insilicoML: an extensible markup language format for describing multi-level biophysical models

Yoshiyuki Asai

The Center for Advanced Medical Engineering and Informatics Osaka University, Japan

Physiome and Systems Biology





insilicoML (ISML) is a XML language to describe biophysical functions

ISML has a compatibility with CellML, and will develop the compatibility with SBML and MML (JSim).

Besides ISML has complementary features to describe models. ISML can be a trial of possible implementations of these new features.

endf:ndf>

<is:editor type="isid

<is:insilico-model version="0.2"

xmlns:is="http://www.physiome.jp/ns/insilicoml" xmlns:rdf="http://www.w3.ora/1999/02/22-rdf-syntax-ns#"

information. author, affiliation, paper, dates, etc

Requirements

- ☆ It can express hierarchy of biophysical functions and structures.
- ☆ It can describe dynamics of biophysical functions
 - Ordinary / Partial differential equations, constraint conditions, etc
- ☆ It can describe structures related to biophysical functions
- Surface information, Volume information
- ☆ It can describe meta-information of the model and physiology.





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Capsulation

Α Æ ----> A A В Æ Æ A

- Capsulation is a way to increase a reusability of modules.
- ♀ A capsule defines a certain name space.
- Modules outside of scope of the capsule cannot access to modules in the capsule directly.
- A capsule module has output and input ports as like interfaces.
- ♀ Dashed connections in left figure are also Edges.

Reuse of Module



MEL

Traceability of Modules



V E sen



Compatibility with CellML



*insilico*IDE can import CellML models.

User can easily construct a new model by importing CellML files.

Translation CellML and insilicoML is fully supported



insilicoIDE



Modeling with Timeseries Data



Modeling with Morphological Data





Programmable ISML







Coordinators & Developers

http://www.physiome.jp/



Yoshi Kurachi @ MEI **Project Coordinator**



Taishin Nomura @ ES **Project Leader**



Ken-ichi Hagihara @ IST Project CoLeader



Yoshi Asai @ MEI Chief Developer



Hideki Oka @ FUJITSU PDE, FEM

Yasu Suzuki @ ES

Musculo-sckeletal CellML interface



Yoshi Kido @ MEI Meta Information Ontology



Yosuke Yumin @ ES Agent model simulation Large scale Cardiac cells



Yoshi Kagiyama @ MEI

Visualizatioin

Kei Tominaga @ ES neural network simulation



Taka Urai @ MEI **Chief Programmer**



Tatsu Okamoto @ MEI Database



Eric Heien @ IST Parallel computing

