Requirements for Phylogenetic Tree Visualisation - A User Driven Approach

Peter Hale, Tony Solomonides, Ian Beeson, Neil Willey, Karen Bultitude, Darren Reynolds University of the West of England

Research Question
‘To what extent is it possible to improve user-driven collaborative software development through interaction with diagrams and without requiring people to learn computer languages?’

Introduction
- Many computer literate people are experts in a particular domain, such as biology
- Enable computer literate scientists to model and visualise problems using software by minimising code writing
- User Driven Programming/Modelling

Problem Statement
- Software development is difficult for users - time, experience, access to programming tools
- Modelling with relationship tree and visualisation - possible to construct visualisation software for non programmers
- Methodology needed for creation of systems to enable collaborative end-user modelling/visualisation
- Methodology would use visualisation to allow scientists to model, visualise and debate taxonomies/phylogenies

Generally Models are not Requirements

Methodology
Translation
• Ontology representation is translated into a computer model
• Ontology defines relationships between things, apply this to Semantic Web
• Relationships conveyed to a software model that evaluates them
• Taxonomy visualised and output to web

Recommendations
• Enable people to create software visually
• Create design abstractions familiar to domain experts e.g. diagrams for engineers
• Ensure interoperability using open standards
• Automate user to computer translation process

Conclusion
Can Widen programming participation by including computer literate non-programmers -
Enable interactive modelling/visualisation of problem