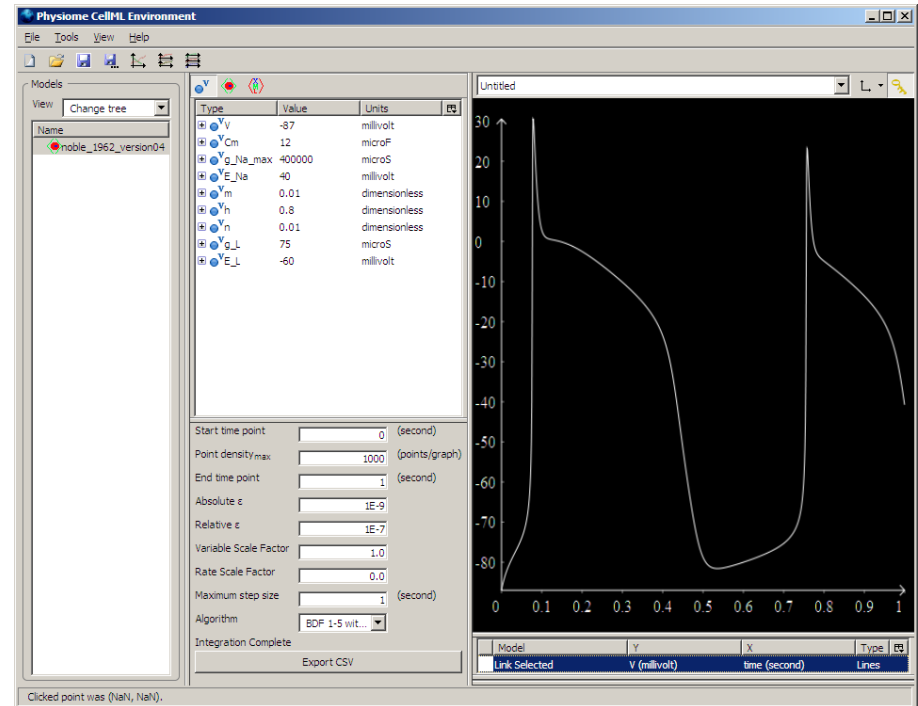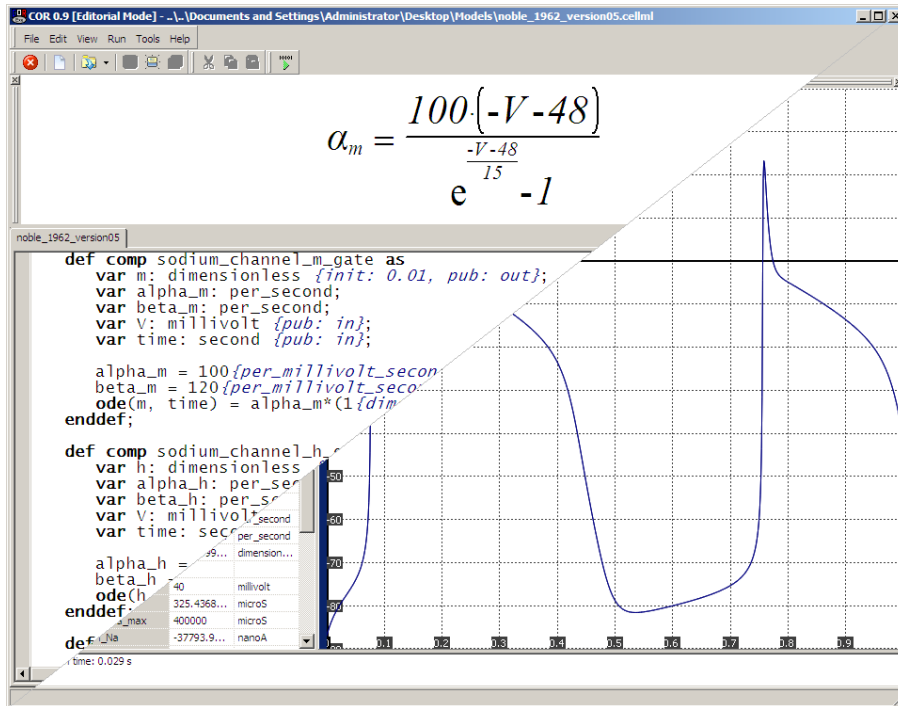# **Moving from COR to PCEnv/COR**

Alan Garny
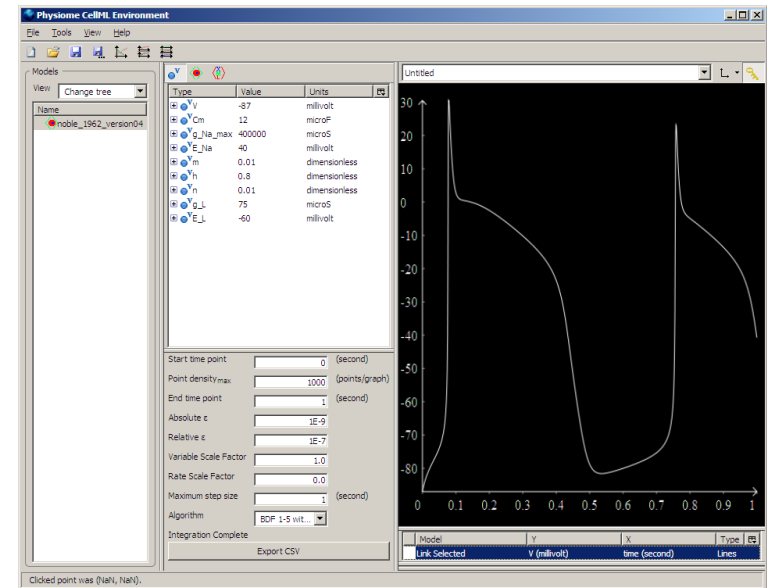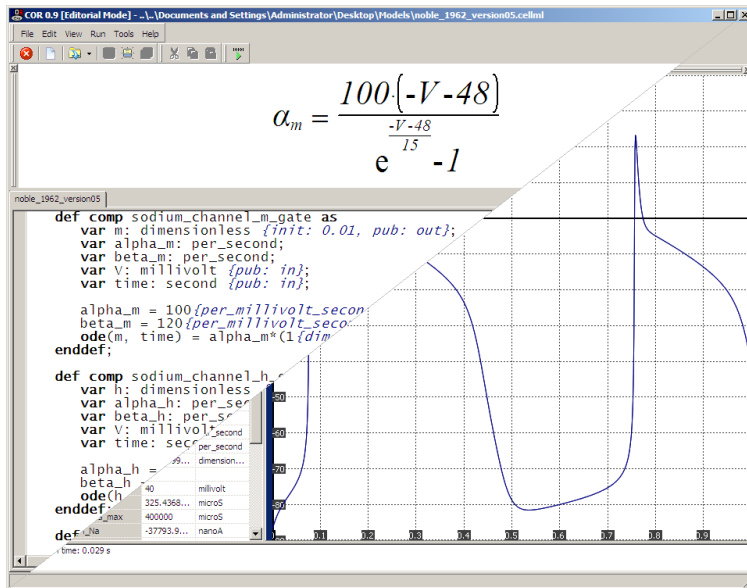
INTRODUCTION

- PCEnv and COR: two CellML environments with similar goals.

AIM

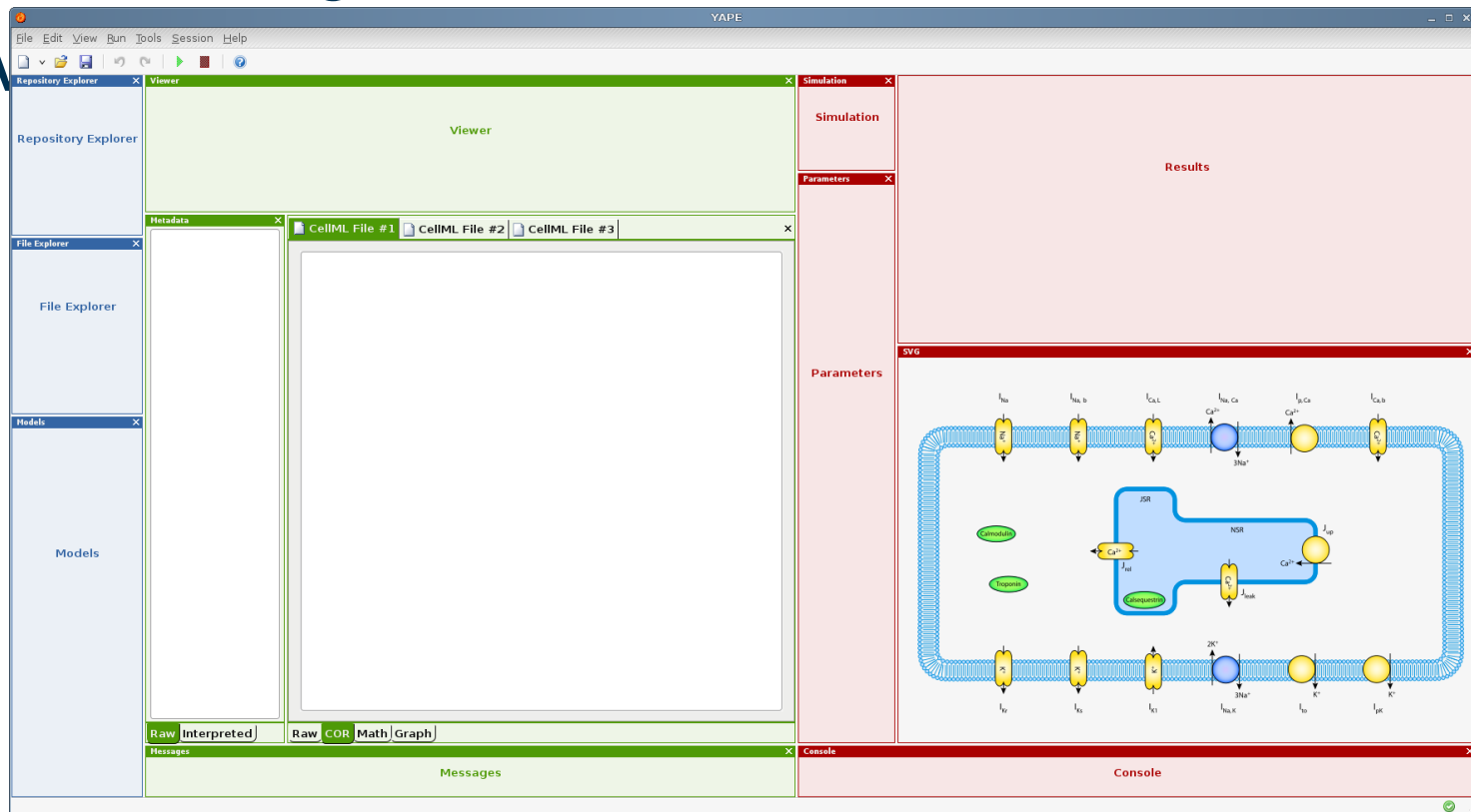# Yet Another Physiome Environment

PHILOSOPHY

- A three-step process:
  1. Organising;
  2. Editing; and
  3. Simulating.
- Env
  -
  -

ORGANISER

- **Repository Explorer**, **File Explorer** and **Models** organiser.
- Repository Explorer: 'link' to the CellML repository.
- File Explorer: mainly for consistency.
- Models organiser: organise models independently of their physical location.
- Drag/drop files from the Repository and File Explorers to the Models organiser and Editor.
- 'Diff' between two models.

EDITOR

- **Viewer**, **Metadata**, **Editor** and **Messages**.
- Viewer: graphically render units definitions, variable declarations and mathematical equations.
- Metadata: edit metadata using either a raw or interpreted view.
- Editor: edit CellML files using either a raw, COR like, mathematical or graphical view (or any other view).
- Messages: list any message related to the editing of CellML files and their metadata.

SIMULATOR

- **Simulation**, **Parameters**, **Results**, **SVG** and **Console**.
- Simulation: access to simulation parameters, including the integrator to use (e.g. CVODE).
- Parameters: access to the model parameters.
- Results: one or several graph panels for rendering simulation data.
- SVG: place holder for a SVG diagram.
- Console: list simulation information (e.g. computational time).
- 'Diff' between current simulation and default.

MISCELLANEOUS (I)

- **General:**
  - Concept of add-on (e.g. for computing electrophy-siological parameters or for testing/refining a parti-cular equation).

- **Organiser:**
  - To query the CellML repository for $I_{Ca,L}$ would not only return results for $I_{Ca,L}$, but also for *Cav1.3* (through ontology). Import of a given result would involve automatic mapping of parameters, conver-sion of units, etc.

MISCELLANEOUS (II)

- Editor:
  - Use Scintilla as the main editor (syntax highlighting, code folding, bookmarks, view splitting, etc.).
  - COR like view should keep things in the same order as in the CellML file.
  - Ability to comment a model (through metadata?).
  - Export to various languages (with or without lookup table (for any parameter) and/or partial evaluation).
- Simulator:
  - Debug mode (i.e. trace into a model).
  - Hijack mode (i.e. apply any protocol to one or several parameters; e.g. to create an IV curve).
  - Render complex parameters (e.g. $I_{Na}+I_{K}$).

CONCLUSION

- COR's strong point is on the editing of CellML files while PCEnv's is on simulating them.
- It would therefore make sense to merge the two of them, as well as add new features.
- To achieve the above, we would need to give YAPE (?) a proper identity and more people on board.

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