



# Gridbean for R

## Grid Computing with R

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# GRID

**Main idea of grid:** access distributed resources combined together in a seamless and secure way through Internet.

## **Definition of Grid:**

- Resources should be distributed without any centralized control.
- All protocols have to be open and standard.
- The use of distributed resources together should give more advantages than using them separately.

Foster, I., Kesselman, C. (1999) The Grid: Blueprint for a New Computing Infrastructure. Morgan Kaufmann Publishers.

Foster, I. (2002) What is the Grid? A Three Point Checklist. Grid Today, 1(6), Argonne National Laboratory and University of Chicago.



# UNICORE

## UNiform Interface to COmputing Resources

Unicore - open source technology which provides seamless and secure access to Grid resources.

Some of projects related to Unicore:

- UNICORE
- UNICORE Plus
- EUROGRID
- UniGrids
- DEISA
- eDEISA
- Chemomentum

<http://www.unicore.eu/>



# PL-GRID

The goal of the Project is to provide the Polish scientific community with an IT platform based on Grid computer clusters, enabling e-science research in various fields. The system will enable the integration of additional local clusters, belonging to universities, research institutions and technology platforms.

<http://www.plgrid.pl/en>





# GridBeans

**Gridbeans** - plug-ins enabling to run an application on the grid.

Some gridbeans are available in UNICORE Life project:  
<http://sourceforge.net/projects/unicore-life>

PL-Grid is going to ensure access to a variety of specialized software, f.e.:

- Gaussian
- NAMD
- R

# UNICORE Rich Client

UNICORE 6 provides a graphical client which allows to load gridbeans and submit jobs on target systems.

URC can be downloaded from:

<http://www.unicore.eu/download/unicore6/>

(Clients → Rich Client → Downloads → 6.2.2)





# GridBean for R

UNICORE Rich Client

File Edit Window Help

UNICORE

Grid Browser

- Grid
  - StanislawRegistry
    - Workflow engine at 158.75.12.146
      - NCU-SITE
        - NCU-SITE\_TargetSystem
          - NCU-SITE\_TargetSystem Home
            - R\_Plugin\_submitted\_at\_2009-09-26 15-29-36
- LocalRegistry
  - DEMO-SITE

Navigator | Keystore | Truststore | Log Monitor | Output for Job R\_Plugin\_submitted\_at\_2009-09-26 ...

**Histogram of data\$Dat1**

data\$Dat1	Frequency
1	2
2	6
3	3
4	5
5	1

1 of 3 Save

R | Files | Variables | Resources

R\_Plugin (finished) \*R\_Plugin

JobName: R\_Plugin

File Edit

```
data = read.table("data.txt", header=TRUE)
hist(data$Dat1)
hist(data$Dat2)
args <- commandArgs(TRUE)
x = as.integer(args[1])
x
mean(c(data$Dat1+x, data$Dat2+x))
hist(data$Dat1+x)
```

File: F:\Praca\R\Skrypty\skrypt7.r successfully saved.

Arguments to script

17

Upload files

F:\Praca\R\Skrypty\data.txt

Browse Remove



# WORKFLOWS

UNICORE Rich Client

File Edit Window Help

UNICORE

Grid Browser

- Grid
  - LocalRegistry
    - DEMO-SITE
  - StanislawRegistry
    - Workflow engine at 158.75.12.146
    - NCU-SITE
      - NCU-SITE\_TargetSystem
    - Global storage at 158.75.12.146

Tools

- Select
- Control Flow
- Applications
  - Blender v0.2
  - ClustalW v2.0.5
  - Generic v1.0
  - POVRay v3.51
  - R\_Plugin v2.0
  - Script v2.0
- Structures
  - If-Statement
  - While-Loop
  - Group
  - ForEach-Loop
- Variables
  - Declaration
  - Modifier

\*ExampleWorkflow.flow \*Oct01-11h12m-ClustalWJob1 \*JobR ExampleWorkflow.flow (finished)

Start → Oct01-11h12m-ClustalWJob1 → JobR

Navigator Keystore Truststore Output for Job J...

Histogram of regions\$Length

regions\$Length	Frequency
0-50	80
50-100	50
100-150	50
150-200	50
200-250	50
250-300	40

Downloading output file...workspace...

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**Thank You!**