

# Invantive Composition

## Manual



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# 1 Invantive Composition

Many organizations experience problems with the optimization of the information supply chain. An often occurring optimization problem is the automatic generation of complex documents with structured data from a database or application. Because of the multitude of complex information and deviating rules per jurisdiction employees spend a lot of time in the composing of documents. This manual and repetitive activity causes more erroneous composed documents and brings with it unnecessary employee costs. For organizations that are dealing with different laws and regulations such as insurers, lawyers and health care institutions, the creation of complex documents is a costly and time consuming task. The automatic generation and creation of documents that meet the laws and regulations is a huge challenge for most.

With Invantive Composition you will have a complete solution for the automatic generation of complex documents that meets the laws and regulations. Invantive Composition allows you to easily retrieve information from your database and process it in Microsoft Word. This way, Invantive Composition makes it easy for you to automatically fill in previously created templates with data from your database. For you this means that you can merge data from your administration system such as budget consumption, contract pieces, licenses, prices and other structured data into a personal document. The advantage of this is that with Invantive Composition you can manage and dynamically create documents from the document management system. Which results in an optimized information and communication process.

The automation of your information supply chain with Invantive Composition will bring you advantages such as:

- Optimization of the documenting and communication process.
- Automatically fill precomposed templates in Word.
- Merge unstructured texts in a document.
- Directly open documents in Word that were stored as BLOB or BFILE.
- Internal search engine to search documents on their classification.
- Reduction of erroneously prepared documents and production costs.
- Improved security of company information.
- Real-time database with historical information.

With Invantive Composition you will have a complete solution for the automatic generation of complex documents in Microsoft Word. Invantive Composition easily allows you to automatically retrieve and edit unstructured data from a database or application. By automatically filling precomposed templates with data, you will easily compose complex documents that meet the laws and regulations. This way Invantive Composition optimizes your information supply and yields you a cost reduction. Invantive Composition is standard supplied along with Invantive Vision, Invantive Estate and Invantive Producer. For a personal presentation of Invantive Composition, please contact us.

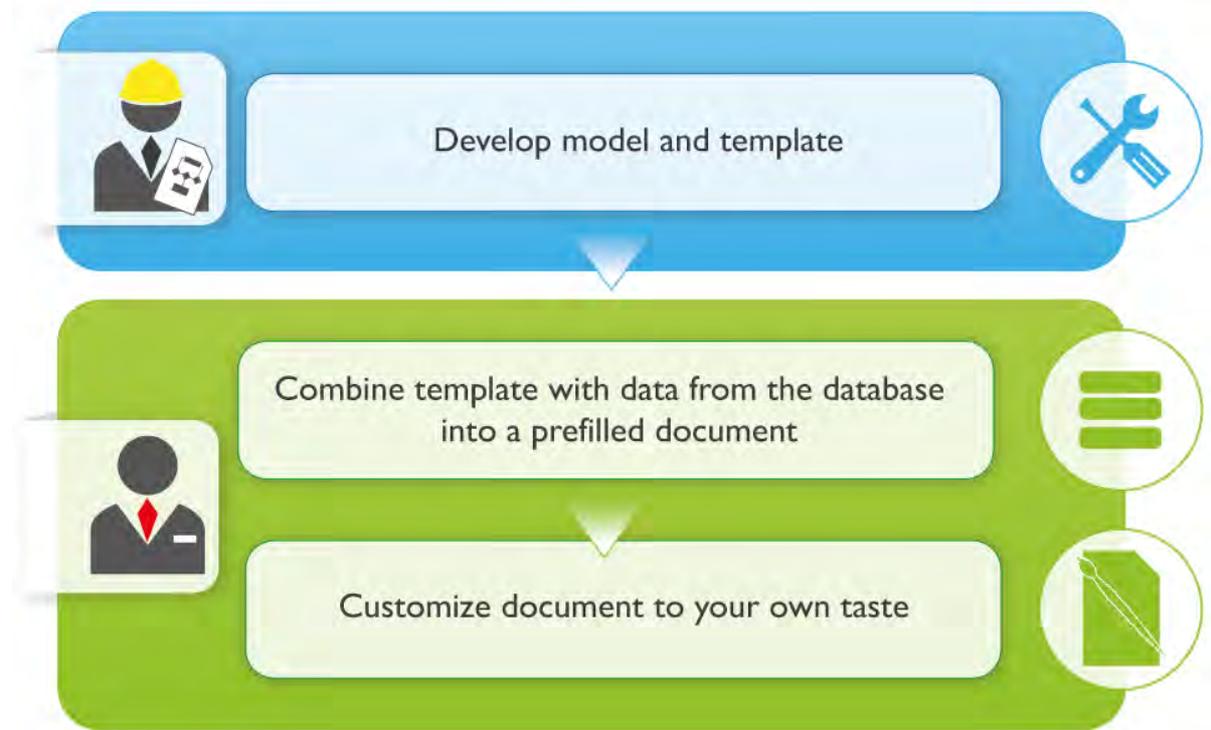
## 1.1 Functioning

The image displays the global working of Invantive Composition. The developer of the template develops the template and an accompanying model in Invantive Composition and saves it as a Word or Powerpoint file. This can be stored in Invantive Estate, Invantive Vision or a different Invantive Producer-based application. But the developer of the template can also store the template on the file system.

The user of the template subsequently opens the template and combines the template with



data from the database. The final result is a Word or PowerPoint document with pre-filled data from the database.



## 1.2 Advantages

The automation of your information supply chain with Invantive Composition will bring you advantages such as:

- Optimization of the documenting and communication process.
- Automatically fill precomposed templates in Word.
- Focus on your business operations, not on the technology, without programming and without software developers.
- Lower time-to-market for the editing of your business operations by decreasing the effort of your IT department.
- Add unstructured texts in a document together with structured data.
- Open documents from Word that were stored in a database, document management system or the file system.
- Internal search engine to search documents on their classification.
- Reduction of erroneously prepared documents and production costs.
- Improved security of company information.

With Invantive Composition you will have a complete solution for the automatic generation of complex documents in Microsoft Word. Invantive Composition easily allows you to automatically retrieve and edit unstructured data from a database or application. By automatically filling precomposed templates with data, you will easily compose complex documents that meet the laws and regulations. This way Invantive Composition optimizes your information supply and yields you a cost reduction. Invantive Composition is standard supplied along with Invantive Vision, Invantive Estate and Invantive Producer.



## 1.3 System Requirements

To use Invantive Composition on your PC or terminal server you will need the following software including licenses:

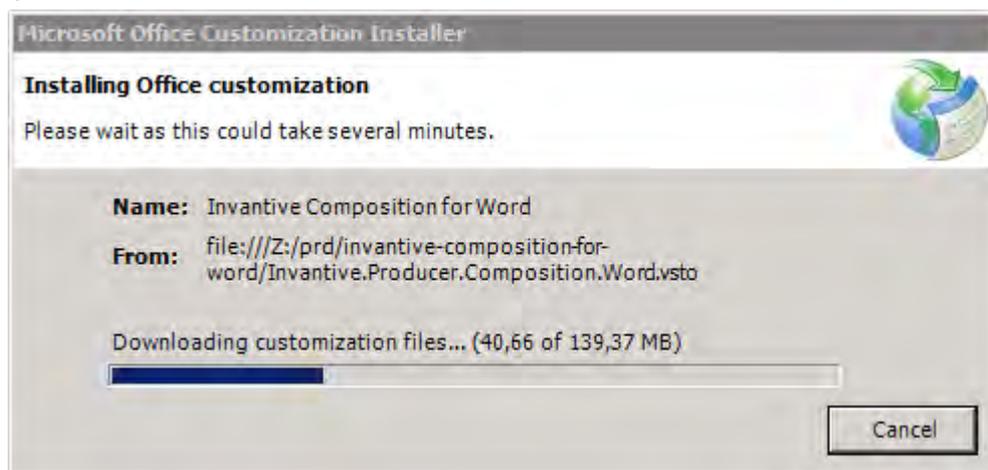
- Microsoft Word 2010 or Microsoft Word 2013 (only on Microsoft Windows).
- Microsoft .NET 4.5.
- Minimum 2 GB of internal memory.
- Screen resolution of 1280 x 1024 or higher.
- User license for used databases and/or business applications.
- Invantive Webservice or local drivers.

Use on Mac, tablet or smartphone is not possible.

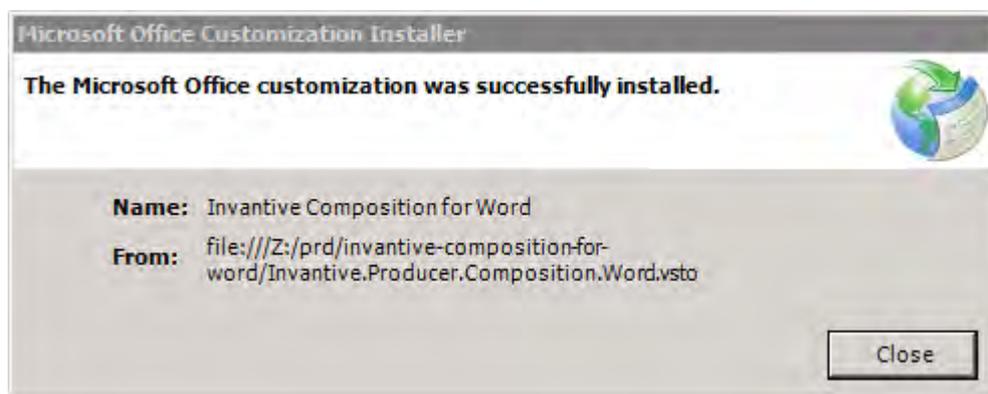
## 1.4 Installation

Invantive Composition is installed on the Windows computers by executing the following steps:

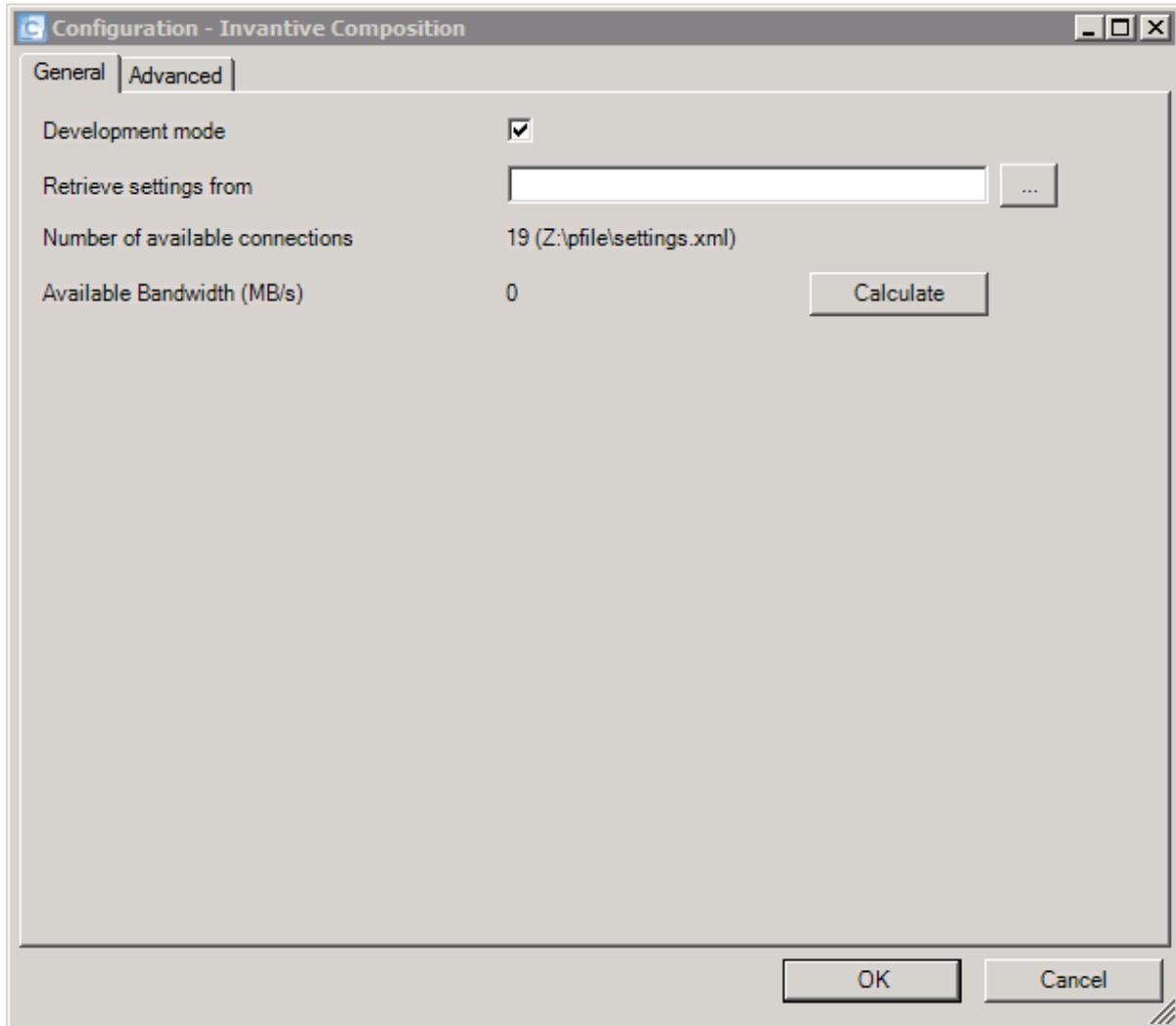
- Run the installation file 'setup.exe' then click on the 'Install' button. The file is in the folder of Invantive Composition for Word and in the folder of Invantive Composition for PowerPoint. You need to do a separate installation for every product. These installation folders are supplied by Invantive.



- When the installation is finished, the screen below is displayed.

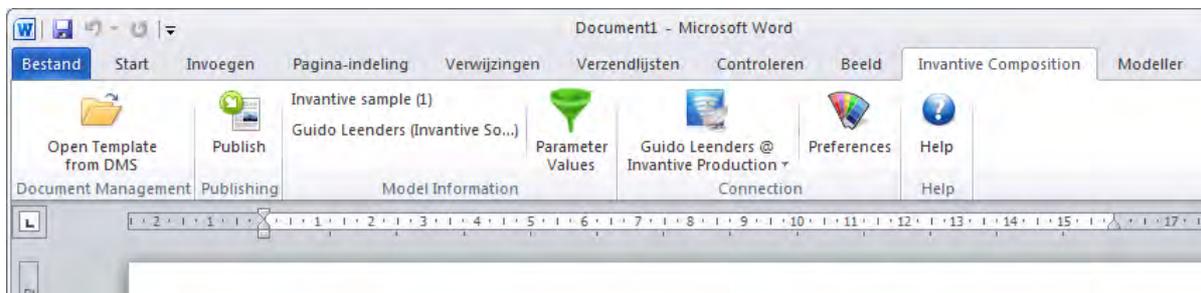


- Then you start Microsoft Word or Microsoft PowerPoint to use Invantive Composition. After launching the Office program this screen is displayed. In this screen, you need to enter the location of the connection file. See [Connection configuration](#) <sup>43</sup> for the explanation of the connection file. Then click on 'OK' to save the change.

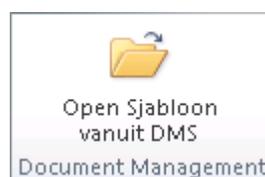


## 1.5 Usage

This paragraph displays an explanation the tab Invantive Composition in the ribbon in Microsoft Word and PowerPoint. The model user can open documents, set values to parameters and compose a document. The following image displays the tab Invantive Composition



### 1.5.1 Document Management

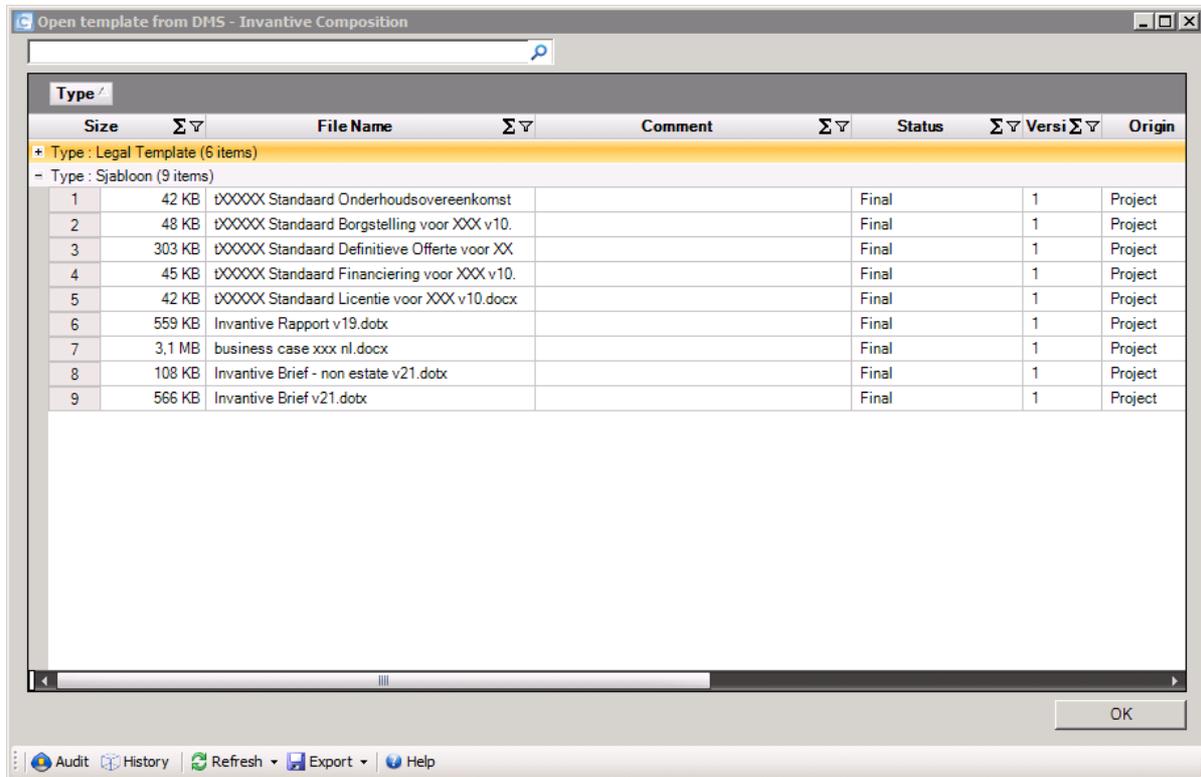


The group 'Document Management' includes a 'Open Template from within DMS'. This al-



allows you to open a pop-up to open documents from within DMS in Invantive Composition. You can of course also open documents in your file system. The advantage of a central DMS is that everyone always has the correct versions, independent of whether the user has access to the disks on his work.

In this screen you will see template documents dependent on your rights. Select the desired template.



Once you have chosen the template, then it will be published immediately. Read more in [Publishing](#) <sup>5</sup>.

### 1.5.2 Publish

The publishing of a template document combines the template with data from the database so that you receive a pre-filled document.

If there are no parameters, then there is nothing else that needs to be done. If there are parameters, then Microsoft Word will first ask which values you wish to use, like for example:



Description	Value
Counterparty	ACME Corp.
Days remaining for final notice	30

If possible the values will immediately be filled with a useful value.

### 1.5.3 Parameter values

The standard parameter values that you enter at [Publishing](#) <sup>5</sup> can also be requested through this button.

### 1.5.4 Connect

Click on the tab Invantive Composition in the ribbon and subsequently click on the button 'Connect' to connect to the server. Enter user name, password and connection and click on 'OK'.



The meaning of the entry fields is:

Username	The username used for connecting to the server.
Passw ord	The passw ord of the user.
Connection	Here you enter the server w ith w hich you w ant to connect.
Store passw ord	The passw ord w ill be stored encrypted, w hen checked.
Connect Automatically	The application automatically connects to the server and the connection screen does not appear, w hen checked.

### 1.5.5 Preferences

In this screen you can set the preferences for Invantive Composition and other Invantive Producer-based products.



Preferences - Invantive Composition

Filter | Preferences | Statistics

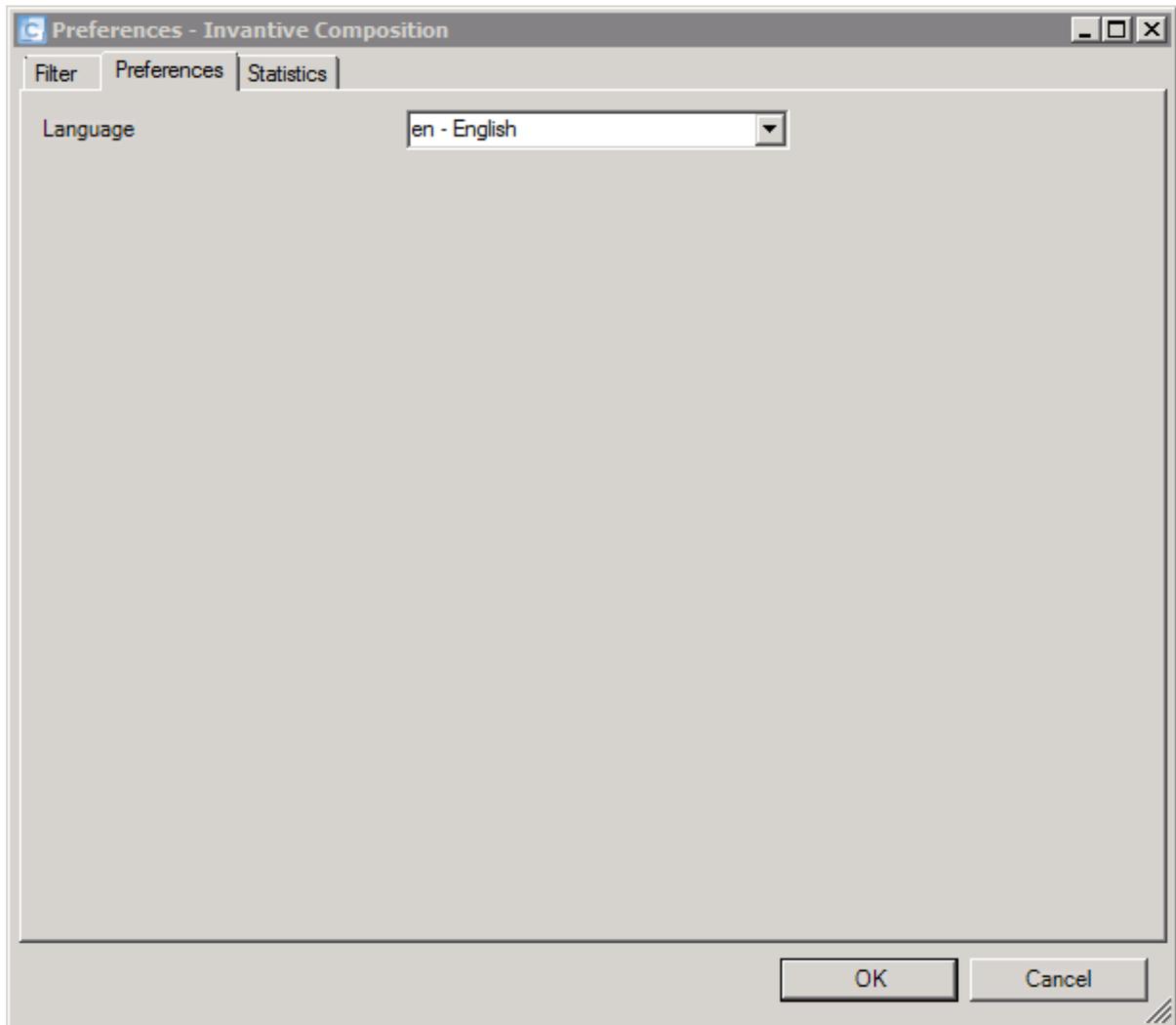
Your name Guido Leenders

Date Reporting  20-06-2013 23:24:07

OK Cancel

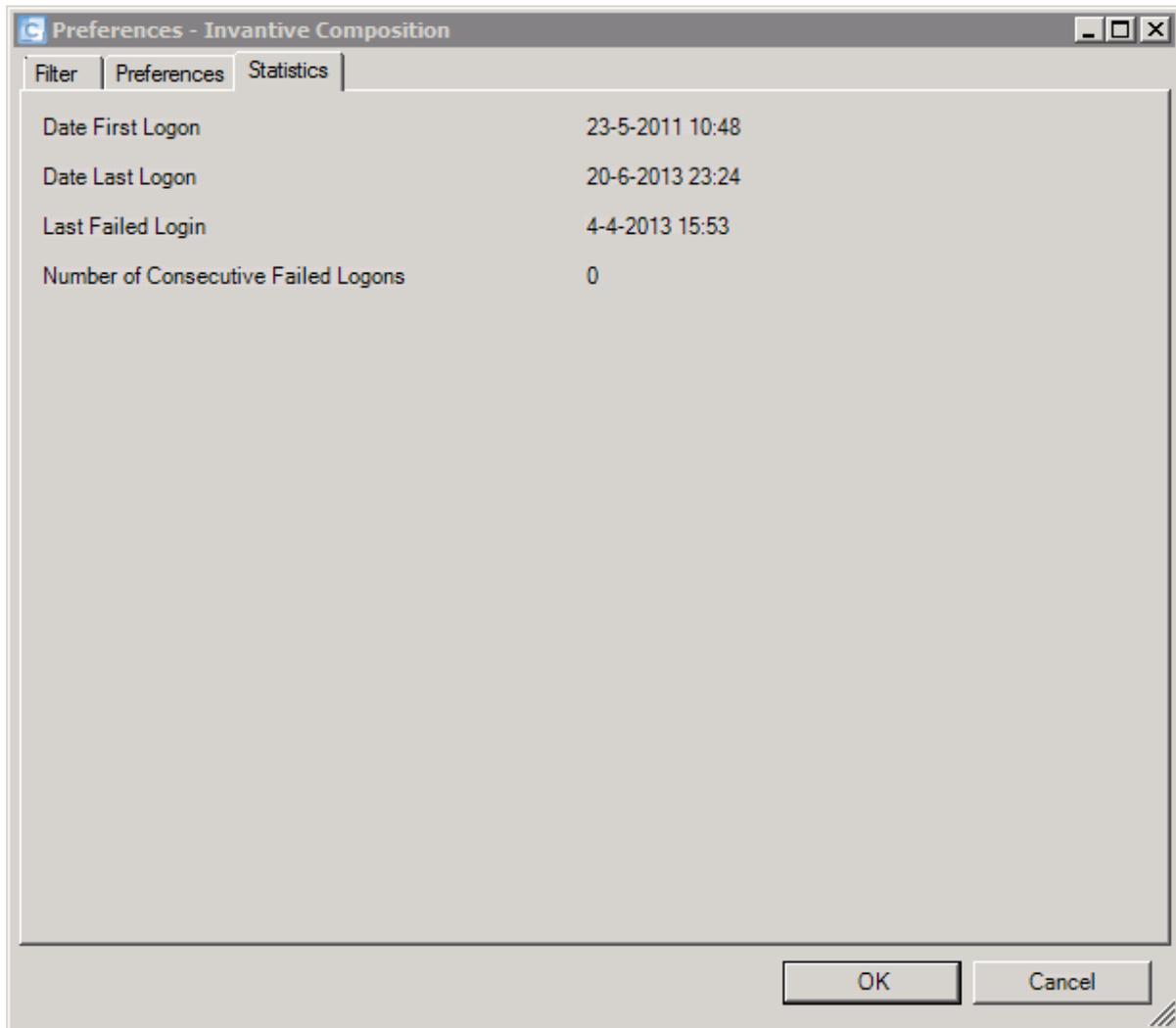
The meaning of the fields in the tab Filter is:

Your name	The name of the user within Invantive Producer.
Report date	Here you can enter the reporting date for which the information on the reports should be shown. This data is activated when checked



The significance of the field in the Preferences tab:

Language	This lists the languages that are available in Invantive Composition. The language shift is immediately processed after closing the screen.
----------	---

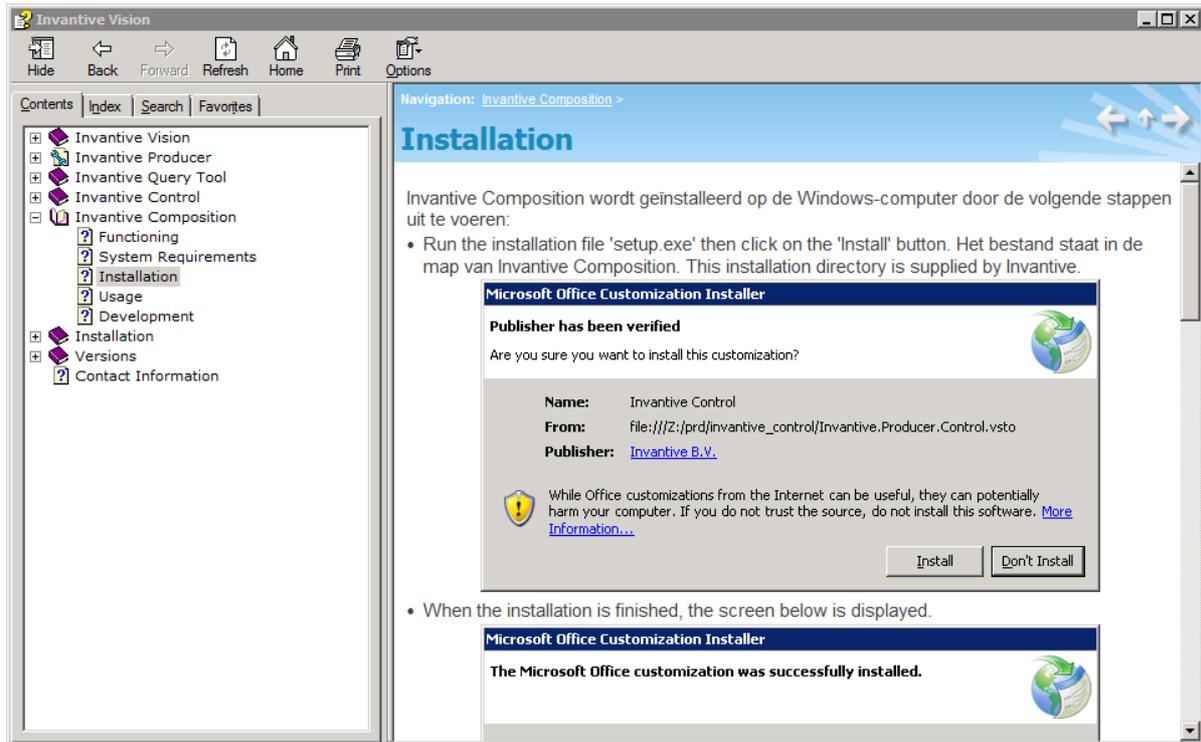


The meaning of the field in the tab Statistics is:

First login date	The time on which you logged in successfully for the first time.
Last login date	The time on which you login successfully for the last time.
Last failed login try	The time on which someone with your login code failed to login for the last time.
Number of Subsequent Failed Login Attempts	The number of subsequent login attempts that have failed.

### 1.5.6 Help

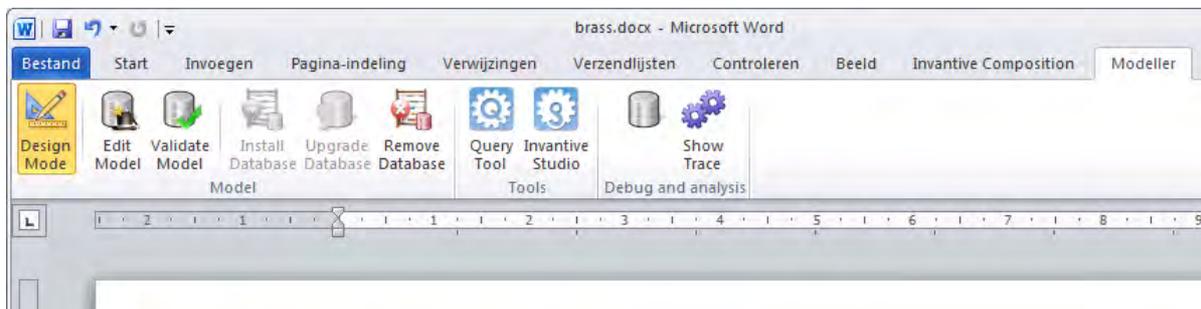
The button 'Help' displays the help function of Invantive Composition.



## 1.6 Modeller

A template consists of pieces of text with in the middle instructions for Invantive Composition.

For the development of a template for Invantive Composition you use instructions in the text and data in a model. For the development you use the resources in the lint "Model":



### 1.6.1 Modeller ribbon

This paragraph shows you an explanation of the tab Invantive Composition in the ribbon Modeller in Microsoft Word and PowerPoint. The template designer can build templates with the accompanying model. The following image shows the tab Modeller:





### 1.6.2 Possible instructions

The following types of instructions are possible:

- `<invantive:value-of/>`: Print value of an expression or cell from a SQL statement.
- `<invantive:foreach>...</invantive:foreach>`: Run through all rows of a SQL statement for the intermediate piece of text.

### 1.6.3 Expressions

An expression can use multiple types of data:

- Parameter value: the value that the user has entered for a parameter as described in the model.
- Variable value: the value of a cell out of a SQL statement.
- Environment variables: the value of information concerning the environment.
- Resource variable: the translation of a translateable resource in the currently chosen language.
- Text: all the remaining.

#### 1.6.3.1 Parameter value

The value of a parameter does not change during the processing of a template. A parameter value has the following notation method:

```
$P{name}
```

Example: the value of the parameter "complaint number" would be requested with:

```
$P{complaint number}
```

#### 1.6.3.2 Variable value

The value of a variable changes during the processing of a template, depending on the foreach where it is filled. The value of a variable has the following notation method:

```
$V{name}
```

Example: the value of the variable "project" can be requested with:

```
$V{project}
```

Multiple foreach can be combined and the same name variable can be retrieved in multiple. You can explicitly request from which foreach you would like to retrieve the value of a variable by explicitly referring to the label of that foreach with the following notation method:

```
$V{label.name}
```

Example: the value of the variable "project" in the foreach with the label "head" can be requested with:

```
$V{hoofd.project}
```

#### 1.6.3.3 Environment value

The value of an environment variable does not change during the processing of a template. The value of an environment variable has the following notation method:

```
$E{groep:naam}
```

There are a limited number of environment variables you can use:



Group	Variable	Meaning	Example
system	date	Date of the work station, displayed in the regional settings (short date format).	31-12-2013
	time	Time of the work station, displayed in the regional settings (short time format)	23:59
	datetime	Date and time of the work station, displayed in the regional settings (short date and time format)	31-12-2013 23:59
	user	Login code of the user on the work station.	john_doe
document	name	Name of the document.	Document1.docx
	location	Location in the file system of the document, including the name of the document.	c:\temp\Document1.docx
	path	Path in the file system of the document, excluding the name of the document.	c:\temp\
database	user	Login code of the user on the database.	u373984

#### 1.6.3.4 Resource value

All Invantive products are multilingual. You can therefore request a text with a resource that displays the message in the current language. You can also define big text blocks in advance with resources and replace them in one single go.

The value of a resource variable does not change during the processing of a template. A resource has the following notation method:

```
$R{resource}
```

Example: the value of the resource "itgen\_composition" can be requested with:

```
$R{itgen_composition}
```

#### 1.6.4 <invantive:value-of/>

With <invantive:value-of/> you can request the value of an expression.

Several examples of <invantive:value-of/>:

- <invantive:value-of expression="\$P{p\_pgp\_code}" />: delivers the value of the parameter p\_pgp\_code.



- `<invantive:value-of expression="$F{pjt.pjt_code}"/>`: supplies the current value of the cell in the column `pjt_code` of the SQL statement with label `pjt`. The use of `$F{}` is only useful if it happens within a [<invantive:foreach>](#)<sup>[14]</sup>.
- `<invantive:value-of expression="Hello world!"/>`: supplies the mentioned text.
- The use of `query_label` is optional; if it is not used then the last determined value is used. This is comparable with variable scoping in programming languages.

## Layout Parameters

The layout of the expression can be influenced with the following parameters:

- `casing`: use capitalization.

## Use Casing

With "casing" you can change the capitalization of an expression. This can be used to display the same fields with capitals in parts of the document and in other places with lower case. Of course you can also do this by adjusting the SQL query.

The possible values of casing are:

- "Normal": replace nothing to the letters..
- "LowerCase": replace all letters with the associated smaller case.
- "UpperCase": replace all letters by the associated upper case.
- "InitCaps": replace the first letter of every word by an upper case letter and replace the rest with lower case letters.

## Meaning in Header and Footer

The value in a header or footer is equal to the first filled value that the expression has at the beginning of the current section.

### 1.6.5 <invantive:foreach>...</invantive:foreach>

With `<invantive:foreach>...</invantive:foreach>` you can repeat a sequence, every time again with different values for the variables.

An example of `<invantive:foreach>...</invantive:foreach>`:

- `<invantive:foreach query="select gbr_naam from bubs_gebruikers_v" />`: provides successively each person's name from the system.
- `<invantive:foreach query="select gbr_naam from bubs_gebruikers_v where gbr_naam = $P{p_naam} order by gbr_naam" />`: provides successively every person's name from the system, which is equal to the value of the parameter `p_naam`, sorted by name.
- `<invantive:foreach label="gbr" query="select gbr_naam from bubs_gebruikers_v" />`: provides successively each person's name from the system. These data are available through `<invantive:value-of>` with the use of the attribute `querylabel`.

The queries you can use `'*` to retrieve all fields. With `<invantive:value-of>` you still



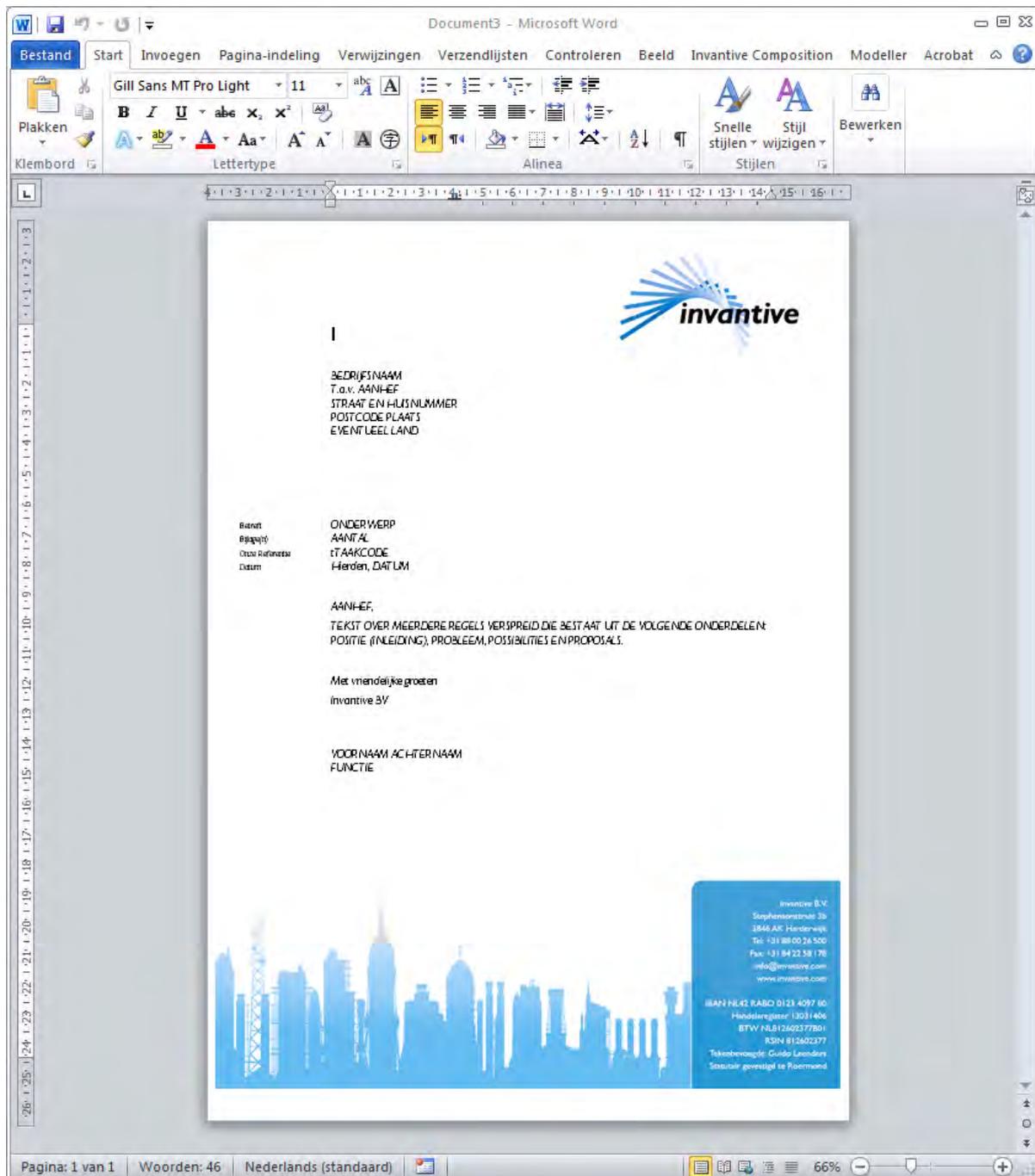
need to specify the exact field name.

### 1.6.6 Example series letter

The following example shows you how to compose a series letter that can be sent to all employees of the company with an overview of their used leave hours.

Perform the following steps:

- Start Microsoft Word.
- Log in to Invantive Composition as described in [Connect](#) <sup>6</sup>.
- Make a new file, for example on the basis of the prescribed layout for letters within the company. The end result might be for example:





- Set the fixed text in the letter. In this example we assume that we are giving an employee an overview of his recorded leave hours of the last year.
- Be careful not to use any unnecessary line breaks or any double spaces. Use styles.
- The final template without information from the database is:

VOORLETTERS TUSSENVOEGSEL ACHTERNAAM  
STRAAT EN HUISNUMMER  
POSTCODE PLAATS  
EVENTUEEL LAND

*Betreft* Opgenomen verlofuren JAAR door NAAM  
*Bijlage(n)* 0  
*Onze Referentie* REFERENTIE  
*Datum* Harderwijk, DATUM

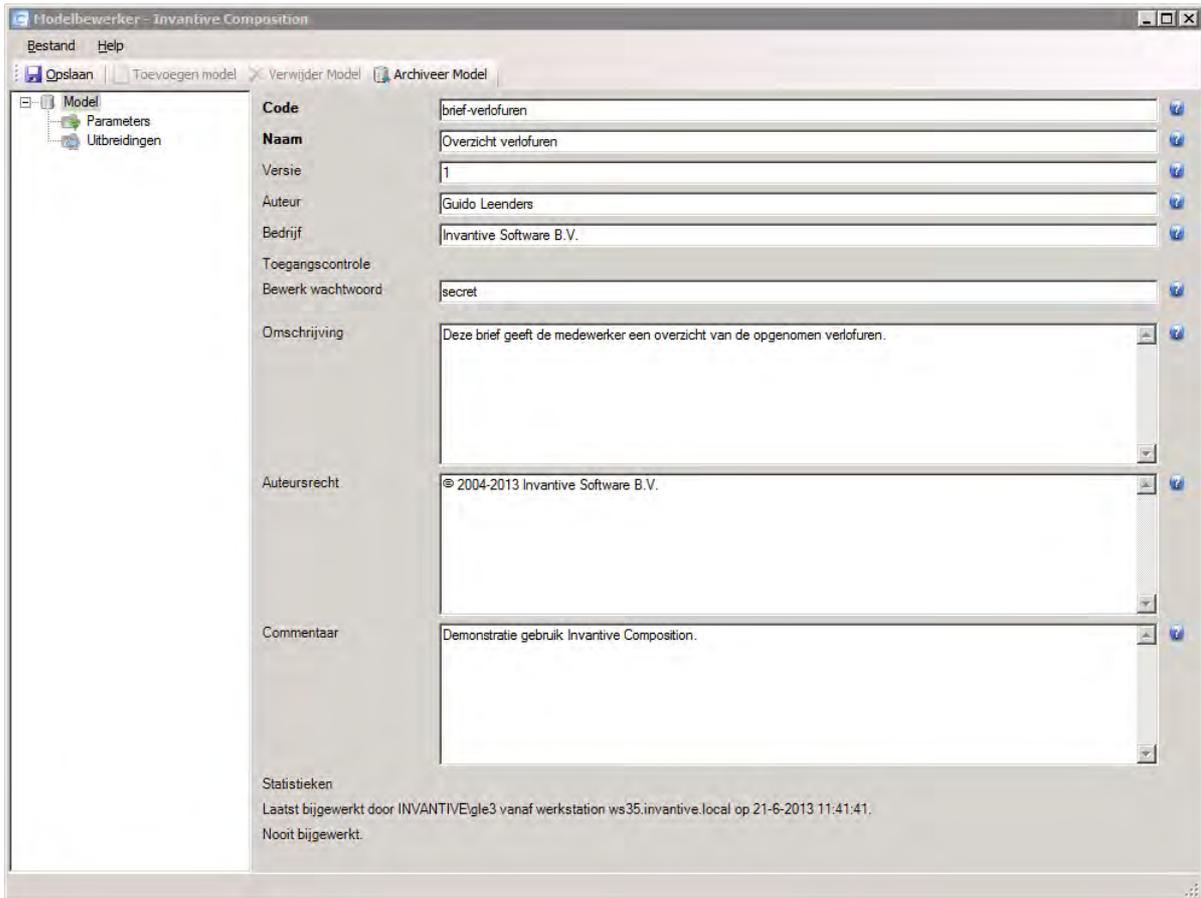
AANHEF,  
Voor uw werkzaamheden binnen JURIDISCHE-ENTITEIT bouwt u het recht op verlof op. Als u verlof opneemt dan komt dit ten laste van de opgebouwde verlofuren. Met deze brief geven wij u een overzicht van de opgenomen verlofuren in de afgelopen zes maanden.

TABEL

Met vriendelijke groeten  
WERKGEVER-AFZENDER

VOORNAAM ACHTERNAAM  
FUNCTIE

- Click on 'Install Database' in the Modeller ribbon. This changes the document in a template for Invantive Composition.
- With the button 'Design Modus' you shift between being able to edit or not being able to edit the model using 'Edit Model'.
- Click on 'Edit Model' and adjust the model as follows:



- You wish to be able to print out the letter just for one specific employee which you enter at the start.
- That is why you need to enter a parameter as follows in the model:



- Then finally choose 'Save' and close the model editor.
- You can now leave the design modus by clicking on the button 'Design Modus' one more time.
- Next we will add instructions to add data to the letter when the template is opened.
- Be careful: Microsoft Word, depending on your settings, changes the straight double quote (") in open or close quotes. If this happens, press Ctrl+Z (undo) immediately; you will then regain the originally entered straight double quote.
- We will now add the following query lines and parameters to the document. With these rules Invantive Composition will allow you to automatically fill your document with dynamic texts:



- Foreach query rule:

To ensure that the same information layout returns on every document, we add the query line "foreach". This indicates that you want the same information to be applied on every document with the same layout. Within the "foreach" query line you enter all information that you wish to have on the employee. The "foreach" query line looks like this:

```
<invantive:foreach query="select gbr_voornaam || case when gbr_tussenvoegsel is not null then ' ' || gbr_tussenvoegsel end || ' ' || gbr_achternaam gbr_volledige_naam, case when gbr_geslacht_ind='M' then 'heer' else 'mevrouw' end gbr_aanhef_geslacht, gbr_adres_regel_1, gbr_postcode, gbr_plaats, gbr_land, to_char(sysdate, 'dd-mm-yyyy') vandaag, lvr_naam, gbr_baas_functie, gbr_baas_naam, to_char(add_months(sysdate, -6) , 'dd-mm-yyyy') || '-' || to_char(sysdate, 'dd-mm-yyyy') periode, gbr_id from bubs_gebruikers_v where gbr_naam like $P{p_naam_medewerker_patroon} || '%' and lvr_code = '13031406' and gbr_tijdschrijver_vlag = 'Y' order by gbr_naam ">
```

- Now that we have entered the "foreach" query for the document, the different "parameters" for the dynamic filling of the letter need to be added. The first "parameter" that we add is the addressing. This is because this differs for each letter. To automatically add addressing by Invantive Compositions, you add the following "parameters" to the document:

```
<invantive:value-of expression="$F{gbr_volledige_naam}"/>
<invantive:value-of expression="$F{gbr_adres_regel_1}"/>
<invantive:value-of expression="$F{gbr_postcode}"/> <invantive:value-of expression="$F{gbr_plaats}"/>
<invantive:value-of expression="$F{gbr_land}"/>
```

- The next step is the adding of the "parameters" for the salutation and content information of the serial letter. Here you are also dealing with dynamic texts. The "parameters" that you wish to add automatically you place between the continuous text of your document. The implementation then looks as follows:

```
Subject      Recorded leave during the period <invantive:value-of expression="$F{periode}"/> by <invantive:value-of expression="$F{gbr_volledige_naam}"/>
Appendix(es)  0
Our Reference <invantive:value-of expression="$P{p_referentie}"/>
Date      Harderwijk, <invantive:value-of expression="$F{vandaag}"/>
```

- Now that we have added the "parameters" for the salutation we continue with the remainder of the serial letter. The next "parameters" that we add are part of the core of the serial letter. With these "parameters" you ensure the proper mention of the personal data within the letter. By adding the following "parameters" within the ongoing text you allow Invantive Composition to automatically fill the text.

```
Dear <invantive:value-of expression="$F{gbr_aanhef_geslacht}"/> <invantive:value-of expression="$F{gbr_volledige_naam}"/> ,
```

```
For your work activities within <invantive:value-of expression="$F{lvr_
```



naam} "/> you accrue leave entitlement. If you make use of leave time then this will be at the expense of accrued leave hours. With this letter we present you with an overview of the recored leave hours in the recent six months.

- Now that the dynamic texts are automatically added within the serial letter, we add the "parameters" for the leave hours. Because you want to have the same layout for each letter, you again add a "foreach" query line. With this query you retrieve all leave hours from the database and process these by Invantive Composition in the text. The query then looks as follows:

```
<invantive:foreach query="select to_char(uur_uren_inspanning,
'FM90D00') uur_uren_inspanning_c, to_char(uur_datum_start, 'dd-
mm-yyyy') uur_datum_start_c, uur_commentaar from bubs_uren_v
where gbr_id = $F{gbr_id} and pjt_code like 'IVAC%' and uur_da-
tum_start > add_months(sysdate, -6) order by uur_datum_start">
  <invantive:value-of expression="$F{uur_datum_start_c}"/>:
<invantive:value-of expression="$F{uur_uren_inspanning_c}"/>
uur</invantive:foreach>
```

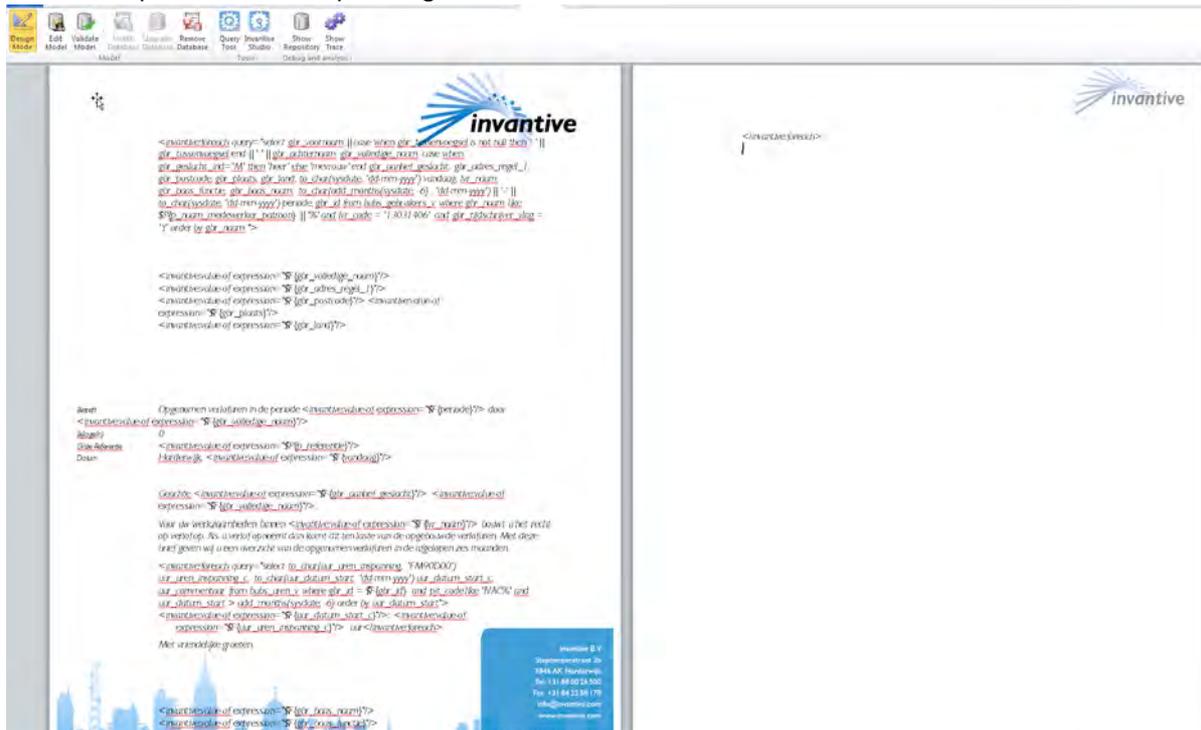
- Now that the leave hours are automatically entered, we close the serial letter with the sender. Here we also make use of "parameters" to automatically fill in the name and function of the sender. We enter the following "parameters":

```
<invantive:value-of expression="$F{gbr_baas_naam}"/>
<invantive:value-of expression="$F{gbr_baas_functie}"/>
```

- Now that all "parameters" have been added, we close the document with the following line:
 

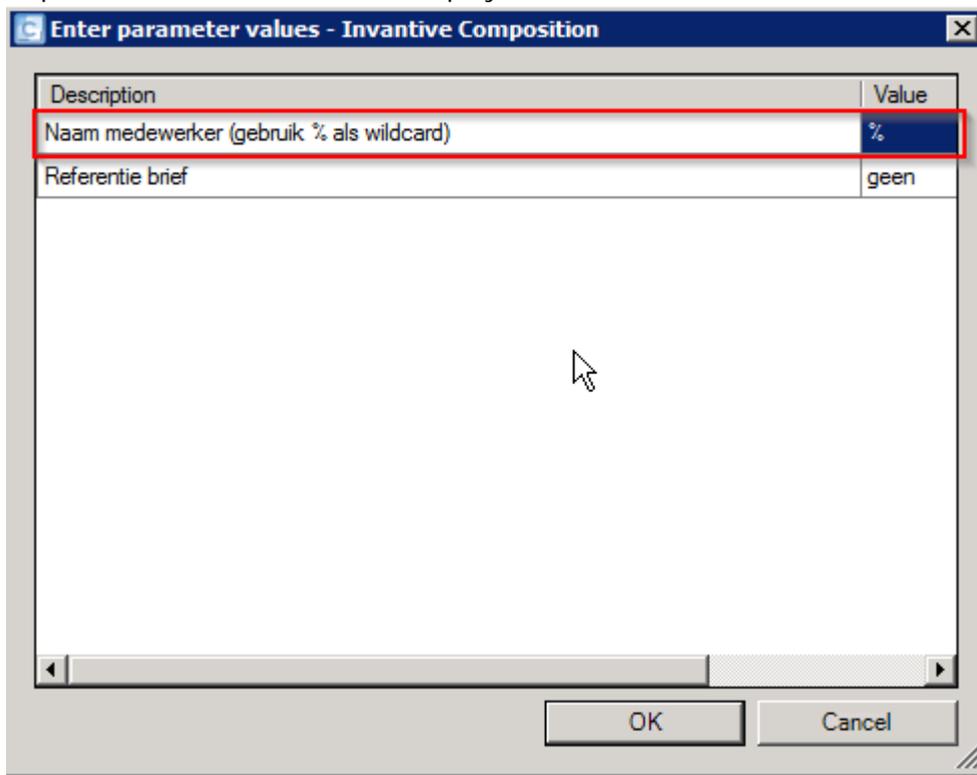
```
</invantive:foreach>
```

- The template for the requesting of the leave hours is now finished and looks as follows:

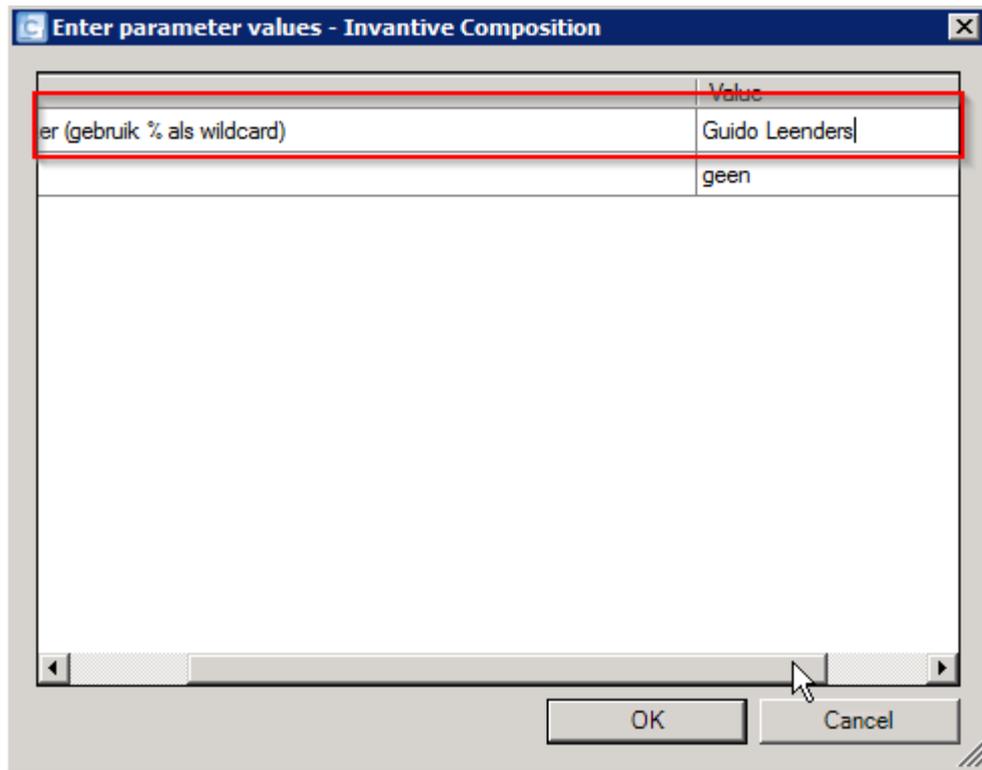




- Now save the template. For this example I will save the template as "voorbeeld-verlofuren-seriebrief" in Word.
- Now the model is saved Invantive Composition will allow you to publish this with a single click. By publishing the template Invantive Composition will retrieve the data from your database and the "parameters" will automatically be filled.
- To request the leave hours of an employee you will proceed as follows.
- Click on "Publish" and let Invantive Composition use the template to fetch the recorded leave.
- Now you see a window appear with "parameters". You will see here the "parameters" name employee and reference letter. This is currently on the setting "wildcard" which means that Invantive Composition does not add reference ( this is different per letter) and requests all leave hours of the employees.



- To request the leave per employee, replace the "%" in "value" for the name of the employee. Do you want a reference? Fill these in as well then. Subsequently, click on "ok" to publish the model.



- Invantive Composition now asks you under which name and on which disc you want to save the document. Choose a name and drive and save the document.
- Now open the document with the requested leave hours. Your document will look as follows:



Guido Leenders  
Stephensonstraat 3b  
3846 AK Harderwijk

Betreft Opgenomen verlofuren in de periode 24-12-2012-24-06-2013 door Guido Leenders  
Bijlage(n) 0  
Onze Referentie geen  
Datum Harderwijk, 24-06-2013

Geachte heer Guido Leenders,

Voor uw werkzaamheden binnen Invantive B.V. bouwt u het recht op verlof op. Als u verlof opneemt dan komt dit ten laste van de opgebouwde verlofuren. Met deze brief geven wij u een overzicht van de opgenomen verlofuren in de afgelopen zes maanden.

18-02-2013: 8,00 uur

19-02-2013: 8,00 uur

20-02-2013: 8,00 uur

21-02-2013: 8,00 uur

06-05-2013: 8,00 uur

07-05-2013: 8,00 uur

08-05-2013: 8,00 uur

Met vriendelijke groeten,

Guido Leenders

Directeur

### 1.6.7 For example contract

The following example shows you how to compile a contract on the basis of data from a process.

Notice that the document that is filled with data from the database can still be edited afterwards! This way Invantive Composition offers totally different possibilities compared to the standard reporting help resources.

## 1.7 Versions

This chapter describes the changes in the application per version.

### 1.7.1 Release 2014 R1

Released: XX-XX-2014.

Invantive Producer: bXX.



Changes and bug fixes:

Number	Type	Product	Description
2145 2	PR	Composition	Invantive Composition niet meer bruikbaar doordat Connect knop ook beveiligd is bij eerste keer gebruiken.

## Installation

- No specialties.

## Implementation

- No specialties.

## 2 Invantive Query Tool

With the Invantive Query Tool working with your data via SQL becomes easy. Invantive Producer makes it possible to edit a real-time data warehouse using SQL. Maintaining integrity and maintaining information security according to ISO 27002. The Invantive Query Tool is an addition to Invantive Producer and derived products such as `products.iv`, `products.ie`, Invantive Control and Invantive Composition.

With the Invantive Query Tool you can:

- Execute SQL-queries and request the results in a table.
- Immediately group, filter and sort the results in the table on the screen.
- Print the results or export them to Adobe PDF, Microsoft Excel or Microsoft XPS.
- Automate processes with assistance from Oracle PL/SQL (only in combination with Oracle RDBMS).
- Retrieve old queries from a file or from the list in the tab "History".
- Connect directly through a native connection for the concerned type database (for example Oracle SQL\*Net for Oracle) or connect through the Invantive Webservice so that you do not have to install database-specific software on a work location.
- Supply the database user with a connection or connect to an already installed Invantive product with associated user codes.
- Retrieve the structure of a table or view.
- Request the output of `dbms_output`, `itgen_output` and `itgen_log` of an Oracle PL/SQL block (only in combination with Oracle RDBMS).
- Retrieve an execution plan ("query plan" or "explain plan") of an Oracle SQL query. (only in combination with Oracle RDBMS)
- Request the trajectory ("Oracle Trace") of a SQL statement (only in combination with Oracle RDBMS).

### 2.1 Learn SQL

More information on what SQL is and how it can be used can be found at: <http://en.wikipedia.org/wiki/SQL>.

The manual at <http://sqlzoo.net> also provides a good insight and in addition allows for inter-



active learning of how you can use SQL to retrieve, edit and create data.

The screenshot shows the SQLzoo.net website interface. At the top, there's a search bar and navigation links. Below that, a table lists countries with columns for name, region, area, population, and gdp. The table data is as follows:

name	region	area	population	gdp
Alghanistan	South Asia	652225	26000000	
Albania	Europe	28726	3200000	6656000000
Algeria	Middle East	2400000	32900000	75012000000
Andorra	Europe	468	64000	

Below the table, there are two example SQL queries and their results:

- The example shows the population of 'France'. Strings should be in 'single quotes'.  
**Show the population of Germany**

```
SELECT population FROM bbc
WHERE name = 'Germany'
```

Submit Query Original

Well Done, that is correct.  
**POPULATION**  
 82500000
- This query shows the population density  $population/area$  for each country where the area is over 5,000,000 km<sup>2</sup>.  
**Show the per capita gdp:  $gdp/population$  for each country where the area is over 5,000,000 km<sup>2</sup>**

```
SELECT name, population/area FROM bbc
WHERE area > 5000000
```

Submit Query Original

Results

The sidebar on the left lists SQL keywords: Quick Ref., SELECT, FUNCTIONS, WHERE, GROUP BY, JOIN, INSERT, UPDATE, DELETE, CREATE TABLE, CREATE VIEW, INDEX, DROP, ALTER TABLE.

## 2.2 Functioning

This paragraph describes the functioning of the Query Tool.

The Query Tool consists of two parts:

- The editor section.
- The output section.

In the following paragraph there are several examples of what you can do with the Invantive Query Tool:

### 2.2.1 Query Tool Examples

- The figure below shows the request by means of a SQL query, of persons grouped by organization.



The screenshot shows the 'Invantive Estate - Query-programma' window. The menu bar includes 'Bestand', 'Bewerken', 'Verbinding', 'Editor', 'Database', 'Venster', and 'Help'. Below the menu is a toolbar with 'Uitvoeren' and 'Exporteren'. The main area contains a SQL query:

```
1 select gbr.gbr_naam persoon
2      , gbr.gbr_functie functie
3      , lvr.lvr_naam organisatiennaam
4      , lvr.lvr_plaats plaats
5 from bubs_gebruikers_v gbr
6 join bubs_leveranciers_v lvr
7 on   gbr.lvr_id = lvr.lvr_id
8 order
9 by   lvr.lvr_naam
```

Below the query is a tabbed interface with 'Resultaten', 'DBMS Uitvoer', 'Uitleggen Plan', 'Spoor', and 'Historie'. The 'Resultaten' tab is active, showing a table with columns 'persoon', 'functie', and 'plaats'. The data is grouped by 'organisatiennaam':

	persoon	functie	plaats
- organisatiennaam : Food and more (1 item)			
1	Born van der	Accountmanager	Amersfoort
- organisatiennaam : Janssen Uitgeversorganisatie (3 items)			
1	Hoef van der	Engineer	Amersfoort
2	Aeilkema	Regiomanager	Amersfoort
3	Dom	Consultant Exact	Amersfoort
+ organisatiennaam : Mekra (1 item)			
+ organisatiennaam : Piet Van Den Herck bna (1 item)			
+ organisatiennaam : QT Design (2 items)			

At the bottom, it indicates '8 Betrokken Rijen' and '39 ms.'.

- Displaying the description of an object (using the F4 key). This corresponds to the Oracle function 'Describe'. The figure below shows the data in the business object persons (bubs\_gebruikers\_v).

The screenshot shows the 'Invantive Estate - Beschrijven : bubs\_gebruikers\_v' window. The 'Kolom' dropdown is set to 'Gegevens'. The main area displays a table with columns: 'gbr\_nk', 'gbr\_aanmeld\_code', 'gbr\_accordeur\_uren\_vlag', 'gbr\_achternaam', 'gbr\_administrateur\_vlag', and 'gbr\_a'. The data is as follows:

	gbr_nk	gbr_aanmeld_code	gbr_accordeur_uren_vlag	gbr_achternaam	gbr_administrateur_vlag	gbr_a
1	Hermans	Hermans	N	Hermans	Y	Gouv.
2	Heunen	Heunen	N	Heunen	N	Klapro
3	Heuvelman	Heuvelman	N	Heuvelman	Y	Lathyr
4	Hoef van der	Hoef van der	Y	Hoef van der	N	Musse
5	Hoekstra	Hoekstra	N	Hoekstra	N	Calan
6	Hoef van	Hoef van	N	Hoef van	N	Keers
7	Houben	Houben	N	Houben	N	Armag
8	Jalkema	Jalkema	Y	Jalkema	N	Louis l
9	Marcel Janssen	Janssen	N	Janssen	N	Dr. Sc
10	Jassen	Jassen	N	Jassen	Y	Wijers
11	Jong de	Jong de	N	Jong de	Y	Lebui
12	Jongen	Jongen	Y	Jongen	N	Kaap l
13	Ketelaars	Ketelaars	N	Ketelaars	N	Fascir
14	Klaassen	Klaassen	Y	Klaassen	N	Brusse
15	Kooman	Kooman	N	Kooman	N	Galva
16	Koopman	Koopman	N	Koopman	N	Prins B
17	Krekelmans	Krekelmans	N	Krekelmans	N	Erepri
18	Kuypers	Kuypers	N	Kuypers	N	Goem
19	Lange de	Lange de	N	Lange de	N	Oude



- The result of the SQL query can be exported to Microsoft Excel, Adobe PDF, Microsoft XPS and can be printed on a printer.

The screenshot shows the 'Invantive Estate - Query-programma' application. The top menu bar includes 'Bestand', 'Bewerken', 'Verbinding', 'Editor', 'Database', 'Venster', and 'Help'. The 'Uitvoeren' menu is open, showing options: 'Exporteer naar Microsoft Excel', 'Exporteer naar Adobe PDF', 'Exporteer naar Microsoft XPS', and 'Afdrukken'. The SQL query in the editor is:

```

1 select
2
3
4
5 from
6 join
7 on gbr.lvr_id = lvr.lvr_id
8 order
9 by lvr.lvr_naam

```

The results pane shows a table with the following data:

	persoon	organisatiename	functie	plaats
1	Born van der	Food and more	Accountmanager	Amersfoort
2	Hoef van der	Janssen Uitgeversorganisatie	Engineer	Amersfoort
3	Aeilkema	Janssen Uitgeversorganisatie	Regiomanager	Amersfoort
4	Dorn	Janssen Uitgeversorganisatie	Consultant Exact	Amersfoort
5	Breukhoven	Mekra	Communicatie	Amersfoort
6	Brouns	Piet Van Den Herck bna	Sr. Channel Manager - General Business	Amsterdam
7	Engel	QT Design	Helpdesk Teamleider	Amersfoort
8	Fasen	QT Design	Account Manager	Amersfoort

At the bottom of the results pane, it indicates '8 Betrokken Rijen' and '39 ms.'.

- The image shows the result of the SQL query in Microsoft Excel.



organisatiennaam	persoon	functie	plaats
organisatiennaam : Food and more (1 item)	Born van der	Accountmanager	Amersfoort
organisatiennaam : Janssen Uitgeversorganisatie (3 items)	Hoef van der	Engineer	Amersfoort
	Aeilkema	Regiomanager	Amersfoort
	Dorn	Consultant Exact	Amersfoort
organisatiennaam : Mekra (1 item)	Breukhoven	Communicatie	Amersfoort
organisatiennaam : Piet Van Den Herck bna (1 item)	Brouns	Sr. Channel Manager - General Business Sales	Amsterdam
organisatiennaam : QT Design (2 items)	Engel	Helpdesk Teamleider	Amersfoort
	Fasen	Account Manager	Amersfoort

- The image shows the result of the SQL query in Adobe Acrobat.

persoon	functie	plaats
organisatiennaam : Food and more (1 item)		
Born van der	Accountmanager	Amersfoort
organisatiennaam : Janssen Uitgeversorganisatie (3 items)		
Hoef van der	Engineer	Amersfoort
Aeilkema	Regiomanager	Amersfoort
Dorn	Consultant Exact	Amersfoort
organisatiennaam : Mekra (1 item)		
Breukhoven	Communicatie	Amersfoort
organisatiennaam : Piet Van Den Herck bna (1 item)		
Brouns	Sr. Channel Manager - General Business Sales	Amsterdam
organisatiennaam : QT Design (2 items)		
Engel	Helpdesk Teamleider	Amersfoort
Fasen	Account Manager	Amersfoort



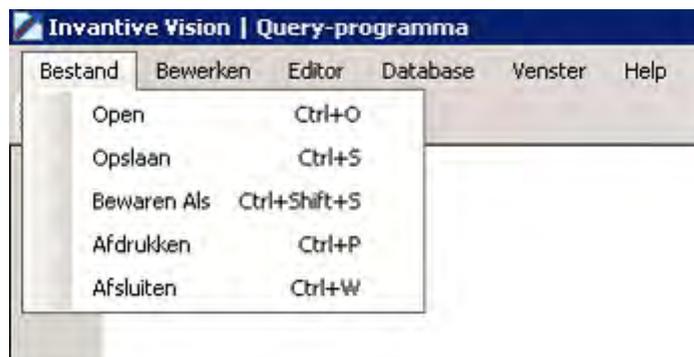
### 2.2.2 Editor

In the editor you can execute queries. There are five types of SQL statements possible:

- Select.
- Insert.
- Update.
- Delete
- PL/SQL (Begin ... End, without line breaks and blank lines)

A possible transaction is immediately recorded at the end of the execution of the statement.

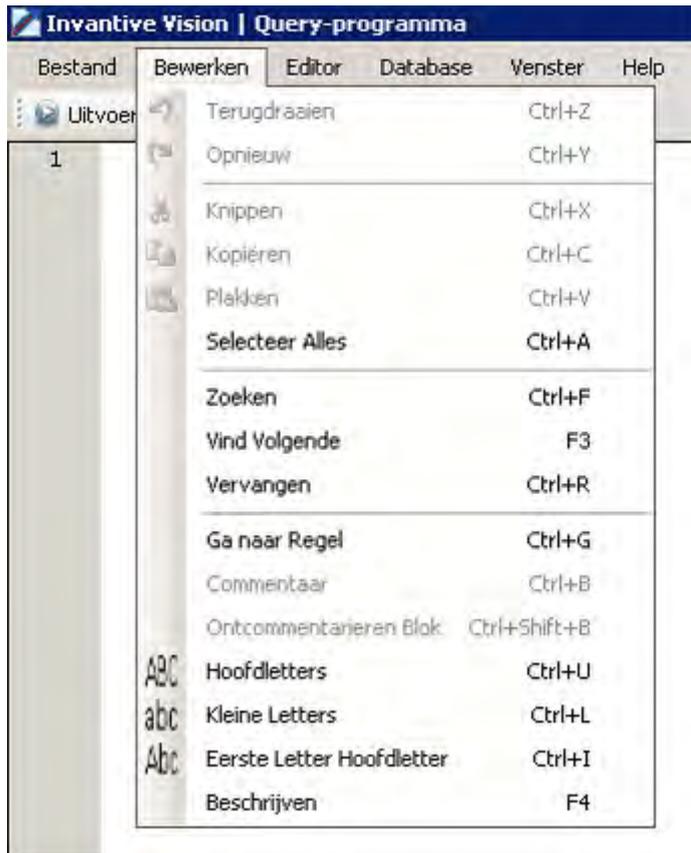
## Menu File



Here queries can be opened, saved, saved under a different name and printed.

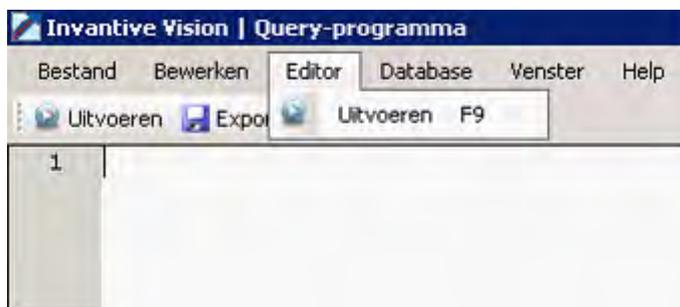
In addition, via 'Exit' the Query Tool can be closed.

## Menu Editor



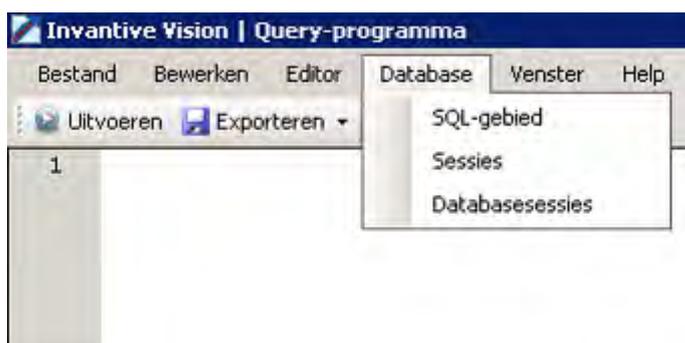
The 'Editor' menu contains all items with which you can edit the query text.

## Menu Editor



Via 'Run' you can run the query. The results of the query are displayed in the Query Results tab in Query Output.

## Menu Database





This menu consists of three specific database menu items:

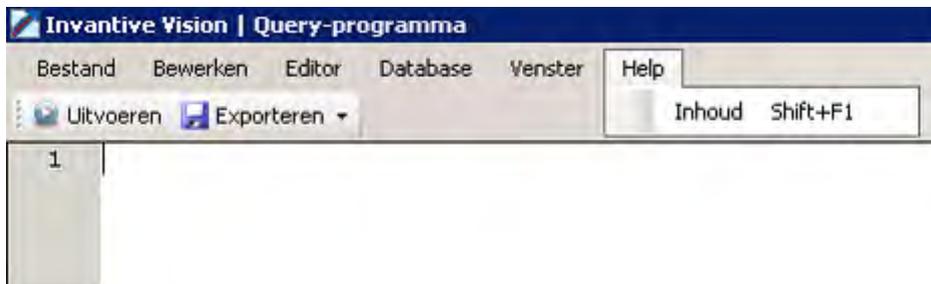
SQL area: This menu item places the following query in the editor:

```
select *  
from itgen_db_sqlarea_r  
where 1=1  
order  
by elapsed_time desc
```

Sessions: ?

Database session: ?

## Menu Help



Using this menu the Help for the Query Tool can be requested as part of the Invantive Vision Help.

## Export Menu



Using the Export tab, you can print the output of queries or export it to different formats.

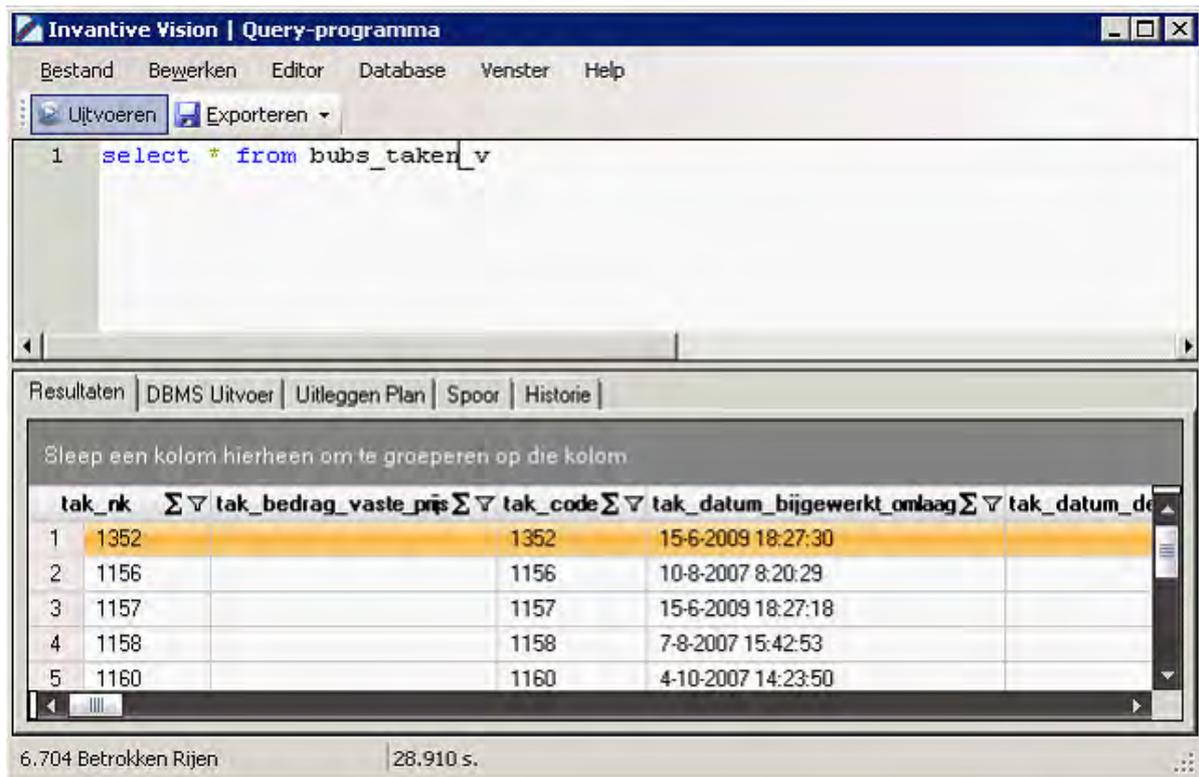
### 2.2.3 Query-output

The query output can be started with the function key 'F9'.

If the editor contains a valid query this will lead to output in different tabs under the tab 'Output'.

#### 2.2.3.1 Query-results

Executing a query results in filling the tab Output with the records delivered by the query.



Also the number of rows and the execution time will be displayed.

### 2.2.3.2 DBMS-output

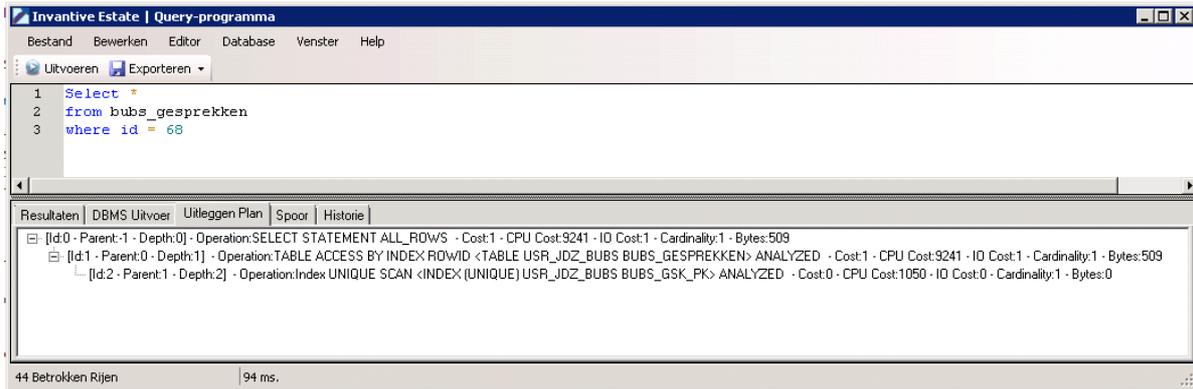
This tab includes the output of `dbms_output.put_line` statements (only in combination with Oracle RDBMS)

### 2.2.3.3 Explain Plan

The Explain Plan can be executed using the menu item 'Explain Plan' or using the key combination Ctrl+E:



The executing of 'Explain Plan' ensures the filling of the tab 'Explain Plan' with the rows which are completed by the 'Explain Plan' of Oracle:



In the tab, the way the query will be executed by Oracle is shown in tree form.

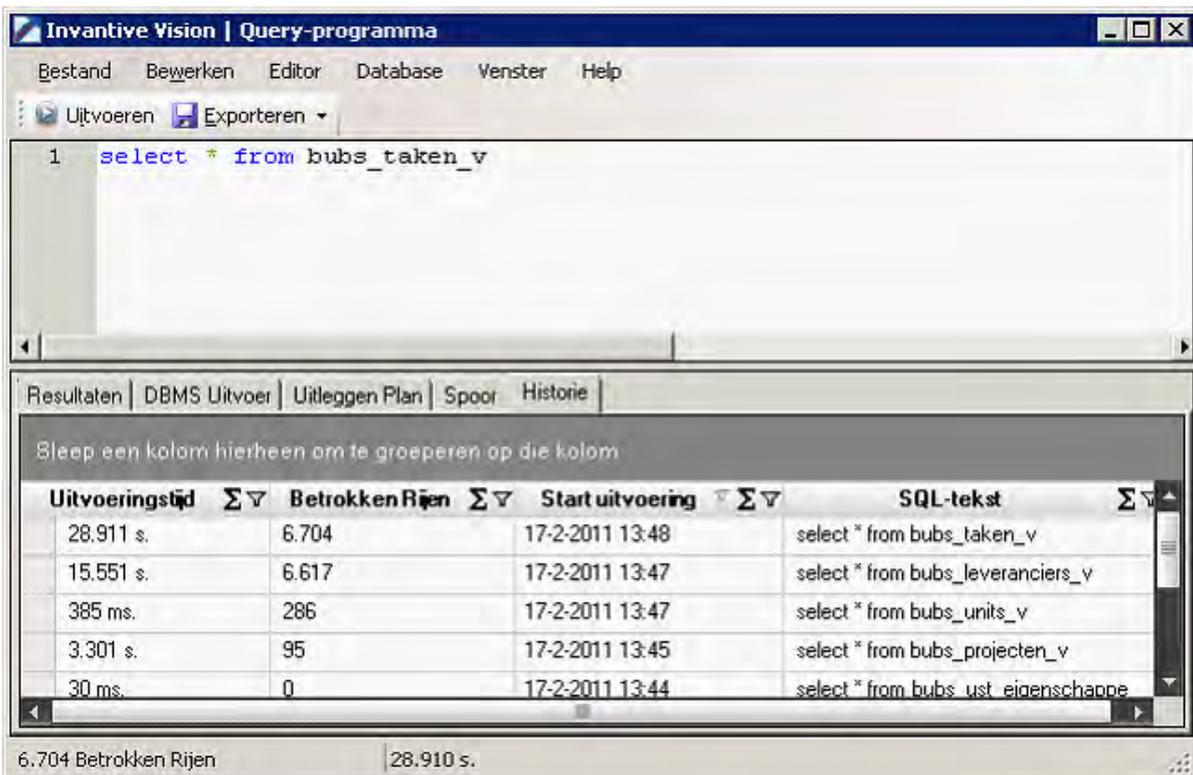
With this the to be executed actions are in order of the ID, so from a branch with the deepest level back to the parent level and back to a related level; this is called 'Processing in Order'.

#### 2.2.3.4 Trace

This tab contains the result of an Oracle trace (only in combination with Oracle RDBMS)

#### 2.2.3.5 History executed queries

Executing a query ensures the filling of the tab history because the data of the last executed query is added.



As long as the Query Tool is open a record is added after each output.

## 2.3 Availability

The following Invantive products provide a user license of Invantive Query Tool:

- `$(products.iv) $(products.ola)`;



- Invantive Control;
- Invantive Composition.

The Invantive Query Tool is also separately available and can be downloaded via the link: <http://webservice.invantive.com/qt/publish.htm>

## 2.4 System Requirements

To use Invantive Query Tool on your PC or terminal server you will need the following software including licenses:

- Microsoft .NET 4.5.
- Minimum 2 GB of internal memory.
- Screen resolution of 1280 x 1024 or higher.
- Invantive Webservice or local drivers.

Use on Mac, tablet or smartphone is not possible.

## 2.5 Installation

Perform the next steps to install Invantive Query Tool:

- Use an Internet browser to go to the link: <http://webservice.invantive.com/qt/publish.htm>. Then click 'Install', next save the file and execute it.

### Invantive B.V. Invantive Producer Query tool

**Name:** Invantive Producer Query tool

**Version:** 50.0.1.1

**Publisher:** Invantive B.V.

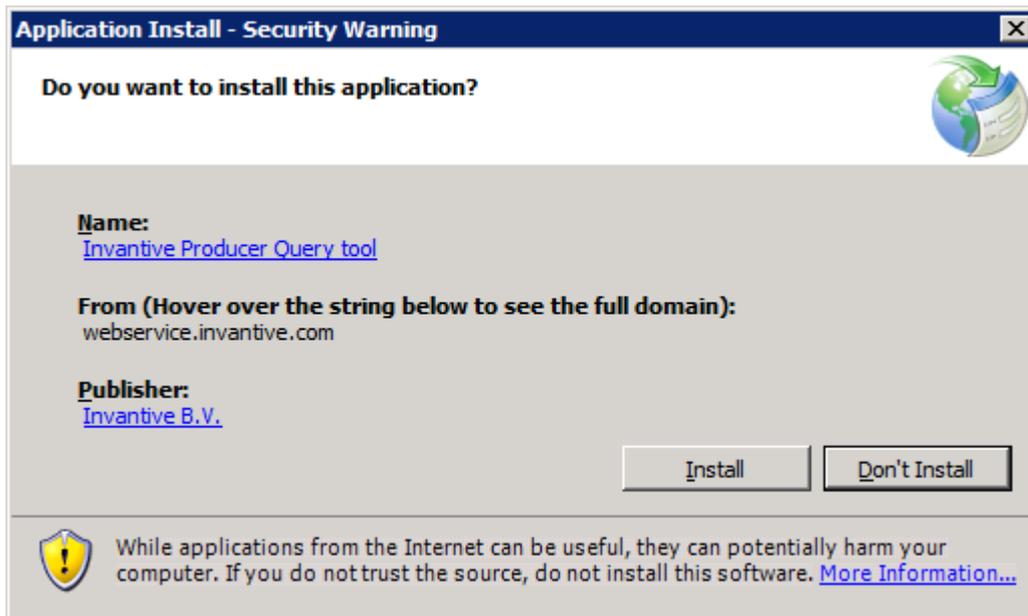
The following prerequisites are required:

- Windows Installer 3.1
- Microsoft .NET Framework 4 (x86 and x64)

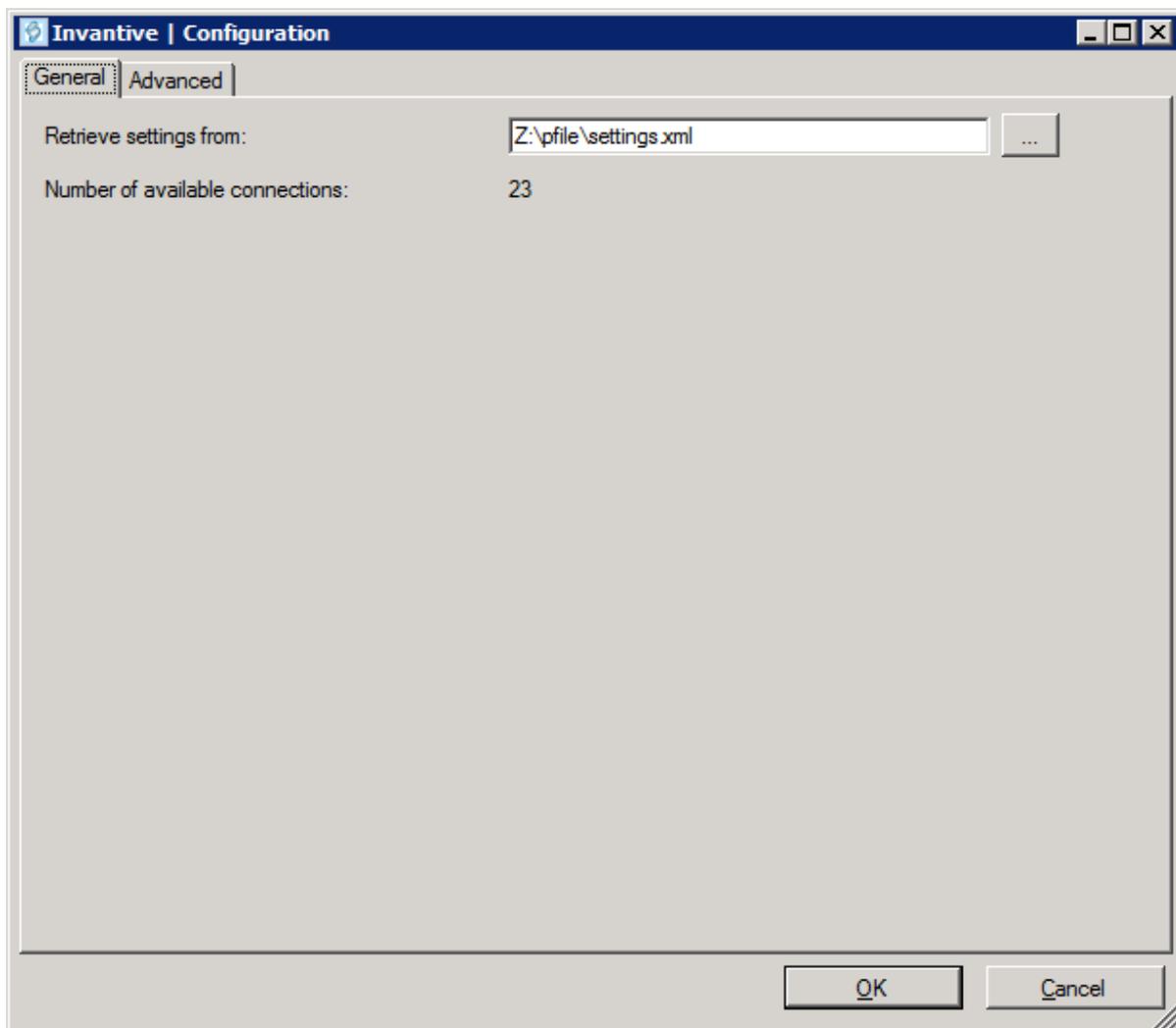
If these components are already installed, you can [launch](#) the application now. Otherwise, click the button below to install the prerequisites and run the application.

Install

- Click on the button 'Install' to install the Invantive Query Tool on the computer.



- After installation, the following window will be shown. In this screen, you need to enter the location of the connection file. See [Connections Settings](#)<sup>43</sup> for an explanation of the connection file. Select 'OK' to save your changes.





- Next comes the login screen. Next enter the username, password and connection and select 'OK'.



- In order to change the settings of Invantive Query Tool after installation, press 'Ctrl' when starting up Invantive Query Tool.

## 2.6 Versions

This chapter describes the changes in the application per version.

### 2.6.1 Release 2014 R1

Released: XX-XX-2014.

Invantive Producer: bXX.

Changes and bug fixes:

Number	Type	Product	Description
12935	ER	Invantive Query Tool	dbms_output en explain plan in Query Tool
21718	PR	Invantive Query Tool	Describe werkt niet in Query Tool ondanks rechten op de functie itgen_querytool_describe.
1994	ER	Invantive Query Tool	Lijst meest recente documenten (stuk of 10) tonen in Bestandsmenu.



Number	Type	Product	Description
3		ery Tool	

## Installation

- No specialties.

## Implementation

- No specialties.

## 3 Invantive Webservice

This chapter describes the possibilities of the Invantive Webservice.

### 3.1 Web services

Because of the technological changes and the mobility of employees more and more traditional work spaces are disappearing. Employees work at home more often or make use of travel time work time. Work processes like the making of financial reports or the start-up of a new project take place more and more outside of the office. For companies this means that work processes are assigned differently and should be optimized. To allow for the work processes to run as efficient and effective as possible it is required to have quick and safe access to the company network through the Internet.

Webservices make it possible for companies to organize work processes through the Internet even smarter. By providing access to the company network and applications using web-services, it is possible to coordinate and optimize processes from each location.

### 3.2 Advantages

The Invantive Webservice offers various advantages:

- The Invantive Webservice makes it easy to quickly and safely exchange data through the internet between various databases and services. For companies this means that the execution of financial calculations and the manufacturing and recording of contracts is available from every location. the Invantive Webservice allows different companies to work together more effective and more efficient within a project.
- That is because the Invantive Webservice simplifies the exchange of information between different parties within a project. The Invantive Webserive makes it possible to give partners - through http(s) - authorized access to applications and databases. The advantage of this is that existing applications and applications based on Invantive Producer can easily exchange data. This means that partners can use one application for the planning of projects, execution of complex calculation models and the registration of work hours. Using the Invantive Webservices the data can - depending on the security model - be retrieved and processed in the own administration. This makes it possible to provide multiple clients and/or relations quick and safe access to the company network with the Invantive Webservice.
- With the Invantive Webservice work processes can be organized even smarter and be optimized. The result is the more effective and efficient work on a project.

### 3.3 System Requirements

#### Client



To use Invantive Webservice on your PC or terminal server you will need the following software including licenses:

- Microsoft .NET 4.5.
- Minimum 2 GB of internal memory.
- Screen resolution of 1280 x 1024 or higher.

## On-Premises

For the use of Invantive Webservice as server within the private network you will need (so-called "on-premises" use):

- Operating system: Windows 2008 R1 Service Pack 2, Windows 2008 R2 or Windows 2012.
- Minimum of 4 Gb internal memory.
- Screen resolution of 1280 x 1024 or higher.
- Minimal 1 central processing unit for server use not older than 2 years.
- Drivers for the supported databases or own specific drivers for business applications.

### 3.4 Concept

With the Invantive Webservice Invantive applications and applications based on Invantive Producer can exchange data with databases and other services using the internet or the company network.

It is also possible to use these applications without Invantive Webservice, but for installations with more than one user this is strongly discouraged. With the Invantive Webservice it will take no time outside of the client installation to allow an extra user or PC to make use of a database; without the Invantive Webservice this will take considerably more time for each PC and/or user.

The exchange of data happens through webservices that use the so-called http and/or https protocol. Depending on the chosen security model you can exchange data with databases in the company network using the Invantive webservice both within the company network as well as on the internet from Invantive applications and applications based on Invantive Producer.

You can also - if authorized - exchange data with databases at various companies. With this you can easily collaborate with multiple clients and/or relations in an efficient manner, wherever you are and whenever you feel the need to. Every client and/or relation also has an own installation of the Invantive Webservice.

The Invantive Webservice works as follows:

- A user starts an application based on Invantive technology.
- The application will know automatically or hear from the user which connection is to be used with which user name and password.
- The connection are is retrieved in a list with available connections and the related (possible redundant) channels.
- On the basis of the retrieved preferences and availability a channel is chosen for communication.
- Through this channel a connection is established with the service provided by the webservice.



- Data and requests are exchanged.

If the connection drops, then the connection is automatically established again. A possible alternative channel for the connection is used if the desired channel is not available.

### 3.5 Database platforms

An installation of the Invantive Webservice consists of one or multiple installations of the Invantive Webservice programming. In addition to the programming you also need to indicate the connections to databases that can be used through this installation. These can at least be the following database platforms:

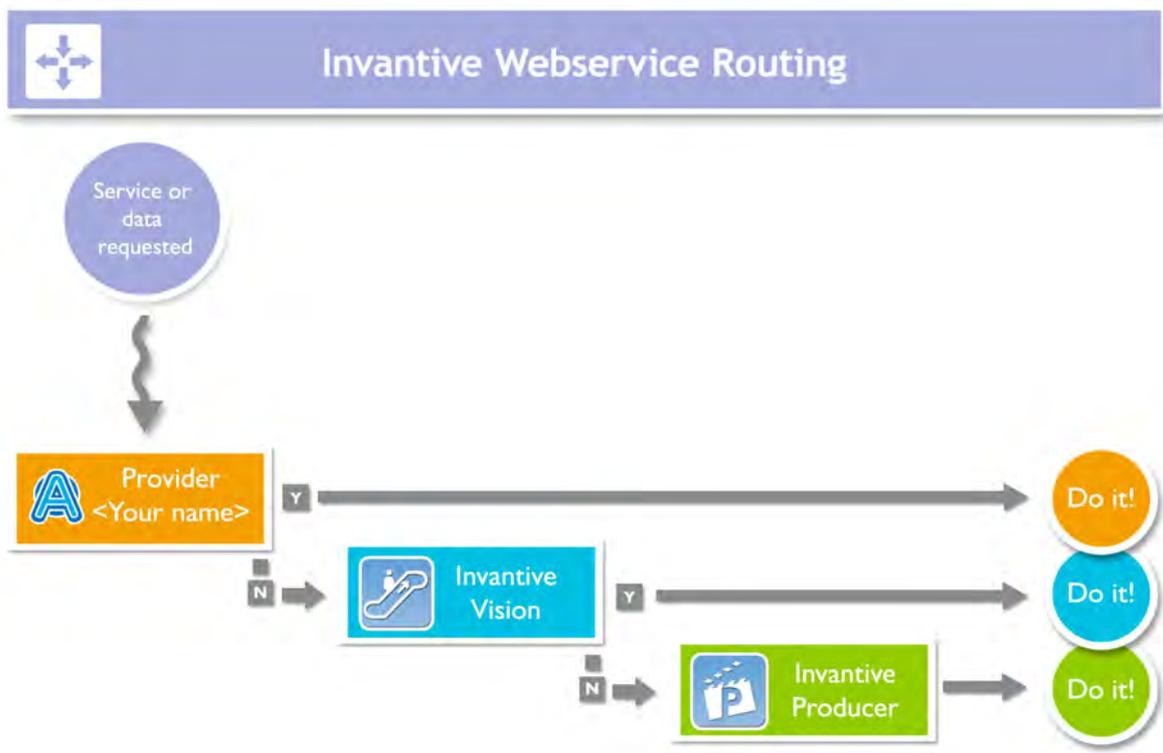
- Microsoft SQL Server
- Oracle RDBMS
- MySQL
- IBM DB2 UDB (Linux, Unix, Windows)

The actual choice of the database platform depends on which application you will be using. Some (company) applications only work on a portion of the database platforms.

The support of extra database platforms can be added by a system developer or ordered with Invantive.

Requests are routed to providers as soon as requests for data or actions arrive to the web-server. In the configuration file you can adjust in which order this happens (see image).

See also [Providers Configuration](#) <sup>46</sup>.

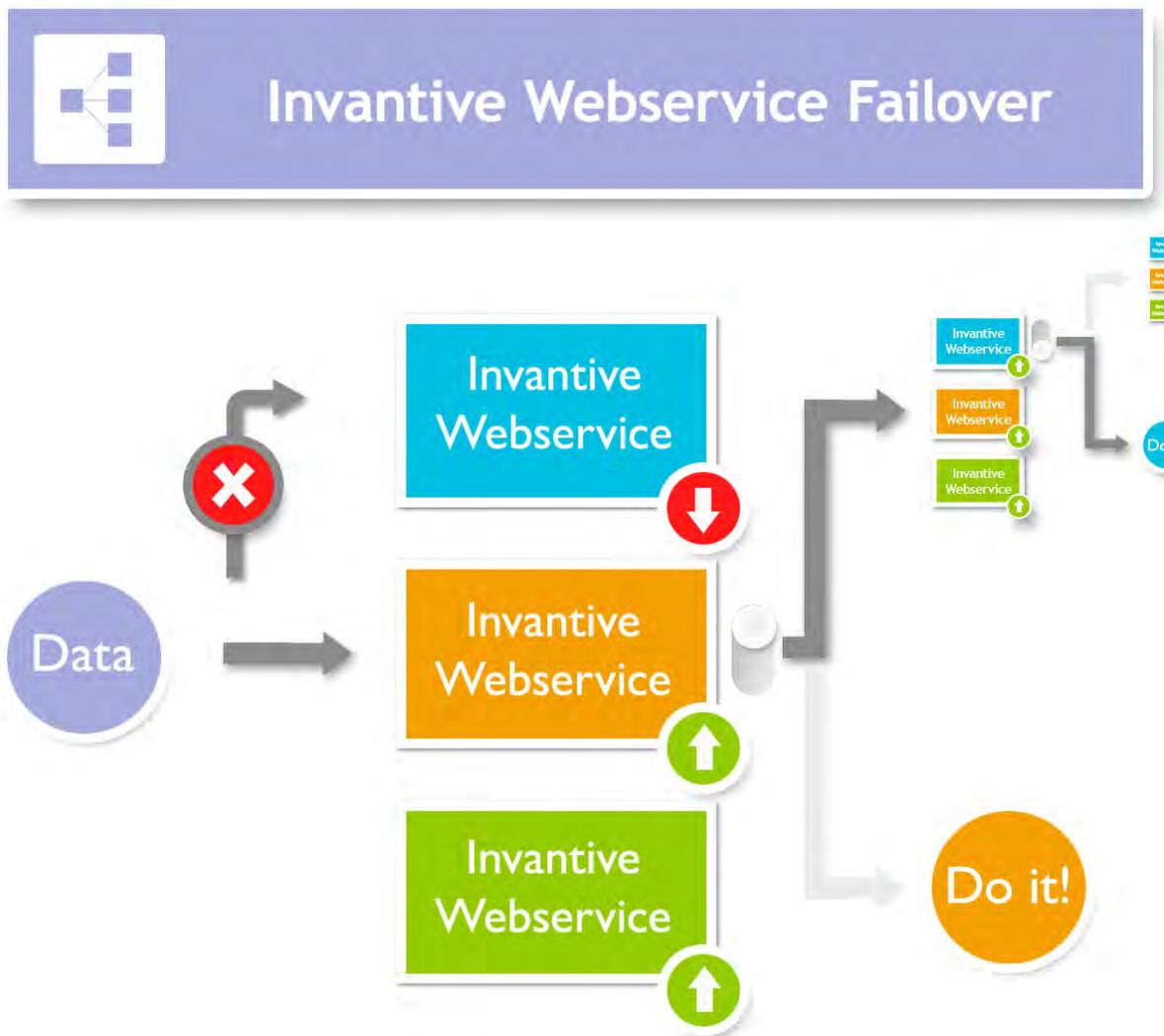


### 3.6 Redundance

For a higher availability you can install multiple installations of the Invantive Webservice programming. These installations can be located on one server or on multiple servers. With



multiple servers you ensure a better availability: even if a server breaks then the users can still keep on working (see image).



The redundancy can be set in the settings.xml file. See also [Connection configuration](#)<sup>[43]</sup>. As soon as a connection is no longer available the programming of your user will try to use a different available connection.

## 3.7 Installation

This element describes the installation of the Invantive Webservice and its components.

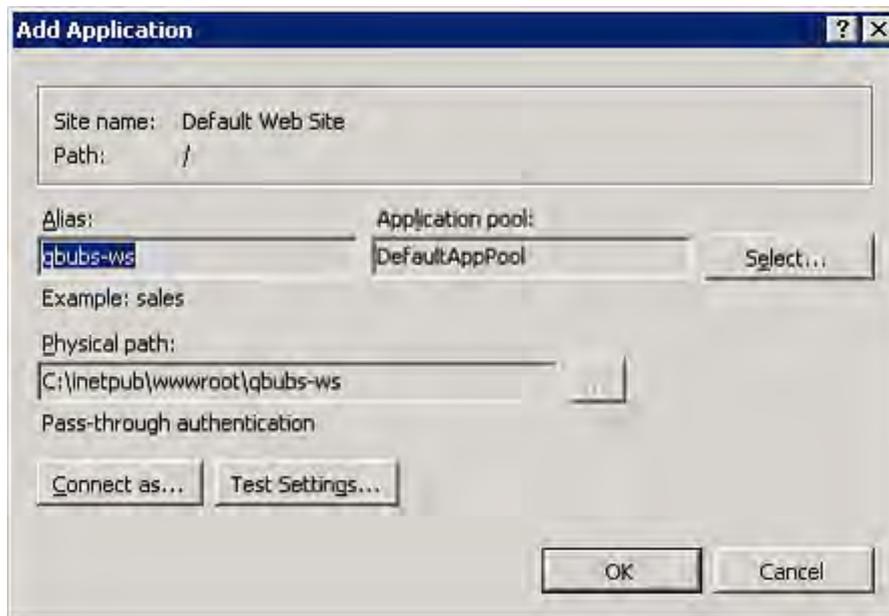
### 3.7.1 Invantive Webservice Programming

Execute following steps to make the Invantive Webservice available to the users.

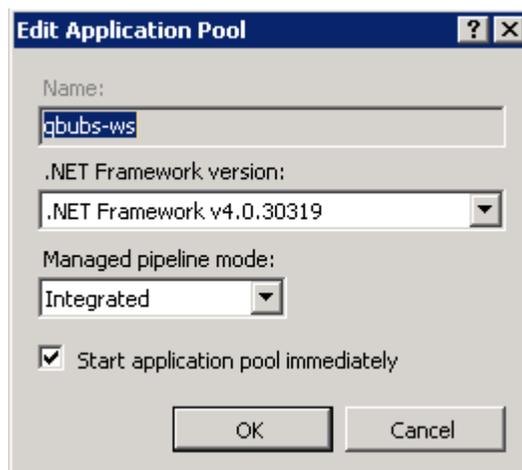
- Install Microsoft IIS 7 or 8 including ASP.NET support.
- Install Microsoft .NET Framework version 4.5 or newer. In the Control Panel among the installed programs there will then be listed 'Microsoft .NET Framework 4.5'.
- Copy invantive-webservice in the distribution to the folder that is known within Microsoft IIS, preferably 'webservice' within the folder of the application or alternatively c:\inetpub\wwwroot\invantive-webservice, c:\inetpub\wwwroot\<OMGEVING>-ws or (preferably) ENVIRONMENTDIR\webservice.
- Adjust settings.xml in this folder as described in settings.xml.sample.



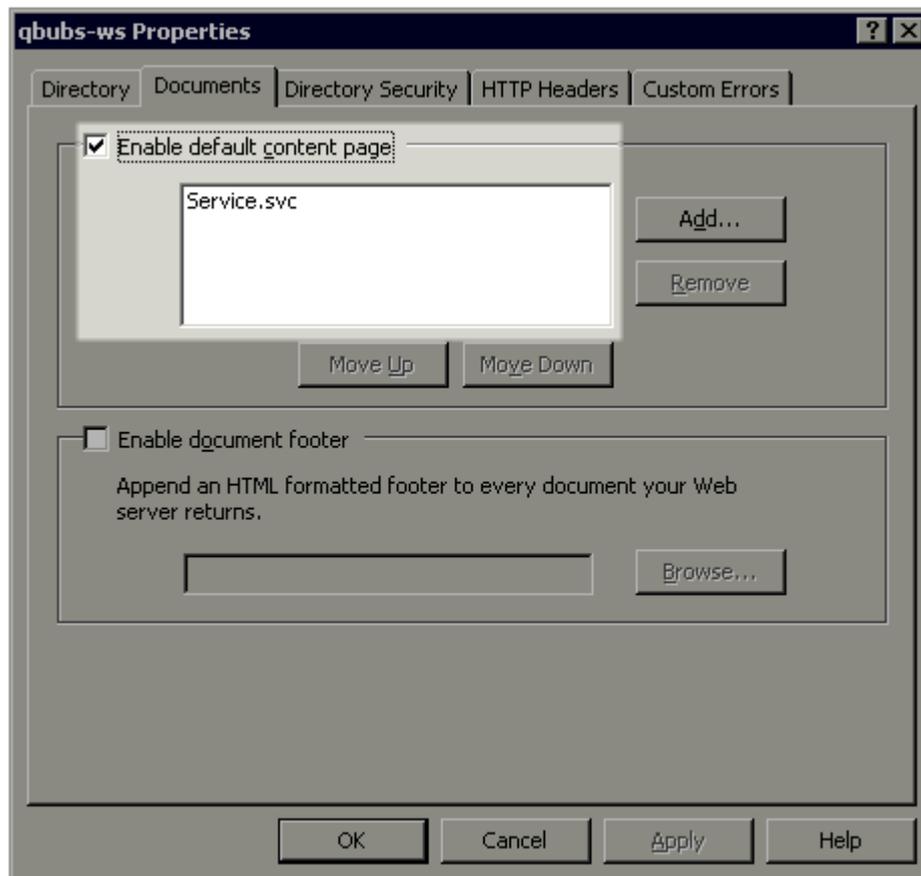
- Start Microsoft IIS with 'inetmgr' or through Control Panel.
- Select 'Properties' from the folder.
- Convert the folder to application with an own application pool:



- Set the application in for use of the application pool 'ASP.NET v4.0':



- Set the standard page Service.ashx:



- You can now test the web service by opening the page. You will receive output such as (t23522):



← → ↻ /ws\_ita\_pbubs/

## Service Service

You have created a service.

To test this service, you will need to create a client and use it to call the service. You can do this using the svcutil.exe tool from the command line

```
svcutil.exe http://localhost.local/ws_ita_pbubs/Service.svc?wsdl
```

This will generate a configuration file and a code file that contains the client class. Add the two files to your client application and use the generated

C#

```
class Test
{
    static void Main()
    {
        ServiceClient client = new ServiceClient();

        // Use the 'client' variable to call operations on the service.

        // Always close the client.
        client.Close();
    }
}
```

Visual Basic

```
Class Test
    Shared Sub Main()
        Dim client As ServiceClient = New ServiceClient()
        ' Use the 'client' variable to call operations on the service.

        ' Always close the client.
        client.Close()
    End Sub
End Class
```

### 3.7.2 Certificate

If you make use of https, then you need to submit a certificate (see also <http://www.iis.net/learn/manage/configuring-security>):

- Start MMC with 'Run'.
- Go to the File menu and select 'Add/Remove Snap-in'.
- Click on Certificates and click on 'Add'.
- Select 'Computer Account' and click on 'Next'.
- Select 'Local Computer' and click on 'Finish'.
- Select 'OK'.
- Click on 'Certificates (Local Computer)' in the middle part of the window.
- Click on the right on 'Personal'.
- Select 'All tasks' and then 'Import'.
- Set up the filter for 'Personal Information Exchange (\*.pfx)'.
- Select the .pfx bestand as Personal Certificate.
- Enter the password.
- If desired you select the check box 'Mark this key as exportable.'
- Allow automatic placement in the storage for the certificate based on the type.
- Select 'Finish'.
- Close the MMC.
- It is not necessary to save the settings of MMC.



- Start Microsoft IIS through 'inetmgr'.
- Click right on the website (usually 'Default Website').
- Go to 'Edit bindings'.
- Add a 'https' binding and choose the Friendly Name of the certificate that you have just imported.

### 3.7.3 Connection Configuration

To make a connection with an Invantive application or an application based on Invantive Producer there needs to be a file settings.xml with included within the configuration of the connection settings. This has to be an XML file with the same design as the example. The file can contain the configuration to connect with one or more servers.

If you start an Invantive-based application product for the first time the settings.xml file is searched for at multiple locations in succession:

- the installation folder containing setup.exe;
- from the installation folder a folder upwards;
- from the installation folder a folder up and the file folder in it;
- from the installation folder two folders up;
- from the installation folder two folders up and the file folder under it;
- from the installation folder three folders up;
- from the installation folder three folders up and the file folder under it;
- in the folder c:\ws.

If the settings.xml file can not be found, the user will be asked where the settings.xml file is located. The chosen location of the settings.xml file is remembered and used from that moment.

In the text below it is described how it works:

```
<?xml version="1.0" encoding="utf-8"?>
<!--
  (C) 2004-2013 Invantive BV, the Netherlands (www.invantive.com).

  $Header: http://svn.invantive.com/repos/pl04/trunk/help/nl/manual/Topics/verbin-
  dingsconfiguratie.xml 23549 2013-11-01 14:21:27Z smoke $

  Purpose:
  Configuration of the Invantive Webservice and direct database connections
  available to client and the Invantive Webservice acting as a database client.

  Explanation:
  Connections are used to retrieve data from a database and to update the contents
  of databases.
  This settings file can accommodate all settings for database and web service
  connections
  that are used by Invantive products.
  This file contains a number of structured elements, explained further on.

  Top level: the connection groups.
  This is the root level of the settings file. It only contains connections
  groups.
```

**Attributes:**

- \* "default": The default connection. The format is 'group\connection'.  
the first connection with the given name will be used when the group element is omitted.
- \* "forceDefault": If true, only the default connection can be used. No other connection is eligible for selection based upon this settings.xml file. You can use for instance when you add a new default connection and you want to make sure everyone switches to the new connection, irrespective of what connection is currently used as default.

**The group level:**

This level defines a set of connections, logically grouped together. You are free to choose the way of grouping.  
Examples of logical manner of grouping: by customer, by environment (production, test).

**Attributes:**

- \* "name": The name of the group.

**The connection level:**

This level defines an actual logical connection.  
For example: Production environment Acme site.  
Under this level, the actual transport mechanism and its settings can be defined.  
The connection and associated failovers are tried when initially establishing the connection and when reconnecting after the provider detected a connection loss.  
The elements of this level can consist of two types:

- \* physical connection (either an Invantive Webservice or direct database connection);
- \* failovers.

All physical connections listed will be brought online during application use.

**Attributes:**

- \* "name": The name of the logical connection.

**The webservice element:**

This element defines a connection using the Invantive.Providers.Webservice provider.  
This provider is capable of proxying database connections over HTTP/HTTPS. A client can connect to a database directly through a webservice, but a webservice can route this request also to another Invantive Webservice and so on.

**Attributes:**

- \* "url": the url of the Invantive Webservice.
- \* "encoding": the encoding to use.  
This will be passed as header on the request.  
Allowed values are: "binary" or "text". Default: binary. Use text for debugging purposes or with poor CPU.
- \* "compression": the compression method to use.  
This will be passed as header on the request. Allowed values are: "auto", "true" or "false". Default: "auto" (will set compression enabled)  
Within a fast LAN network and/or with slow servers, we recommend no compression. In all other situations, we recommend compression to be enabled.

**The database element:**

This element defines a connection to a database using a provider specific for that type of database.

**Attributes:**

- \* "connectionString": the ADO.NET connection string for the specified provider. You can specify Data Source, User Id and other settings.
- \* "provider": the name of the ADO.NET connection provider. For example: "Oracle.DataAccess.Client"

**The failover level:**

The failover level can define a list of database or webservice settings. It supplements the webservice/database element. Connection settings defined in a failover can be used to have a failover connection when one connection cannot be established. This can be useful when relying on a internet connection or presence of a VPN tunnel. Settings defined in this section will be evaluated one after another, starting top down. When any of the failovers can be established, no other failovers will be tried.

**Attributes:**

- \* (none)

**Examples:**

This example illustrates a single connection. The software will sequentially try to:

- \* Connect to the 'authenticationServer' Active Directory server;
- \* Connect to one of the connections in the failover:
  - First the database connection (when connection from the internal network or VPN);
  - The first webservice connection;
  - The second (or 'failover') webservice connection.

```
<connections default="Customer A\Production" forceDefault="false">
  <group name="Customer A">
    <connection name="Production">
      <database connectionString="Data Source=authenticationServer;User Id=username;Password=thepublicpassword;Pooling=false" provider="Invantive.CustomerA.ActiveDirectory" />
    <failover>
      <database connectionString="Data Source=localhost;User Id=username;Password=thepublicpassword;Pooling=false" provider="Oracle.DataAccess.Client" />
      <webservice url="http://www.customer-a.com/ws/" encoding="binary" compression="true" />
      <webservice url="http://failover.customer-a.com/ws/" encoding="binary" compression="true" />
    </failover>
  </connection>
</group>
</connections>
```

This example illustrates connections to different database platforms. The software will try to:

- \* Connect to the IBM DB2 UDB database when connection 'DB2' is selected;
- \* Connect to the Microsoft SQL Server database when connection 'SQLServer' is selected;
- \* Connect to the Oracle MySQL server when connection 'MySQL' is selected;
- \* Connect to the Oracle RDBMS server when connection 'Oracle' is selected;

```
<connections default="Customer A\Production" forceDefault="false">
  <group name="Customer A">
    <connection name="DB2">
      <database connectionString="Server=localhost;Database=THE_DATABASE;UID=username;PWD=password;CurrentSchema=schema" provider="IBM.Data.DB2" />
    </connection>
    <connection name="SQLServer">
```



```

        <database connectionString="Server=localhost;Database=database;User Id=us-
ername;Password=password;" provider="System.Data.SqlClient" />
    </connection>
    <connection name="MySQL">
        <database connectionString="Server=localhost;Database=database;Uid=userna-
me;Pwd=password" provider="MySQL.Data.MySqlClient" />
    </connection>
    <connection name="Oracle">
        <database connectionString="Data Source=localhost;User Id=username;Pass-
word=password" provider="Oracle.DataAccess.Client" />
    </connection>
</group>
</connections>

-->
<connections default="Customer A\Production" forceDefault="false">
    <group name="Customer A">
        <connection name="Production">
            <database connectionString="Data Source=authenticationServer;User Id=user-
name;Password=thepublicpassword;Pooling=false" provider="Invantive.CustomerA.Acti-
veDirectory" />
            <failover>
                <database connectionString="Data Source=localhost;User Id=username;Pass-
word=thepublicpassword;Pooling=false" provider="Oracle.DataAccess.Client" />
                <webservice url="http://www.customer-a.com/ws/" encoding="binary"
compression="true" />
                <webservice url="http://failover.customer-a.com/ws/" encoding="binary"
compression="true" />
            </failover>
        </connection>
    </group>
</connections>

```

### 3.7.4 Providers Configuration

In the providers configuration file `providers.xml` you configure which requests are processed by which providers and how the requests are routed within the Invantive Webservice. The possibilities are described in the sample file `providers.xml.sample`:

```

<?xml version="1.0" encoding="utf-8"?>
<!--
    (C) 2004-2013 Invantive BV, the Netherlands (www.invantive.com).

    $Header: http://svn.invantive.com/repos/pl04/trunk/help/nl/manual/Topics/bubs-
Providers_Configuratie.xml 23549 2013-11-01 14:21:27Z smoke $

    Configuration of providers for Invantive Webservice

    Purpose:
    You can configure providers here, sorted by order.
    Providers are tried to handle a request in decreasing order. So the provider
with order 500 is offered
the request before the provider with order 400 is offered the request.
    Providers with order 70, 80, 90, 100 and 200 are reserved for Invantive internal
use (see the table below).

    Explanation:
    Providers are used to provide functionality that is not part of the webservice.
    A provider knows how to handle a specific action on a specific platform.
    Some providers are included in the installation, such as providers for database
or webservice connectivity or a file logging provider.
    The default providers are included in the software, so they are not listed here
between the <providers> tag.

    A provider does in general NOT define WHERE the action will be executed. That is
normally specified by the settings.xml.

```



But specific providers may contain the location WHERE the action will be executed as default value or specified as attributes with the provider's configuration.

Default providers:

The default providers are always available.

A list of the default providers and there order (which cannot be used again):

Order	Name	Comments
70	Oracle MySQL	Provider supporting the execution of actions on Oracle MySQL. Built and tested with Connector/Net 6.7.4. See <a href="http://dev.mysql.com/doc/refman/5.6/en/connector-net.html">http://dev.mysql.com/doc/refman/5.6/en/connector-net.html</a> . File: Invantive.Data.Providers.MySql.dll
80	Microsoft SQL Server	Provider supporting the execution of actions on Microsoft SQL server 7.0 and later. See <a href="http://msdn.microsoft.com/en-us/library/kb9s9ks0.aspx">http://msdn.microsoft.com/en-us/library/kb9s9ks0.aspx</a> . File: Invantive.Data.Providers.SqlServer.dll
90	IBM DB2 UDB	Provider supporting the execution of actions on IBM DB2 UDB 9.7 for Windows. Not tested on any other version. File: Invantive.Data.Providers.IbmDb2.dll
100	Oracle RDBMS	Provider supporting the execution of actions on Oracle RDBMS 9i - 12c. Needs ODP.NET and OCI to be installed. File: Invantive.Data.Providers.Oracle.dll
200	Invantive Webservice	Provider that is executing action by forwarding it to another Invantive Webservice over HTTP/HTTPS. File: Invantive.Data.Providers.Webservice.dll Order 200 ensures that forwarding is preferred instead of a database connection by default.

The providers tag contains a list of providers available, each one consisting of the provider-tag.

Attributes of the <provider> tag:

\* "order": Sorting order of the provider. The higher the value, the sooner it is called.

\* "file": The file name of the provider. This can be a path relative to the Providers directory, or an absolute path.

Fully specify the path or use a path relative to the Invantive Webservice installation folder.

Do not use the ASP.NET/IIS ~/-prefix to indicate the current folder.

\* "class": Optional. Full class name of the provider. You can specify the class name to increase startup performance since it reduces the time needed querying the file.

You need to specify the class if you want to load a single provider in a file that contains multiple providers.

The elements of the <provider> tag:

\* All: you can specify elements within the provider tag. See for instance the <templatesfolder> element in the example below.

Their names and values will be passed as attributes to the provider during instantiation.

Example:

```
<providers>
  <provider
    order="998"
```



```

    file="C:\ws\distribute\invantive-sdk\Invantive.XXX.Provider.dll"
    class="Invantive.XXX.Provider.Provider"
  >
    <templatesfolder>C:\temp\templates</templatesfolder>
    <serviceurl>http://localhost/ThisIsAnExmample/Service.svc</serviceurl>
  </provider>
</providers>

-->
<providers>
  <!-- Custom logging. -->
  <!--
  <provider
    order="999"
    file="C:\ws\distribute\invantive-sdk\Invantive.Data.Providers.Logging.dll"
    class="Invantive.Data.LoggingProvider"
  >
    <log>C:\temp\invantive_logging.log</log>
  </provider>
  -->
  <!-- Most preferred provider due to order 400.
    Data access provider for Invantive Estate and/or Invantive Vision.
    Generates an Oracle SQL execute request. Invantive Estate and
    Invantive Vision currently only support the Oracle RDBMS.
  -->
  <!--
  <provider
    order="400"
    file="Invantive.Estate.Data.Provider.dll"
    class="Invantive.Estate.Data.InvantiveEstateDataProvider"
  />
  -->
  <!-- Less preferred provider due to order 300.
    Data access provider for Invantive Producer products.
    The following Invantive Producer products require the use of Oracle RDBMS:
    * Invantive Studio
    * Invantive Query Tool
    The following Invantive Producer products run with all supported database
platforms
    although this specific provider does not yet support it. Use a database
specific
    provider instead:
    * Invantive Composition
    * Invantive Control
  -->
  <!--
  <provider
    order="300"
    file="Invantive.Producer.Data.Provider.dll"
    class="Invantive.Producer.Data.InvantiveProducerDataProvider"
  />
  -->
</providers>

```

### 3.7.5 Providers

The Invantive Webservice can make use of various providers that record and retrieve data, but also offer other services. Here are the standard available providers.

#### 3.7.5.1 Oracle Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition, some suggestions are provided to execute the installation of the Oracle programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the instal-

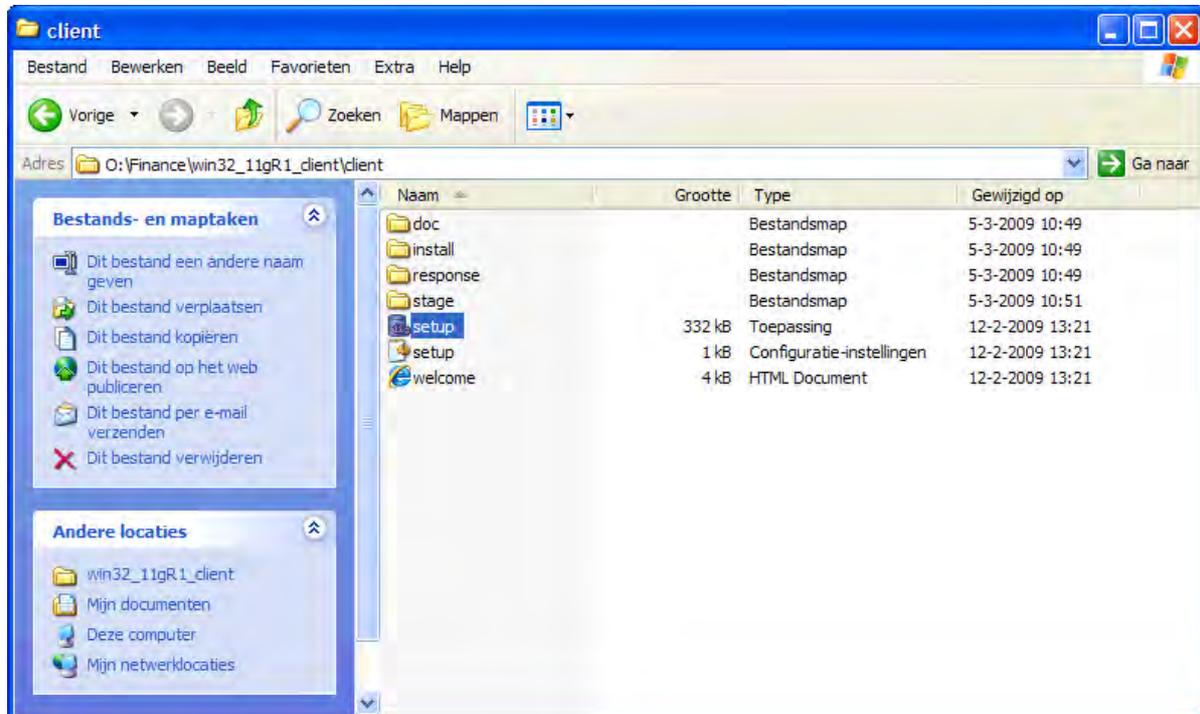


lation are therefore not guaranteed.

### Oracle Client Installation

The installation of the Oracle client can be done following the next steps:

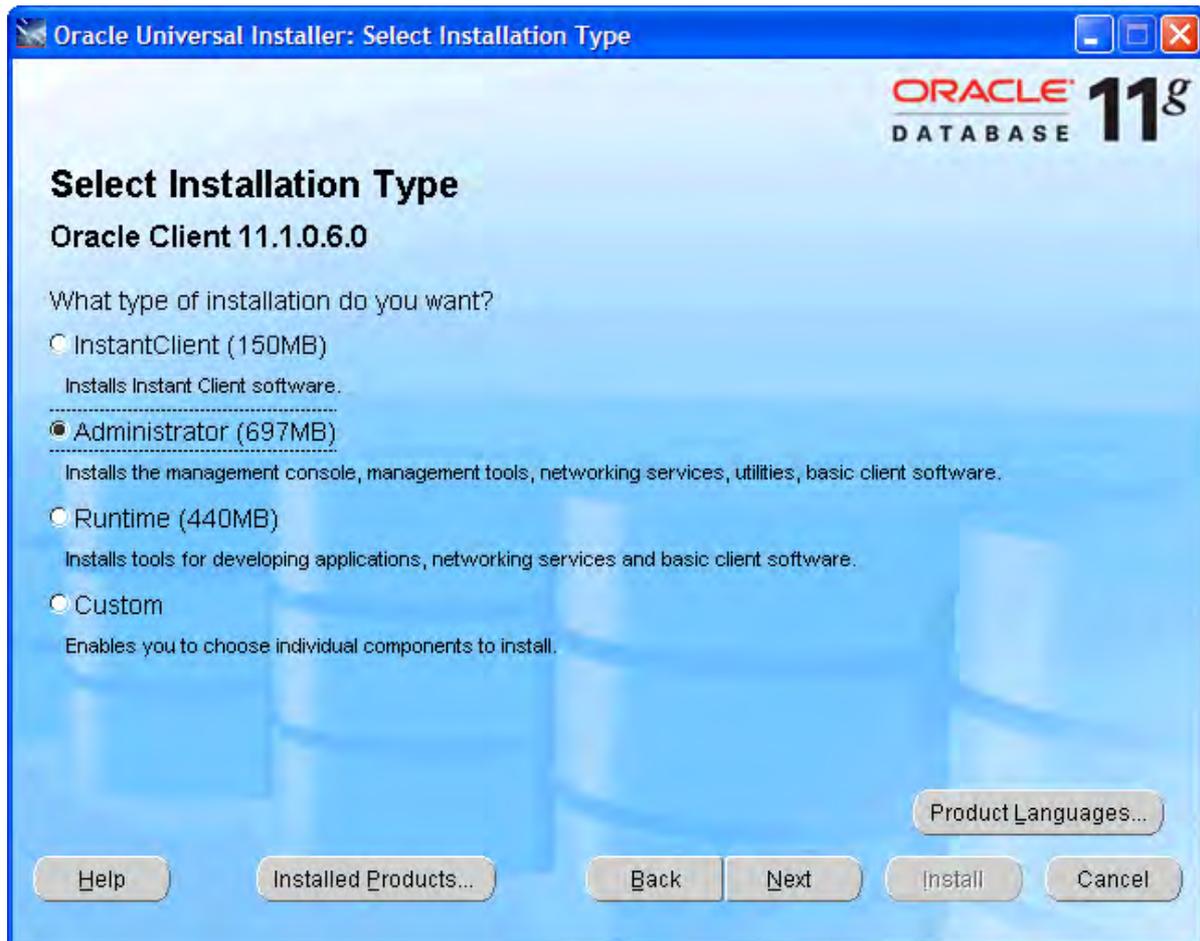
- Navigate to the folder containing the 'setup' program, for example:



- The Oracle installation program appears:



- We recommend to install the most comprehensive version within the license agreement, so that all devices are readily available if they should be needed later:



- Select the required languages via 'Product Languages'. Here we recommend to choose all languages:

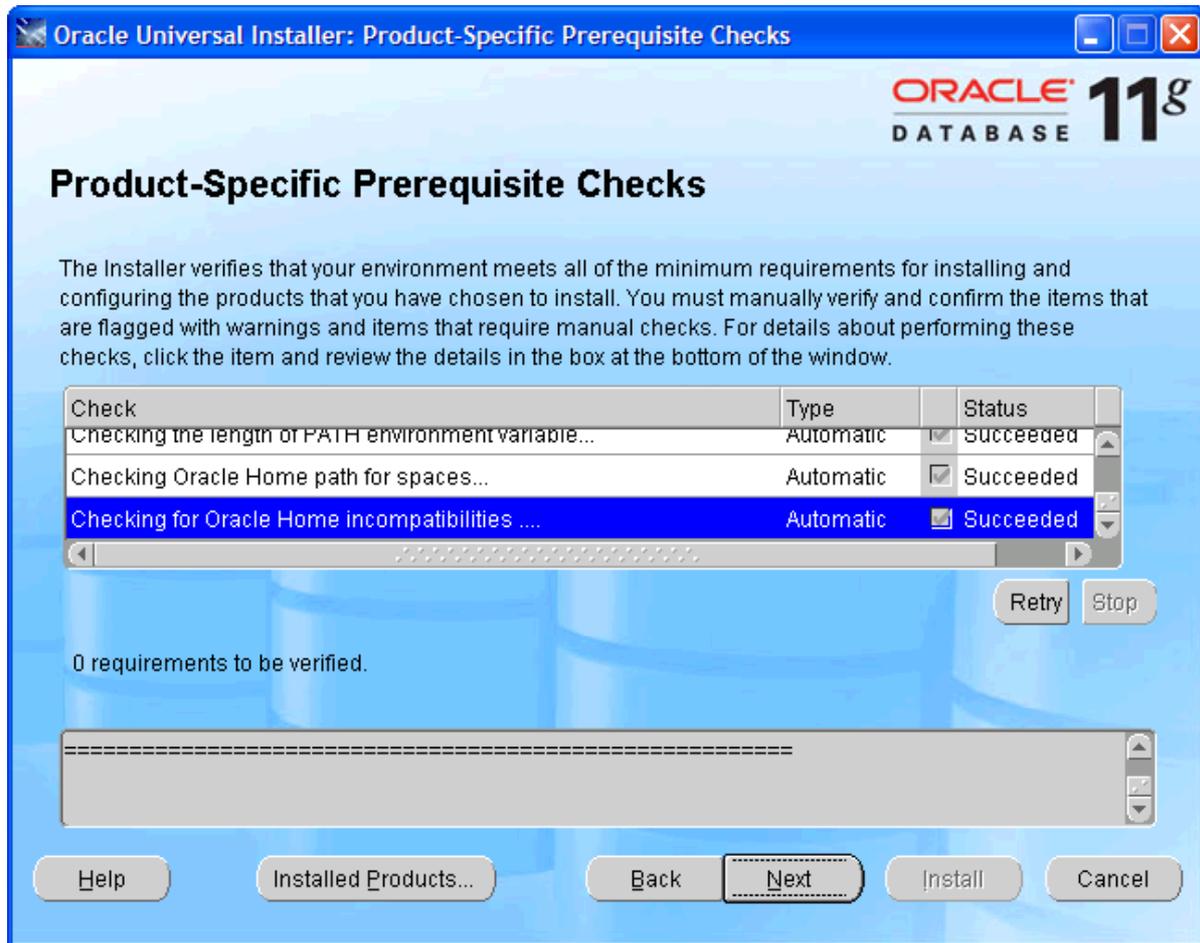


- Select 'OK' and then 'Next'. We recommend to install the software under 'c:\oracle':

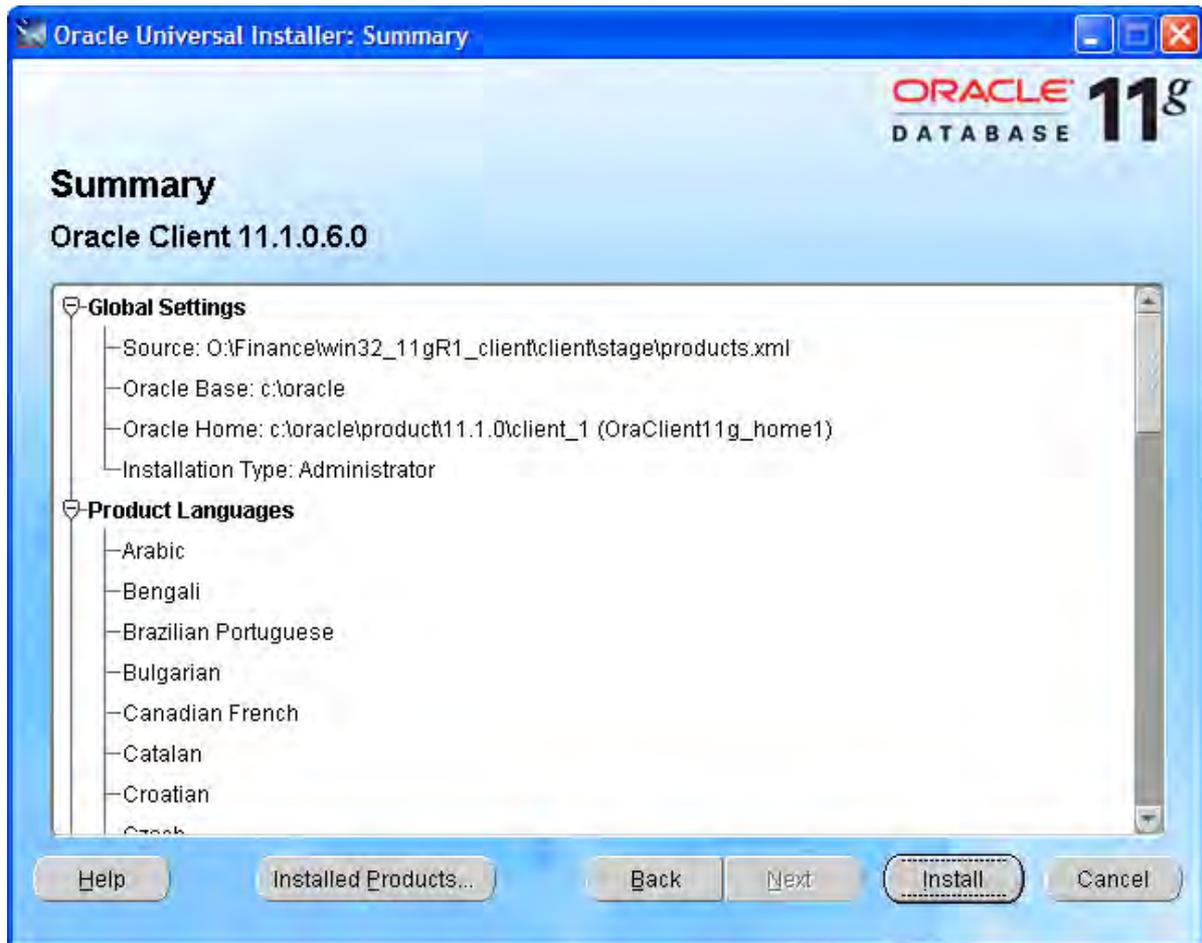




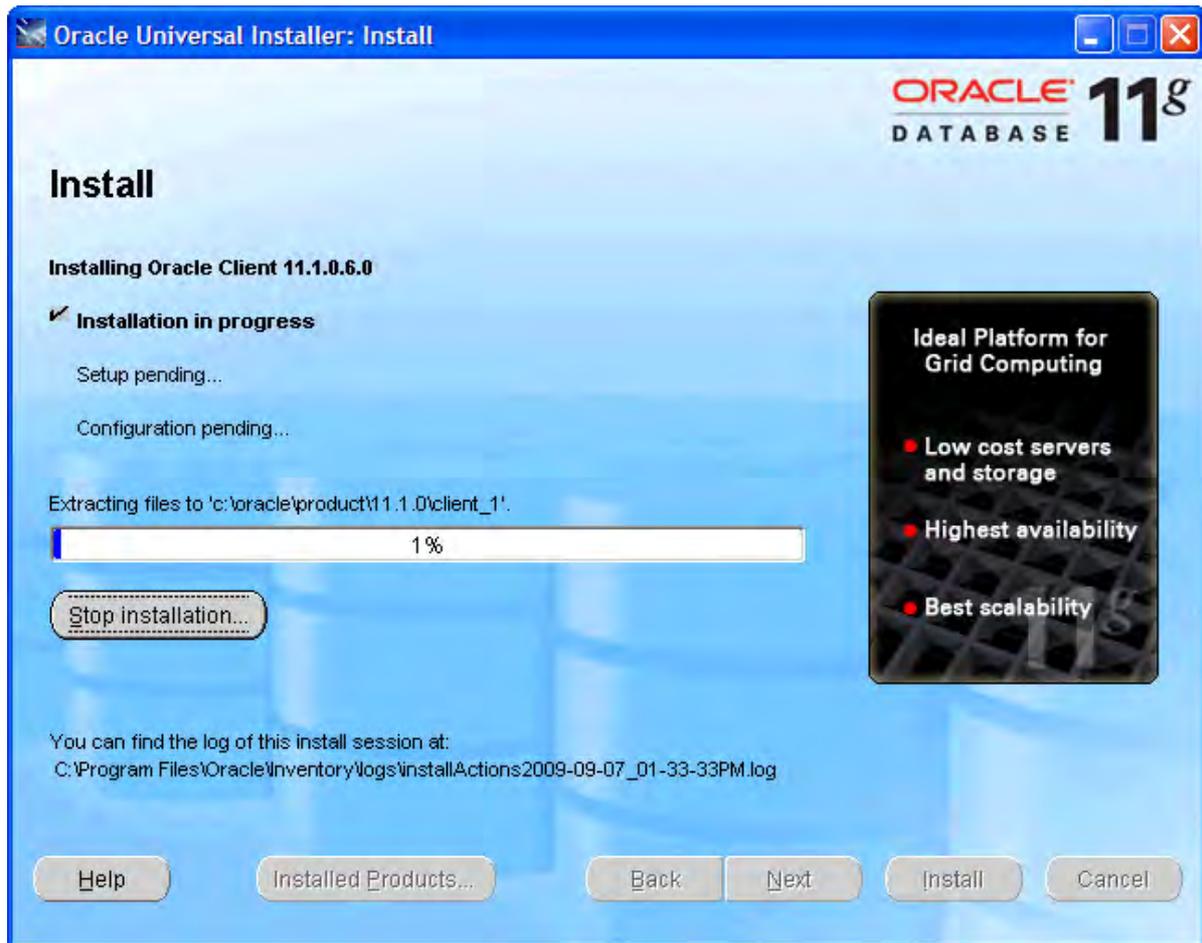
- Subsequently a number of checks will be performed. If problems are found, solve them first:



- Check the settings.
- Check if ODP.Net is listed between the products to be installed.
- Execute the installation by choosing 'Install':



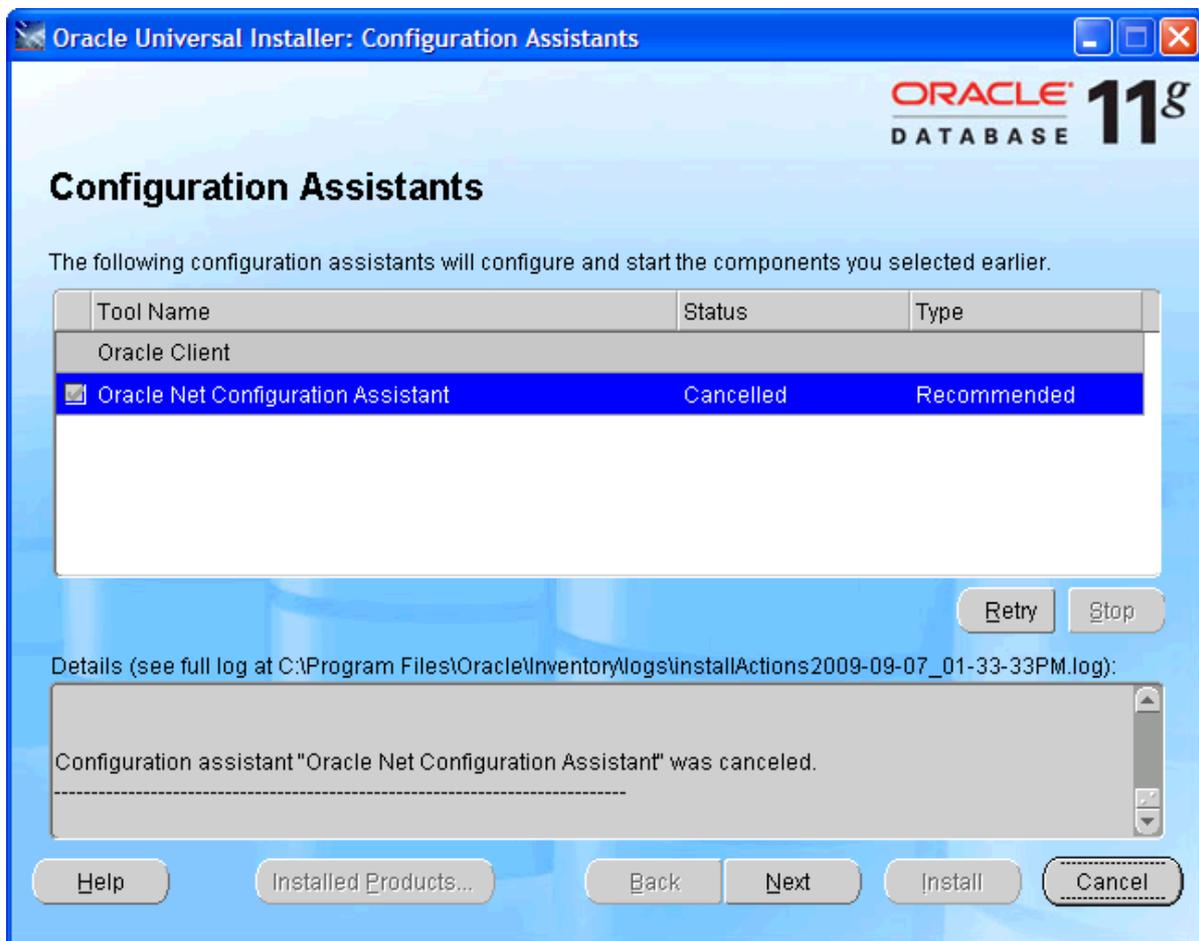
- The progress is displayed:



- Afterwards a configuration program for the network configuration is started. Choose 'Cancel', we advise you to use the configuration file 'tnsnames.ora' as described in the next part of the instructions:

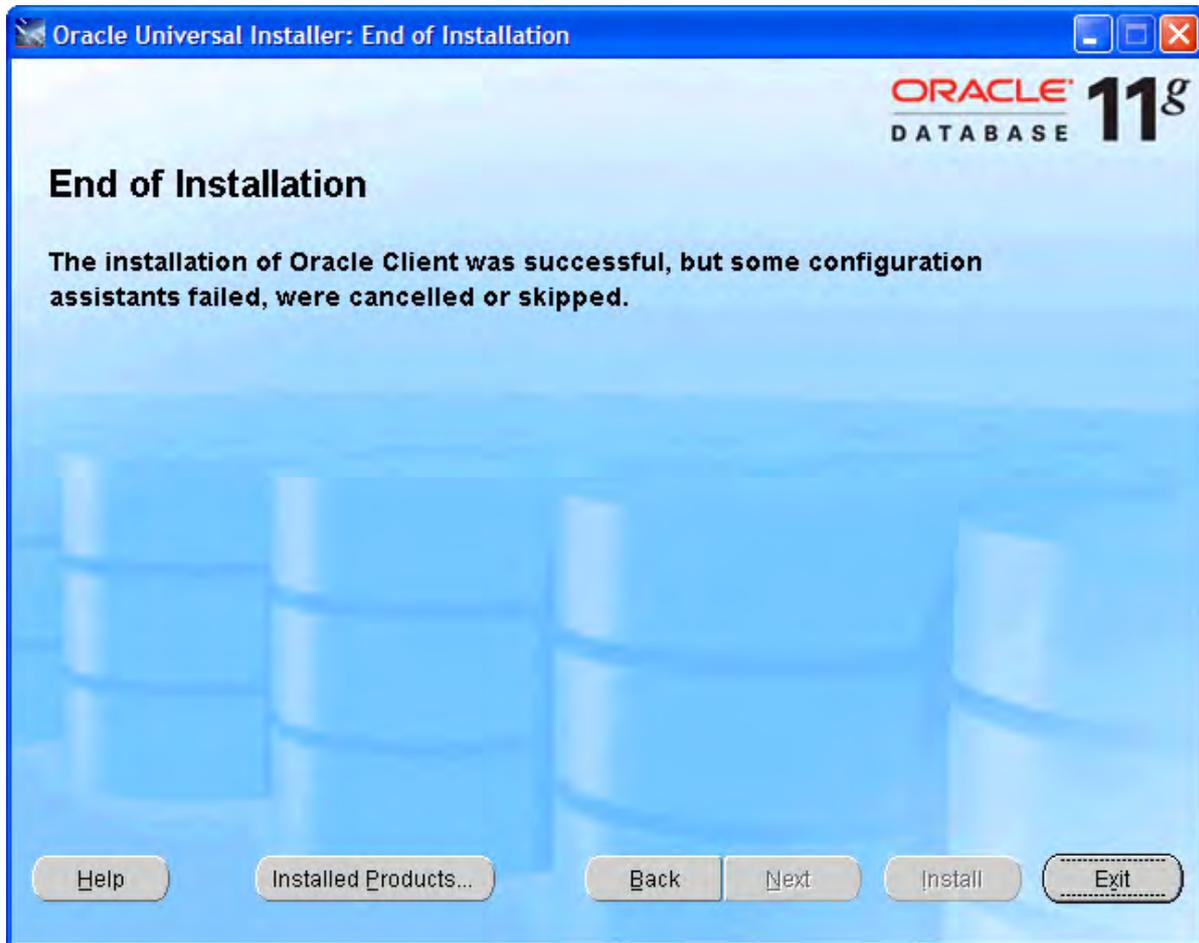


- Select 'Next':





- Close the error message about the failure of the Oracle Net Configuration Assistant.
- Select 'Exit':



### Oracle Client Configuration

Follow these steps to configure the Oracle client:

- Construct (if not available yet) a tnsnames.ora configuration file.
- In a tnsnames.ora file ('tns' is the abbreviation for 'Transparent Network Substrate') all Oracle based databases ('services') and the route via the network to get there, are described.
- An example of a description of the service:

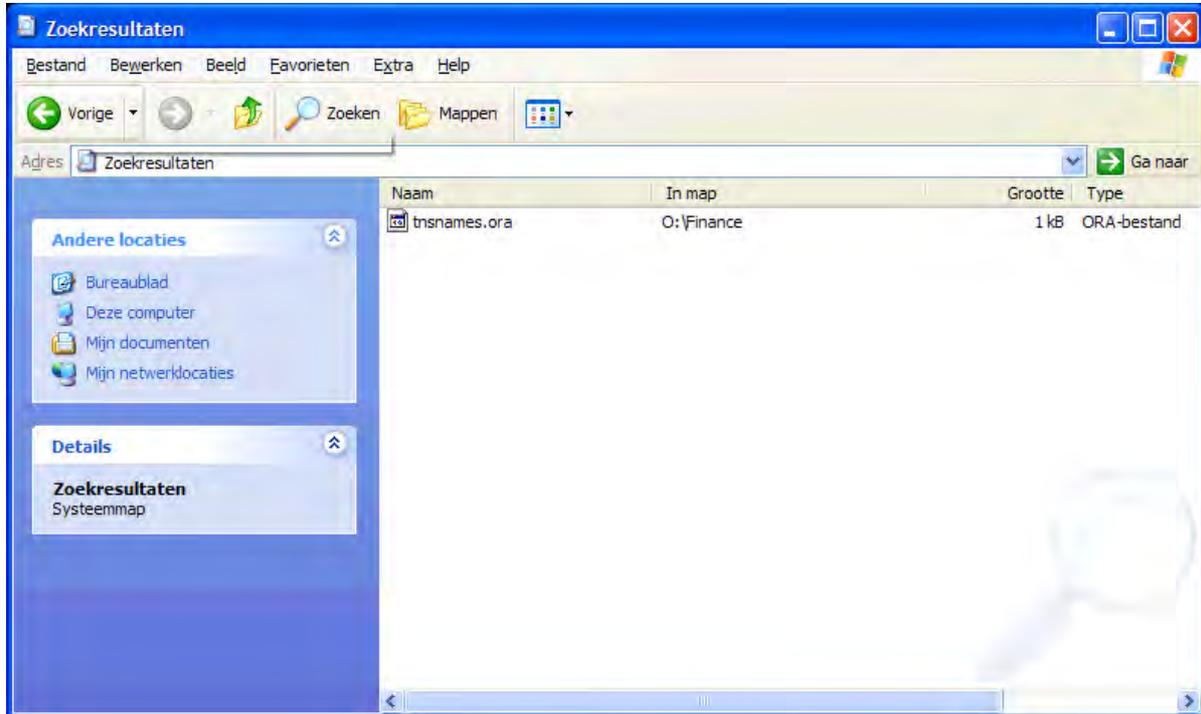
```
81 dvt11r2.invantive.local=  
82 ( description =  
83   ( address_list =  
84     ( address = (protocol = tcp) (host = 192.168.172.16) (port = 1521)  
85     )  
86   )  
87   ( connect_data =  
88     (sid=dvt11r2)  
89     (global_name = dvt11r2.invantive.local)  
90   )  
91 )
```

- This one describes that on the server with IP address 192.168.172.16 on port 1521 a program runs that knows how to make a connection with an Oracle database with the SID dv-

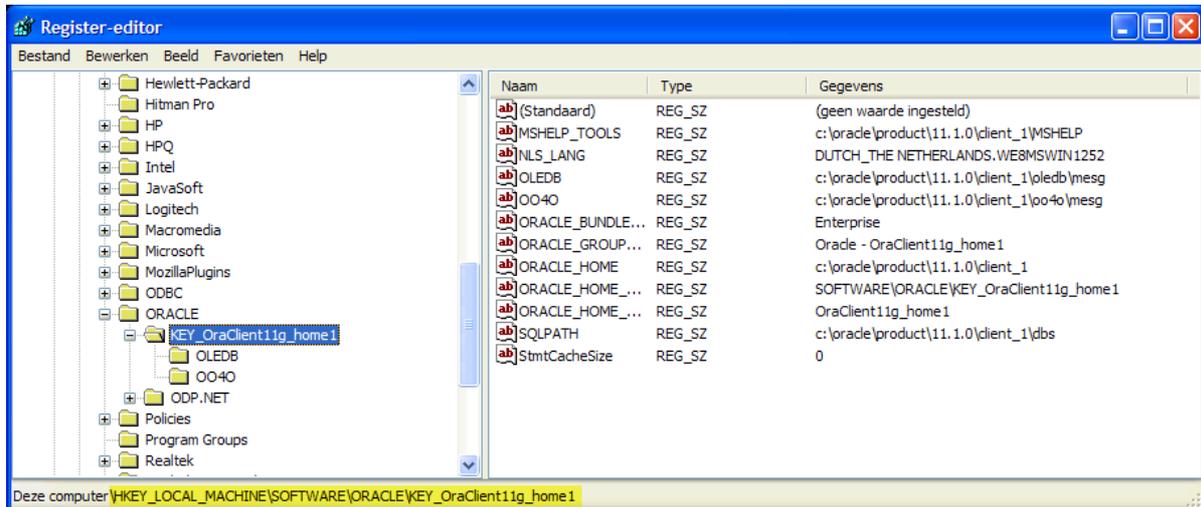


t11r2 and the global name dvt11r2.invantive.com.

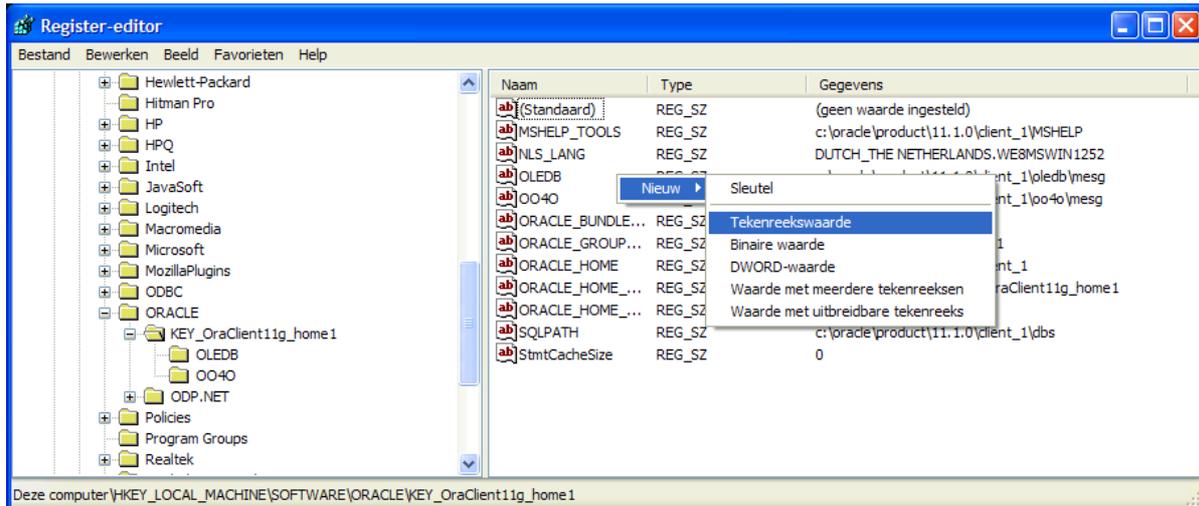
- Full instructions on creating tnsnames.ora can be found in the Oracle documentation.
- Make sure that the tnsnames.ora file is located on the same place on all PC's, preferably in way to make it easy to add services from a central location. For fixed workplaces often a network drive is used, for example, as follows:



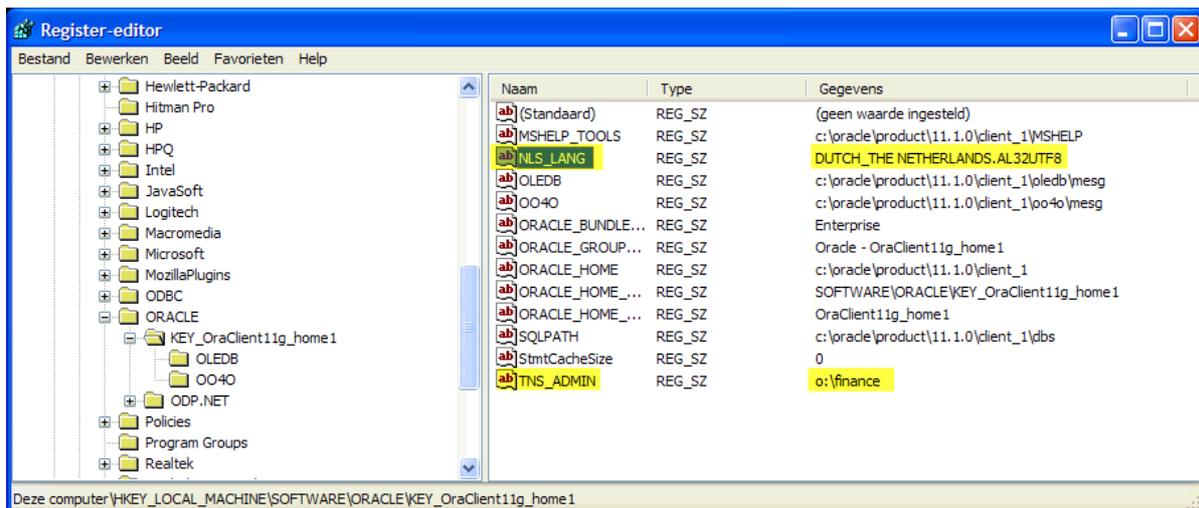
- Open the register with 'regedit' and go to the key HKLM\SOFTWARE\Oracle\KEY\_OraClient11g\_home1:



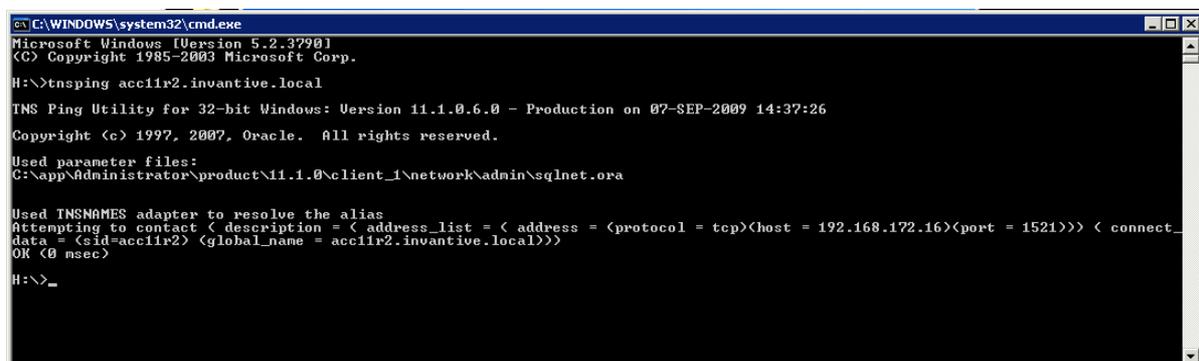
- Add a string with the name 'TNS\_ADMIN' and make it point to the network location:



- Change also the NLS\_LANG to 'DUTCH\_THE\_NETHERLANDS.AL32UTF8' to make sure that messages appear in dutch and the Unicode character set is used. If you use Oracle Instant Client, then there is no NLS\_LANG in the Windows registry; that's why you need to define the NLS\_LANG environment variable in Windows.



- If you use Oracle Instant Client, then there is no NLS\_LANG in the Windows registry; that's why you need to define the NLS\_LANG environment variable in Windows.
- Test the connection from a command prompt with 'tnsping':



- It is still not certain if the user/password are correct, but it is certain that a network connection to the Oracle service can be built.



- Finally, check the connection by logging in with SQL\*Plus.

### 3.7.5.2 Microsoft SQL Server Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition some suggestions are provided to execute the installation of the Microsoft programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

#### Installation Microsoft SQL Server Client

There are no installation steps for the Microsoft SQL Server Client. The Microsoft SQL Server Client is supplied with every .NET installation.

#### Configuration Microsoft SQL Server Client

There are no configuration settings for the Microsoft SQL Server Client.

### 3.7.5.3 MySQL Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition, some suggestions are provided to execute the installation of the MySQL programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

#### Installation MySQL Client

The MySQL Connector/Net client is available at <http://dev.mysql.com/downloads/connector/net/>. The installation of the MySQL client MySQL Connector/Net proceeds as follows:

- Double click the MSI installation file from the zip at above mentioned website.
- Choose the button 'Next'.
- Choose the button 'Typical'.
- Choose the button 'Install'.
- Choose the button 'Finish'.

#### Configuration MySQL Client

Specific settings for the MySQL Connector/Net client can be found at <http://dev.mysql.com/doc/refman/5.6/en/connector-net-connection-options.html>.

### 3.7.5.4 IBM DB2 Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

Furthermore, some suggestions are given to execute the installation of the IBM DB2 programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

#### Installation IBM DB2 Client

Install the IBM DB2 Data Server Driver as described on <http://pic.dhe.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=%2Fcom.ibm.swg.im.dbclient.install.doc%2Fdoc%2Ft0007315.html>.



## Configuration IBM DB2 Client

There are no configuration settings for the IBM DB2 Client.

## 3.8 Terminology

Hieronder beschreven we de gebruikte termen.

### 3.8.1 Channel

A channel is the medium on which data and requests are exchanged between an Invantive Producer client application and an Invantive Webservice server.

### 3.8.2 Connection

A connection is the definition of possibilities to establish a [channel](#) between an Invantive Producer client application and an Invantive Webservice server.

## 3.9 Versions

This chapter describes the changes in the application per version.

### 3.9.1 Release 2014 R1

Released: XX-XX-2014.

Invantive Producer: bXX.

Changes and bug fixes:

Number	Type	Description
22414	ER	IBM DB2 data provider support.
23456	ER	IBM DB2 ook via ODBC mogelijk maken.
22594	ER	Ondersteuning voor redundante verbindingen (failover).
23279	PR	Onder specifieke condities treedt een Byte[] error op bij gebruik van de w ebservice.

## Installation

- No specialties.

## Implementation

- No specialties.

## 4 Contact Information

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## Route

Follow the instructions of your navigation system. The offices are located above Carglass. Parking spots are on the right side. Parking spots are indicated with a sign with 'Invantive'.

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# **invantive**

**Solutions for  
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