

e-Infrastructures to support social modelling

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Outline

- **Speeding up modelling**
- **Distributed coupled modelling**
 - (Coupled modelling = building a model from two or more existing models)
- **Licensing and good science**
- **Ways forward**



Various ways to speed up modelling

- **Reduce the learning curve**
 - Applications: drag-and-drop modelling (e.g. Simile)
 - High-level Languages: closer to NL
- **Reduce development time**
 - Applications
 - Libraries
 - Standardised, avoid common mistakes, design patterns
- **Issues**
 - Bias/variance dilemma
 - Applications: High bias
 - Languages: High variance
 - Transparency
 - What is being done for you? What assumptions are made?



Distributed coupled modelling

- **Model fragments as self-describing semantic grid services**
 - Authors, version, platform, etc.
 - Related published material
 - Assumptions
 - Other required fragments
- **Potentially attractive**
 - Little or no programming effort
 - Reuse of existing models
 - Better scientific credibility
 - Advantage for multi/inter-disciplinary work
- **Issues**
 - Generalisation (misuse of existing models!)
 - Automated integration difficult (e.g. scheduling)
 - Repeated, potentially conflicting representations of the same concept in different fragments
 - Description language
 - (OWL: no processes.)



Licences for good science: rights

- **Access to executable & documentation**
 - Check/confirm model behaviour and parameter sensitivity
 - Model is still a black box
- **Access to source code**
 - Checking implementation
 - Like checking a mathematical proof?
- **Modify source code**
 - Checking implementation-specific dependencies
- **Publish modified source code**
- **GNU GPL-like licences allow this whilst preserving IPR**
 - ‘Free’ does not necessarily mean without financial cost!
- **Political issues**
 - Accountability of models used as a basis for advice to policy-makers
 - Software developed using public funds



Ways forward

- **Libraries**
 - Shared ownership of libraries (could be OO or rule base)
 - Publication & peer-review of contributions
 - Requires adoption by the community
 - Easier if language independent... somehow
 - Fragments?
- **Design patterns**
 - Avoids reinvention of wheel and repeating mistakes
 - Some sort of searchable medium is needed for publication (& peer-review)
 - Automatic verification that pattern has been adhered to?
- **Ontologies**
 - Comparing models & conceptual context of models
 - Comparing algorithms?

