DEPARTAMENTO DE INFORMÁTICA

Uncertainty in SW Development

SOFTWARE SYSTEMS / SE.MOVA Team

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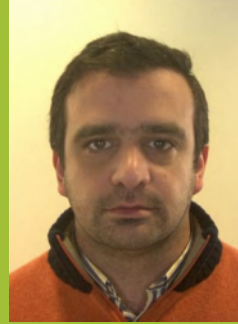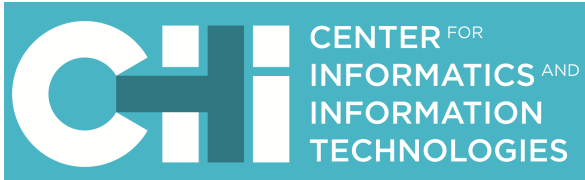
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Objectives

Uncertainty is a common factor in software development. Traditional approaches to software developmente seek to control and reduce uncertainty by eliminating it as soon as possible in the software development cycle. This requires the early identification and resolution of potential sources of uncertainty. A potentially negative consequence of this course of action is that relevant decisions may be taken too early, using speculative considerations, that may prove to be inadequate at a later stage. By creating mechanisms that allow uncertainty to be explicitly modelled and transmitted throughout the software development cycle, uncertainty is reifeid and can be handled as yet another factor in SW development, to be resolved and handled at the most convenient moment.
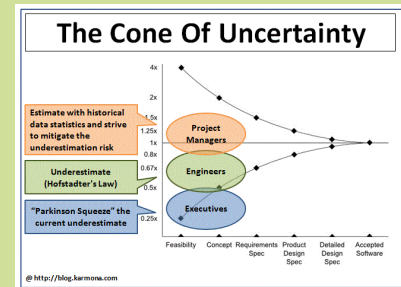

Eliminating uncertainty as early and often as possible. Maybe too prematurely in some cases ?...

Methodology

"If we knew what it was we were doing, it would not be called research, would it?"
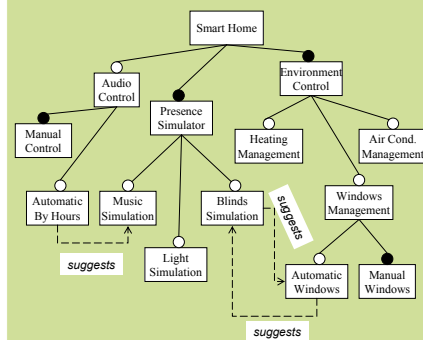*Albert Einstein*

- Devise techniques for explicitly representing uncertainty in SW development artefacts.
- Devise automated reasoning techniques and tools that take advantage of such information.
- Explore the application of those techniques to real word problems to assess and validate the benefits gained by using these approaches.

Soft constraints representing uncertain configuration restrictions in a feature model

Expected Results

- Embrace uncertainty by explicitly representing and handling it throughout the software development cycle.
- Automated tools to assist developers in better resolving uncertainty.
- Reduce the need to conduct speculative decisions early in development, thereby offering controlled flexibility that will be instrumental for improving the satisfaction of stakeholder's expectations.
- Product line development will also be benefitted, as increased domain complexity can be better handled and therefore a wider range of systems can be encompassed with no or little additional effort.

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By Jeremie Averous | Published June 20, 2012