MELISSA

An R connector to I2B2 server

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MELISSA, goals

• to provide an interface between R statistical software and I2B2 servers;

• to enable the sharing of statistical models built on I2B2 hosted clinical data;

• to insure the traceability of these models, and their capability to be rebuilt.
MELISSA, goals
MELISSA, current state

- Tcl-tk written GUI;
- import of I2B2 hosted ontologies in R;
- import of clinical data from I2B2 CRC to R data frames;
- objects management;
- light POC of a statistical analysis (Kaplan Meier);
- Simulated model sharing functionality.
MELISSA, current state

Current Melissa
Object
Management in R

Object & events manager

Bundle (imported data)
- id;
- label;
- date

SOAP query
- connection parameters
- CRC query
- filtering and imported concepts

Facts Set
set of:
- concept
- timestamps
- patient ids
- value

Model (analysis)
- class, id;
- label;
- date;
- owner;

Model Parameters

GUI

I2B2

CRC

id
mngt

Ontology

...
MELISSA, current state

I2B2 XML messaging protocol is rewritten in R to connect Melissa and I2B2.
MELISSA, current state

Import of ontologies and data from I2B2 to R.

I2B2 ontologies and queries are mirrored in R workspace

New dataset building specifications with specific queries and concepts
MELISSA, current state

Analysis and modeling of imported data and concepts.

Analysis specifications based on imported concepts

Use and management of previously computed analysis

Model sharing
MELISSA, current state

Models publication and sharing (simulated.)

- Models published on the server
- Import models in R for leveraging or refreshing
- Owners of models can administrate them on the server
MELISSA, targeted solution

Future road map

• creation of a CRAN package;
• design a client-server computation framework so that R servers are close (on the same machine) to I2B2 data bases;
• find use cases and data;
• develop more models (classification, etc.)
• develop a Melissa model hosting cell in I2B2 Hive.
MELISSA, targeted solution

I2B2 & computation server

R Client

Object & events manager

manage

GUI

Bundle (imported data)
- id;
- label;
- date

SOAP query
- connection parameters
- CRC query
- filtering and imported concepts

Model (analysis)
- class, id;
- label;
- date;
- owner;

Model Parameters

use

Facts Set
set of:
- concept
- timestamps
- patient ids
- value

en refer to

AMIA2012