



# + TANGO gateway

- Work of Martin Usé (2<sup>nd</sup> year student) from LGM
- Goal = interface TANGO to Scilab
- Scilab is a (great) free alternative to Matlab
- Tango is interfaced as a Gateway in Scilab
- Fully featured interface supporting all Tango features
- Current status:
  - tango\_read\_attribute() - ready
  - tango\_write\_attribute() - ready
- TODO:
  - tango\_command\_inout() - under development
  - packaging as part of Scilab using Atoms - started
  - Port and test on Windows – on hold
- Source code is available on Scilab forge:  
*<http://forge.scilab.org/index.php/p/tango-gateway/>*



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Console

Graphic window number 100001

```
-->A=[3 1];b=-5;
```

```
-->linsolve(A,b)
```

```
ans =
```

```
1.5  
0.5
```

```
-->[x0,kerA]=linsolve(A,b)
```

```
kerA =
```

```
- 0.3162278  
0.9486833
```

```
x0 =
```

```
1.5  
0.5
```

```
-->A=['1','1';'0','1'];c=['a1';'a2'];
```

```
-->solve(A,c)
```

```
ans =
```

```
!a1-a2 !  
!      !  
!a2    !
```

```
-->t=[0.5:0.1:1];
```

```
-->deff('u = f(t,y)', 'u = t')
```

```
-->ode(0,0,t,f)
```

```
ans =
```

```
0.125 0.18 0.245 0.32 0.405 0.5
```

```
-->|
```

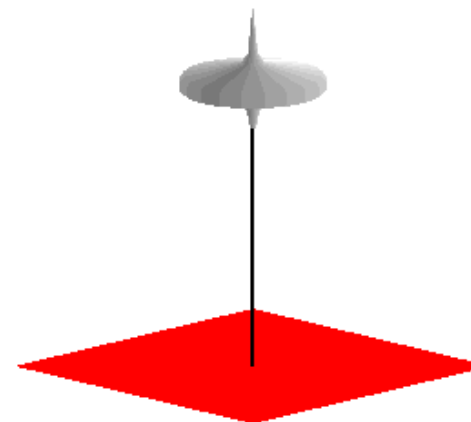
Height  
1.720

Theta  
0.280

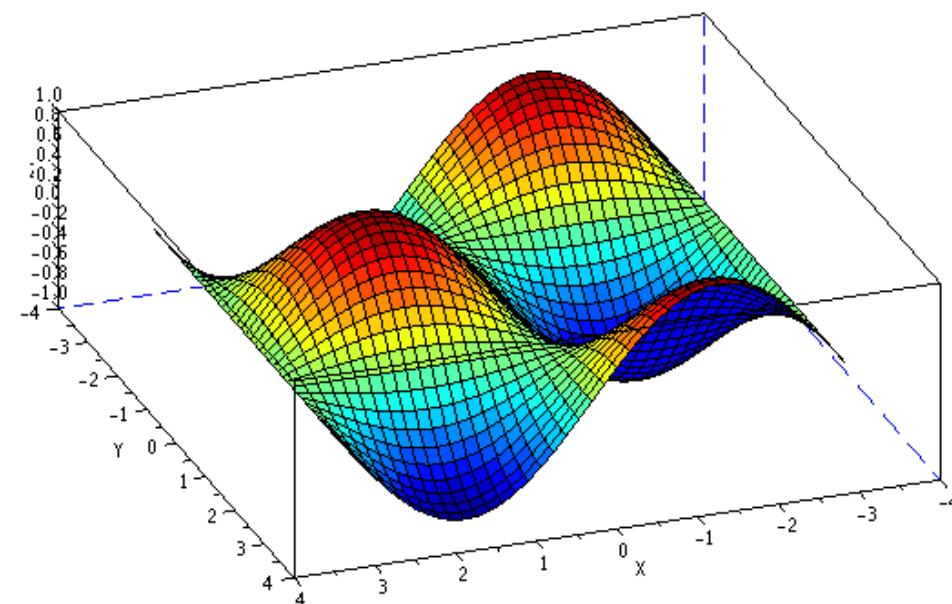
Phi  
0.000

Psi  
0.000

Start Stop Reinit



Graphic window number 0



# Online Help

The screenshot shows the Scilab Online Help browser interface. The title bar reads "File Tools ?" and "Help Browser". The left sidebar contains a tree view of help topics, with "Toolbox tango" expanded to show "tango\_read\_attribute" and "tango\_write\_attribute". The main content area displays the help page for "tango\_read\_attribute".

Navigation: << Toolbox tango      Toolbox tango      tango\_write\_attribute >>

Toolbox tango >> Toolbox tango > tango\_read\_attribute

## tango\_read\_attribute

How to read attribute from a Tango Device Server

### Calling Sequence

```
[double/string attr_value,double tango_error,double attr_time_stamp,double attr_quality] = tango_read_attribute(string device_name,string device_attr;
```

### Arguments

**Inputs**

To be able to read an attribute from a Tango Device Server, you need to use the function `tango_read_attribute()`.  
Two inputs arguments are needed :

- the address of the device server as a string. i.e. : "my/device/server"
- the attribute you want to read as a string. i.e. : "my\_attribute"

**Outputs**

The first output (`attr_value`) is the value of the attribute asked by the user. It can be a double or string  
There are three different formats accepted by this function : SCALAR, SPECTRUM, IMAGE.  
On this first version, string can be read only if it has the SCALAR data\_format.  
(check the Tango data\_format man in the Tango User's Guide)

The second output (`tango_error`) is a variable set to 0, if a Tango's Error occur, this variable will be set to -1.  
You could so check the result of a success or a fail of your call of `tango_read_attribute()`.

The third output (`attr_time_stamp`) give the timestamp of your attribute, the precision of this value depends on your scilab config.  
Please, check the `format()` (Scilab's function) to get more precision of your attribute.

The last output (`attr_quality`) return a double to give the quality of your attribute.  
(Please check the Tango User's Guide on the enum chapters)

# Click to run Example

File Tools ?

Help Browser

← → 🖨️ 🖨️

🔍

- Strings
- Sound file handling
- Time and Date
- Output functions
- Xcos
- Spreadsheet
- Console
- History manager
- Matlab binary files I/O
- Matlab to Scilab Conversik
- Compatibility Functions
- Advanced functions
- Development tools
- Demo Tools
- Dynamic/incremental Link
- ATOMS
- Tcl/Tk Interface
- Text editor (Scinotes)
- UI Data
- Online help management
- Parallel
- Modules manager
- Localization
- API Scilab
- call\_scilab API (Scilab engi
- Java Virtual Machine (JVM
- Java from Scilab
- Java Interface
- Intersci
- Preferences
- Windows tools
- Toolbox tango
- Toolbox tango
  - tango\_read\_attribute
  - tango\_write\_attribute

The third output (attr\_time\_stamp) give the timestamp of your attribute, the precision of this value depends on your scilab config. Please, check the format() (Scilab's function) to get more precision of your attribute.

The last output (attr\_quality) return a double to give the quality of your attribute. (Please check the Tango User's Guide on the enum chapters)

**Error and Exception handling**

You could me some errors or excpetions by using this function, You can meet two kinds of errors, Scilab's errors and Tango's errors. Tango's errors are fully describe with the reason, the severity, the origin, the description, you could so easily fix your problem. They are caused by a Tango error like : Database not online, Device not exported or not present in the Database ... the error code is 2XXX Scilab's errors are generate by a mistakes in your syntax : a missing parenthesis, a wrong type of input argument

**Examples**

First example to show how the function works

```
[a, b, c, d]=tango_read_attribute("sys/tg_test/1","State") ▶ 📄
```

Second example. Generate a tango error : a slash is missing in the device\_address so Tango is unable to reach your Device Server

```
[a, b, c, d]=tango_read_attribute("sys/tg_test1","State") ▶ 📄
```

Third example. Generate a scilab error : the quote are missing for the device\_address, Scilab is unable to understand that your input is a string

```
[a, b, c, d]=tango_read_attribute(sys/tg_test/1,"State") ▶ 📄
```

[Report an issue](#)

[Toolbox tango](#) [Toolbox tango](#) [tango\\_write\\_attribute >>](#)

# Result of tango\_read\_attribute()

The screenshot displays the Scilab 5.5.0 interface with three main panels:

- File Browser:** Shows the directory structure of the tango-gateway project, including folders like Debug, demos, doc, etc, help, jar, macros, pdf, sci\_gateway, src, and tests, along with files like C:\nppdf32Log\debuglog.txt, DESCRIPTION, DESCRIPTION-FUNCTIONS, README, and builder.sce.
- Scilab 5.5.0 Console:** Shows the execution of the command `[a, b, c, d]=tango_read_attribute("sys/tg_test/1","State")` and the resulting values for variables a, b, c, and d.
- Variable Browser:** Displays the values of the variables a, b, c, and d, all of which are of type Double.

The console output shows the following sequence of operations and results:

```
-->
-->
-->
-->
-->
-->[a, b, c, d]=tango_read_attribute("sys/tg_test/1","State")
d =
    0.
c =
    1.400D+09
b =
    0.
a =
    10.
-->
```

The Variable Browser shows the following data:

Name	Value	Type	Visibility
a	10	Double	local
b	0	Double	local
c	1.4e+09	Double	local
d	0	Double	local

The Command History panel shows the following sequence of commands:

```
help demo
// -- 19/05/2014 11:41:31 -- //
help
cd tango-gateway/
cd git/tango-gateway/
exec builder.sce
quit
// -- 19/05/2014 11:43:03 -- //
exec cleaner.sce
exec builder.sce
exec loader.sce
help
clear
cls
```