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Challenges faced by the utilities industry: moving towards a GIS-centric enterprise

Joep Luijten & Jan Van de Steen
Capgemini Belgium
25 April 2012, GWF 2012
Capgemini in Utilities

- With **115,000 people in 40 countries**, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services
  - Utilities sector: #1 in EMEA; #3 worldwide*
- We have **8400** systems integration and management consultants working in the energy and utilities sector
- We author annual **thought leadership studies and surveys, e.g.**
  - European Energy Markets Observatory (EEMO)
  - Platts-Capgemini North American Executive Study
- **Over 20 years of experience** in geographic information management, GIS system implementation and GIS software development

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Geospatial capabilities

- Over 200 geospatial consultants worldwide
- Technology-neutral with expertise in all leading GIS software
- Focus on
  - Large transformation programs
  - GIS systems integration
  - Enterprise implementations
  - GIS data migration projects
  - Legislative compliance projects
  - Smart meter/smart grid programmes

Capgemini’s 6 largest GIS competence centers
Utilities industry

- The utility industry is entering an unprecedented period of transformation and renewal. This transformation affects:
  - Generation; Distribution; Pricing models; Business models, Customer relationship

- Legislation and regulatory pressure require utilities to make available accurate and complete information
  - Location of networks; project works; performance statistics

- GIS, apart from being a network asset management system, becomes more integrated in the business processes
### Roadmap towards GIS-Centric Enterprise

**From:** (mapping and drawing solution)
- Unavailability of a single source of reliable and accurate network information for the business
- Multiple databases that are not integrated, not standardized; may be out-of-date or incomplete
- Network connectivity has not been established

**To:** (integrated graphical asset management solution)
- Enterprise geodatabase; 1 source of the truth, represents the real conditions and status of assets
- Connectivity established between all network components, including customer connections
- Accurate traceability of physical network assets
Roadmap towards GIS-Centric Enterprise

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- Network referenced on inaccurate or poorly updated topographic basemaps
- Network information is stored on a combination of paper maps, CAD files, GIS
- Heavy paper-based update cycle of network information resulting in unacceptable backlogs between actual and documented situation

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- All networks are referenced based on a common, uniform, up-to-date topographic basemap.
- Foundation in place to meet government regulations for exchange of information
- Business is better positioned for multi-utility coordination
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- A variety of graphical and non-graphical apps are used at different stages of the network lifecycle
- Fill lifecycle management of network infrastructure tends to be impossible with this set of applications
- GIS loosely coupled with legacy solutions (asset mngt, work order mngt, outage mngt, ect)

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- Improved regulatory reporting about physical characteristics of the network and performance
- GIS applications and database can be integrated or expanded with smart grid applications

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*Energy & Utilities*

*Geospatial World Forum 2012*
Roadmap towards GIS-Centric Enterprise

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GIS-centric enterprise

1. GIS is the asset information system at the heart of the utility’s operation
2. GIS is the master system for the “normal state” as-built network
3. GIS is also integrated with key business processes and applications across the business; it’s part of composite business processes
Legislative drivers in Belgium

- Regulatory pressure and recent legislation in Belgium requires utilities to make available information about:
  - the location of their networks, referenced against a new uniform topographic basemap
  - where and when utility works are carried out, and the impact this will have on the public domain and citizens

- Utility operators have to
  - upgrade their network information systems
  - implement systems for exchanging project information with external systems.
Legislative drivers in Belgium
Legislative drivers: KLIP
(Cable and Network Information Portal)

Utilities (multiple)

Plan request

Process request
Mail paper maps

Forward plan request

Plan request

Confirmation

KLIP website
Legislative drivers: KLIP
Legislative drivers: KLIP

Number of KLIP plan requests

- 2008: 60,000
- 2009: 90,000
- 2010: 120,000
- 2011: 150,000
Legislative drivers: KLIP

Aquafin
PIDPA
AWV & MOW
INFRA
TMVW
VMM
Municipalities
Eandis
Telenet
Belgacom

$$_$$$_

Unique number of plan requests: 127,929
Average utilities per request: 6.37
Total number of plan requests: 814,554

*For the period 01/09/2010 - 31/08/2011
KLIP evolution

- 2010 – 2015: Digitize maps; reposition networks to uniform topographic reference data (GRB)
- 2013 – 2016: Convert to digital exchange format IMKL /XML
- From 2016/17: exchange network information in IMKL format
Legislative drivers: GIPOD
(Generic Information Platform Public Domain)
Legislative drivers: GIPOD

- Optimize the exchange of information related to temporary occupation of public domain
  - Improve the coordination between utility and other road works
  - Detection of conflicts between road works and manifestations
  - Improve better information to citizens and road users who are impacted

- GIPOD/Synergy website (in beta)
  - Early detection of possible synergy
  - Agreements about carrying out works in synergy
Internal synergy application

TMVW – Water & Waste water company, Flanders

Project scope: Integrate GIS in the lifecycle of project portfolio management (PPM) processes and detect synergy between projects on the public domain, as part of a system for dashboarding SAP PPM data.

Main goals:
- One single view on projects planned by the different service lines, with access to plan and build information (in SAP), project files (in Sharepoint) and project locations (in GIS).
- To dynamically visualize the status of projects in space and time; to detect and manage (internal) synergies between projects.

Main business benefits:
- Management reporting on plan and build processes of the TMVW project portfolio through a SP-based dashboard and maps. The map as an entry point.
- Detect synergy across different business units (drinking water, waste water).
- An application foundation is in place that could be expanded to exchange information with the GIPOD.

Technology: ESRI ArcGIS 10 with Silverlight API, SAP PPM, MS Sharepoint, Microsoft Duet.
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Sibelga – Gas, Electricity & public lighting distribution company, Brussels

Project scope: Realisation of an integrated enterprise GIS solution for mapping, asset management and work management. The solution had to allow an optimization of network investment activities (projects) and had to efficiently support daily network operations (incident and maintenance management).

Main goals:
- To replace the actual GIS and CAD tools
- To interface the GIS system with key business processes, asset management and operations
- To consolidate all asset data into one consistent environment (one version of the truth)
- To become responsive to market evolutions and increasing demands for information from the outside world, e.g. regulatory enquiries

Main business benefits:
The new GIS must allow Sibelga to anticipate the information requests on the status of the networks but also to optimize its investments and to respond to the requirements of the regulatory bodies on the basis of precise criteria such as life cycle stage, network length, …

Technology:
Intergraph G/Technology & Geomedia
Enterprise ETL system for basemap

Eandis – Electricity and natural gas operator in Belgium

**Project scope:** Implementation of an enterprise ETL architecture for updating the Eandis topographic basemap with GRB updates, development of Spatial ETL tools (based on FME), and CAD-GIS data migration.

**Main goals:**
- Implementation of an enterprise Spatial ETL system based on FME Server.
- Migration of existing large-scale CAD-based basemaps to Oracle Spatial; data quality checks.
- Developing Spatial ETL scripts for automatically uploading and updating the basemap.
- Produce a consistent and most up-to-date topographic basemap for the entire Eandis service area.

**Main business benefits:**
- In-house availability of a uniform & updated basemap (GRB) for repositioning the networks → KLIP
- Ability for users to update the topographic basemap in Oracle a simple web-based interface
- Capability for processing quarterly GRB updates for nearly 300 municipalities. (> 10,000+ shapefiles per year)

**Technology:**
Oracle Spatial v10; FME Desktop & FME Server 2011

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**Run workspace with the following parameters**

- **Email results to:**
- **Upload Files:**
- **Parameter Prompt**
  - **Value:**
    - **ShapeFileFolder:**
    - **GRBP_ProjectZone:**
    - **Datum_Toestand_Teren:**
    - **WwVeVersion:**

**Edit Parameter - GRB_ProjectZone**

- **OK**
- **Cancel**
Some further reading

http://www.capgemini.com/services-and-solutions/by-industry/energy/overview/
Contacts

Please contact:

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About Capgemini

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