



**GIS and beyond  
Looking to SAP through the Geo-Window.**

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## **Paper Abstract**

As a Belgian water utility, Pidpa uses a complete ArcGIS software-based solution to maintain a large amount of water distribution network data. Next to the powerful edit environment, an ArcIMS software-based viewer called "GeoLink" allows every employee to easily access this geographical data in a browser. GeoLink also contains a number of interfaces to important company-wide information systems like SAP, CIS, SCADA ,and an intranet document archive, making GIS a portal to all kinds of location linked corporate data. In a utility company the majority of data has a location attribute, so with a locational visualisation having detailed data only a mouse-click away has a lot of benefits. We would like to share the experience of interfacing best-of-breed software like ArcGIS and SAP with the GIS user community in order to improve the value of this integration for the business processes in the utility world.

## Pidpa – a view on the company

Pidpa is a progressive European company, that produces and distributes high quality drinking water throughout the Antwerp province in Belgium (Flanders). We are active in an area of about 2581 km<sup>2</sup>, in which we continuously provide more than 1.1 million people with drinking water. This makes us one of the largest drinking water companies in the Flanders region.



The mission of Pidpa is to distribute high quality drinking water to our customers at a continuous and affordable rate, because we strongly believe everyone has a right to this vital and primary necessity of life. To accomplish this, we maintain a network of more than 12.000 km of water distribution mains in city as well as rural areas. Through 26 water production centers, we yearly produce over 65 million m<sup>3</sup> of water. We mainly work with groundwater that's pumped up and treated in several steps to maintain a constant quality of our end-product.

The water quality throughout the network is permanently checked in our own laboratory. On a daily base, several water samples are taken on different points in the network and checked to make sure potential water quality problems are detected in an early stage. When some calamity does occur, we are equipped to react quickly to isolate problems in the network, and switch the network to minimize the number of affected customers. And, if necessary, we have alternative ways of distributing drinking water to those customers in the form of small water bags or bottles, of which we have set up an emergency production line.

Pidpa has a lot to offer. Water seems like a simple product, but reality is that it's very complex and requires high standards. If you open a tap, together with the "blue gold" a lot of expertise and know-how comes out. Not only regarding water production and treatment, but also in water distribution, quality control, customer service and sustainable management of our water resources we want to be the best. In cooperation with other organisations, we want to share our knowledge and expertise to make sure that sustainable development in the water sector will still be possible in the future. We do this through active participation in local, European and world-wide organisations and making our customers aware of the value of fresh drinking water. We are even regularly involved in projects abroad to help people accomplish their goals in water production and distribution. e.g. a Pidpa supported laboratory in China.

On March 22, 2003 we also opened an interactive watercenter called 'Hidrodoe' in Herentals (Belgium). In the middle of a natural environment, the visitors can learn and experiment, enjoying the richness of water and discover all it's secrets. Hidrodoe is the answer of Pidpa on the many questions people can have about water. This is our way to do our bit in generating an awareness on the value of water. The "blue gold" deserves all attention. It is a primal reason of existence for our society, nature and man. It's also our specialty. Take a look at <http://www.hidrodoe.be> to learn more.

We invite you to learn more about Pidpa on our website : <http://www.pidpa.be>

## **IT Strategy : choosing standards**

Over the last years Pidpa has evolved from being a company with a lot of in-house developers and proprietary mainframe-based information systems, to a company where the IT strategy now comprises a standard software approach. The central IT-guideline can be summarized in one sentence with ‘buy what you can find and build yourself what you can’t find’.

This approach is mainly based on the typical ERP business model, stressing the availability of rich generic software that fits the needs of many companies. It limits the amount of programming required and shifts the effort to customizing the application to the company needs. In the long term this also ensures us of continuous development and improvements in the base-product due to a large user-base. The choice to implement SAP company-wide is undisputably a corner-stone of the corporate IT strategy.

Also the GIS implementation is a perfect example of this approach. Using the ArcGIS family of products from ESRI as a solid basis, complimented with the ArcFM solution from Miner & Miner, provides us with a powerful combination of COTS products. This choice allowed us to build a firm stable database-centric gis-environment for water distribution network management, that is now operational for two years and still expanding to more and more departments within the company.

GIS at Pidpa is seen as an important information system. After all, as a utility company an enormous amount of data we work with has a geographical component. Being it a customer question, an intervention on the water distribution network, planned maintenance, construction, or the location of a company asset, it all has a location that can be translated to X,Y coordinates. A geographical view on information generates a lot of benefits for utility companies like Pidpa and the integration of gis with other key-IT systems provides our organization with new strategic, tactical and operational opportunities.

## **Information systems at Pidpa**

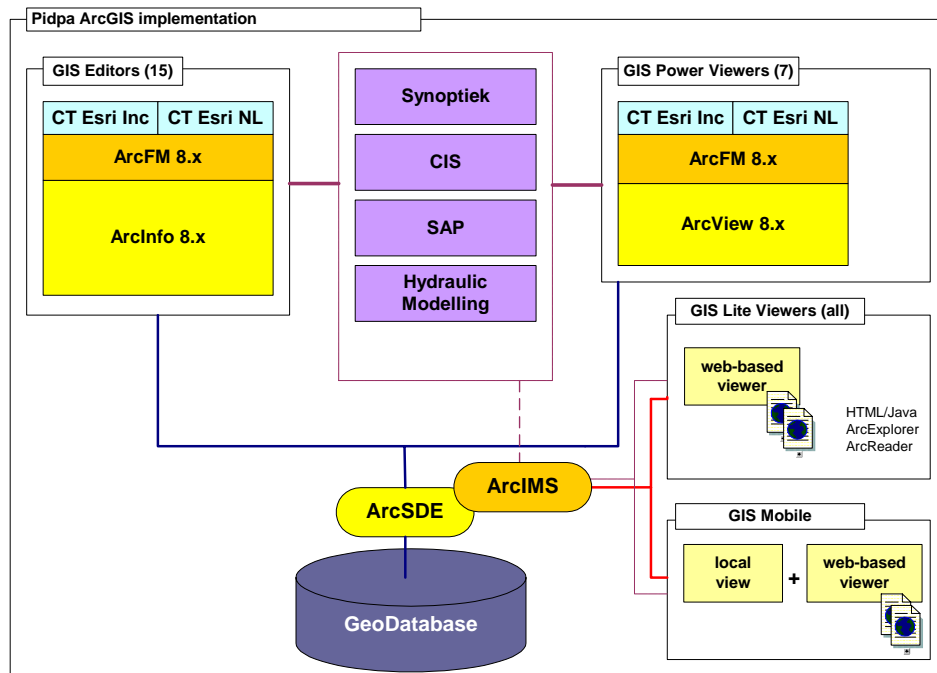
With over 450.000 customers depending on us for round the clock provision of high quality drinking water, we need to use all possible means to continuously improve our processes and service to the customers. In the current information-age this means that a number of key information systems are an important base that’s used by a lot of people to do their job.

An overview of the key information systems at Pidpa:

- GIS

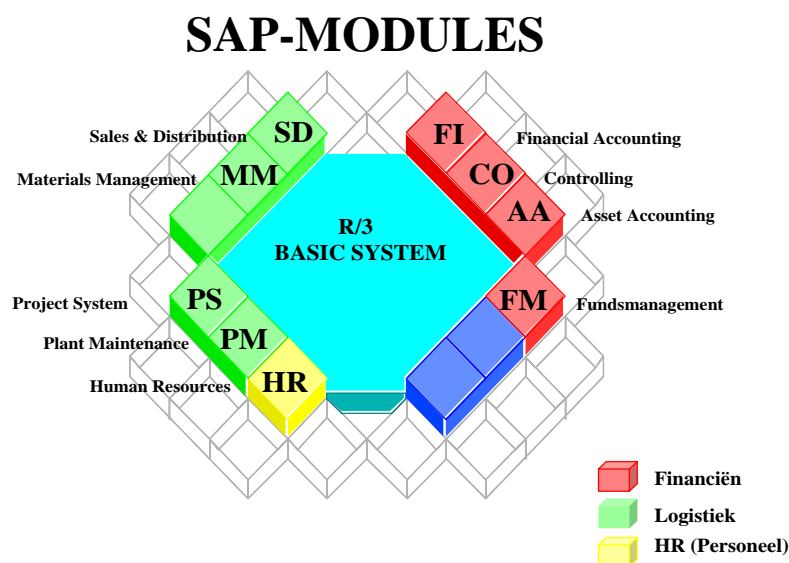
The GIS implementation has expanded over the last two years from a mainly edit-environment directed system, to a very accessible information system where a virtually unlimited amount of viewers can use geo-information about the water distribution network. In the schematic below you can see an overview of the applications that use our central GIS database and the major other systems they are linked to. More about how GIS

started at Pidpa and how we installed our edit environment you can read in a paper that was written for the ESRI User Conference in 2002. The paper can be downloaded on the GIS pages of the Pidpa website <http://www.pidpa.be/en/gis/gis.htm>



- ERP

We chose to implement SAP as an overall ERP system throughout the company. This paper doesn't allow us to go into detail on this implementation, but a big bang approach was chosen in which the modules mentioned in the SAP diamond were implemented.



**Logistic modules:**

PM (Plant Maintenance) : used by the maintenance department to manage all their activities, and support the overall workprocess in regard to house connections.

PS (Project System) : used to manage the larger water network construction projects and industrial connections.

MM (Materials Management) : to support our buying proces and the supply departement.

SD (Sales & Distribution) : third party accounting module

**Financial modules:**

FI (Financial Accounting) : financial and accounting processes

CO (Controlling) : analystic process of our internal orders

FM (Funds Management) : manage budgetary policy

AA (Asset Accounting) : the internal process of asset management

**Human Resource module:**

HR-PA (Human Resources – Personnel Administration) : to support the day-to-day workprocess in this departement (payroll, time registration ...)

HR-PD (Human Resources – Personnel Development) : personnel management

- CIS, SCADA and LIMS

All information on customers is currently still maintained in an in-house developed mainframe based information system, complimented with an intranet environment containing a lot of day-to-day information and being a portal to a lot of archived information. A good base that allows us to efficiently handle all customer related activities, but in time an assessment will be made whether to bring this system also under the SAP umbrella.

Further we also have a SCADA system (Supervisory control and data acquisition), allowing us to remotely control the functioning of equipments on the waterproduction-sites. The SCADA-system is in house development and stores all necessary information (e.g. readings of a watertowers, pumps, valves ...), supports making the necessary decisions, gives the necessary input to e.g. pumps and generates alarms where needed.

Pidpa also has a fully equipped labororium that uses a Labo Information Management System from COMPEX-Unilab to manage all results.

**What is GeoLink ?**

GeoLink is a flexible intranet GIS viewer, providing easy access to geographic information to anyone within the company. The solution was developed and implemented in cooperation with ESRI Netherlands and is based on the out-of-the-box ArcIMS 4.1 HTML viewer. We kept the basic layout with a toolbar, table of contents and a large data frame for optimal viewing. The standard and powerful gis-functionalities have been used where possible, limiting the amount of additional development in javascript and asp code.

The power of GeoLink can be found in the availability in a browser and the ease of use. Starting from the Pidpa Intranet home page, any user on our network can start this viewer

having geo-information just a mouse-click away. The functionality is very straightforward, limiting the need for extensive training. This solution allowed us to limit training efforts to a couple of 2-hour demo-sessions and a good documentation, showing people the available functionalities. A huge advantage of using the ArcIMS solution is the central licensing structure, not only limiting licensing costs, but also adding flexibility for a large user base of over 100 viewers.

All data shown in GeoLink is coming out of the central ArcSDE database, that is also used by the gis-editors. This approach allows us to give the GeoLink users a view on always up-to-date gis-data, immediatly getting the changes the editors have posted into the database. Sharing the database with editors has proven to be a good choice, and gives us a fairly good performance in the viewing solution. The environment runs smoothly and doesn't require much maintenance.

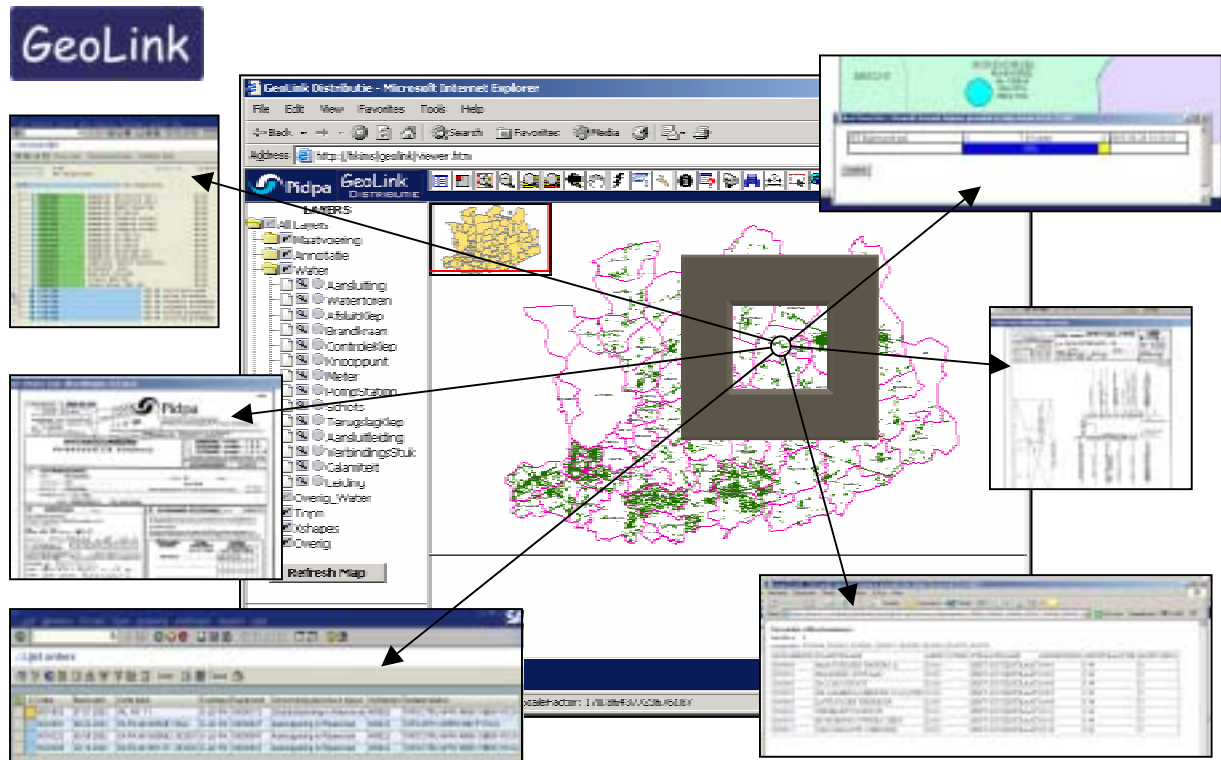
GeoLink offers the flexibility to use the interface with different sets of information. The first version we created was GeoLink Distribution, showing all water distribution network data. But the same basic structure is also used for a water production based site focussing more on an overview map of the complete area displaying water production centers, watertowers, pumping stations etc.

Starting with ArcIMS we faced 3 challenges in gis-functionality :

- **Symbology** : our water distribution network is represented with a complex set of symbols and classifications. On top of that we use a number of 'special' features like rotated symbols, annotations and dimensioning. Using the ArcMap server extension has proven to be a bit complex in the beginning due to an edit-environment with over 60 layers, but once a basis .mxd file was generated, maintenance became easy. We just need to adjust the view settings in ArcMap, save a new .mxd file and use this to refresh the ArcIMS service.
- **Raster data** : our GIS environment consists of a seamless combination of raster and vector data. A complex hybrid situation that is not always easy to get displayed correctly. But with the ArcMap server extension we can now use the same image catalogs as in ArcMap.
- **Printing** : although we try to convince users to access data as much on screen as possible, we have a lot of field crews that still require a printout to get a geographic view of the location where they have to work. Because we still use a lot of raster data, printing in ArcIMS is limited to A4 or A3 size sheets. Larger printouts caused us to run into an ArcIMS limitation with 1-bit raster data. As we move to more and more full-vector areas this problem is fading away.

## GIS-centric strategy : linking GeoLink with other key IT systems

Pidpa is very much aware of the fact that a lot of data used throughout the company can be referenced to a geographic location like a street, connection point, infrastructure, water main, etc. Imagine how much GIS can help to immediately pinpoint an exact location while creating a new SAP maintenance order or quickly determine the location of a problem in the network (e.g. a ruptured main), and subsequently create a list of the customers that will be affected. Merely two examples of a wide range of logical associations in information that users make in their everyday work. With GeoLink, we can disclose GIS functionality to technical as well as non-technical departments and link geographic information to corresponding information within many other company information systems like SAP, CIS, SCADA or our intranet archive.



The theoretical GIS-SAP link was conceived in an early stage of the GIS project years ago, but actual development was postponed till 2003. We started with an intensive search, looking for a generic interface between ESRI GIS and SAP software, specifically for the modules PM and PS as a start. An intensive research process learned us that there are some solutions to integrate GIS and ERP environments like SAP through commercial products like ArcFM Designer from Miner&Miner. But after some discussions with people at SAP, ESRI and independent consultants, we decided this would get very complex and a costly long term project. The focus kept turning to creating records in SAP from GIS and the other way around, something that would result in a solution that could be used by gis-editors, while it



were the large group of gis-viewers that would benefit the most from combining geographic and other data. At that time starting a large-scale GIS and SAP edit integration project and redrawing complete workflows wasn't possible due to limited resources. So we changed course and decided to look at it from a pragmatic point of view, going one step at a time to accomplish quick wins.

We started out with defining business scenario's by talking to SAP and GIS key-users in our distribution department. Workprocesses where a link between gis and other information systems could generate almost immediate benefits, were documented. Resulting in 8 business scenario's that were selected for development. A small team of IT and functional people started working on this, developing the interfaces one by one. The link between GIS and SAP was the most complex, and took one of our technical SAP specialists quite some time to research, but once the road was clear a generic interface to call the SAPGui with possibility to pass parameters was developed. Instead of trying to implement custom SAP interface components in ArcMap, the GeoLink ArcIMS application was used as a 'portal' environment from which the SAPGui could be started.

#### Challenges faced in the GIS-SAP link :

- **SAP - permissions :** the GeoLink environment is available to everyone within the company, without any restrictions or risk of uncontrolled data changes. The SAPGui on the other hand, allows users to access and change information, a powerful functionality that requires good permission management. So when calling the SAPGui we had to find a way to let users log into SAP with their own userid to get the correct permissions according to their clearance level. The difficulty was to make this possible automatically through a single-signon principle, using the windows login to access SAP to make the interface fast and very straightforward. Security is important to maintain, but you can't bother users with too many login screens.
- **Roll-out :** the interface between GIS and SAP is accomplished using the SAP DCOM connector. A component that needs to be installed on every client PC locally. It was a challenge to get this connector and the interface .dll pushed to everyone of over 200 client PC's throughout the network overnight.
- **SAPGui starting point :** when calling the SAPGui, it defaults to the user menu where the preferred transaction can be chosen. But when starting from GeoLink, a user wants to go directly to the needed transaction using the parameters from GIS to display the desired data. Being able to do this, is a huge part of the benefit of the GIS-SAP interface. This is something we had to include in the interface code.
- **Browser application / client-server application :** GeoLink runs in a browser, while SapGui is a regular client-server application. Two very different environments seen from a technical point of view, which unavoidably bring security issues and application control issues when calling one application from the other. These issues could be handled because we are working in an enclosed intranet environment, allowing us to manage security with a fair amount of flexibility. Working in an internet environment would complicate this and require more complex measures to ensure security. In time the expectance is that there will also be a browser implementation of the SAPGui making the interfacing easier.

## GeoLink interfaces

### Interface 1 & 2 : GIS → SAP - retrieve maintenance orders & project information

#### Background

12.000 km of water distribution network, requires quit a bit of maintenance by a number of maintenance crews. For each work that needs to be done, whether it being a planned maintenance or swift action after notification of a problem, a maintenance order is always created in SAP PM. This yearly results in a large amount of maintenance orders, that all have a reference to a location that is maintained by adding a connection number as a partner in each maintenance order. Larger projects are maintained in the SAP PS module, where for each project also a connection number is entered as a partner.

#### GIS features : connection , streetname

- Identifier attribute : connection number
- References to SAP where used as partner in a PM workorder or PS project

The screenshot displays the GeoLink GIS interface on the left, showing a map of a street network with a highlighted area. The SAP interface on the right shows a table of maintenance orders with the following data:

Partner	Partner-adres	Order-OT	So. project	Lotstat	Systemstatu	Order
8-84-281-02	2004-05-01	2004-05-25	011	010		11
8-84-281-03	2004-05-27	2004-05-25	011	010		11
8-84-281-04	2004-05-07	2004-05-07	011	010	010	11
8-84-281-05	2004-05-16	2004-12-16	011	010		11
8-84-281-06	2004-01-13	2004-01-13	011	010	010	11
8-84-281-07	2004-12-08	2004-12-08	011	010	010	11
8-84-281-08	2004-05-08	2004-05-08	011	010		11

## **Operational use**

A user can select one or more connection points in the GeoLink application, after which a SAP1 button is available in the select window to start the SAPGui. A report containing a list of maintenance orders and projects that reference to these connection points can be displayed. The identifier that is being used is a unique connection number, that is present as an attribute of the connection feature in GIS, and also present as a partner in a SAP maintenance order or project.

It is also possible to work on a more global level of street. Every streetname feature in GIS has an attribute containing a unique street connection number (grouping individual connection numbers). This allows the user to select one or more streets, and retrieve a SAP-report that displays all maintenance orders in those streets and an overview of larger PS projects. The SAP report was custom created to combine PM and PS data, into a clear user-friendly overview for the end user. In the report, the users can select the order of project of interest, and retrieve detailed information about it in the SAPGui interface.

### Interface 3 : GIS → SAP - retrieve functional location information

## **Background**

Pidpa is a utility company with a lot of infrastructure throughout the distribution area. There are two major office buildings, but also a lot of water towers, pumping stations and water production centers that all have a functional location in SAP. This allows us to efficiently maintain a huge amount of data referring to infrastructures, that's available through a complex tree of functional locations and equipments. A lot of these elements are also represented in GIS, so by adding the functional location ID as a feature attribute, a link with SAP can be made.

## **GIS features : watertower, pumping station, WPC, streetname,...**

- Identifier attribute : functional location
- References to SAP functional location

## **Operational use**

Starting from the GeoLink application, the user selects an infrastructure and by clicking on the SAP3 functional location button, the SAPGui is started in transaction IH01 and the functional location information of the selected element is displayed on screen. This allows users that typically are working in GIS, to quickly get detailed information about a functional location by passing parameters from GIS to SAPGui.

In addition it is also possible to use a SAP3 button on the toolbar that works similar to the default hyperlink function. This allows the user to click on an infrastructure in the data window and launch the SAPGui to display detailed functional location information.

## Interface 4 : GIS → SAP - retrieve maintenance orders, linked to calamity point

### Background

When a problem occurs in the water distribution network, the dispatchers are the first to be notified to take the necessary actions to solve the problem and limit any interference in the water flow. Typically in these situations a SAP maintenance order is created and a crew is immediately dispatched to the location to solve the problem. After the job is done an evaluation is made as to the cause of the problem. When it's a problem due to a structural problem on a water main, the dispatcher can decide that the problem should be marked as a calamity point in GIS, to mark network-locations that had structural problems.

This allows us to detect groupings of structural problems over time and take appropriate measures to renew network segments. But not all maintenance orders will be registered as calamity points, e.g. when a contractor causes a breach in a water main, this is only an unfortunate accident, not directly related to the integrity of the pipe.

### GIS feature : calamity point

- Identifier attribute : workorderid
- References to SAP PM maintenance order

The screenshot shows the GeoLink GIS interface. On the left, there is a 'LAYERS' panel with various map layers like 'Maatvoering', 'Water', 'Aansluiting', etc. The main map area displays a network of pipes and structures. A 'SAP' window is overlaid on the map, titled 'Service- en OH-orders weergeven en w: Lijst orders'. This window contains a table with the following data:

Order	St	Soortstart	korte tekst
5005478	ZO.	2002-03-13	na lek
5005819	ZO.	2002-03-18	na rk herstellen lek afsluiter - pakking

Below the map, there is a 'Calamiteit' table with the following data:

Pos	WERKORDERID	WERKORDERID	STATUS	WERKORDERID	WERKORDERID	WERKORDERID	WERKORDERID	WERKORDERID	WERKORDERID
1	PI2FA	5005478	gabri	Fr, 27 Feb 2004 15:10:46	gabri	Fr, 27 Feb 2004 15:02:04			
2	PI2FA	5005819	gabri	Fr, 27 Feb 2004 15:03:00	gabri	Fr, 27 Feb 2004 15:02:00			
3	PI2FA	5005819	gabri	Fr, 27 Feb 2004 15:10:53	gabri	Fr, 27 Feb 2004 15:03:00			

## **Operational use**

The user will select one or more calamity points in a certain area, after which he can use the SAP4 button to start the SAPGui. In this case the SAPGui is started in PM transaction IW39, using the workorderid attributes from GIS as a selection criteria. A list of maintenance orders is shown, giving the user detailed information about the exact circumstances of the calamity.

Currently the number of calamity points is limited because we only started entering calamities recently, but in time this data will be very valuable for network integrity analysis. This data can be used to assist management in making decisions in regard to renewal of water mains.

### Interface 5 : GIS→ CIS - retrieve scanned connection schematic

#### **Background**

Pidpa has over 450.000 connections, of which in the past a sketch on paper was made to represent how the connection was constructed. These A4 size sketches have all been scanned and registered in a CIS intranet-archive that can be accessed in a browser. Based on a connection number, the detailed connection sketch can be retrieved.

#### **GIS feature : connection**

- Identifier attribute : connection number
- References to CIS intranet environment, uniquely identifying a connection.

#### **Operational use**

Starting from the GeoLink application, a user can select the connections layer and use the default ArcIMS hyperlink tool. By clicking on a connection with this tool, the connection number is retrieved and passed as a parameter in the URL to the intranet archive. This results in a list with available scanned documents containing detailed historical information. Since the CIS archive is also available in a browser application, this interface was really easy to get operational. Only a matter of minutes.

Working between two browser-environments has the advantage that also the link from the CIS-archive to the ArcIMS Geolink application was easy to create. When a user accesses information about a connection directly in the CIS archive, he can use a hyperlink to start GeoLink and immediately zoom in to the correct street.

## Interface 6 : GIS → CIS - retrieve customer information

### Background

Pidpa currently has a mainframe based CIS, containing detailed customer information. This information is accessible through an ODBC connection to the central CIS-database, allowing other information systems to interface with this environment based mainly on the unique connection number.

### GIS features : connection, streetname

- Identifier attribute : connection number
- References to CIS mainframe uniquely identifying a connection.

The screenshot displays the GeoLink GIS interface. On the left, a 'LAYERS' panel lists various map layers such as 'Maatvoering', 'Aansluiting', 'Waterboren', 'Afsluitklep', 'Brandklep', 'Controleklep', 'Knooppunt', 'Mole', 'Pompstation', 'Schets', 'Tweugslagklep', 'Aansluitleiding', 'Verbindingsklep', 'Calamiteit', 'Leiding', 'Overleg\_Water', 'Topo', 'Xshapes', and 'Overleg'. The main map area shows a street layout with 'MOLENSTRAAT' labeled. A 'Launch SAP' window is overlaid on the map, displaying a table of customer information. Below the map, a table titled 'Aansluiting' is visible.

AFNAMENR	KLANTNAAM	AFNPGOTNR	STRAATNAAM	AFNHUISNR
305732	ROMBAUT MARTINE	2310	MOLENSTRAAT	0037
842339	ROYENS JOZEF	2310	MOLENSTRAAT	0039
305733	SMITS WILLY	2310	MOLENSTRAAT	0041
851371	BEVERS GUY	2310	MOLENSTRAAT	0048

PKW	AVCELLARYROL	ENABLED	HERREDIET	GEBOUWTECODE	PACLTYPE	INSTALLATIEDATUM	STATUS	RUITNR	WERKIDBERG	STRAATCODE
1	E	1	RASVECT				IVOENR	285 7137-80237 185		
2	D	1	RASVECT				IVOENR	118.702802308018		
3	D	1	RASVECT				IVOENR	118.701003124228		

### Operational use

When construction or maintenance on the network is planned, it is important to get accurate information on the customers that will be affected and need to be notified. Using GIS as a starting point to select one or more streets, this interface allows us to get a detailed list with customer information in an HTML table. The information that's provided in the table depends on an SQL query that is easily adjusted or duplicated to get different sets of customer information. Giving us a very flexible way of accessing and presenting data, that's easily copied and pasted to other applications or used in more advanced further processing like mailing lists.



But the added value of gis really comes out when separate house connections are selected, just selecting the customers that have a connection to the water segment that will be affected. A technique that can only be used on a limited area due to an ongoing raster to vector conversion, but this is the basis for future functionalities where main isolation tracing can assist us in more automatically selecting all connections linked to a specific network segment.

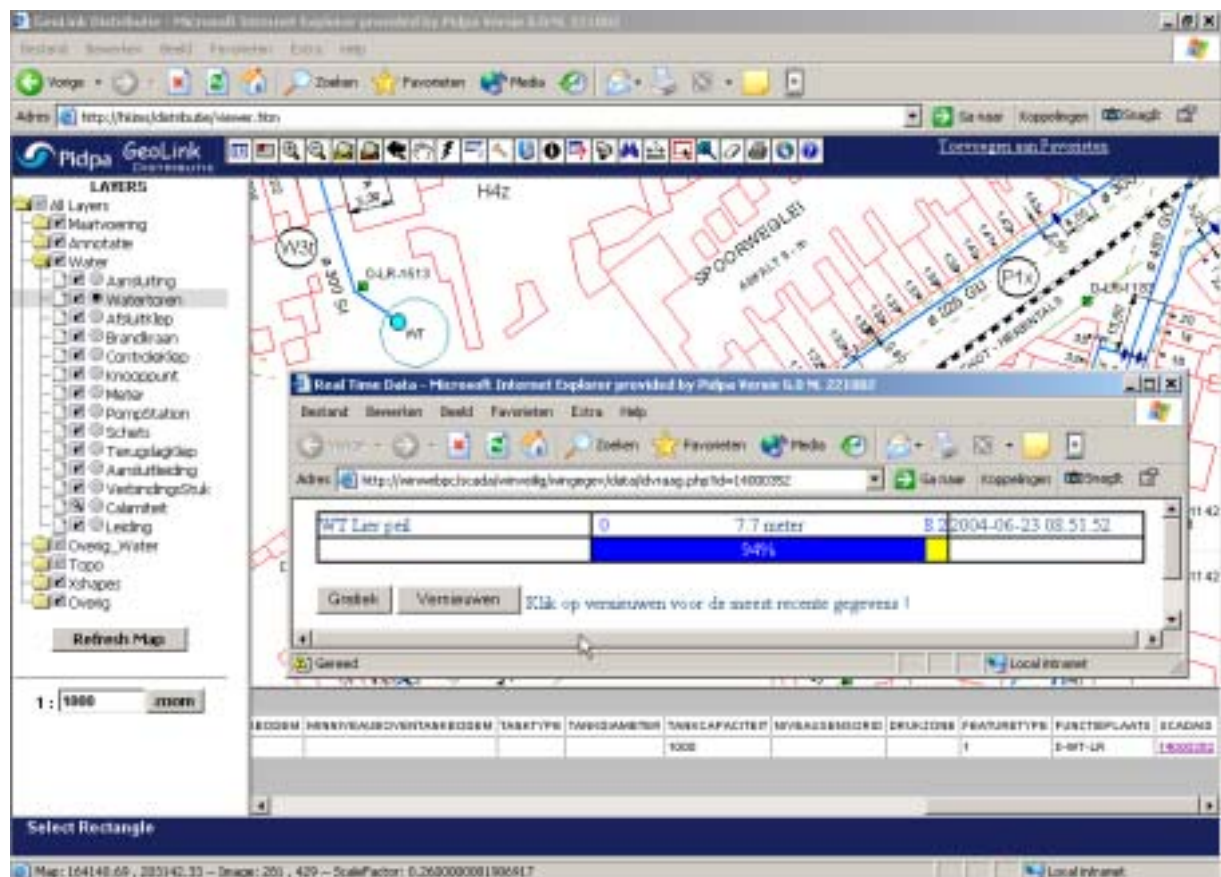
## Interface 7 : GIS → SCADA – retrieve real-time water level information

### Background

Pidpa has an in-house developed SCADA system, that registers a lot of data about as well production as distribution facilities. One of the real-time data collections that is available in SCADA, is the status of watertower levels. Every value that's registered in SCADA refers to a unique SCADAID, which has been added as an attribute to the watertower features in GIS.

### GIS features : watertower, pumping station

- Identifier attribute : SCADAID
- References to SCADA facility



## Operational use

Being it on an overview map showing all watertowers, or just zoomed in to a certain watertower in context of analysis of a network segment, the default hyperlink functionality can be used to click on a water tower and get the actual water level from SCADA. The SCADA information is available through a browser interface on the intranet, which makes the link just a matter of defining a URL with the SCADAID as a parameter. When the SCADA information is retrieved, also an overview graph of the last 24h is available.

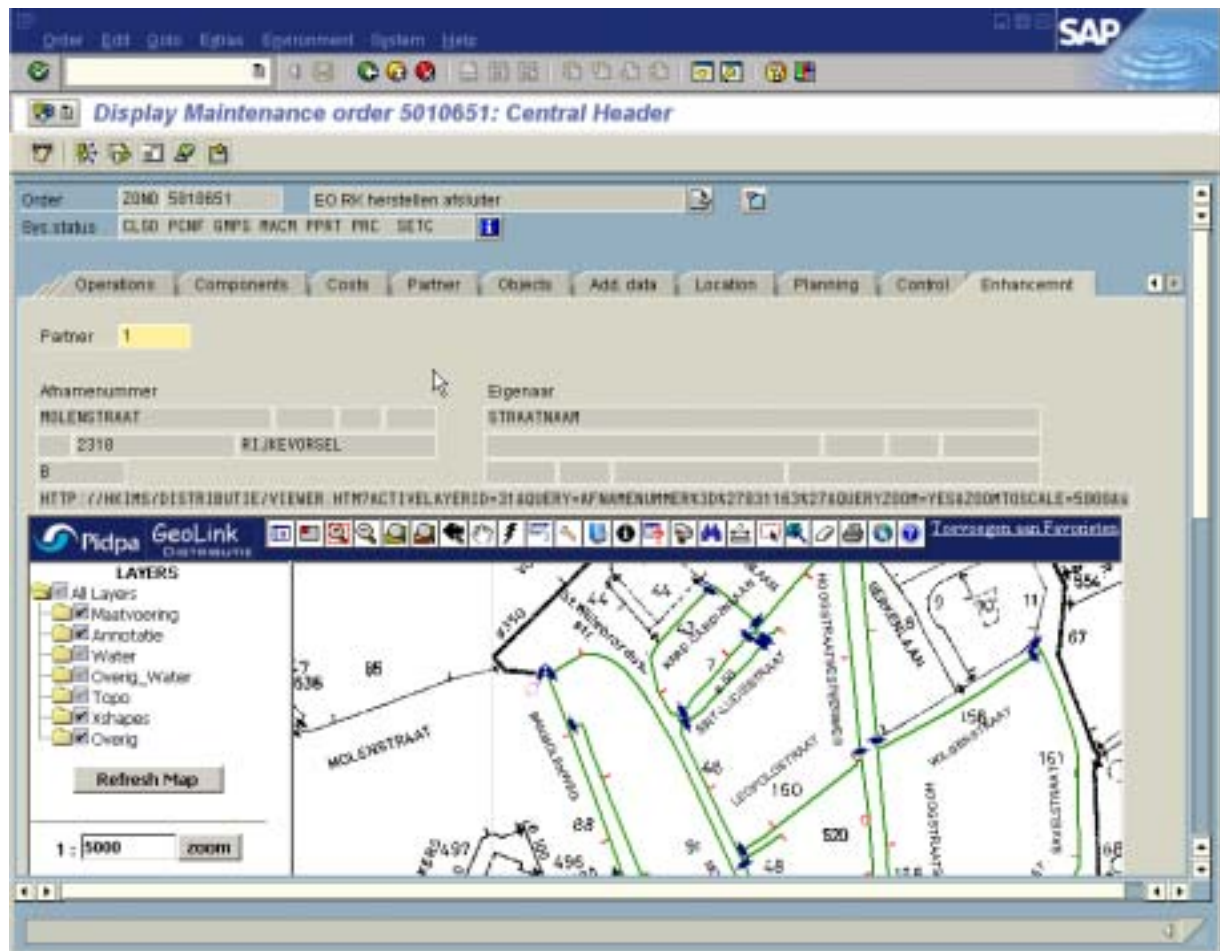
### Interface 8 : SAP → GIS – zoom to partner in GIS, within SAPGui

## Background

Often people are working directly in SAP PM module with maintenance orders. Each maintenance order contains partner information that refers to a connection. When accessing detailed data on a maintenance order, it is very interesting to also get a geographic view of that location.

## GIS features : connection, streetname

- Identifier attribute : connection number
- References to SAP where used as partner in a PM workorder





## **Operational use**

When a user selects an order in SAP PM module, there is an extra tab sheet that was created using user enhancement IWO10018. On this tab page the SAP HTML control was used that allows us to display the GeoLink application within the SAPGui. The moment the tab sheet is opened, the partner number in the order is retrieved and used in a URL to zoom to the streetname in GeoLink where the connection that is in the sap order is referring to.

This allows users to easily retrieve geographic information inside the SAPGui. The interface currently always on street level connection ID's to zoom to data. In the future, when separate connection information is available everywhere, also more precise localisation will be possible. It's just a matter of waiting for the raster to vector conversion to finish.

### Interface 12 : GIS→ SAP – create maintenance order, starting from GIS feature

#### **Background**

When a maintenance order is created, up until recently the dispatchers started from the SAPGui, and afterwards in GeoLink a printout of the location was created to give to the maintenance crews. But imagine the situation where a call comes in, and the dispatcher retrieves the location in GIS to assess the situation and check whether large construction is active in the neighborhood. To create an order to send a crew to that location with administrative information as well as geographic information, he doesn't need to start SAP separately anymore.

#### **GIS features : connection, streetname**

- Identifier attribute : connection number
- References to SAP where used as partner in a PM workorder

#### **Operational use**

When a call comes in referring to a problem in the distribution network, the call is routed to a dispatcher. According to the directions of the person that is calling, the dispatcher will look up the location and assess the situation there. It could be that a crew is already present and working in the neighborhood being the direct or indirect reason for the call, but it can also be a simple network breach. If there is work going on there, the dispatcher will see a notification of that work. By selecting a street, the dispatcher can retrieve connection information and also start a SAP workorder either on street level or at a specific connection and use the gis and SAP information to dispatch a crew that is closeby.

## The road ahead

We have accomplished a lot of our goals in setting up a powerful gis-edit environment, and a flexible and performant view environment linked to other company information systems. But all this is running on the company intranet, leaving our field crews still mainly with information on paper. Getting these powerful tools to the field-crews, adjusted to their workprocess, is another major challenge we face.

The future goal is to really integrate the field crews workprocesses with the workflow currently present in the office. Instead of giving them information on paper, we want to equip them with a mobile device that can either be a handheld or a tablet PC device, depending on the needed functionality. It is important especially for maintenance crews, that they have an easy means to retrieve water network information. Also the link with SAP is very important in this concept, since all workorders and detailed information therein, find their origin there. We started with an offline testproject for field crews that offers new possibilities to access data, but the real added value will be when they can receive new maintenance orders on-line with a link to gis and zoom in to that location, do the job on location, and give administrative feedback in SAP afterwards. Up until now the limited bandwidth was the most important factor to delay this project, but as new technology is becoming available, the idea to bring standard applications to the field can become a reality.

But this isn't all. As vector data is increasing in GIS, more analysis possibilities become available, supporting management in the decision making process. Also more and more non-technical departments are discovering what GIS is all about and the myriad of possibilities it has to offer. Not only for water network management, but also for more thematic applications. Keyword for the future is further integration, respecting every information systems qualities and specific functionalities, but making this massive amount of information quickly and unambiguously available to the users via an intuitive connection between information systems. GIS can be the glue to make this happen for a utility company...

For more information about the implemented GIS at Pidpa, please feel free to contact us :

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