CORMAS Tutorial

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ESSA 2007 Conference

Outline

- Introduction
- How to design a model from scratch (StupidModel benchmark)
- Cormas and Role-Playing Games (MejanJeu)

What is Cormas?

Common-pool **R**esources and **M**ulti-**A**gent **S**ystems

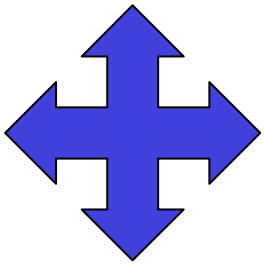
- For several years now, agent-based simulation software exist. User groups (including ecologists and sociologists) are organized around generic tools that facilitate the construction of models and offer facilities ("virtual laboratories") for monitoring and analysing simulation trials

- The "*Green*" research unit, from Cirad, is particularly interested in models for integrated renewable resource management.
  The multi-agent simulation software that we have developed, named **Cormas**, is oriented towards the representation of interactions between people using renewable resource

What are we doing ?

Artificial societies
Theory building

Applied models
Understanding by knowledge and data integration

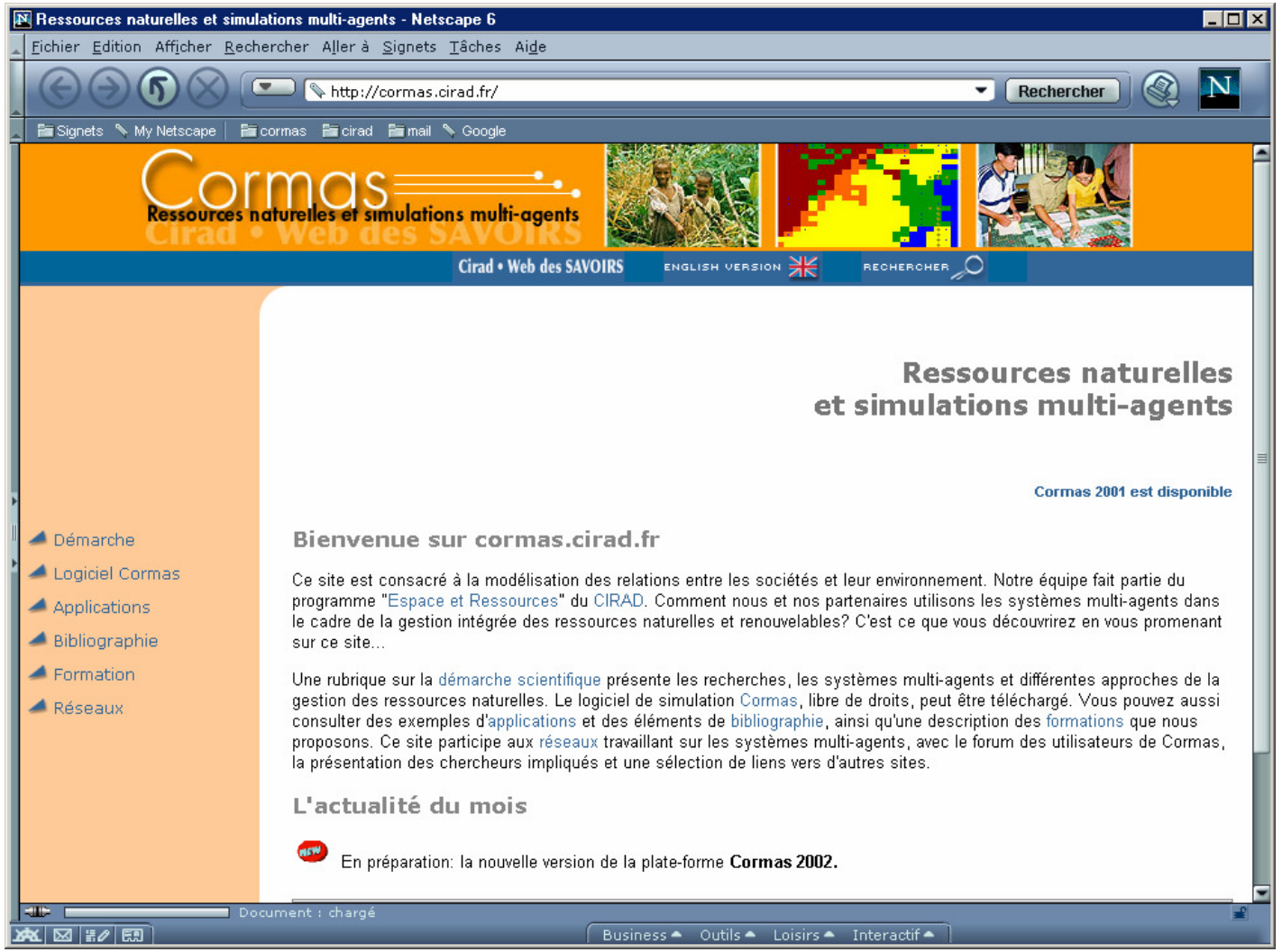


Platform implementation
Concrete capitalization, Improving the methodology

Action research
Using the models to help management

CORMAS web site

http://cormas.cirad.fr



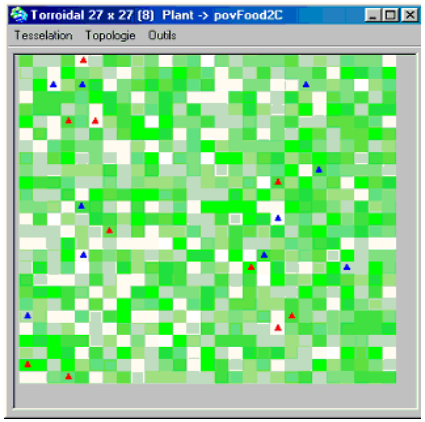
What are we doing ?

Artificial societies

Theory building

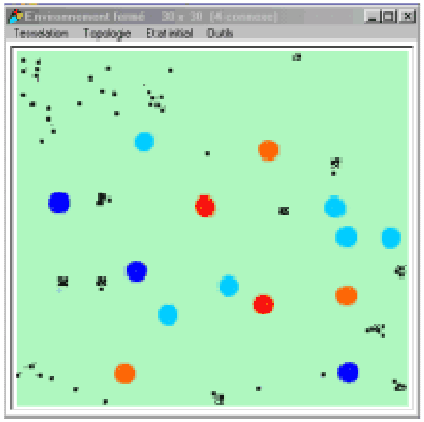
http://www.cormas.fr/en/applica/ecec.htm

Pepper, J.W. and Smuts, B.B., 2000. The evolution of cooperation in an ecological context: an agent-based model.
In: T.A. Kohler and G.J. Gumerman (Eds), Dynamics in human and primate societies. Oxford University Press / Sante Fe Institute, New York, pp. 45-76.



http://www.cormas.fr/en/applica/dricol.htm

Thébaud, O. and Locatelli, B., 2000.
http://jasss.soc.surrey.ac.uk/4/2/3.html



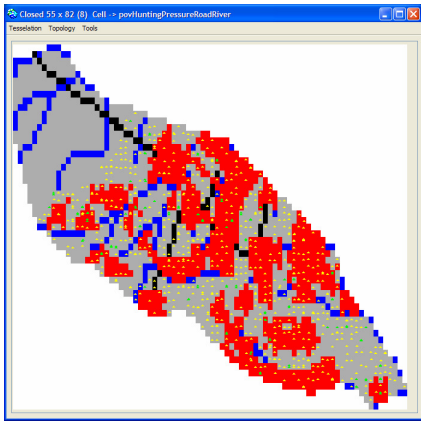
What are we doing ?

Applied models

Understanding the co-adaptation
between resources dynamics and socio-economic organization
by knowledge and data integration

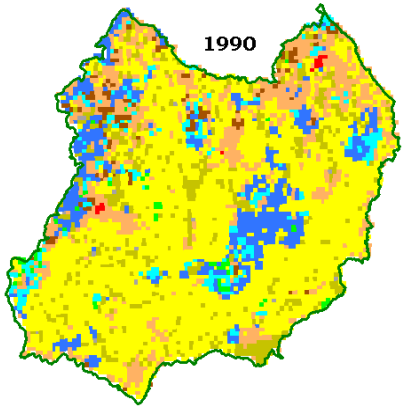
http://www.cormas.fr/en/applica/djemiong.htm

Bousquet, F., Le Page, C., Bakam, I. and Takforyan, A., 2001.
Multiagent simulations of hunting wild meat in a village
in eastern Cameroon. Ecological Modelling, 138:331-346.



http://www.cormas.fr/en/applica/mejan.htm

Etienne, M., Le Page, C. and Cohen, M., 2003.
A Step-by-step approach to building land management scenarios
based on multiple viewpoints on multi-agent system simulations.
http://jasss.soc.surrey.ac.uk/6/2/2.html



What are we doing ?

Action research

Using the models to help management

http://www.cormas.fr/en/applica/selfCormas.htm

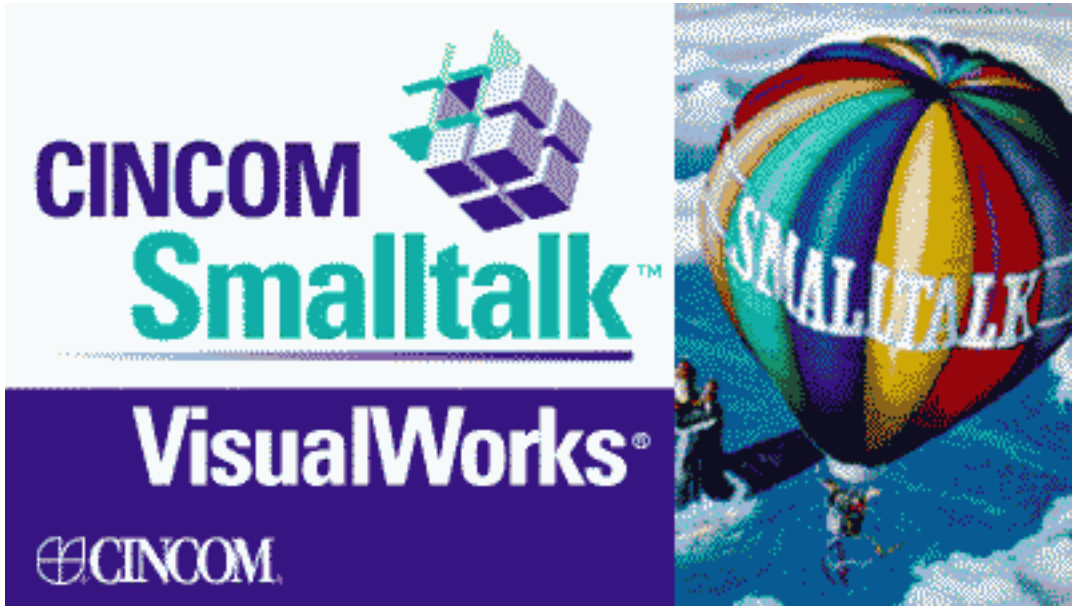
D'Aquino, P., Le Page, C., Bousquet, F. and Bah, A., 2003. Using self-designed role-playing games and a multi-agent system to empower a local decision-making process for land use management: The SelfCormas experiment in Senegal. *http://jasss.soc.surrey.ac.uk/6/3/5.html*

http://www.ecole-commod.sc.chula.ac.th/

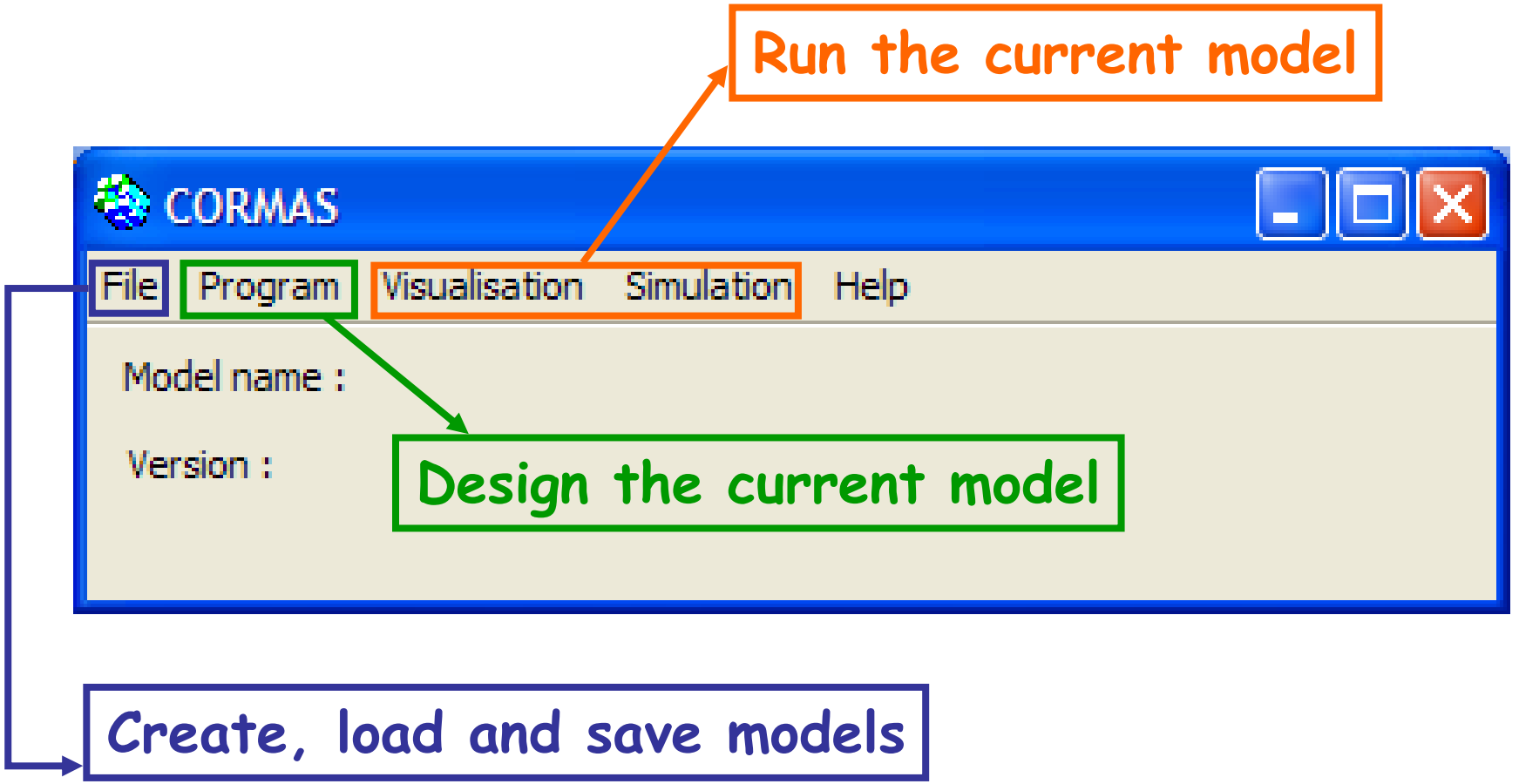
Gurung, T.R., Bousquet, F. and Trébuil, G., 2006. Companion modeling, conflict resolution, and institution building: sharing irrigation water in the Lingmuteychu watershed, Bhutan. Ecology and Society, 11:36. *http://www.ecologyandsociety.org/vol11/iss2/art36/*

What is Cormas?

- **Cormas** has been developed with **VisualWorks**, a programming environment based on the object-oriented language **Smalltalk**

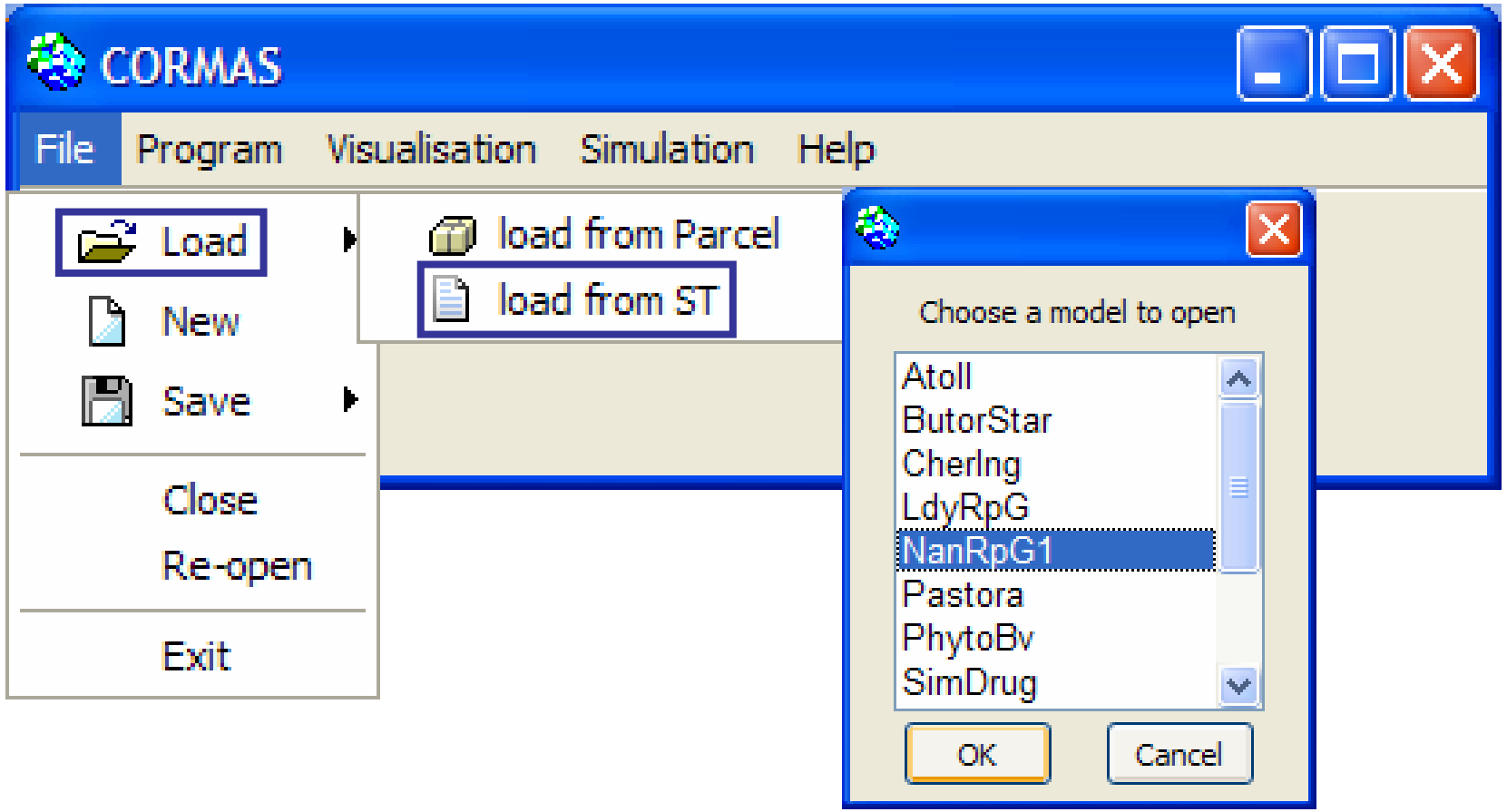


Cormas at a glance



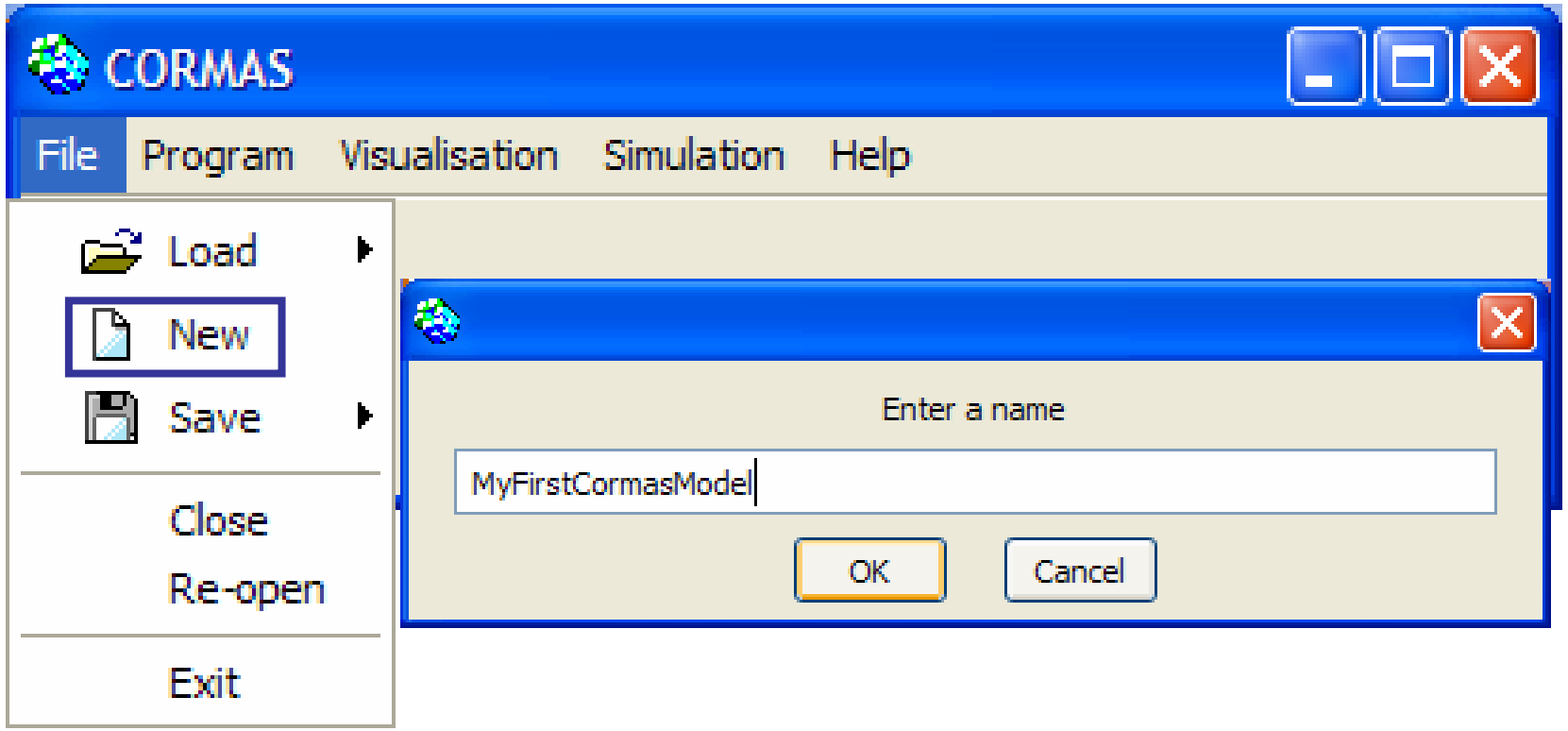
Cormas at a glance

Start to play with an existing model



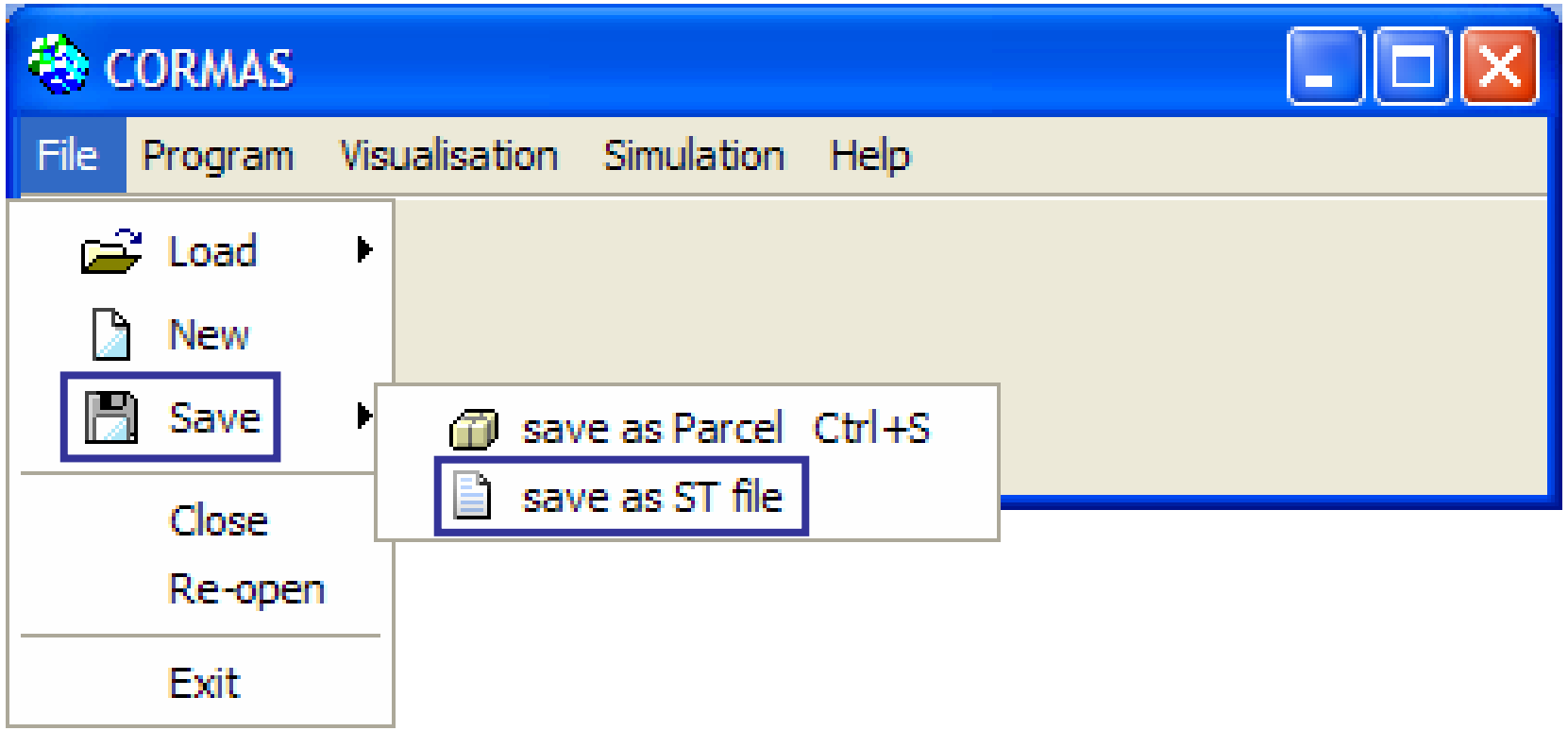
Cormas at a glance

Start to create a brand new model

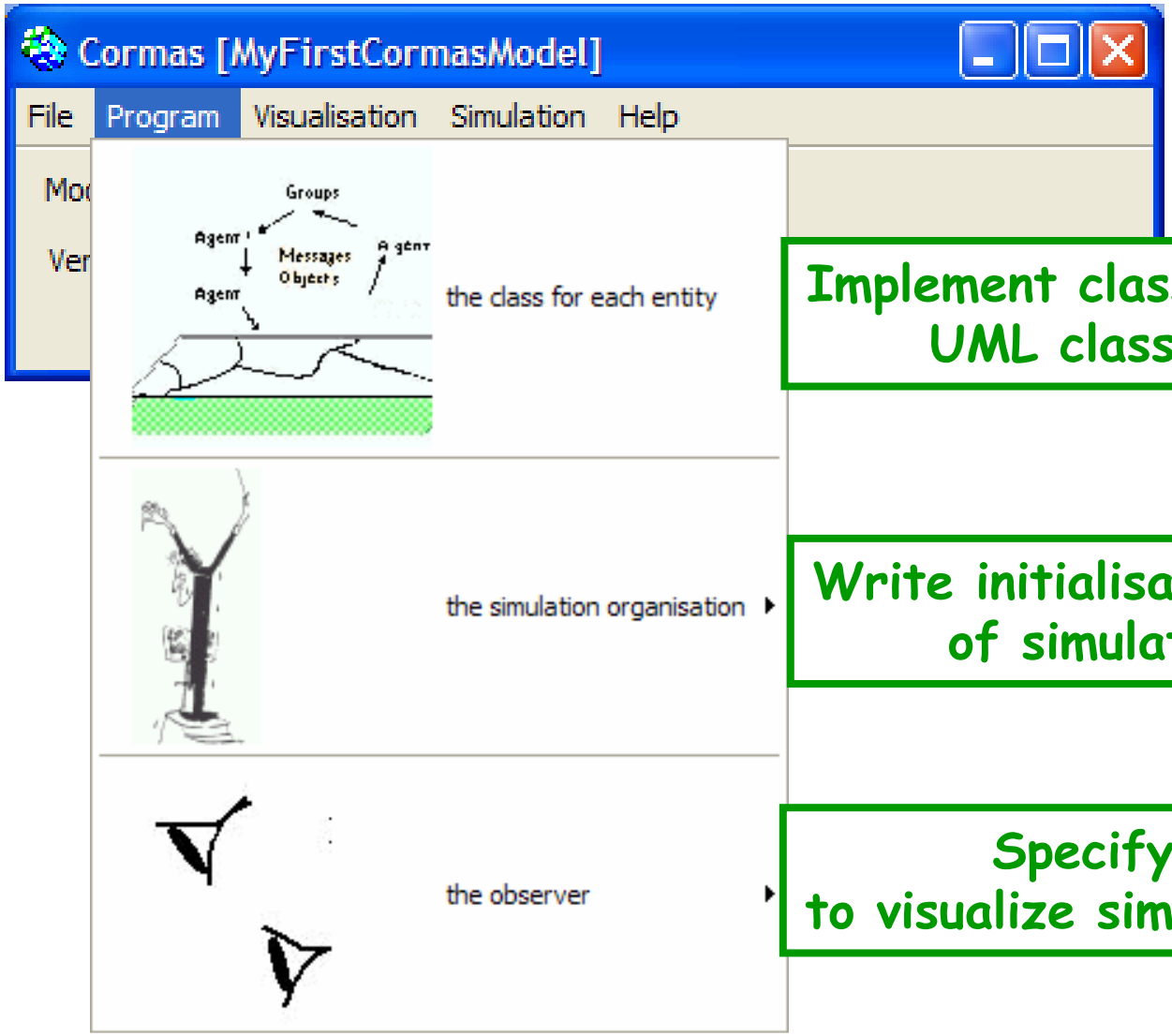


Cormas at a glance

Make your brand new model an existing one…



Cormas at a glance

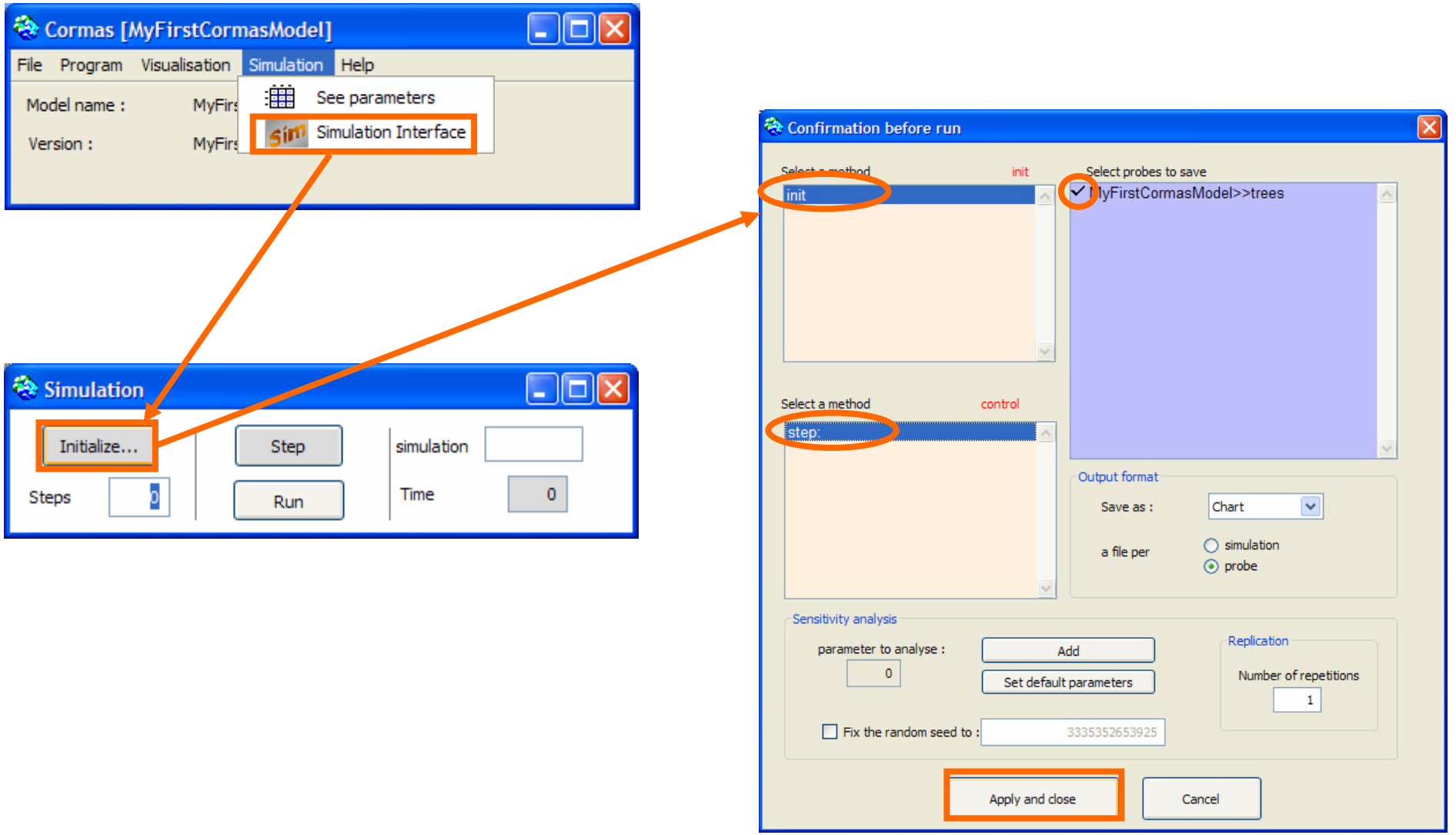


Implement classes from your UML class diagram

Write initialisation and scheduling of simulation scenarios

Specify means to visualize simulation scenario

Cormas at a glance



Cormas at a glance