B.I.R.O.

Best Information through Regional Outcomes

BIRO Architecture - part 2

From local BIRO system to central BIRO system

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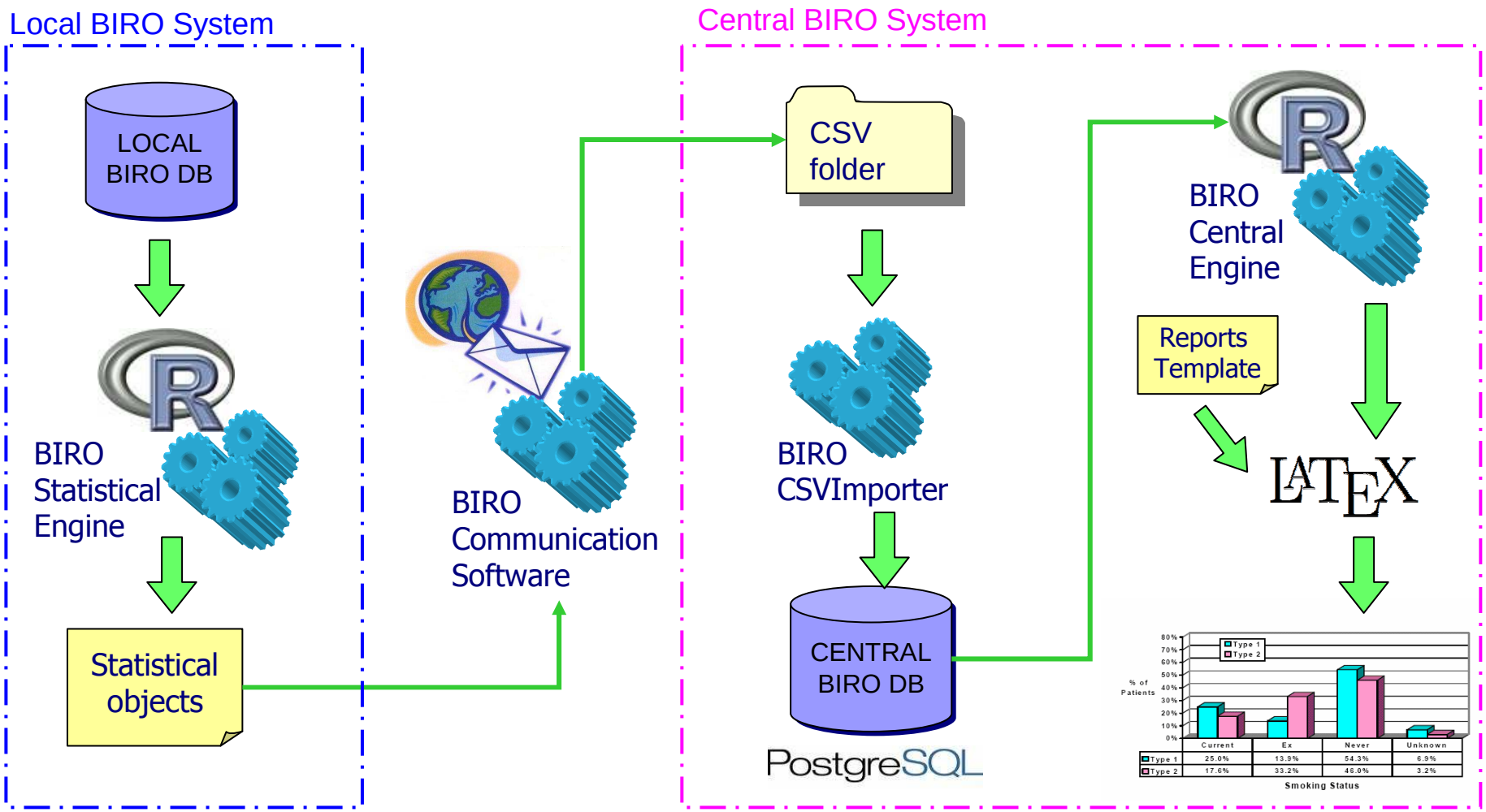
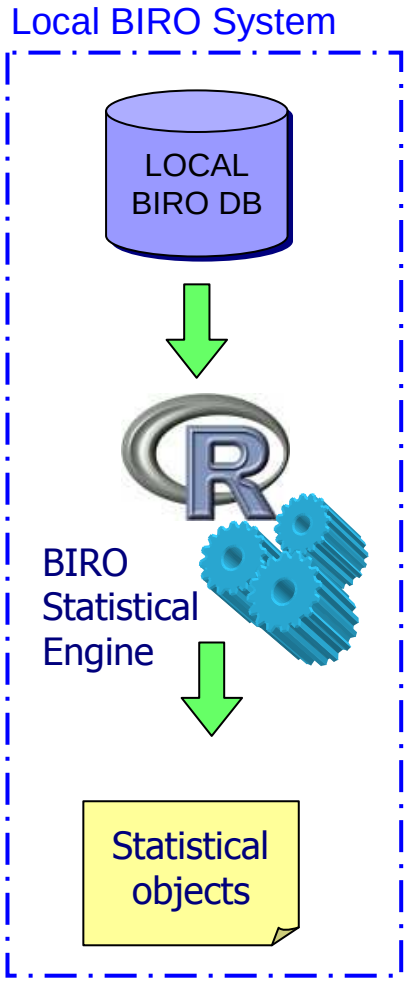
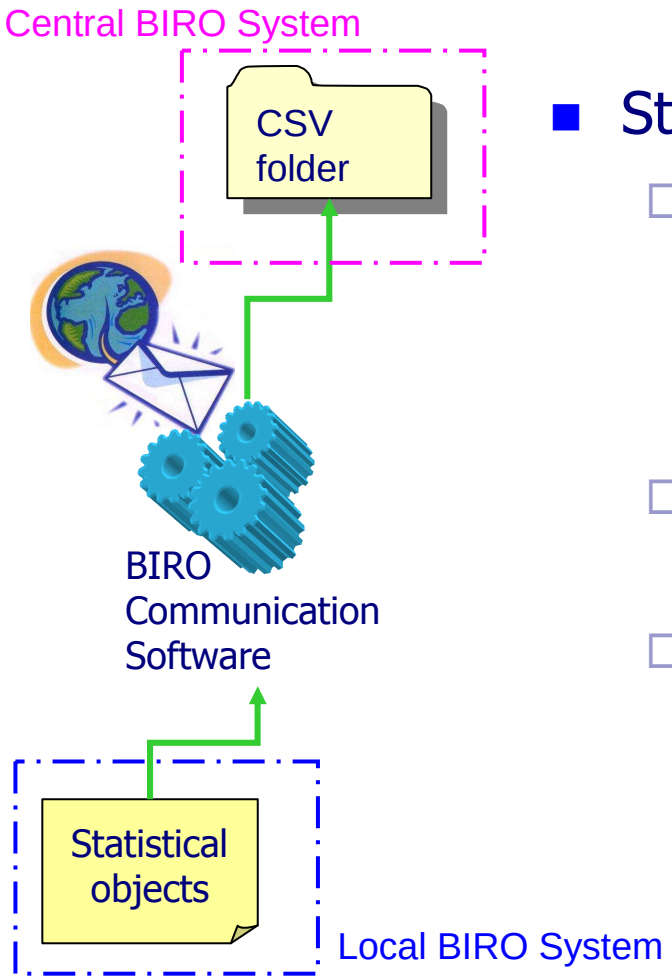


From local data to statistical objects



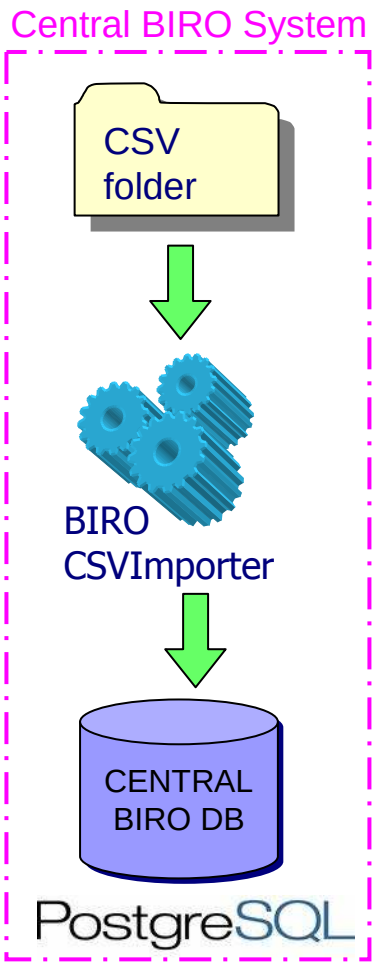
- Step 1
  - the context is still local BIRO system
  - BIRO Statistical Engine connects to local BIRO database and produces **Statistical Objects**
  - Statistical objects are tables that contain statistical aggregations of local data (arithmetic mean, percentile, variance, linear regression, logistic regression, bar plot data, histograms data, box plot data...)
  - Statistical Objects are stored as CSV files

From local system to central system



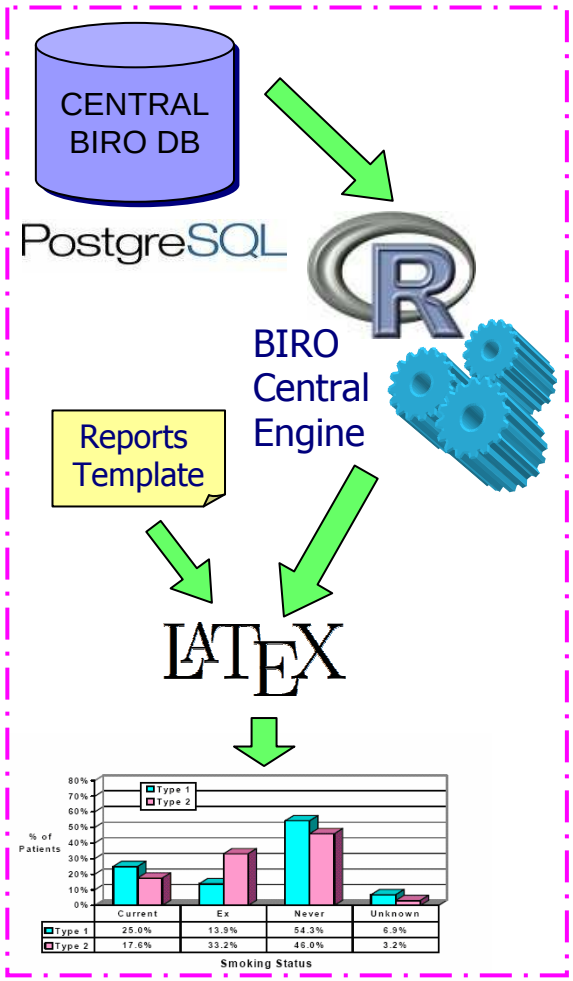
- Step 2
  - BIRO Communication software securely transmits Statistical Objects between Local BIRO System and Central BIRO System
  - Is there any problem in dealing with csv files?
  - In the Central BIRO System Statistical Objects are stored in a folder and classified by date and centre-id

Storing csv files to central database



- Step 3
  - BIRO CSVImporter reads CSV files and stores them into the Central BIRO Database
  - Central BIRO Database will contain as many tables as statistical objects
  - CSV files which refer to the same statistical object will be added to the same table
  - A sum of local component coming from several centres is called Cumulative Component

From central database to final report



- Step 4
  - The BIRO Central Engine connects to the Central Database
  - BIRO Central Engine performs a basic elaboration of Cumulative Components triggering PostgreSQL internal procedures
  - Refined elaboration is done by R functions
  - The output of Central Engine may be both a .csv file and a .html file and a .pdf file (Global BIRO Report) which is written using LaTeX.

BIRO CSVImporter

- BIRO CSVImporter is a software tool which is able to read .csv files and to store data into the BIRO Central database
- It is written completely in Java language
- It has been developed by UNIPG and specifically by Pietro Palladino
- A simple Java standard property file is used to configure the BIRO CSVImporter
- Similarly to BIRO Adaptor and BIRO Database Manager, we need to specify some JDBC parameters such as the JDBC driver class name to load, the database url, the user name and password

CSVImporter - configuration file

```
# JDBC Driver to use
DBDRIVER=org.postgresql.Driver

# JDBC url to connect to
DBURL=jdbc:postgresql://localhost/BIROCentralDatabase

# JDBC User name
DBUSER=user

# JDBC Password
# Specify [optional] the password for the database. If this field is empty it will be asked
    on input console for more security
DBPWD=pwd

# True if import process should use SQL transaction with high memory system it
    increases performances
USE_TRANSACTION=true
```

Using BIRO CSVImporter

- The CSVImporter is a batch process that does not need any user interaction
- It can be executed as a standard Java process from the console:

```
java -Xmx1024m -cp CSVImporter.jar:<jdbcdriver>
eu.biro.CSVImporterMain <CSVImporterConfig.conf> <Import>
```

- java is the Java Virtual Machine launcher
- -Xmx1024m is an option to allow the virtual machine to increase the memory
- -cp specify the class-path of the process
- CSVImporter.jar is the jar file containing the main class
- <jdbcdriver> is the jar file containing the JDBC driver class
- eu.biro.[…].CSVImporterMain is the fully qualified name of the main class
- <CSVImporterConfig.conf> is the path of the configuration file to load
- <Import> is the path of the import directory where the csv files are stored

Triggering the BIRO Process

- At the local BIRO system a simple GUI will allow the user to
  - export local data which resides into the local pc to XML files by running the BIROAdaptor
  - import XML files to the local BIRO database by running the BIRO Database Manager
  - output the local statistical report
  - send the local components of statistical objects to the Central BIRO System

Triggering the BIRO Process

- At the central BIRO system a simple GUI will allow the user to
  - import Statistical Object stored as csv files
    - another possibility is to load a csv file as soon as it has been received from the local BIRO system
  - run the statistical analysis and output the BIRO report