



# Capturing and Maintaining Architectural Knowledge using Context Information

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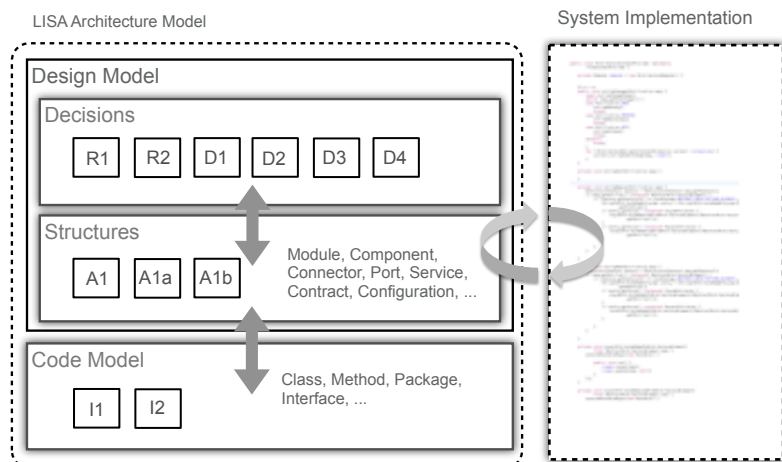
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## AKM in LISA



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## Capturing and maintaining AK

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- **Problems**
  - High effort in capturing knowledge [Lee 1997][Capilla 2008]
  - Lack of motivation [Lee 2007]
  - Cost/benefit relationship [Tang 2006]
  - Lack of time and budget [Tang 2006]
  - Difficult to capture and describe design decisions during development process [Lee 2007]
  - Difficult to embed new decisions in the existing decision tree
- **Idea**
  - Use context information for capturing AK

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## Kinds of context information

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- Time
- User
- Tracing
- Textual similarity
- Working context

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## Example View

The screenshot shows the 'Decision Activity Context View' application. At the top, there is a table titled 'Contextbased Decisions' with columns for CRI and various utility values. Below this is the 'TraceabilityView' section, which displays a hierarchical diagram of decisions. The top decision is 'Use different information to calculate the context for an architectural element', which is highlighted in yellow. It branches into several sub-decisions: 'Use tracing information for calculation', 'Use user information for calculation', 'Use time information for calculation', 'Use similarity information for calculation', and 'Use information about activated decision for calculation'. The 'Decision Information' panel on the right provides details for the selected decision, including a description of context utility functions and an 'Edit decision' link.

Contextbased Decisions	CRI						Last modified elements
Use different information to calculate the context for an architit	0,34	0,00	0,48	0,20	0,32	0,00	ActiveDecisionContextInformation
Provide decision context information for architectural elements	0,18	0,00	0,93	0,00	0,07	0,00	calculateContextInfo
Update the context information model only on specific user upc	0,08	0,00	0,00	0,87	0,13	0,00	getProviderID getProviderName

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## Experiences and further work

- Different context information providers are not equally useful
- Depending on application scenario
- Validate with controlled setting in student projects
- Very interested in potential cooperation regarding validation
- Support architecture reviews of SOA-based applications

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Thank you for your attention



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## References

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- [Tang 2006] A. Tang, M.A. Babar, I. Gorton, and J. Han, A survey of architecture design rationale, Journal of Systems and Software. 79 (2006) 1792-1804.
- [Lee 2007] L. Lee, and P. Kruchten, Capturing Software Architectural Design Decisions, Electrical and Computer Engineering, 2007 CCECE 2007 Canadian Conference on DOI - 10.1109/CCECE.2007.176. (2007) 686-689
- [Capilla 2008] R. Capilla, F. Nava, and C. Carrillo. Effort Estimation in Capturing Architectural Knowledge, Proceedings of the 2008 23rd IEEE/ACM International Conference on Automated Software Engineering (ASE '08). (2008) 208-217.

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