage : URL
- protocol [0..1] : String
- applicationProfile [0..1] : String
- name [0..1] : String
- description [0..1] : String
- function [0..1] : CI_OnlineFunctionCode

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**Moving beyond the Mandatory**
Web-based “open” geoprocessing workflows integrate data and services in an interoperable way, each step of the workflow is responsible for only a specific task, without being aware of the general purpose of the workflow.
Intergraph portal for discovery, viewing, analysis, (optional) download of features or images, and their deployment within other web-based mapping applications or proprietary desktop applications.
Where’s the Beef?

Customized workflow steps
- geoprocessing and data extraction
- follow standards-based workflow steps
- discovery and viewing

Geospatial Portal

Map Content
Search ERDAS APOLLO Catalog
Browse ERDAS APOLLO Catalog
Clip-Zip-Ship

Geoprocessing

Processes
- Name
- Date
- Status

Find Helicopter Landing... 04/12/2013 1... Success
Painted Relief 04/12/2013 1... Success
IKONOS Vegetation_Hea... 04/12/2013 1... Success
IMAGINE Painted Relief 04/10/2013 0... Success
IMAGINE Painted Relief 04/10/2013 0... Success
IKONOS Vegetation_Hea... 04/09/2013 1... Success

Show result  Execute again

Input Data
- Input DEM:
  http://demo-apollo.geospatial.intergraph.com/erdas-
  Painted Relief:
  C:\Intergraph\ERDAS APOLLO\storage\wps\sims\ipro

Analyses

Settings
Optional back end the workflow steps:
1. Downloading a file directly,
2. Adding it to a Zip file for emailing to the user, or
3. Opening directly in a web-based or desktop application.
Standards for Spatial Data Infrastructure

“Foundational” SDI Standards

- W3C Recommendation: eXtensible Markup Language (XML) Version 1.1
- W3C Recommendation: XML Schema Version 1.0
- W3C Recommendation: Hyper Text Transport Protocol (HTTP) Version 1.1
- W3C Recommendation: Simple Object Access Protocol (SOAP) Version 1.2
- W3C Note: Web Services Description Language (WSDL), Version 1.1
- Geographic Tagged Image File Format (GeoTIFF) Version 1.0
- Information retrieval (Z39.50)—application service definition and protocol specification (ISO 23950:1998)
- W3C XLink 1.1 Schema

“Core” SDI Standards

- OGC Web Map Service 1.3
- OGC Web Feature Service 1.1
- OGC Filter Encoding 1.1
- OGC Web Coverage Service 1.1.2
- OGC Geography Markup Language 3.2.1
- OGC Catalogue Service 2.0.2 HTTP protocol binding (CS-W)
- OGC Catalogue Service 2.0.2 HTTP protocol binding (CS-W) ebrIM and ISO Profiles
- OGC KML 2.2
- OGC WPS 1.0 + corrigenda

“Supplemental” SDI Standards

- OGC Styled Layer Descriptor 1.1
- OGC Web Map Context 1.1/Corrigendum 1
- Future SDI Standards
- OGC Web Coverage Service 2.0, corrigenda, and KVP, XML/POST, and XML/SOAP protocol binding extensions
- OGC Web Feature Service 2.0/ISO 19142:2010
- OGC GML 3.3
- OGC Filter Encoding 2.0
Intergraph finds that reliance on standards as building blocks is not just the most efficient and open way to implement user workflows; rather, our adoption and extension of these standards is the only way to implement them.

Thank you!

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