

New Hampshire NHD GeoSynchronization Network

2010 NSDI CAP Category 2
Framework Data Exchange Through Automated Geo-Synchronization

Prepared by CubeWerx USA

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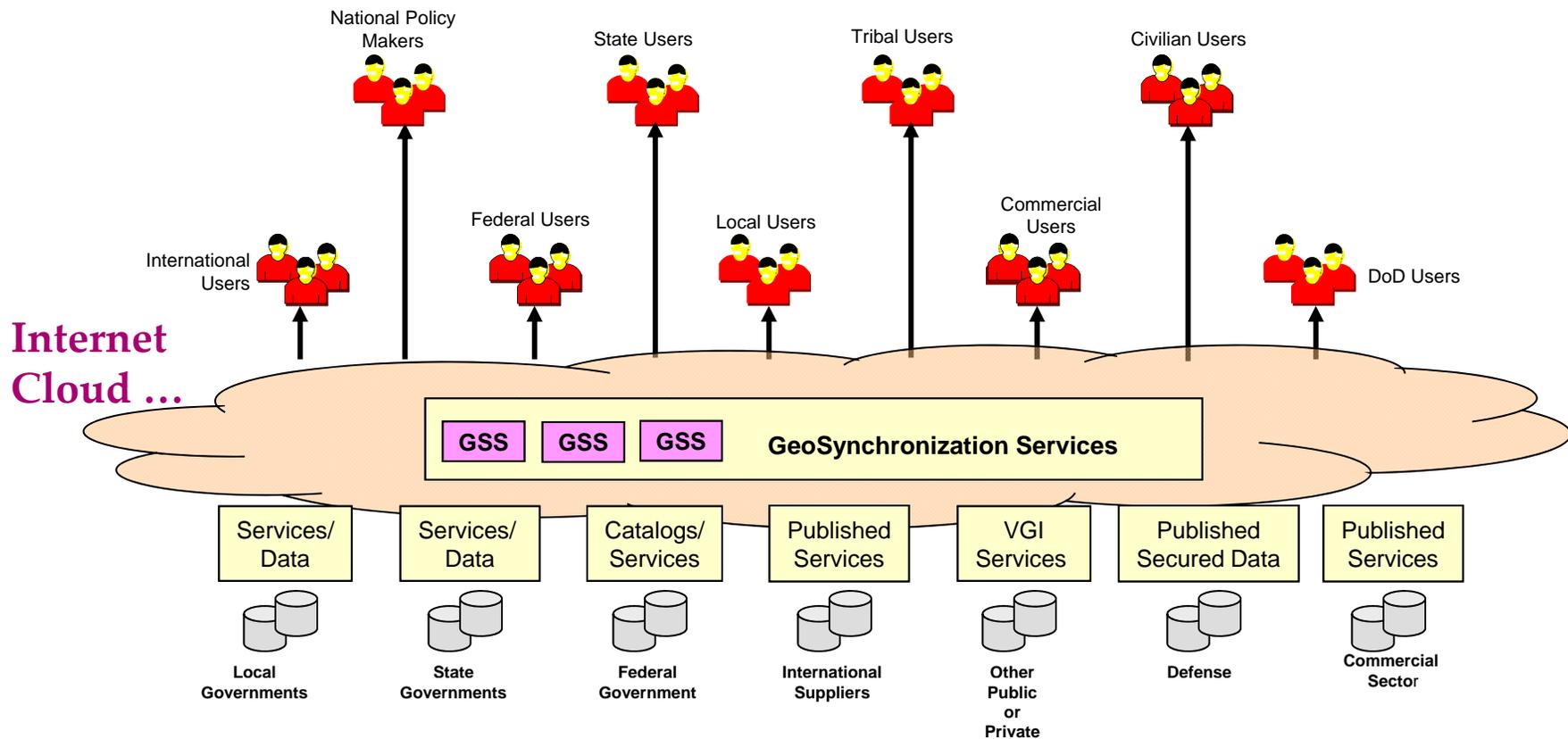
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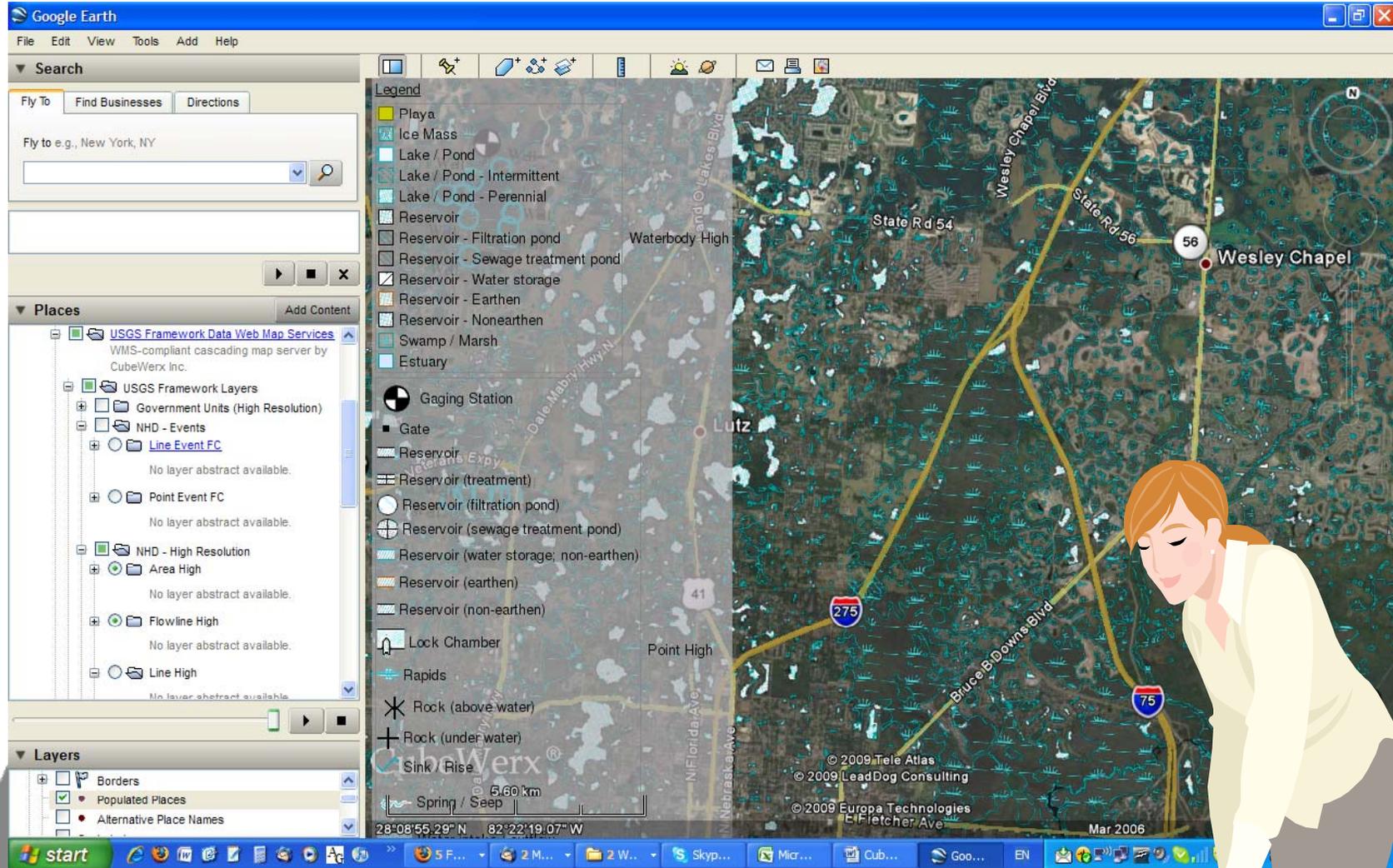
Collaborative SDI Emerging...



Spatial Data Infrastructure (SDI)



National Hydrography Data (NHD) Vital



The image shows a screenshot of the Google Earth application interface. The main window displays a satellite map of a region in New Hampshire, with various hydrography data layers overlaid. The layers are color-coded and include features like lakes, ponds, reservoirs, and swamps. A legend on the left side of the map provides a key for these features. The interface includes a search bar at the top left, a 'Places' panel on the left, and a 'Layers' panel at the bottom left. The Windows taskbar is visible at the bottom of the screen, showing the Start button and several open applications. In the bottom right corner, there is an illustration of a woman with brown hair, wearing a yellow shirt, leaning over a laptop and using a mouse.

Legend

- Playa
- Ice Mass
- Lake / Pond
- Lake / Pond - Intermittent
- Lake / Pond - Perennial
- Reservoir
- Reservoir - Filtration pond
- Reservoir - Sewage treatment pond
- Reservoir - Water storage
- Reservoir - Earthen
- Reservoir - Nonearthen
- Swamp / Marsh
- Estuary
- Gaging Station
- Gate
- Reservoir (treatment)
- Reservoir (filtration pond)
- Reservoir (sewage treatment pond)
- Reservoir (water storage, non-earthen)
- Reservoir (earthen)
- Reservoir (non-earthen)
- Lock Chamber
- Rapids
- Rock (above water)
- Rock (under water)
- Sink / Rise
- Spring / Seep

Places

- USGS Framework Data Web Map Services
- USGS Framework Layers
- Government Units (High Resolution)
- NHD - Events
- Line Event FC
- Point Event FC
- NHD - High Resolution
- Area High
- Flowline High
- Line High

Layers

- Borders
- Populated Places
- Alternative Place Names

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Fletcher Ave
Mar 2006



Overview

- Facilitate framework data exchange between state and national data stores by deploying a Geo-Synchronization capability in New Hampshire using common NHD data models, services and apps
- Bridge gaps between current NHD production operations and vision of CAP grant
- Transform Data Delivery Format XML produced by current NHD geo-edit tools to Web Feature Service Transactions (WFS-T) - support current and future NHD operations simultaneously
- Leverage current business processes without disruption
- Deploy practical leave-behind capability for New Hampshire and free, reusable NHD tools for entire NSDI

Help evolve hydrography data theme of the NSDI into framework driven by collaborative data maintenance partnerships at local, state and federal levels.





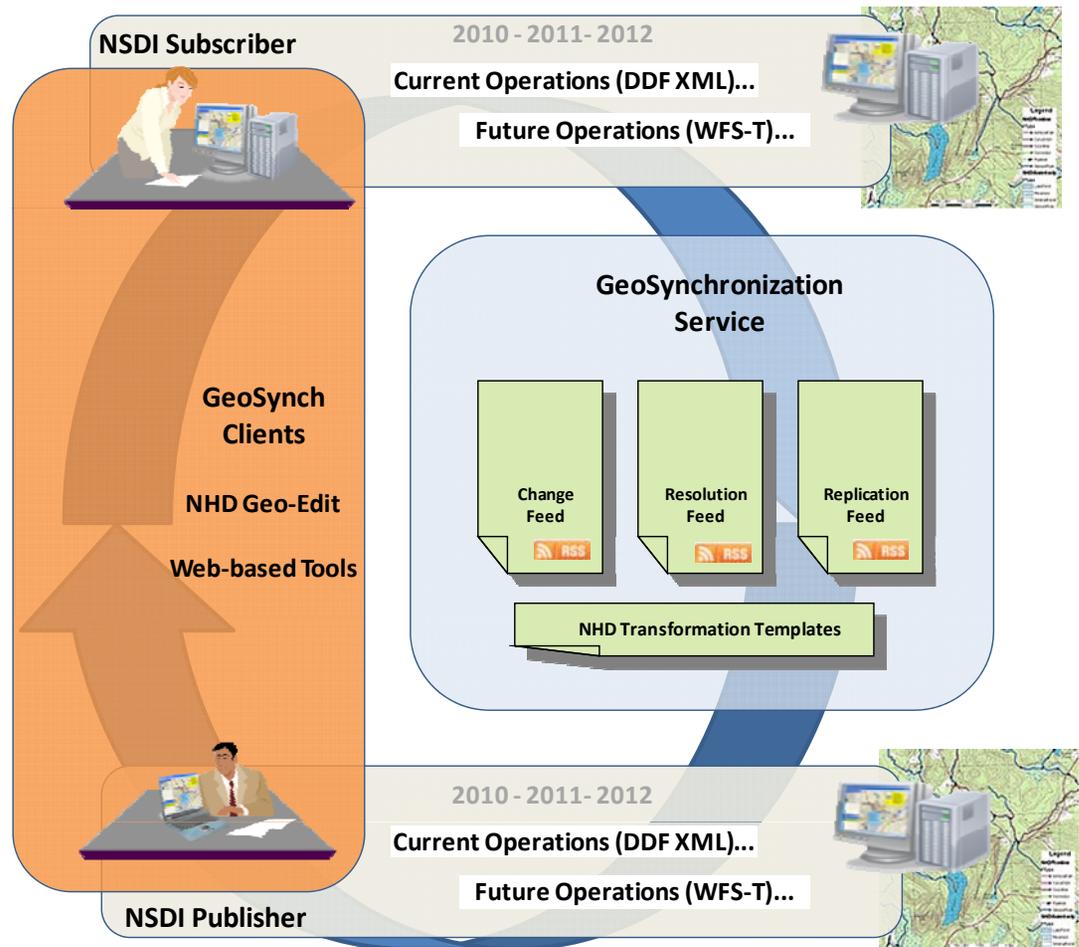
Partners

- New Hampshire Geological Survey, New Hampshire Dept. of Environmental Services (NH DES)
- NH GIS Advisory Committee
- Steering committee of representatives from state government
- USGS, EPA (coordination underway)
- Private sector participants (CubeWerx and others)



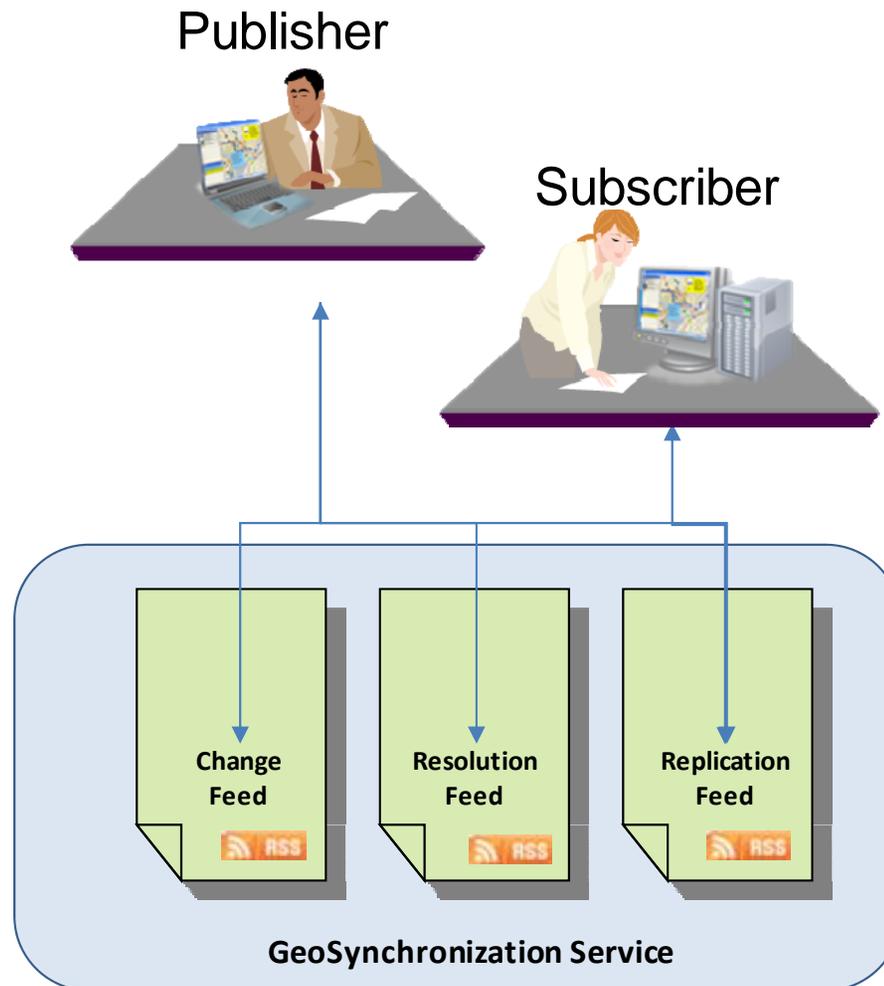
Standards-based Architecture

- Based on New Hampshire implementation of the NHD
- GIS comprised of spatial features that represent natural and man-made surface waters
- Features mapped as a combination of stream centerlines and “artificial paths” through water bodies at a scale of 1:24,000





GeoSynchronization Feeds





Builds on Proven Tools

The screenshot shows a web browser window titled 'Démonstrateur GéoSynchronisation - Mozilla Firefox'. The address bar shows the URL 'https://sdi.cubewerx.com/geosync/'. The page header includes the logo for 'Ressources naturelles et Faune Québec' and the title 'Service de GéoSynchronisation'. Below the header, there are navigation links: 'Client SIG', 'GSS pour le collecteur', and 'GSS pour l'intégrateur'. The main interface is divided into several sections:

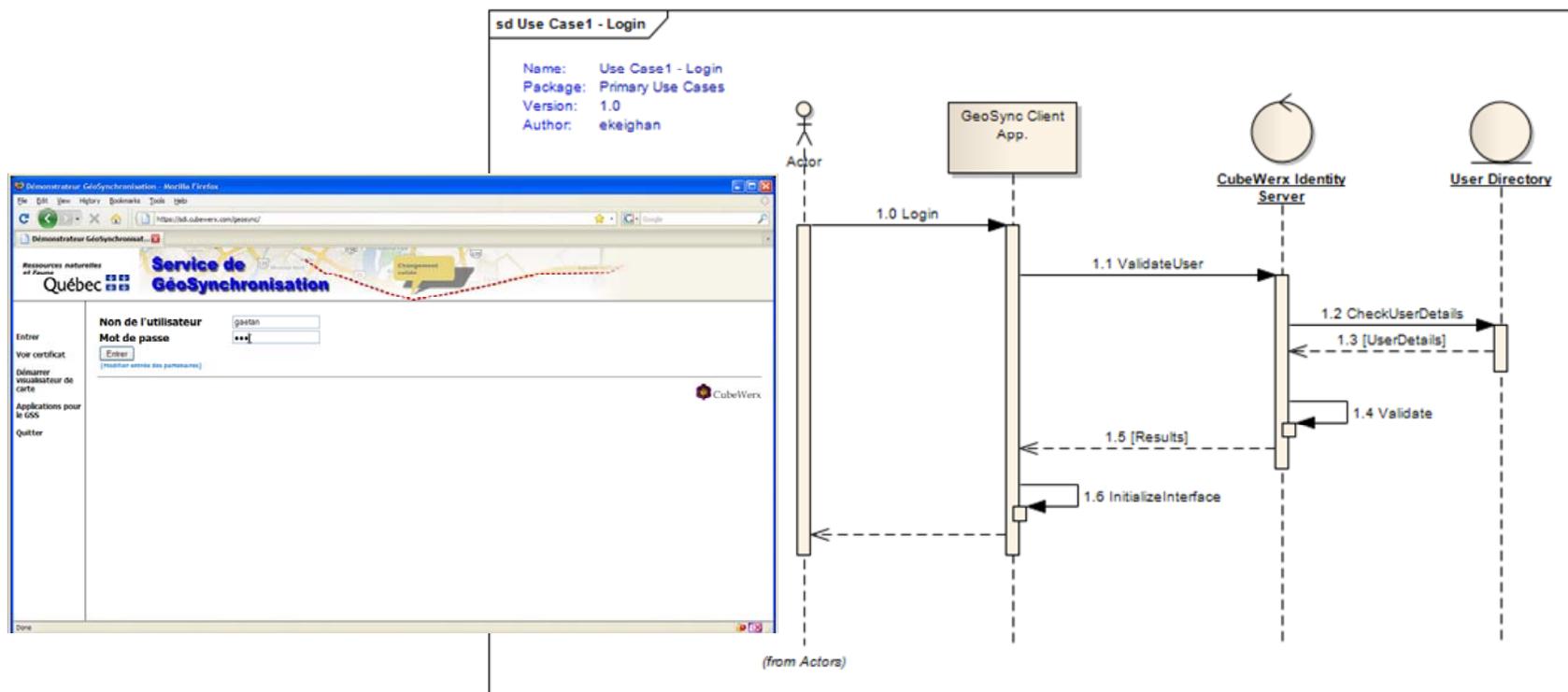
- Left sidebar:** Contains navigation options: 'Entrer', 'Voir certificat', 'Démarrer visualisateur de carte', 'Applications pour le GSS', and 'Quitter'.
- Map area:** Displays a satellite view of a residential area with a street grid. A red dashed line indicates a 'Changement valide' (valid change). Street names visible include Rue Dompierre, Rue Gamelin, Rue Bourque, Rue Caron, and Boulevard Saint-Joseph.
- Top right:** A 'Couches de la vue' (Layers) panel showing 'Routes' and 'Google Hybrid' layers.
- Bottom right:** A 'Serveurs' (Servers) panel with a table of server configurations and a list of layers to be added.

Serveur	Opérations
MRNF WMS	Accéder aux couches
MRNF WFS	Accéder aux objets
MTQ WMS	Accéder aux couches
MTQ WFS	Accéder aux objets

Région	Ajouter
Forage au diamant	Ajouter
Kilomètres Drummond	Ajouter
ODM_CONTR_MINIE	Ajouter
ODM_POLYG_LOCAL_T	Ajouter
Endroits	Ajouter
Routes	Ajouter
T1E07_08	Ajouter
T1E08_08	Ajouter



Identity Management

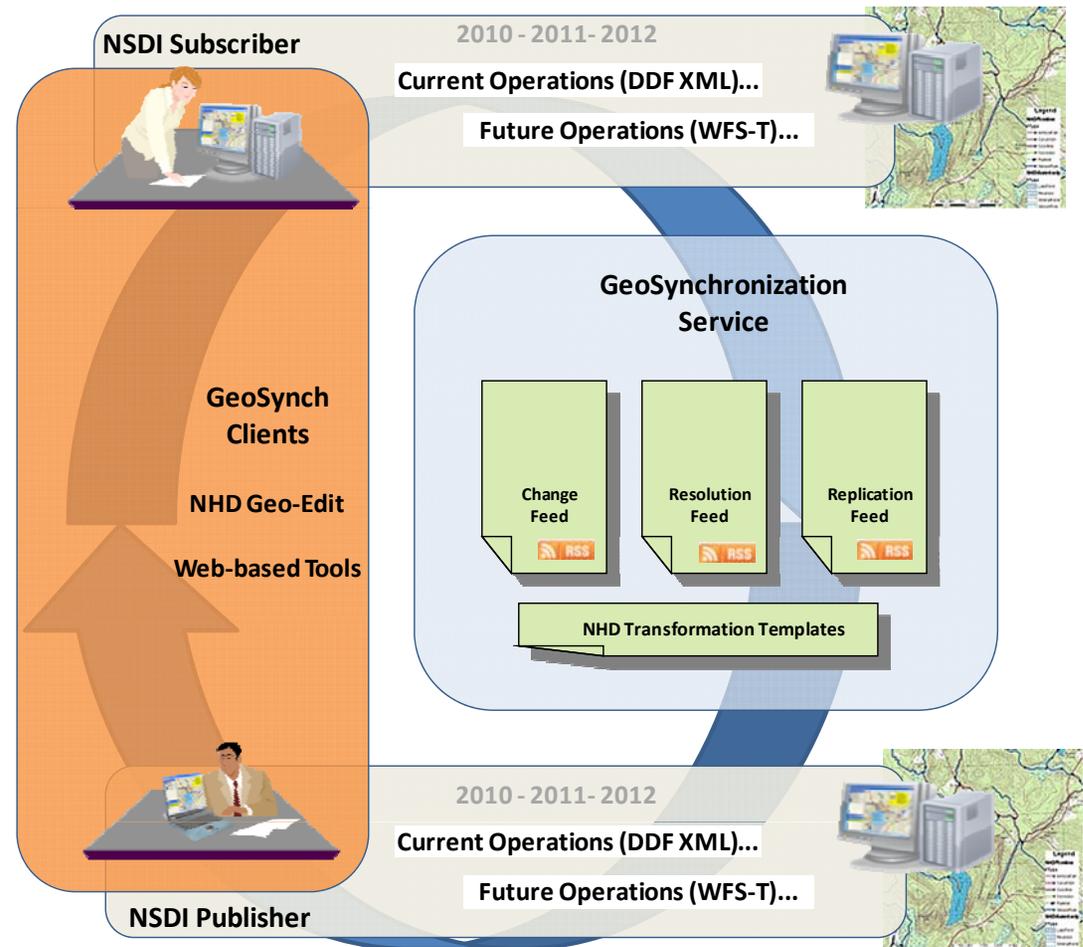


- Approach includes an Identity Management Service to provide role-based access control operations



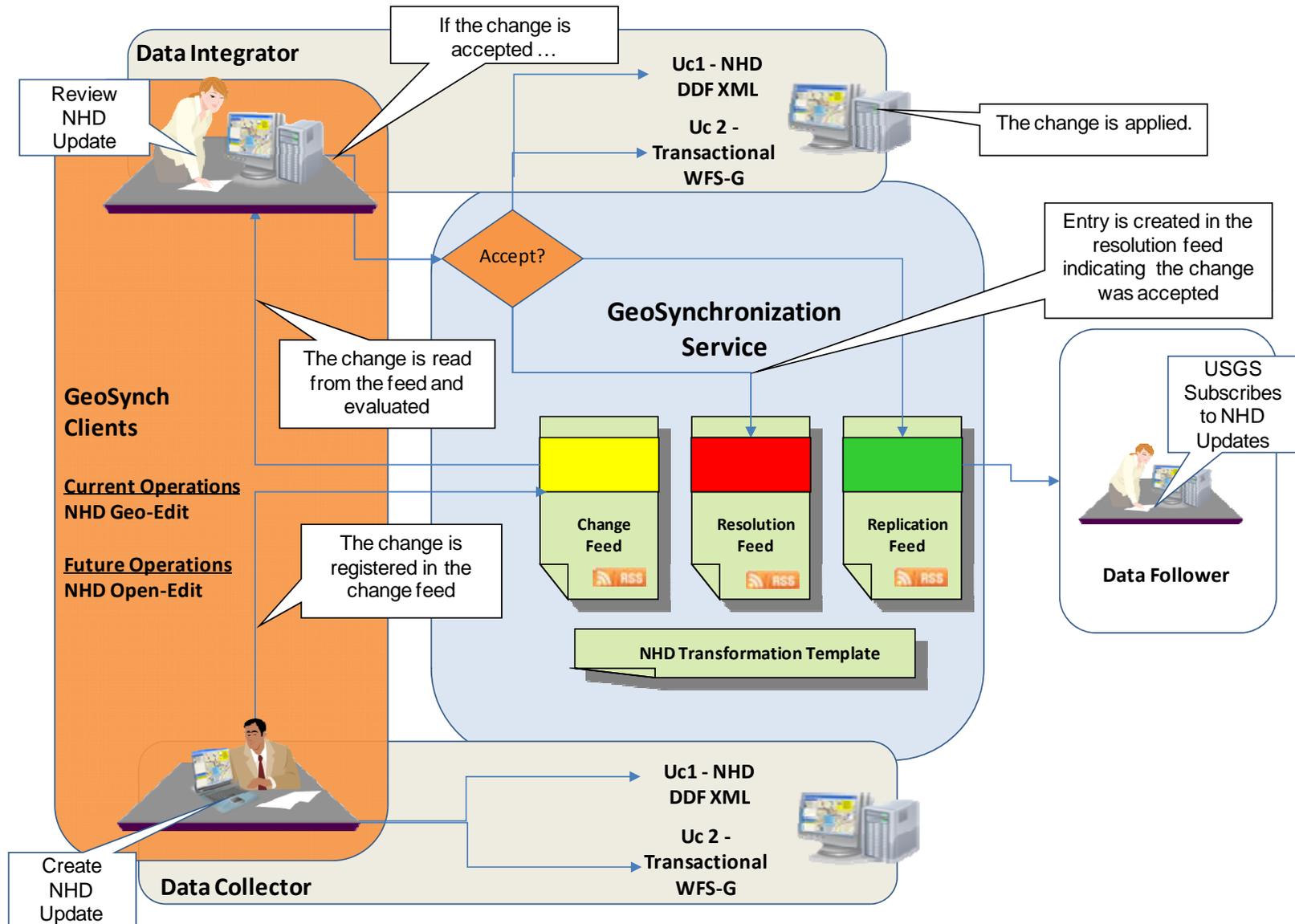
'DDF' and 'GSS'

- Transform NHD Data Delivery Format (DDF) XML from geo-edit tools used now to WFS Transactions used in GSS
- Leverage current NHD processes w/o disruption
- Address "feature-based" methods and "hydrologic basin-based" methods
- Detailed Use Cases





Sample GSS Flow

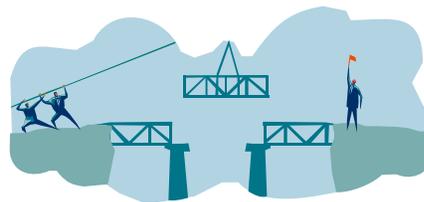




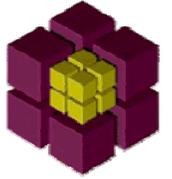
Building Bridges with "Transforms"

- Real-world deployment of GeoSynchronization for NHD requires converting DDF XML (see Appendix B) into WFS transactions.
- In our approach, DDF is converted to WFS transactions using XSLT (XSL Transformations) a declarative language that transforms XML documents into other XML documents.
- We use XSLT to provide a bridge from current production operations to future operations using WFS-T

- ✓ FEATURE MANAGEMENT,
- ✓ RELATIONSHIP MANAGEMENT
- ✓ METADATA MANAGEMENT



- ✓ CreateFEATURE...
- ✓ CreateRELATIONSHIP...
- ✓ CreateMETADATA...



Project Tasks



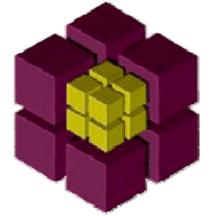
Development, Deployment, Sustainment



Community Engagement



Project Coordination



Thanks!

