# ProjectWise @ Elia

Nicolas.Tobbackx@Elia.be

# Agenda :

# 1. About Elia

# Elia Group

At the heart of the European electricity grid

elia group
Powering a world in progress

# Elia Group, a unique location in the heart of Europe



The Elia Group encompasses two leading TSOs (Transmission System Operator) in two European regions: **Elia in Belgium** and **50Hertz in Germany**

# One group

Two internationally active TSOs



The Elia Group is expanding its international activities through Elia Grid International

# Facts & Figures 2016: Elia Group

A top-5 player in the EU TSO Business

**30,000,000**
residents covered

**143,000 km$^2$**
covered

**18,400 km**
high-voltage lines in
Belgium and in Germany

**6**
interconnections

**800**
experienced engineers
and technicians

**35,000 MW**
installed capacity of
renewable energy

**2,100**
employees

**26**
nationalities

# Facts & Figures 2016: Elia

A top-5 player in the EU TSO Business

**11,267,910**
residents covered

**30,528 km$^2$**
covered

**8,432 km**
of lines and cables

**800**
substations

**22,000**
transmission towers

**12,734 MW**
maximum load

**1,225**
employees

**18,435**
Interventions on the grid

# 2. Plan Management (Assets) and Engineering (Infrastructure)

**Interne Audit**
Erik De Schrijver

**Security**
Jeroen François

**Secretariaat Generaal & Legal**
Gregory Pattou

**ELIA Belgium**
Chris Peeters *

**Secretariaat CEO**
Veronique Hendrickx

**Eurogrid**
Bert Maes

**Risk Management**
Gwendolyne Verstraelen

**Veiligheid**
Stéphane Otto

**IT Group**
Pierre Loverius

**Algemeen** — Chris Peeters

| | |
|---|---|
| Userid | FFJ754 |
| HU | 1 |
| Personeels-nummer | 40000674 |
| Telefoon | +3225467448 |
| Intern nummer | 977448 |
| GSM | +32471717030 |
| Fax | |
| Taal | N |
| Kantoor | EMP 7 |
| Bedrijf | Elia System Operator |
| Adres | Keizerslaan 20, |
| Stad | 1000 Brussel |
| E-mail | chris.peeters@elia.be |

**Asset Support**
Danny Vanderhaeghen

**Contact Center, WiovD en Taksen**
Céline Ghyselen

**Plan Management**

**Critical Installations, Adm. Ondersteuni**
Jan Windels

**Asset Regulation**
Ruben Deblauwe

**Facilities**

**Projects**
Benoit Lahy

**Public Acceptance**
Ilse Tant *

**ASSETS**
Frederic Dunon *

**Infrastructure**
Markus Berger *

**HR & Interne Communicatie**
Peter Michiels *

**Corporate Finance**
Catherine Vandenborre *

**Customers, Market & System**
Patrick De Leener *

**PRA & Externe Relaties**
Pascale Fonck *

**Engineering**
Frank Wellens
Annick Van Den Neste

**Expertise Primary Systems**
Bart Leemans

**Engineering HV & CW**
Bert De Paepe

**Expertise Secondary Systems**
Joris Bauweraerts

**Engineering LA & S**
Joris Timmermans

**Engineering Governance**
Grégory Huon

**Engineering Secondary Systems**
Bart De Wit

* is lid van het directiecomité

elia

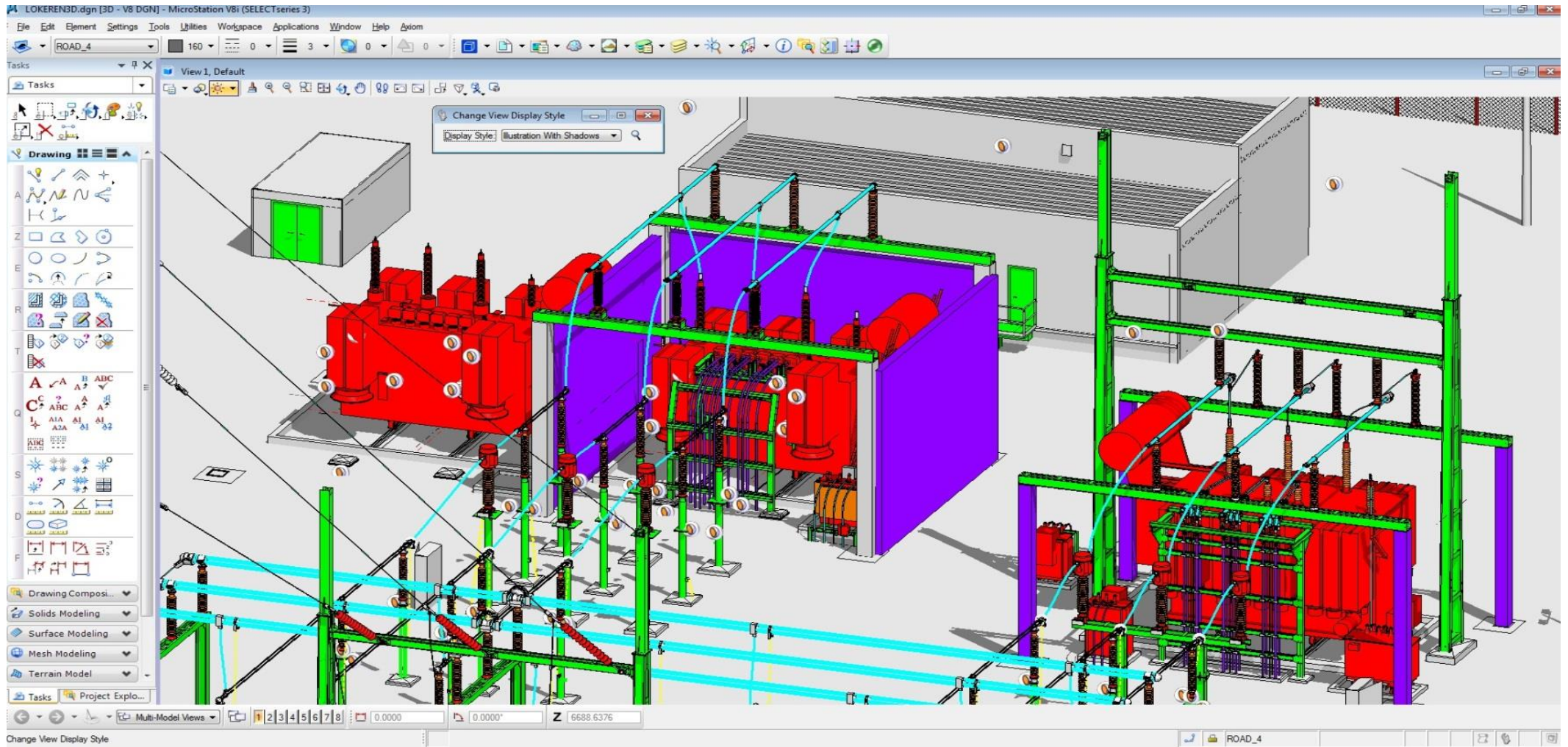# CAD examples @ Elia

# Schema LV AutoCad (IPM LV, TGX, Plan Management/ ASB, MAC)
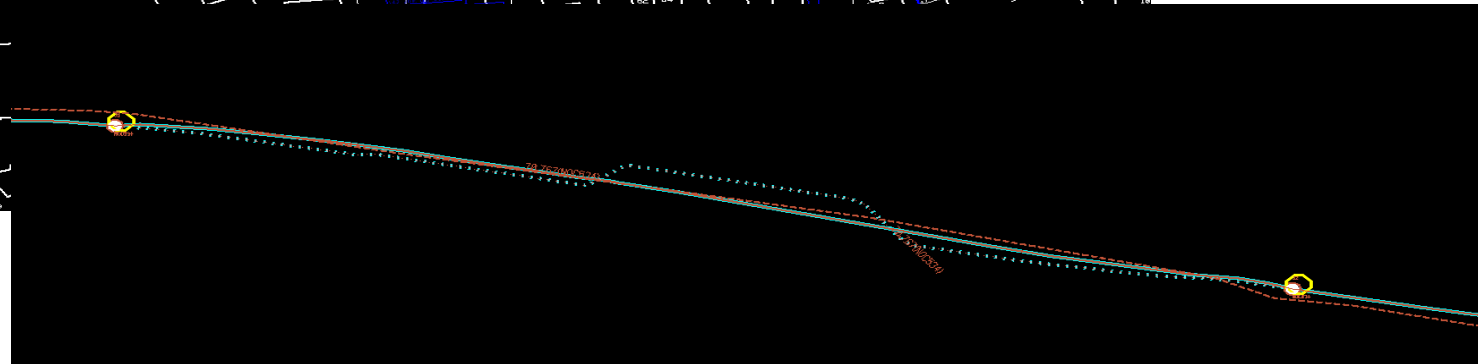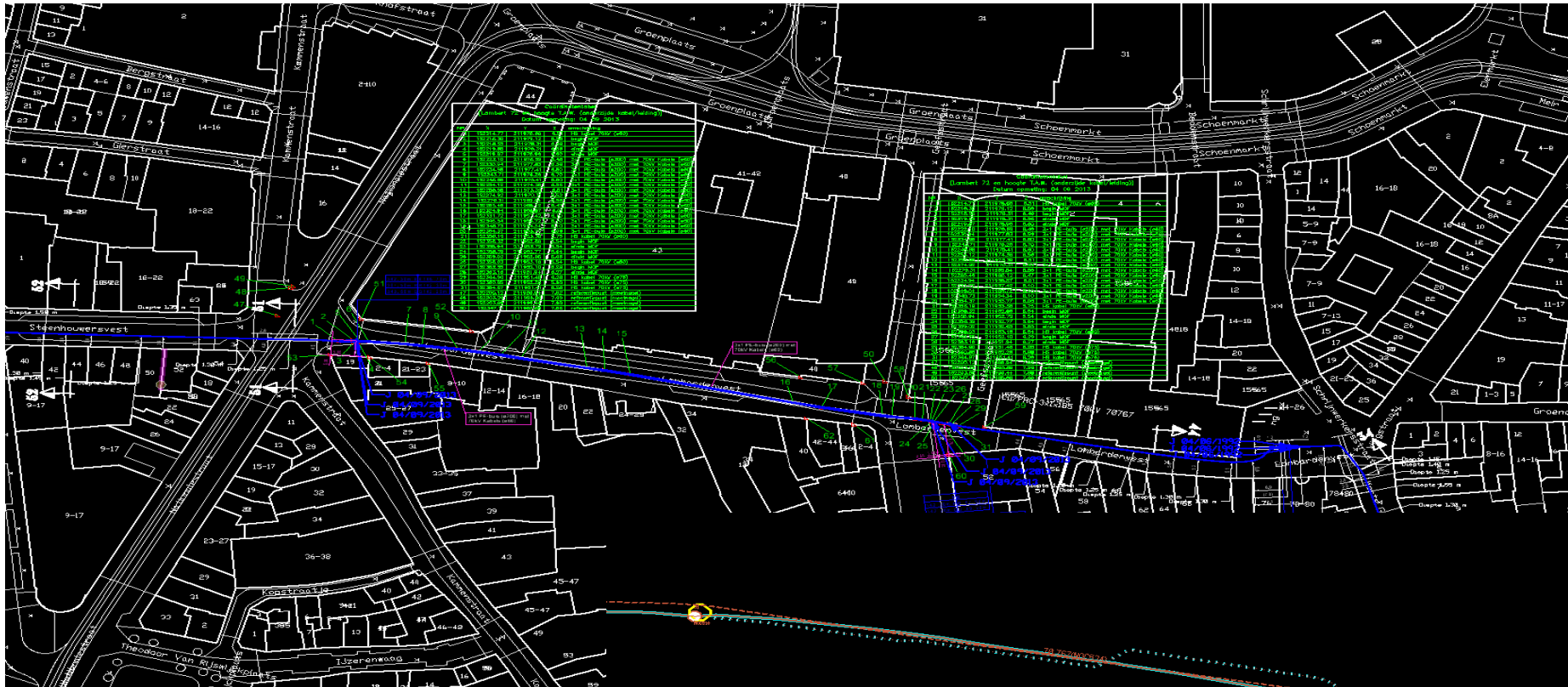
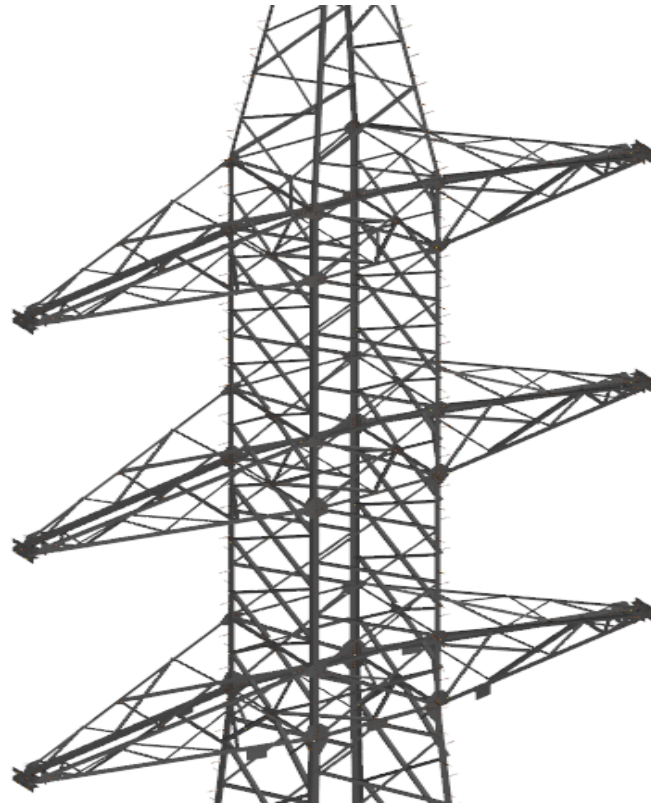# Power Lines HV Microstation (IPM LA&S, DMI TranGIS, CC, BOG, MAC)
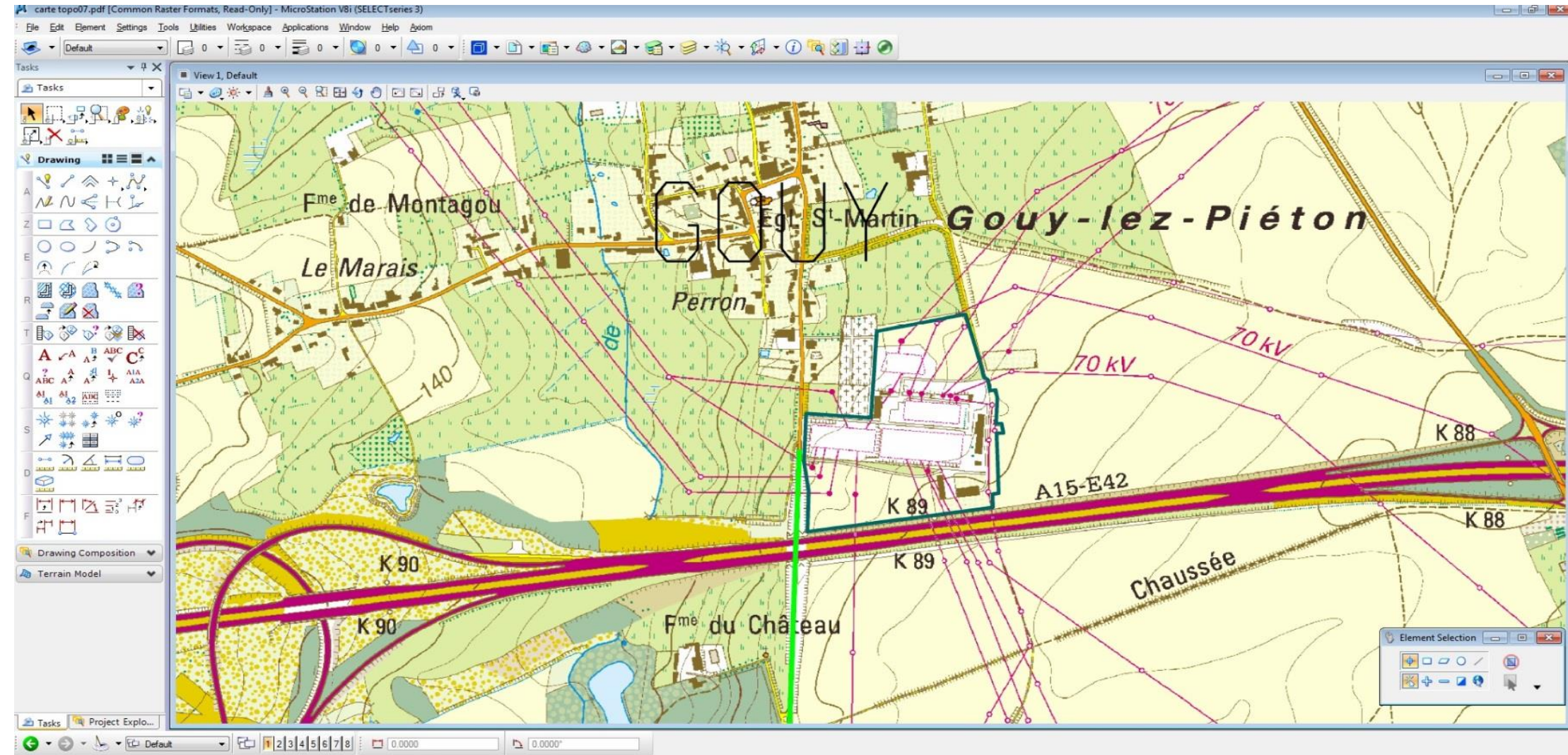
# Substations HV Microstation (IPM HV, TGX, Plan Management / ASB)

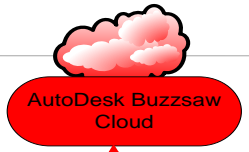# Cables / Lines Microstation (IPM LA, DSI TranGIS, Telco-TGX, CC, BOG)
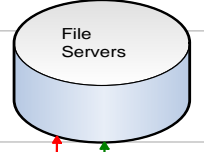
# Tekla, Scia, PYL, PLS…HV Pylones (IPM LAS, TGX)

Add-On Dev by Greenock

Push UDP | Compare
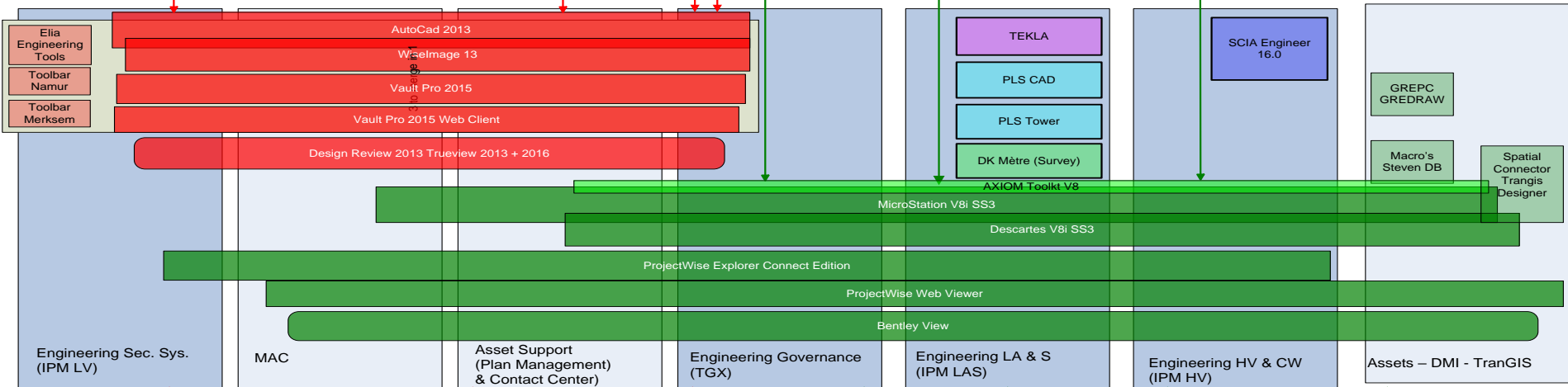Create PDF | Create list (xls)

AutoDesk Vault Professional Server 2015

AutoDesk Buzzsaw Cloud

Printing A4 A3 Canon – Plotting A2-A1-A0-A0+

File Servers

Bentley i-Model Composition Server | Bentley ProjectWise Interplot Server | Bentley ProjectWise Web View Server

Bentley ProjectWise Design Integration Server

Graphland MSI

Elia Engineering Tools
Toolbar Namur
Toolbar Merksem

AutoCad 2013
Wheelimage 13
Vault Pro 2015
Vault Pro 2015 Web Client
Design Review 2013 Trueview 2013 + 2016

TEKLA
PLS CAD
PLS Tower
DK Mètre (Survey)

SCIA Engineer 16.0

GREPC GREDRAW
Macro's Steven DB
Spatial Connector Trangis Designer

AXIOM Toolkt V8
MicroStation V8i SS3
Descartes V8i SS3
ProjectWise Explorer Connect Edition
ProjectWise Web Viewer
Bentley View

Engineering Sec. Sys. (IPM LV) | MAC | Asset Support (Plan Management) & Contact Center) | Engineering Governance (TGX) | Engineering LA & S (IPM LAS) | Engineering HV & CW (IPM HV) | Assets – DMI - TranGIS
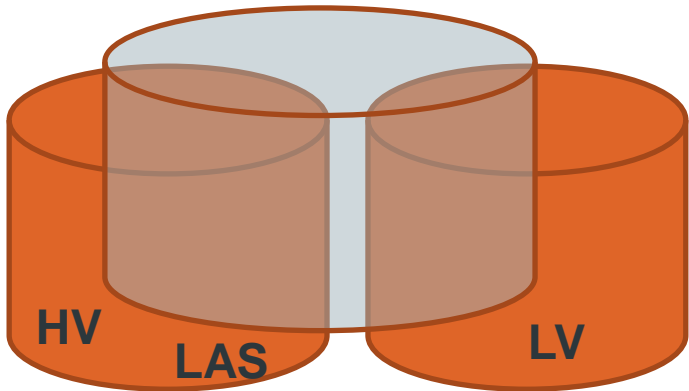
AutoDesk
Bentley

AutoCad Design Methodology Secondary Systems (LV)

MicroStation Design Methodology HV & CW & LA&S

MicroStation TRANGIS Design Methodology

PROJECTS | ARCHIVES

Folder list (left):
- ADEG
- AIRLI
- AMERC
- AMERI
- ANDUM
- ANGLE
- ANS

- 00 Exchange - Secrétariat
- 01 Finance & Approbation
- 02 Avant projet (Budget-UGE-PUTM)
- 03 Scénario & Planning DE
- 04 Permits
- 05 Photos
- 06 Study ( NP, Planning PR, … )

\\belgrid.net\Org\Engineering\PAX\Projects Infra\SUBSTATIONS
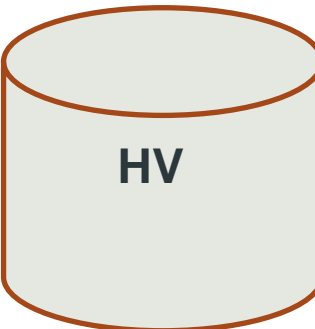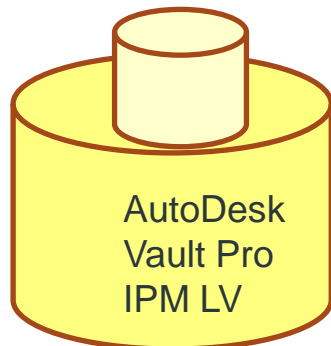
HV    LAS    LV

\\Tiecad\Projets
- XSOP013
- XTBP01
- XTEL02
- xtll02
- Xtsep02
- XXCARTE
- XXEA001
- Xxea002

\\Tiecad\ProjaCad
- XXEA019_KALLO
- XXEA022_KETEN
- Xxea023_LIER
- XXEA024_LILLO
- Xxea025_MASSE
- Xxea026_LINT
- Xxea027_MERCA
- XXEA030_MORTS

MS SQL DB
AutoDesk Vault Pro IPM LV

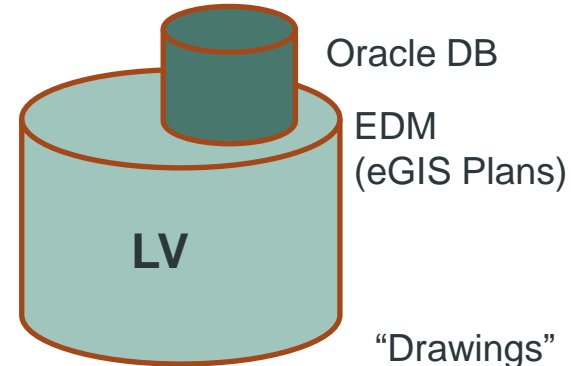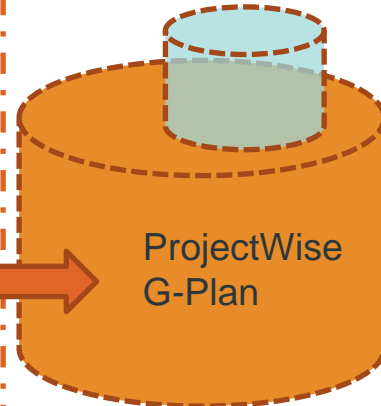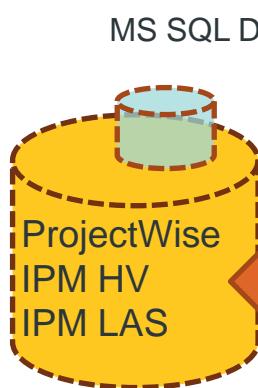HV

\\Tiecad\Archives
- CEC501
- CEC502
- CEC503
- CEC504
- CEC505
- CEC507

MS SQL DB
ProjectWise IPM HV IPM LAS

MS SQL DB
ProjectWise G-Plan

Oracle DB
EDM (eGIS Plans)
LV

"Drawings" Tool - eDoc
eDoc

NEWBEL
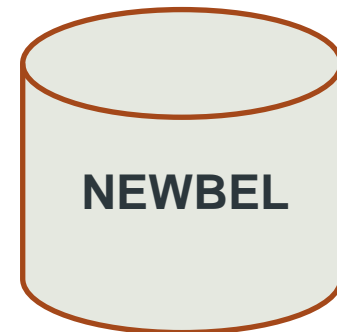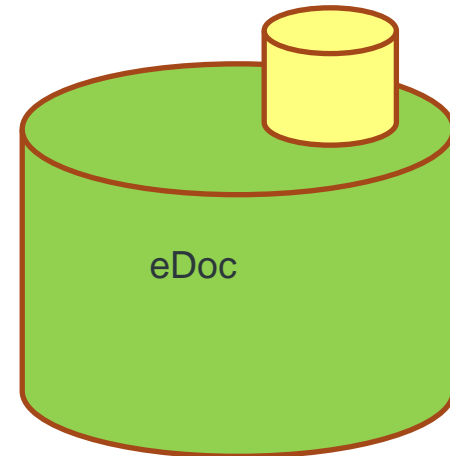
# 3. ProjectWise

# 3. ProjectWise
## a) Why

- "Old" Legacy  OCE EDM system

- OCE acquired by CANON 2010

But without the EDM Software activities

$\Rightarrow$ Dead end street.

Project to integrate Plan Management in Elia corp OpenText system failed.

2015 New initiative
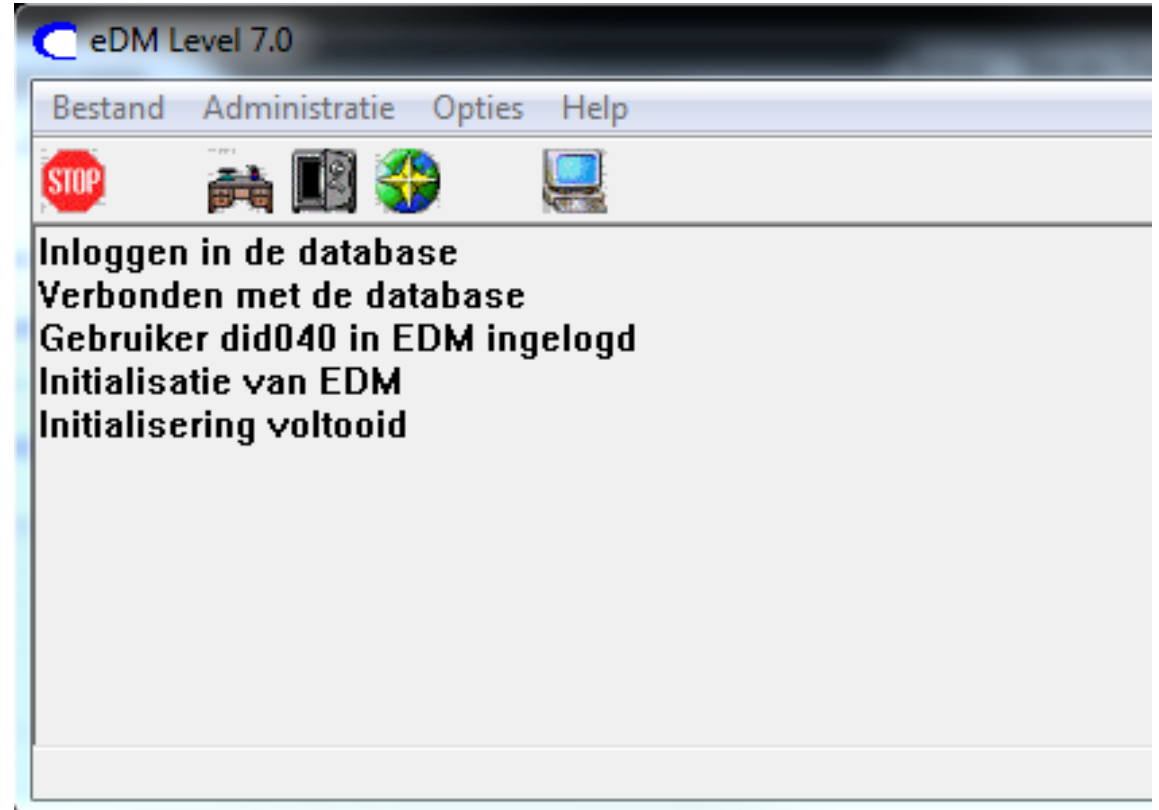
# 3. ProjectWise
## b) How

Old system -> New system
Step-by-step

# What's on the Market ?

With [list of requirements](#) in mind (e.g. old EDM tool) we looked at :

    Autodesk "Vault"*
    Bentley "ProjectWise"*
    Blue Cielo "Meridian"*
    Aucotec "Ruplan"
    SAP "PLM"
    EMC² "Documentum"*
    IBM FileNet "Panagon"

\* Visited user sites

Plannen    About

👤 Nicolas    Nl ▾

| | |
|---|---|
| Geografisch gebied | SC Gouy ▾ |
| Site | % ▾ |
| Post | % ▾ |
| Schakelveld | % ▾ |
| Categorie | % ▾ |
| Type | % ▾ |
| Plan titel | |
| Plan nummer | |

Zoeken

| Titel | Plan nummer | Categorie | Type | Geografisch gebied | Site | Post | Schakelveld |
|---|---|---|---|---|---|---|---|
| PROT. DIFF. JEUX DE BARRES-RADSS+BACK UP 380KV-R1.U27.155 I RESERVE-SCHEMA VAUX.+SURVEILLANCE 110VDC | ABB-XBZ_M7030475-121 | W - bedradingschema's | bedrading - post algemeen | SC Gouy | COURCELLES | COURCELLES 380kV | |
| CELLULE N°1 RESERVE + CREATION DES POLARITES EDWAL ET DISPOSITION DES BARRETTES | ABY-3235_301- | W - bedradingschema's | bedrading - veld transfo | SC Gouy | SOIGNIES | SOIGNIES 10kV | |
| CELLULE N°2 RESERVE | ABY-3235_302- | W - bedradingschema's | bedrading - veld transfo | SC Gouy | SOIGNIES | SOIGNIES 10kV | |
| CELLULE ECHT 1 EL N° 7 - RESERVE | ABY-392_267- | W - bedradingschema's | bedrading - veld lijn/kabel | SC Gouy | SENEFFE | SENEFFE 10kV | |
| CELLULE ECHT 1 EL N°8 - RESERVE | ABY-392_268- | W - bedradingschema's | bedrading - veld lijn/kabel | SC Gouy | SENEFFE | SENEFFE 10kV | |
| CELLULE ECHT 1 EL N°9 | | | | | | | |

**Interface:** Viewer Substation interface ▾

| | |
|---|---|
| **Service Center (optional)** | Gouy ▾ |
| **P** | % ▾ |
| **U** | % ▾ |
| **T** | % ▾ |
| **Category of plan** | % ▾ |
| **Type of plan** | % ▾ |
| **Keywords** | |
| **Plan Number** | |
| **Store** | % ▾ |

🔍 **Search**

| Name | Rev | Title | Category | P | U | T | Store |
|---|---|---|---|---|---|---|---|
| 609670.dgn | 03.00 | BATIMENT SERVICES AUXILIAIRES - IMPLANTATION - PLAN GUIDE | | DEUXA | 015 | % | % |
| 1183180_F012 (1).jpg | 00.00 | - | - | PORTF | % | % | % |
| 1305777.dgn | 02.00 | CHARPENTE POUR SERVICE AUXILIAIRE - SUPPORT CABLES - PARTIE VERTICALE | E | MAISI | 070 | % | % |
| 247865 at.dgn | 00.00 | | | DAMPR | % | % | % |
| 211131.DGN | 08.00 | CELL. 12 - ARRIVEE TFO3 70/10KV - 40MVA | E | ELOUG | 070 | % | H |
| els-eloug_9009-001.dwg | 00.00 | ZONE DE BALISAGE POSTE EXTERIEUR 70KV | V | ELOUG | 070 | % | GEN... SITE : Rouge |

# Liste des plans migrés vers Gplan - Lijst van gemigreerd naar "GPlan" plannen

| HV-CW 996 existing code P5 (source : Infraref) 518 active code P5 (on "K") | | | | | LAS 1405 existing code UGE (source : Transgis) 889 active code P5 (on "K") | | | | | | | LV 996 existing code P5 (source : Infraref) 892 active code P5 (on eDM) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From active code P5 : | | | 100% | | From active code UGE : | | | 66% | | | | From active code P5 : | | | | 92% | |
| P5 | Migration date | P5 | Migration date | | P5 | Migration date | P5 | Migration date | P5 | Migration date | | P5 | Migration date | P5 | Migration date | P5 | Migration date |
| AALNO | 13/04/2017 | MALEC | 16/10/2017 | | CEC014 | 10/01/2018 | NOC542 | 29/06/2017 | | | | AALBA | 7/12/2017 | GAURA | 21/12/2017 | POEST | 27/12/2017 |
| AALST | 7/09/2017 | MALLE | 13/04/2017 | | CEC032 | 24/10/2017 | NOC661 | 29/06/2017 | | | | AALBB | 7/12/2017 | GAVER | 13/03/2018 | PONDR | 5/03/2018 |
| AALTR | 9/09/2017 | MAPON | 13/04/2017 | | CEC069 | 31/10/2017 | NOC686 | 4/08/2017 | | | | AALBC | 7/12/2017 | GEEL | 23/04/2018 | PORTF | 27/12/2017 |
| AALVE | 13/04/2017 | MARFA | 31/10/2017 | | CEC123 | 15/06/2017 | NOC691 | 23/06/2017 | | | | AALBE | 3/04/2018 | GEMBL | 27/04/2018 | PORTP | 27/12/2017 |
| AARSC | 13/04/2017 | MARLD | 10/08/2017 | | CEC251 | 19/01/2018 | NOC696 | 4/08/2017 | | | | AALBU | 2/10/2017 | GEMBS | 4/10/2017 | POUPL | 23/11/2017 |
| AARTS | 18/04/2017 | MARQU | 9/05/2017 | | CEC266 | 24/10/2017 | NOC697 | 23/06/2017 | | | | AALNO | 21/12/2017 | GENPA | 20/12/2017 | PRECH | 23/11/2017 |
| ACHEN | 25/08/2017 | MASSE | 13/06/2017 | | CEC504 | 2/02/2018 | NOC699 | 4/08/2017 | | | | AALST | 2/10/2017 | GENPM | 19/12/2017 | PROFO | 22/01/2018 |
| ACHEN PYL TELECOM | 31/10/2017 | MECHL | 13/04/2017 | | CEC507 | 31/10/2017 | NOC702 | 29/06/2017 | | | | AALTE | 7/12/2017 | GENTS | 19/12/2017 | PROVI | 21/02/2018 |
| ADEGE | 21/09/2017 | MEERH | 18/04/2017 | | CEC508 | 1/02/2018 | NOC704 | 29/06/2017 | | | | AALTR | 8/12/2017 | GERDB | 4/10/2017 | PTOUE | 12/01/2018 |
| AFRI= | 16/05/2017 | MERCA | 3/07/2017 | | CEC518 | 31/10/2017 | NOC710 | 27/06/2017 | | | | AALTS | 8/12/2017 | GERDI | 4/10/2017 | PTROC | 21/02/2018 |
| AIRLI | 21/08/2017 | MERCH | 7/09/2017 | | CEC519 | 31/10/2017 | NOC712 | 11/08/2017 | | | | AALVE | 8/12/2017 | GERPI | 27/04/2018 | PTSUD | 12/01/2018 |
| AMEL | 20/10/2017 | MERCL | 13/04/2017 | | CEC522 | 31/10/2017 | NOC714 | 11/08/2017 | | | | AARSC | 12/02/2018 | GGTER | 20/12/2017 | PUTTE | 7/11/2017 |
| AMERC | 16/10/2017 | MEREL | 8/08/2017 | | CEC525 | 1/02/2018 | NOC715 | 11/08/2017 | | | | AARTS | 12/04/2018 | GILLY | 27/04/2018 | QDEME | 17/01/2018 |
| AMERI | 10/08/2017 | MERKS | 13/06/2017 | | CEC528 | 31/10/2017 | NOC716 | 11/08/2017 | | | | ABEE | 20/02/2018 | GISTE | 13/03/2018 | QUEVA | 24/10/2017 |
| AMOCO | 13/04/2017 | MEWST | 27/10/2017 | | CEC542 | 1/02/2018 | NOC717 | 11/08/2017 | | | | ACHEN | 12/04/2018 | GLAIN | 27/04/2018 | RAMET | 22/01/2018 |
| AMPSI | 13/04/2017 | MIDI | 18/04/2017 | | CEC544 | 2/02/2018 | NOC719 | 11/08/2017 | | | | ACHES | 2/10/2017 | GLMOU | 13/10/2017 | RANSS | 27/12/2017 |
| ANDUM | 6/06/2017 | MIECR | 17/10/2017 | | CEC545 | 31/10/2017 | NOL201 | 5/09/2017 | | | | ADEGE | 8/12/2017 | GLROC | 13/10/2017 | RAVEL | 23/04/2018 |
| ANGLE | 7/09/2017 | MOARD | 17/10/2017 | | CEC547 | 1/02/2018 | NOL202 | 11/08/2017 | | | | ADOK2 | 16/10/2017 | GLROF | 13/10/2017 | RECOG | 16/03/2018 |
| ANS | 10/09/2017 | MOL | 13/04/2017 | | CEC548 | 31/10/2017 | NOL203 | 11/08/2017 | | | | AIRLI | 11/12/2017 | GLWOR | 21/12/2017 | REGZA | 16/04/2018 |
| ANTOI | 13/10/2017 | MOLEN | 24/08/2017 | | CEC549 | 31/10/2017 | NOL205 | 11/08/2017 | | | | AKZO | 25/01/2018 | GODSH | 4/10/2017 | RELEG | 16/04/2018 |
| ARLON | 25/08/2017 | MONAI | 1/09/2017 | | CEC550 | 31/10/2017 | NOL207 | 11/08/2017 | | | | ALEUR | 25/01/2018 | GORIS | 5/10/2017 | REMI= | 8/03/2018 |
| ARMAT | 13/04/2017 | MONC= | 3/11/2017 | | CEC551 | 31/08/2017 | NOL208 | 11/08/2017 | | | | ALKEN | 2/10/2017 | GOSDI | 21/12/2017 | RHODE | 17/01/2018 |
| ATHUS | 20/10/2017 | MONCE | 5/12/2017 | | CEC565 | 31/08/2017 | NOL209 | 11/08/2017 | | | | ALLEU | 3/11/2017 | GOSSE | 22/12/2017 | RIEME | 11/01/2018 |
| AUBAN | 25/08/2017 | MONS | 13/04/2017 | | CEC568 | 31/08/2017 | NOL210 | 11/08/2017 | | | | ALZ | 2/10/2017 | GOUY | 2/05/2018 | RIJKE | 12/04/2018 |
| AUBAN PYL TELECOM | 31/10/2017 | MONSI | 13/04/2017 | | CEC573 | 29/06/2017 | NOL211 | 11/08/2017 | | | | AMEL | 12/04/2018 | GRAMM | 2/05/2018 | RIMIE | 23/11/2017 |
| AUVEL | 19/10/2017 | MONTE | 25/07/2017 | | CEC576 | 29/06/2017 | NOL212 | 11/08/2017 | | | | AMERC | 20/12/2017 | GRIMB | 4/10/2017 | RINGV | 16/04/2018 |

Training/
Documentation

eGIS

Document aangemaakt door **Günter Van der Donckt** op 20-dec-2017 • Laatst gewijzigd door **Günter Van der Donckt** op 19-mrt-2018          Versie 1

**eGIS**

Tutorials

Handleiding

Infofiches

**Plannen**

Indien de gezochte plannen zich niet in de eGIS Viewer bevinden, gelieve ze dan op te zoeken via de Gplan viewer.

Raadpleeg de plannen in eGIS

Raadpleeg de plannen in Gplan

Lijst van de plannen gemigreerd naar Gplan

**Reporting lijnen / kabels**

Raadpleeg de reporting

**Opleidingshandboek Gplan (Project Wise)**

Opleidingshandboek voor project leaders

Opleidingshandboek voor techniekers en

Contact eGIS: Helpdesk eGIS - 97.7550

Contact Gplan: Helpdesk Gplan

**Gebruik eGIS om:**

- In enkele klikken een groot deel van onze assets visualiseren.
- Geselecteerde informatie samenvoegen op één kaart.
- Gerichter communiceren dankzij de interactieve aard van de tool.
- Informatie terugvinden die je nodig hebt voor je taken.
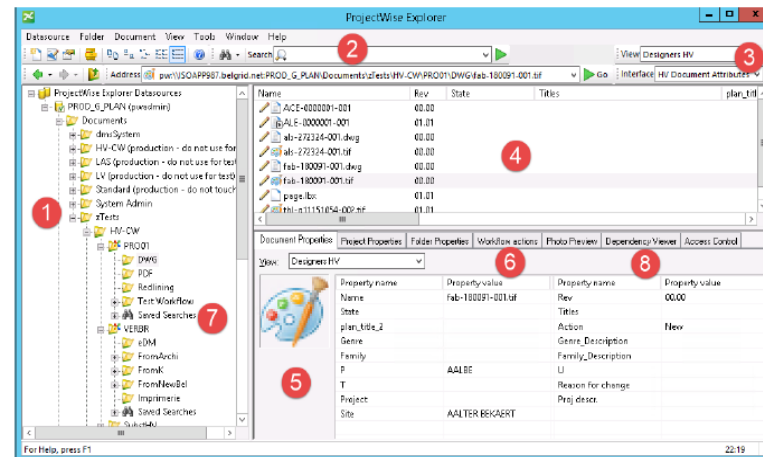- Makkelijk analyses maken over een asset.

**Klik op dit logo om toegang te krijgen tot de tool.**

eGIS

**Gebruik de tool Plans om:**

Gebruikershandleiding ProjectWise Explorer
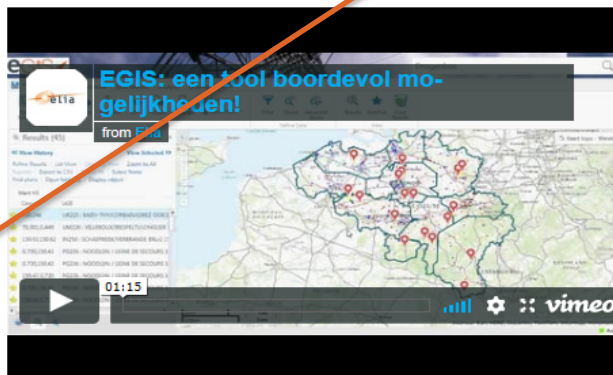
**4   PROJECTWISE INTERFACE**

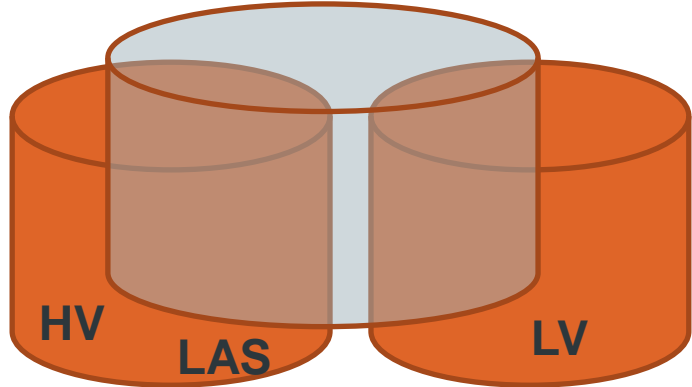De interface bestaat uit verschillende delen:

1. Boomstructuur van mappen
2. Menubalk en toolboxen
3. Werkbalk om weergave/interface in te stellen
4. Lijst van submappen of documenten (personaliseerbare kolomvolgorde)
5. Leesvenster attributen
6. 'Workflow actions' - Venster om status te wijzigen
7. Opgeslagen zoekopdrachten
8. 'Dependency Viewer' - Venster om referentiebestanden weer te geven

PROJECTS | ARCHIVES

ADEG
AIRLI
AMERC
AMERI
ANDUM
ANGLE
ANS

00 Exchange - Secrétariat
01 Finance & Approbation
02 Avant projet (Budget-UGE-PUTM)
03 Scénario & Planning DE
04 Permits
05 Photos
06 Study ( NP, Planning PR, … )

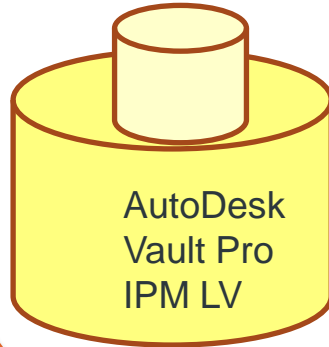\\belgrid.net\Org\Engineering\PAX\Projects Infra\SUBSTATIONS

HV    LAS    LV

\\Tiecad\Projets

XSOP013
XTBP01
XTEL02
xtll02
Xtsep02
XXCARTE
XXEA001
Xxea002
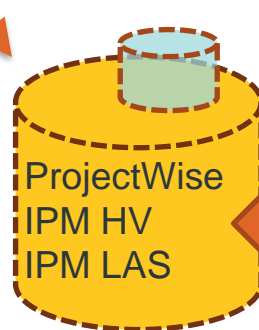
\\Tiecad\ProjaCad

XXEA019_KALLO
XXEA022_KETEN
Xxea023_LIER
XXEA024_LILLO
Xxea025_MASSE
Xxea026_LINT
Xxea027_MERCA
XXEA030_MORTS

MS SQL DB

AutoDesk Vault Pro IPM LV
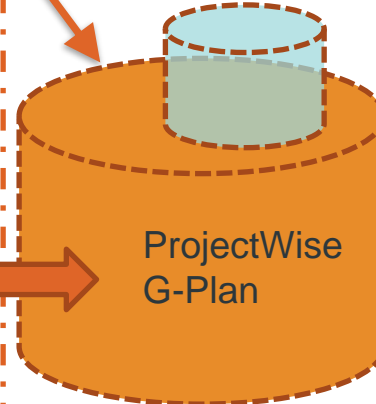
Oracle DB
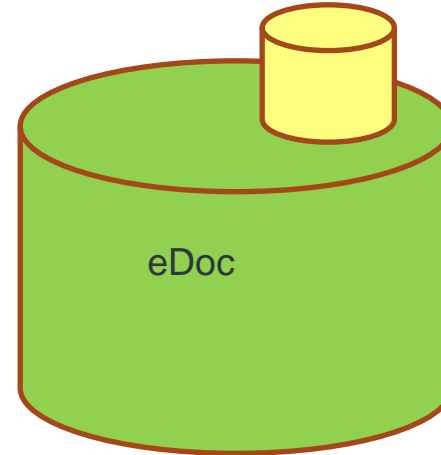
EDM (eGIS Plans)

LV

HV

\\Tiecad\Archives

CEC501
CEC502
CEC503
CEC504
CEC505
CEC507

"Drawings" Tool - eDoc

eDoc

MS SQL DB

MS SQL DB

ProjectWise IPM HV IPM LAS
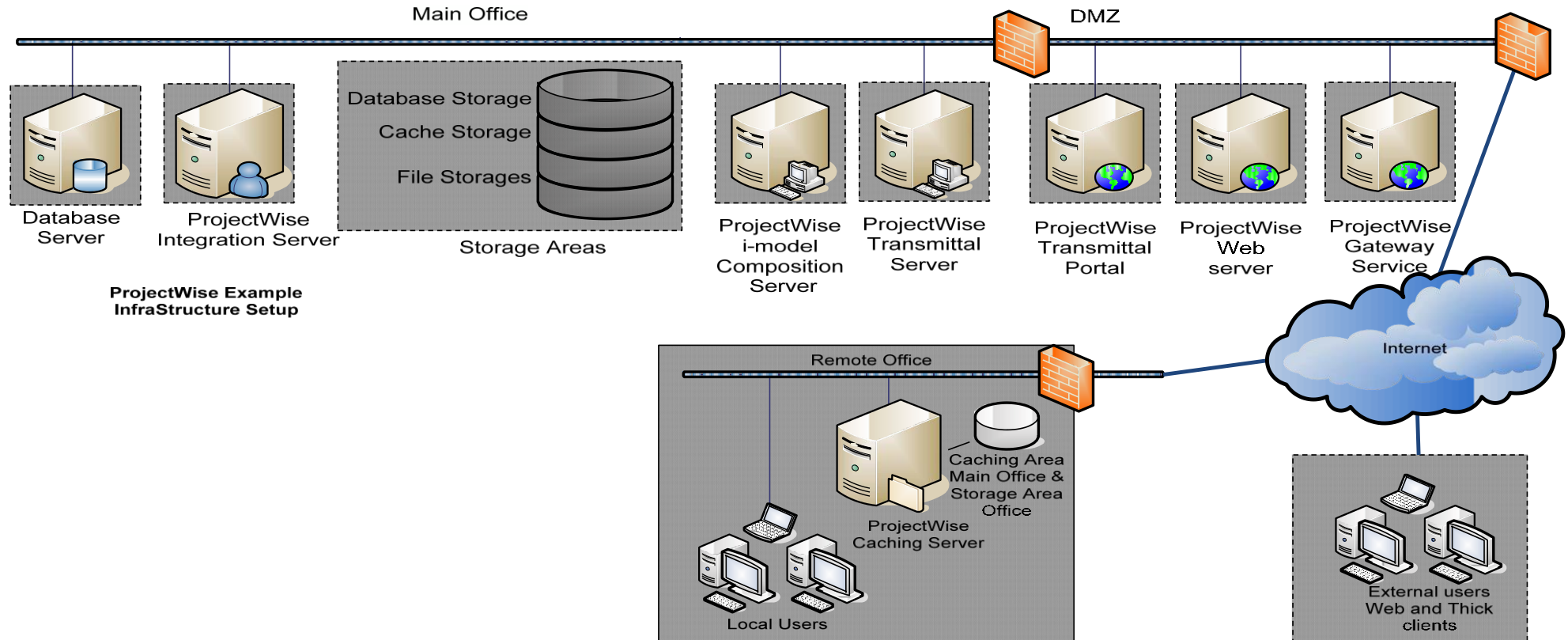
ProjectWise G-Plan

NEWBEL
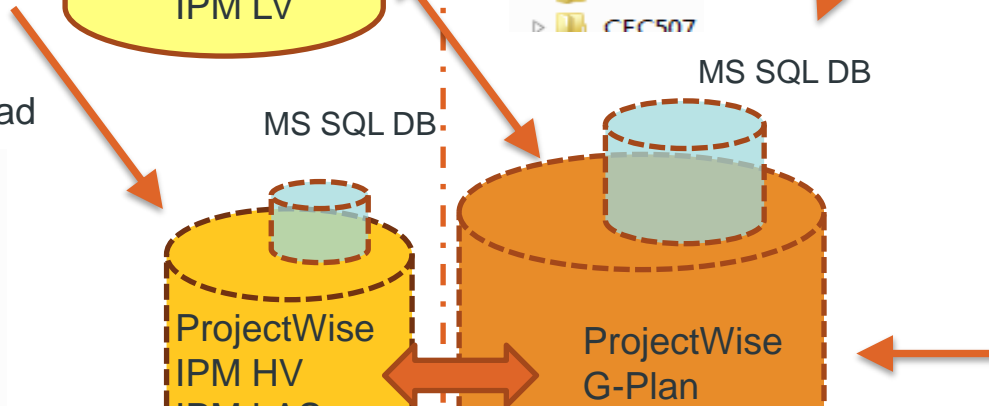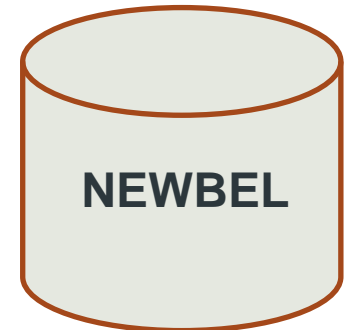
**Data (Legacy) Migration :**

- Old EDM database

- Old "Drawings" Plan number generating System

- File Servers "Projects"

- Archives File Servers

- MicroFilm (Physical) Archives

- "To be scanned" documents/plans

| | A | B | C | D | E | |
|---|---|---|---|---|---|---|
| 1 | | | | | EDM Data | |
| 2 | **G-Plan__attrib_list** | **G-Plan_lines_attrib_list** | **G-Plan_LV_attrib_list** | **G-Plan_2_attrib_list** | **LV_Migr-attr_list** | **HV-and** |
| 3 | Name | Name | Name | Name | Name | Name |
| 4 | | | | | | |
| 5 | | | | | | Accoun |
| 6 | Action | Action | Action | Action | | |
| 7 | ALT_folio | ALT_folio | ALT_folio | ALT_folio | ALT_Folio | |
| 8 | ALT_search_nr | ALT_search_nr | ALT_search_nr | ALT_search_nr | ALT_Nr | |
| 9 | ALT_supplier | ALT_supplier | ALT_supplier | ALT_supplier | ALT_Supplier | |
| 10 | Assigned_designer_ipm_lv | Assigned_designer_ipm_lv | Assigned_designer_ipm_lv | Assigned_designer_ipm_lv | | |
| 11 | Assigned_designer_ipm_lv_date | Assigned_designer_ipm_lv_date | Assigned_designer_ipm_lv_date | Assigned_designer_ipm_lv_date | | |
| 12 | Assigned_designer_pm_asb | Assigned_designer_pm_asb | Assigned_designer_pm_asb | Assigned_designer_pm_asb | | |
| 13 | Assigned_designer_pm_asb_date | Assigned_designer_pm_asb_date | Assigned_designer_pm_asb_date | Assigned_designer_pm_asb_date | | |
| 14 | Assigned_technician | Assigned_technician | Assigned_technician | Assigned_technician | | |
| 15 | Assigned_technician_date | Assigned_technician_date | Assigned_technician_date | Assigned_technician_date | | |
| 16 | BIS_folio | BIS_folio | BIS_folio | BIS_folio | BIS_Folio | |
| 17 | BIS_search_nr | BIS_search_nr | BIS_search_nr | BIS_search_nr | BIS_Nr | |
| 18 | BIS_supplier | BIS_supplier | BIS_supplier | BIS_supplier | BIS_Supplier | |
| 19 | | | | | | CAD |
| 20 | Category | Category | Category | Category | Category | |
| 21 | Checked_out_for_company | Checked_out_for_company | Checked_out_for_company | Checked_out_for_company | | |
| 22 | Checked_out_for_name | Checked_out_for_name | Checked_out_for_name | Checked_out_for_name | | |
| 23 | Checkin_date | Checkin_date | Checkin_date | Checkin_date | | |
| 24 | | Classes_of_tower | | | | |
| 25 | Client | Client | Client | Client | | Client |
| 26 | Code_UGE | Code_UGE | Code_UGE | Code_UGE | | |
| 27 | | | | Construction_Site_Comments | | |
| 28 | | | | | Currency | |
| 29 | Designed_by | Designed_by | Designed_by | Designed_by | | |
| 30 | Designed_by_date | Designed_by_date | Designed_by_date | Designed_by_date | | |

**Configuration :**

# ProjectWise    Infrastructure    example



ProjectWise Example
InfraStructure Setup

ProjectWise    Elia G-Plan Infrastructure

# Rules Engine Workflow

- "BS 1192" Addition since SS4 to Standard product
- Gives the option to create enforcement of attributes
- Gives option of versioning control in State change
- Gives option to create duality in workflow
- Allows for configuration by XLSX template
- Powerful
- Needs extra configuration (services)
- Changes standard ProjectWise behavior
- Disables standard functions of ProjectWise for the folder where the workflow
  is attached to.


- Only works in PWE !

B41 · Obsolete...

| ID | Name | Prompt | Module | Callback | State callback | Menu order | Workflow As Built | Feasibility | Permit | Single Line |
|---|---|---|---|---|---|---|---|---|---|---|
| SEPAR2 | *** HV - LAS Section *** | - | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 1 | TRUE | | | |
| SEPAR4 | *** Feasibility *** | - | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 2 | | TRUE | | |
| SEPAR5 | *** Permit *** | - | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 3 | | | TRUE | |
| STARTLV | Start LV Project | Start LV Project? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 4 | TRUE | | | |
| STARTAVP | Start AVP | Start AVP Study? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 5 | TRUE | | | |
| STARTFIN | Start FIN | Start FIN Study? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 6 | TRUE | | | |
| STARTCFC | Start CFC | Start CFC Study? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 7 | TRUE | | | |
| STARTFEAS | Restart Feasibility | Restart Feasibility? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 8 | | TRUE | | |
| STARTPER | Restart Permit | Restart Permit? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 9 | | | TRUE | |
| CHECKING | In Checking | Process checking? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 10 | TRUE | TRUE | TRUE | |
| APPROVE | Approve | Approve? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 11 | TRUE | TRUE | TRUE | |
| REJECT2 | Reject... | Reject? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 12 | TRUE | TRUE | TRUE | |
| STARTASBLAS | Start ASB LAS | Start ASB LAS? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 13 | TRUE | | | |
| RETURNCFC | Return CFC... | Return CFC | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 14 | TRUE | | | |
| SEPAR1 | *** REDLINING - LV Section *** | - | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 15 | TRUE | | | |
| ADAPTDON | Adaptation Done | Adaptation Done? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 16 | TRUE | | | |
| ASB ASSIGN | ASB Assign | ASB Assign ? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 17 | TRUE | | | TRUE |
| ASB PROG | Start ASB | Start ASB? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 18 | TRUE | | | TRUE |
| STARTLAS | Approve LAS Plans | Approve LAS Plans? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 19 | TRUE | | | |
| ASB DONE | ASB Done | ASB Done? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 20 | TRUE | | | TRUE |
| STARTIPM | Send HV Plan for approval | Send HV Plan for approval? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 21 | TRUE | | | |
| APPHVPLAN | Approve HV Plan | Approve HV Plan? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 22 | TRUE | | | |
| APPSTORE | Send HV Plan for storage | Send HV Plan for storage? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 23 | TRUE | | | |
| STORPLAN | Store Plan | Store Plan? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 24 | TRUE | | | TRUE |
| OPERATIO | Approve for Operational | Approve for Operational? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 25 | TRUE | TRUE | TRUE | TRUE |
| REJECT | Reject... | Reject? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 26 | TRUE | | | TRUE |
| REDLDONE | Redlining Done | Redlining Done? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 27 | TRUE | | | |
| SEPAR3 | *** Operational Section *** | - | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 28 | TRUE | | | |
| REVISE | Reserve... | Reserve? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 29 | TRUE | | | |
| UNRESERVE | Unreserve... | Unreserve? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 30 | TRUE | | | |
| REQUEST | Request... | Request? | WorkflowRulesEngine.dll | Exec_DefaultCmd | State_DefaultCmd | 31 | TRUE | | | |

| | | | | Actions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Super User | | FALSE | FALSE | FALSE | FALSE | FALSE | FALSE | FALSE | FALSE | FALSE | FALSE |
| | | | Param2 | | | | | | | | | | | |
| | | | Param1 | | NO_ACTION | LV Project in Progress | ASB Assigned | ASB in Progress | Pending - Storage Assignment | To be Stored | Operational | Obsolete | Deleted | Requested |
| | | | Type | | CLEAR_ATTR | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE | CHANGE_STATE |
| Workflow | State | Operation Type | Prompt | ID | 1 | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| As Built | Operational | REVISE | Reserve & Create New Version? | 1 | | | | | | | | | | |
| As Built | Operational | REQUEST | Request plan booking? | 2 | | | | | | | | | | 1 |
| As Built | Operational | ASB ASSIGN | ASB Assign? | 3 | | | 2 | | | | | | | |
| As Built | Operational | OBSOLETE | Obsolete ? | 4 | | | | | | | | 1 | | |
| As Built | Reserved | STARTAVP | Start AVP Study? | 5 | | | | | | | | | | |
| As Built | Reserved | STARTFIN | Start FIN Study? | 6 | | | | | | | | | | |
| As Built | Reserved | STARTCFC | Start CFC Study? | 7 | | | | | | | | | | |
| As Built | Reserved | STARTLV | Start LV Project? | 8 | | 1 | | | | | | | | |
| As Built | Reserved | UNRESERVE | Unreserve? | 9 | 2 | | | | | | | 3 | | |
| As Built | Reserved | ADAPTDON | Adaptation Done? | 10 | | | | | | | | | | |
| As Built | LV Project in Progress | ADAPTDON | Adaptation Done? | 11 | | | | | | | | | | |
| As Built | Requested | SEND_REQ | Submit plan for reservation? | 12 | | | | | | | | | | |
| As Built | Requested | CANCEL_REQ | Cancel plan request? | 13 | 2 | | | | | | | 3 | | |
| As Built | Submitted for reservation | ACCEPT | Reserve & Create New Version? | 14 | | | | | | | 1 | | | |
| As Built | Submitted for reservation | REJECT3 | Reject plan booking? | 15 | 2 | | | | | | | 3 | | |
| As Built | Adaptation Done | ASB ASSIGN | Assign designer ASB? | 16 | | | 2 | | | | | | | |
| As Built | ASB Assigned | ASB PROG | Start ASB? | 17 | | | | 3 | | | | | | |
| As Built | ASB in Progress | OPERATIO | Approve for Operational? | 18 | 2 | | | | | | | 3 | | |
| As Built | ASB in Progress | ASB DONE | ASB Done? | 19 | | | | | 6 | | | | | |
| As Built | ASB in Progress | STARTIPM | Send HV Plan for approval? | 20 | | | | | | | | | | |
| As Built | Pending - Storage Assignment | STORPLAN | Store Plan? | 21 | | | | | | 2 | | | | |
| As Built | For Approval HV | APPHVPLAN | Approve HV Plan? | 22 | | | | | | | | | | |
| As Built | For Approval HV | REJECT | Reject? | 23 | | | | 2 | | | | | | |
| As Built | HV Plan Approved | APPSTORE | Approve & Store? | 24 | | | | | | | 1 | | | |
| As Built | HV Plan Approved | OPERATIO | Approve for Operational? | 25 | 2 | | | | | | | 3 | | |
| As Built | To be Stored | OPERATIO | Approve for Operational? | 26 | 2 | | | | | | | 3 | | |
| As Built | To be Stored | REJECT | Reject? | 27 | | | | 2 | | | | | | |
| As Built | Obsolete | RESTORE | Restore plan ? | 28 | 2 | | | | | | | 3 | | |
| As Built | AVP in Progress | CHECKING | Validation Process ? | 29 | | | | | | | | | | |
| As Built | AVP Coord. Checking | APPROVE | Approve ? | 30 | | | | | | | | | | |
| As Built | AVP Coord. Checking | REJECT2 | Reject ? | 31 | | | | | | | | | | |
| As Built | AVP PL Checking | APPROVE | Approve ? | 32 | | | | | | | | | | |
| As Built | AVP PL Checking | REJECT2 | Reject ? | 33 | | | | | | | | | | |
| As Built | AVP Approved | STARTFIN | Start FIN Study ? | 34 | | | | | | | | | | |
| As Built | AVP Approved | STARTAVP | Return AVP in Progress? | 35 | | | | | | | | | | |

**19 June 2017 Rev 17**

Reject plan booking (PM Dispatcher)

Send request (Extern)

+2 ssec

+2 ssec

Notif to requester

Cancel Request (Extern)

+8 sec

Status: Requested

Status: submitted for reservation

Fill attributes: Reason for change Project

Notif to requester

Request plan booking (Extern)

+12 sec

Accept (PM Dispatcher)

Notif to requester

+26 ssec

Book plan (D IPM LV/HV/LAS)

Status: Reserved (Read only for all)

Fill attributes: Reason for change Project

D IPM HV+LAS

Fill attribute: Assigned coordinator Assigned Project Leader Assigned Permits Approver

New File/ Drawing

HV – CW – LAS EXTRA Workflow

Un-reserved (D IPM HV/LAS/ LV)

Start LV Project (D IPM LV)

New Revision MAJ LV Project in progress

Export (D IPM LV)

**Engineering LV (sub-) flow Vault**

**Engineering HV – CW - LAS Subflow**

Start AVP

Start FIN

Start CFC

Start Feasability

Start Permit

Fill attribute: Assigned Coordinator Assigned Project Leader

Adaptation done (D IPM LV+Extern)

Vault

Import (D IPM LV)

2-3 sec

AVP

FIN

CFC

Feasability

Permits

Add redlining –> State "Redlining"

Status:Adaptation done

2-3 sec

AVP in Progress (IPM Des)

FIN in progress (IPM Des)

CFC in progress (IPM Des)

Feasability in progress (IPM Des)

Permit in progress (IPM Des)

Redline (technician) Jpg photo's -> redlining folder Redline State

Assign designer ASB (PM Disp)

Fill attribute: Assigned designer pm_ASB

In Checking

In Checking

In Checking

In Checking

In Checking

Notif to Coord

Notif to Coord

Notif to Coord

Notif to Coord

Notif to Coord

AVP coord. Checking (Coord)

FIN coord. Checking (Coord)

CFC coord. Checking (Coord)

Feasability coord. Checking (Coord)

Permit coord. checking (Coord)

Status: ASB Assigned

Assign designer ASB (PM Disp + PM Des)

Fill attributes: Assigned designer pm_ASB Reason for change

2-3 sec

Start ASB (D PM ASB)

Approve

Approve

Approve

Approve

Approve

Rejected

Rejected

Rejected

Rejected

Rejected

Notif to Des

Notif to Des

Notif to Des

Notif to Des

Notif to Des

Status:ASB in progress

Delete (D PM N/S/ASB)

Status:Obsolete

+2 sec

Reject (D IPM)

Notif to PL

Notif to PL

Notif to PL

Notif to PL

Notif to PL

Approve for Operational (D PM N/S/ASB)

+22 sec

+4 sec

Send HV plan for approval (D PM ASB)

Fill attribute: Rejected reason

AVP PL Checking (PL)

FIN PL Checking (PL)

CFC PL Checking (PL)

Feasability PL Checking (PL)

Permit PL checking (PL)

Notif to PM designer

ASB Done (D PM ASB)

+5 sec

Approve

Approve

Approve

Approve

Approve

Notif to IPM designer (Reserved_by)

Notif to Designer

Notif to Designer

Notif to Designer

Notif to Designer

Notif to Designer

Generation PDF

Generation PDF

Generation PDF

Generation PDF

Generation PDF

Status:Pending - Storage Assignment

Approve & Store (D PM ASB)

Status:For approval HV

AVP Approved (IPM Des)

FIN Approved (IPM Des)

CFC Approved (IPM Des)

Feasability Approved (IPM Des)

Permit N&P Checking (PrmVal)

+4 sec

Reject (Redliner)

Fill attribute: Assigned technician

Notif to Redliner/ Assigned Technician

Store plan (SPOC/Redliner)

+8 sec

+2 sec

Approve HV plans (D IPM HV)

Start FIN Nouvelle Révision majeure

Start CFC Nouvelle révision majeure

Permit Request Approved (IPM Des)

Notif to PM designer

Adaptation done (D IPM HV)

Fill attribute: Rejected Reason

Status:To be stored

Status:HV plan approved

ASB LAS

Adaptation done (D IPM HV)

D IPM LAS / Start ASB

Start ASB LAS Nouvelle Révision majeure

+2 sec

ASB LAS in progress (IPM Des)

Status:Operational

Approve for Operational (Redliner)

+22 sec

+20 sec

Approve (D PM ASB)

Notif to Coord

In Checking

ASB LAS coord. Checking (Coord)

Notif to Des

Notif to PL

ASB LAS PL Checking (PL)

Approve

Rejected

Notif to Designer

Generation PDF

Restore (PW admin)

ASB LAS Approved (IPM Des)

ASB LAS to Operational (D LAS)

Nouvelle Révision Min.

Commentaires à la/te reoplabies

Nouvelle Révision Min.

PW Admin Only

**(Test-) Roles**
redline: technician MAC
pmdis: Planmanagement Dispatcher
pmdes: Designer Plan Management
ipmdeslv: Designer IPM (Engineering) LV
ipmdeshv: Designer IPM (Engineering) HV
ipmdeslas: Designer IPM (Engineering) LAS
spoc: SPOC Plan ASM
ipmcoohv: Coordinator HV
ipmcolas: Coordinator LAS
prmval: Permits validator
ipmprld: Project Leader
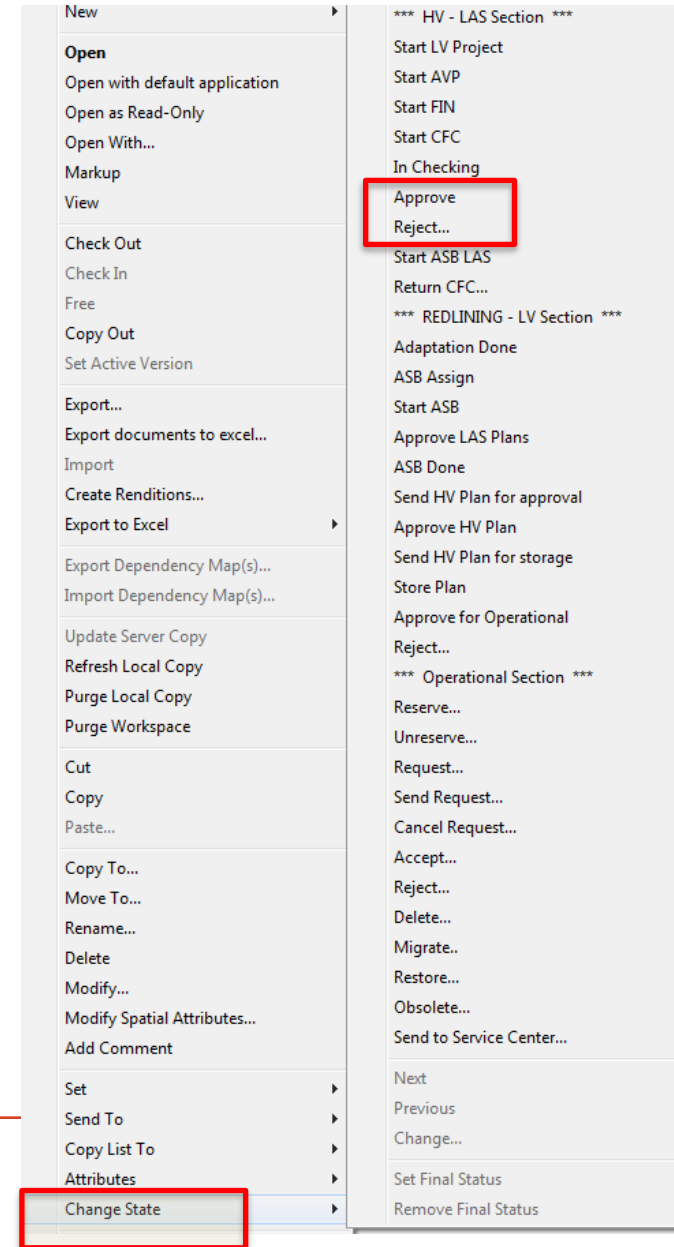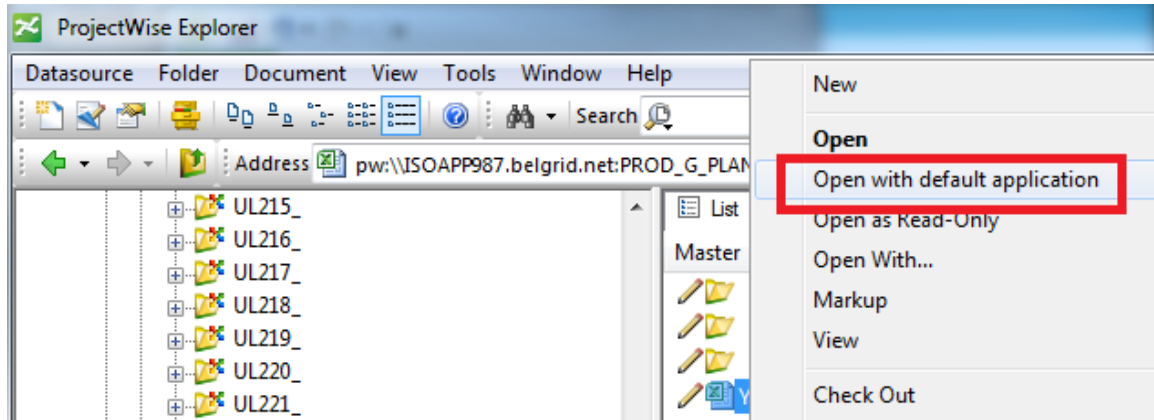
+20 sec  **Timings per set of 10 files**
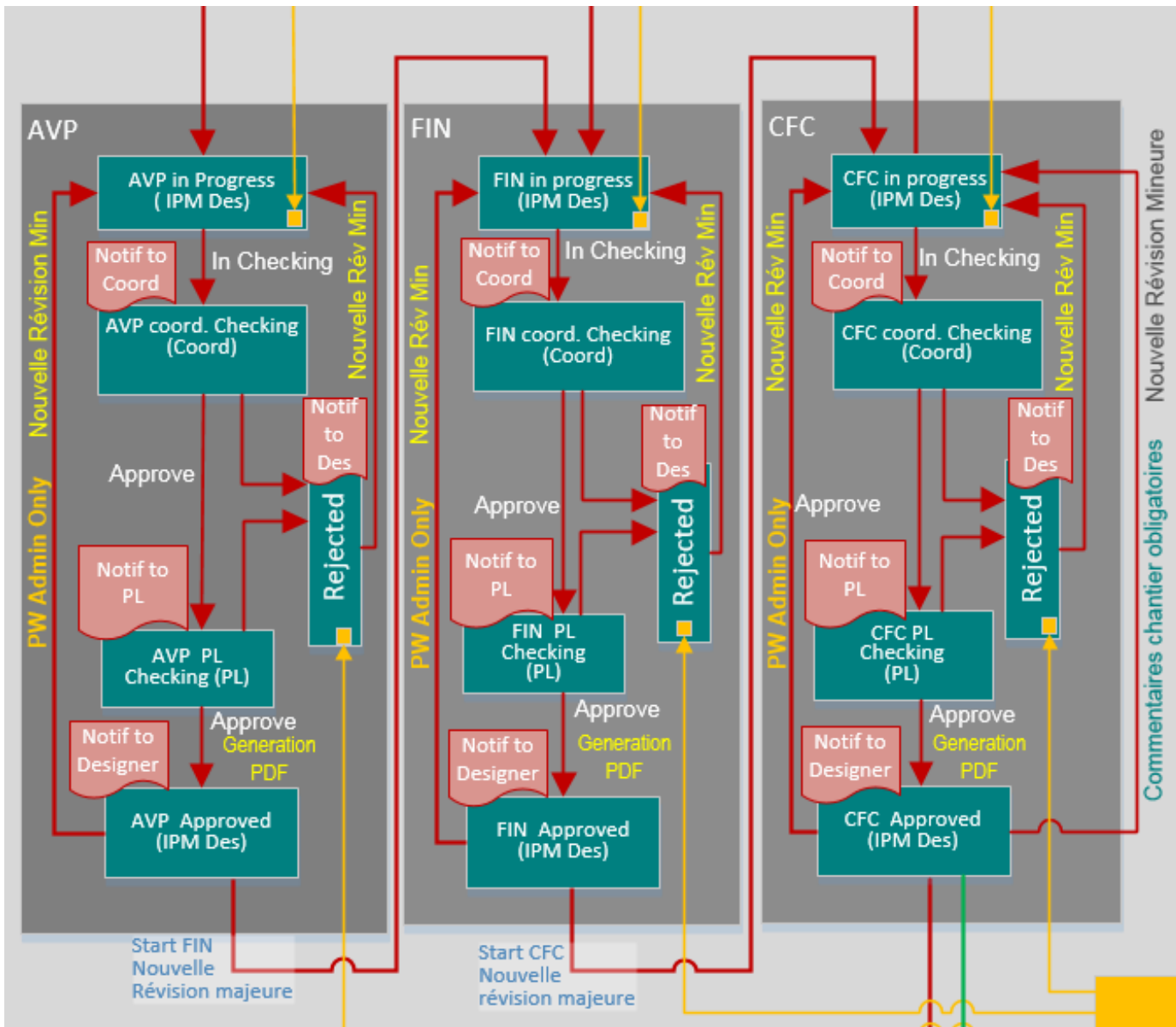
# Customization :

- Workflow (only possible) actions tab (instead of many non-valid) choices
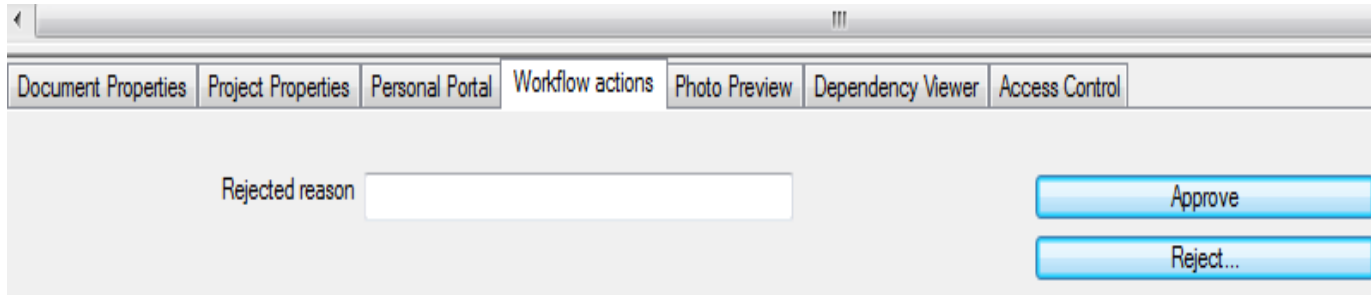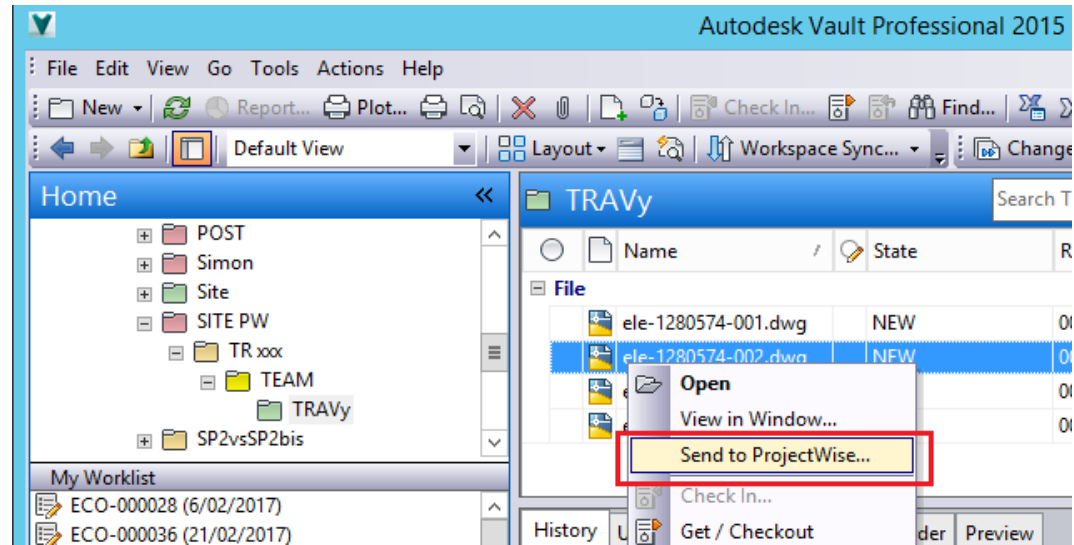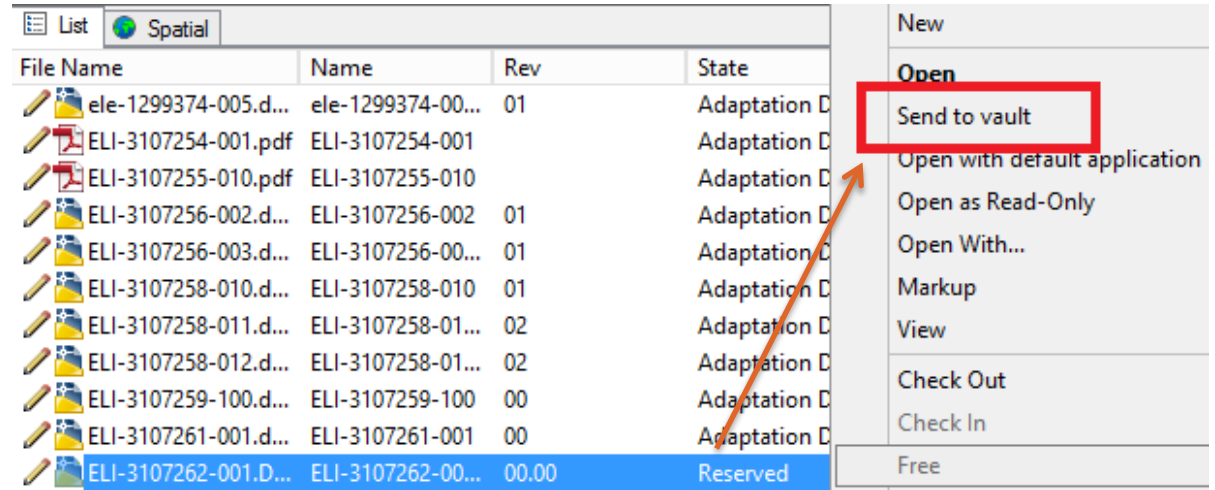


- Open with Default (Windows) Application (incl. ref files)



40

# Customization :

- ProjectWise <-> Vault Connector



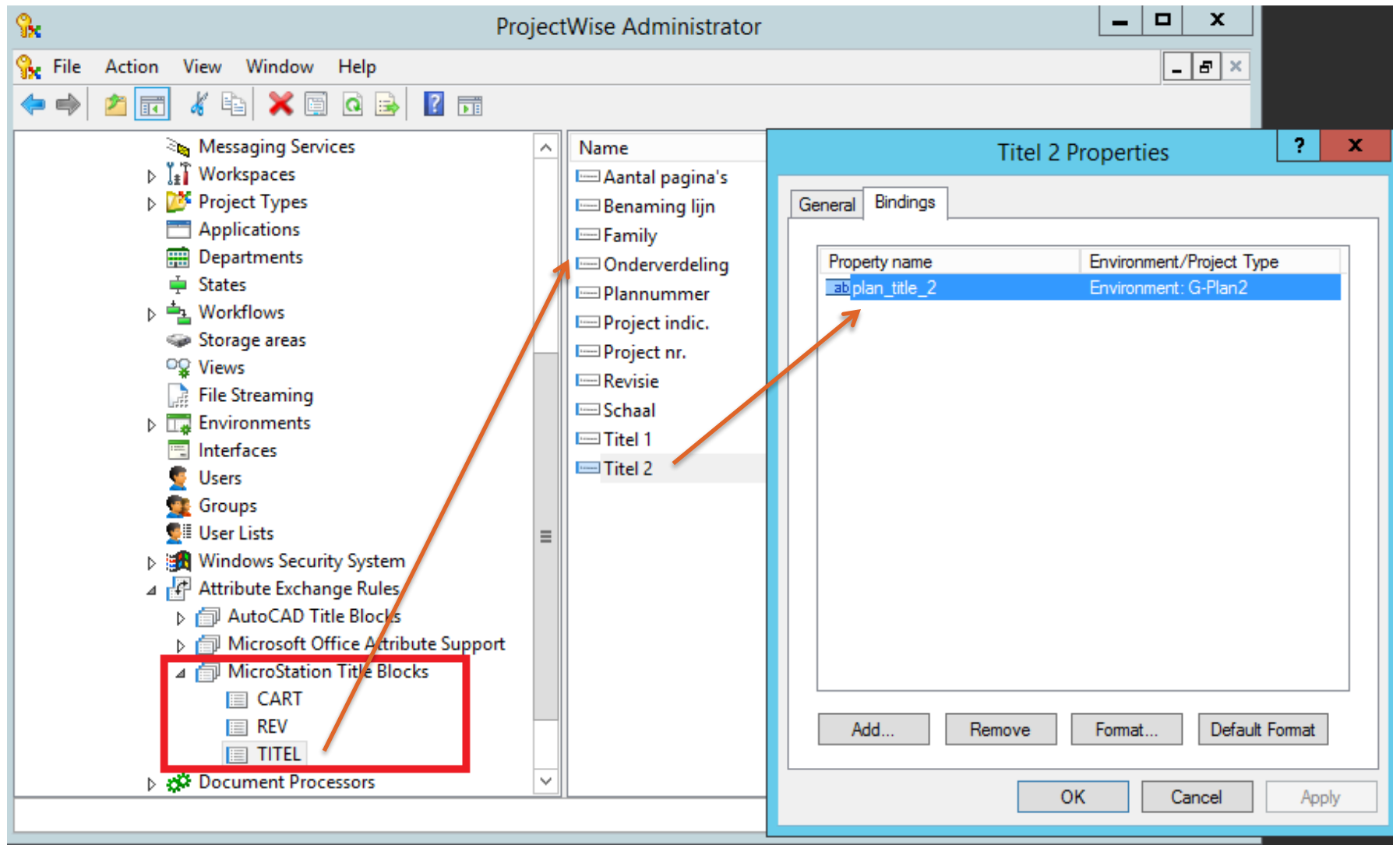Done by Bentley partner Graphland (France)

# MAC (Maintenance and Commissioning) "REDLINING"



Terminal Server configuration

- Indexing :
    attributes, full text, thumbnails*



* Question other users experience ? e.g. see collection of thumbnails

# Title Block Tag* exchange

Update in both directions



* Question other users experience ? Does work in CE ? No tags but item sets ?

**File Streaming :**

- Point Clouds*
- Raster*

- 3MX ? **

\* Still supported in the future ?
\*\* Question other users experience ?

## Some stats:

1,6 Million docs

1,6 TB

150 "Fat" Clients

450 "Light Clients" – All using the PWE "Fat" client for now

# 3. ProjectWise
## c) WIP (Work-in-Progress)

- Move to .299 server (server side WRE)
- Further explore web clients
- Vault Connector 2022
- iTwins / BIM
- …

# 3. ProjectWise
## Bentley OpenUtilities Substation integration

- Managed Environment

- …

**Spatial component/ option,
point clouds, 3MX, 360°,..**

# 3. ProjectWise
## d) Roadmap

- Stay Tuned on Technology – release 4.x PW ?
- Develop solutions for iPhones, Tablets .. Redlining ?
- QR codes in Title Blocks
- Further test (Cloud) BI functionality (e.g. KPI's)
- Analyse possibilities Powershell
- Further integrate smart design data (tools) (Bentley OpenUtilities Substation, ..)
- Integrate Subcontractors – same level like local Elia Engineering designers
- More Integration with Corp info systems (GIS-TranGIS, SAP, Infraref, …)
- …

# 4. Q&A

Nicolas.Tobbackx@Elia.be  +32 475 20 52 64

# Thank you ☺

Nicolas.Tobbackx@Elia.be  +32 475 20 52 64

elia