

Systems Biology Format Converter

A generic conversion framework



EBI is an Outstation of the European Molecular Biology Laboratory.

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Introduction

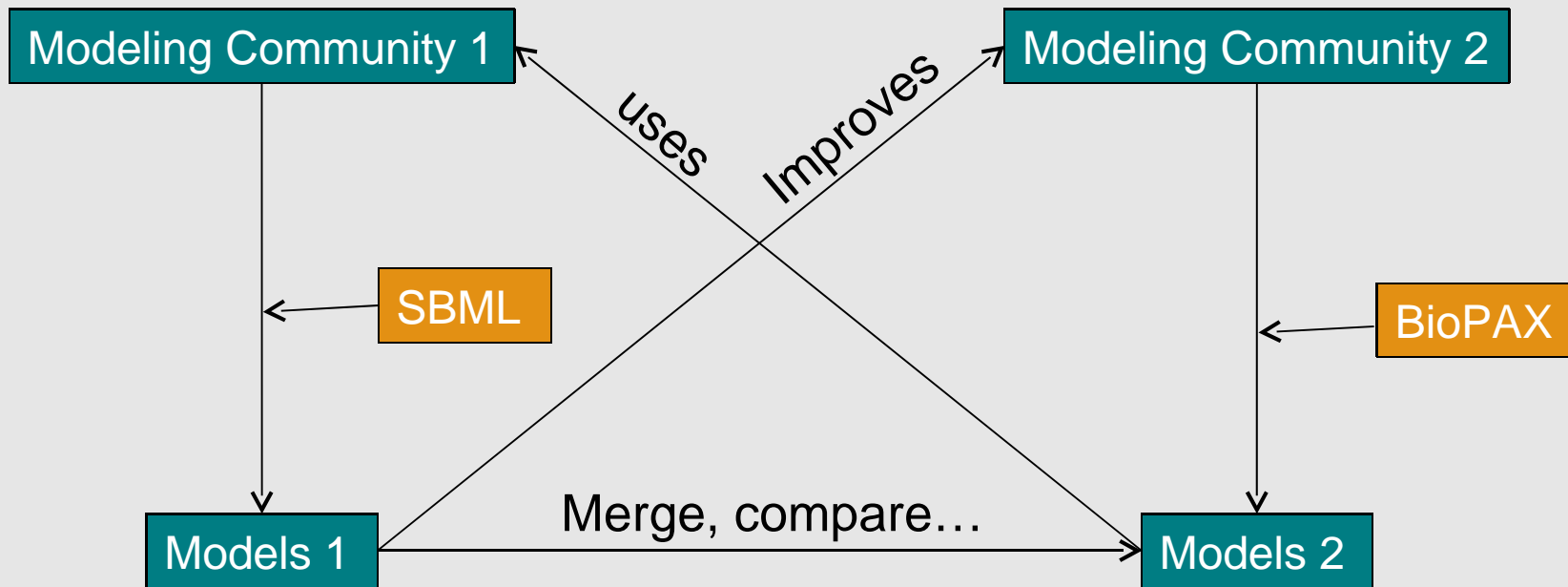
- 4 months internship in Hinxton (near Cambridge)
- Personal goals before the internship
 - Integrating a complex group
 - Using the knowledge acquired during the mastère
 - Trying to take advantage of my double competence

Project

- Context
 - The modeling community
 - Different goals
 - Descriptive models
 - Mathematical models
 - Different formats
 - SBML, BioPAX, CellML...
 - Octave, R, Matlab, Mathematica...

Internship project

Problematic



- Problem of inter-operability
- Need for conversion means between formats

Project

- Problematic
 - Lots of conversion tools already exist but :
 - They're all developed by different groups
 - All separated programs → different programming languages
 - Not always easy to use (different syntax...)
 - Not accessible as web applications or web services → need a local installation

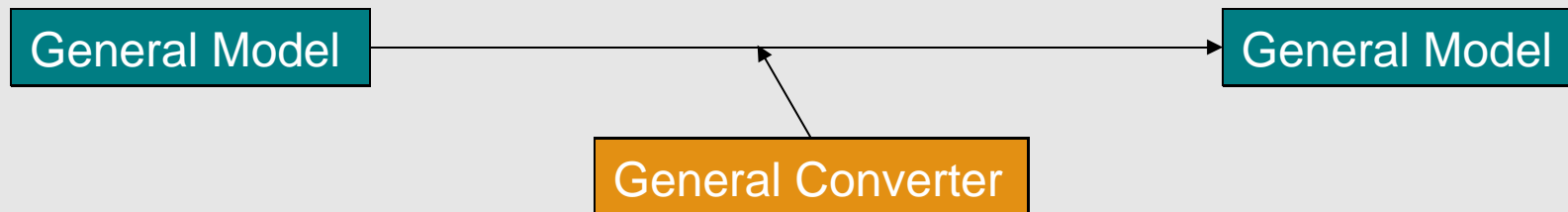
Project

- Goals

- Create a generic Framework in Java that can:
 - Potentially translate any format into another
 - Be updated with a new converter easily
 - Easy to use locally→ Project General Converter
- Create a web application for the General Converter
 - Models upload (file, URL, copy/paste)
 - Using the EBI resources (Computer Farm, servers...)
- Create a web service for the General Converter
 - Way to enable calls to the converter from a distant application

The SBFC package

- Specifications
 - Conversion framework
 - Single executable file
 - Generic conversion



→ Interfaces GeneralModel & GeneralConverter

Web application

- Specifications
 - Online application accessible from a simple browser
 - allow any user to convert models in a given format to another
 - from file(s) on their computer
 - from an URL
 - copy/paste the model in a text area.
- Program running on a server at the EBI
- Conversion jobs very demanding in terms of CPU or memory
 - The conversion jobs sent to another machine
 - Use of the Computer Farm

Live demo

Web service

- Specifications
 - Easy way to convert file from one format to another inside a program developed by a third party.

- Problems
 - Synchronisation
 - Several ways to make the call

Conclusion

- **Meant to be a collaborative project**

→ Sources available on SourceForge :