

Impact Analysis with Traceability

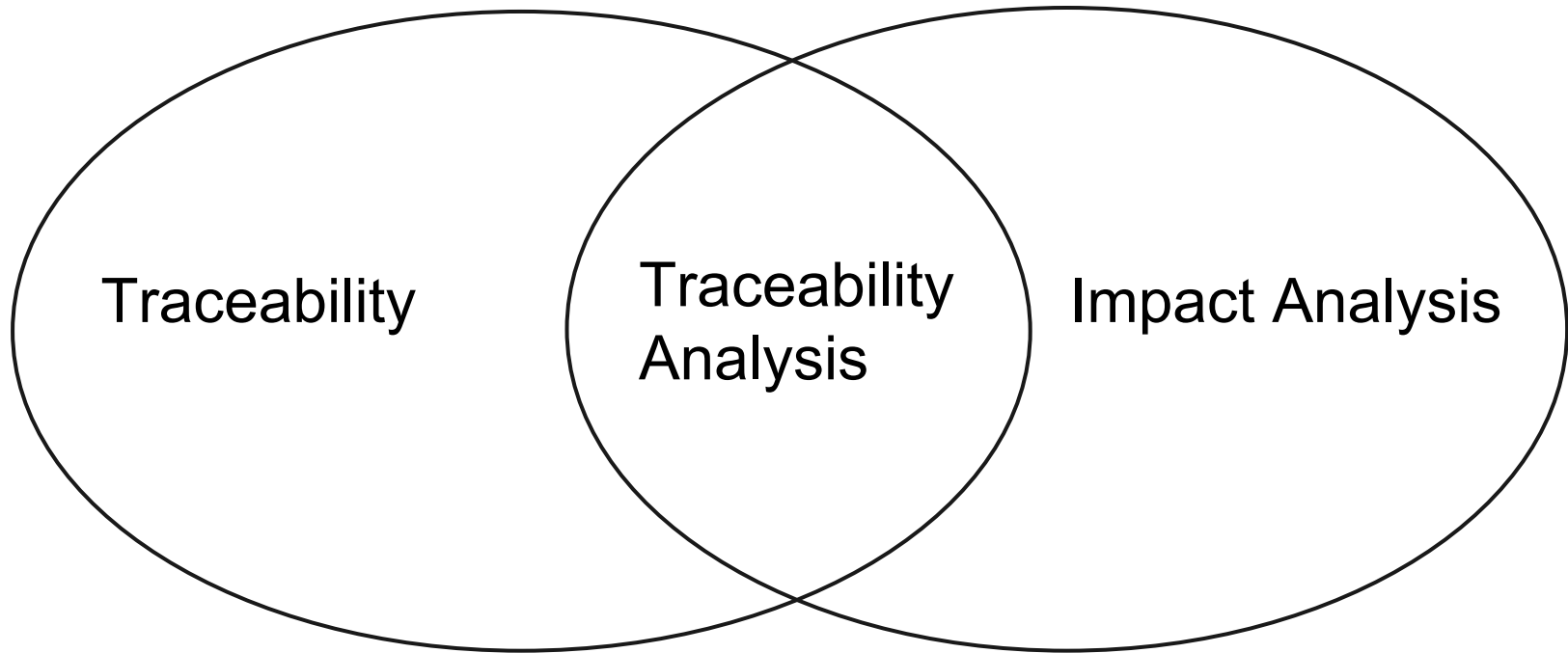
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Agenda

1. Impact Analysis
2. Traceability Analysis

1. Impact Analysis

Context



Definitions

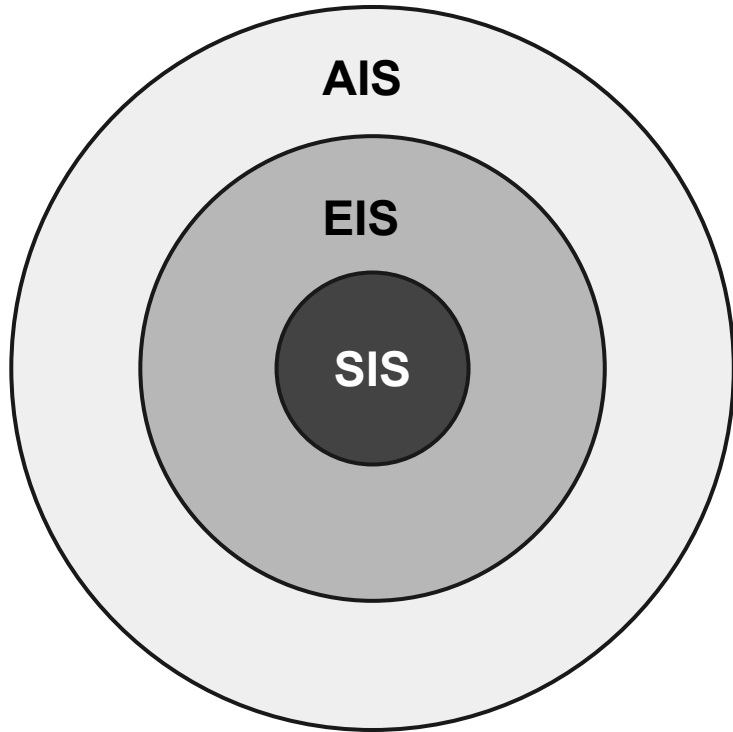
Impact Analysis

- Identify potential consequences of a change
- Estimate what needs to be modified to accomplish a change

Software Life-Cycle Objects (SLOs)

- Requirement
- Architectural component
- Class, Function, etc.

Concepts



SIS = Starting Impact Set

EIS = Estimated Impact Set

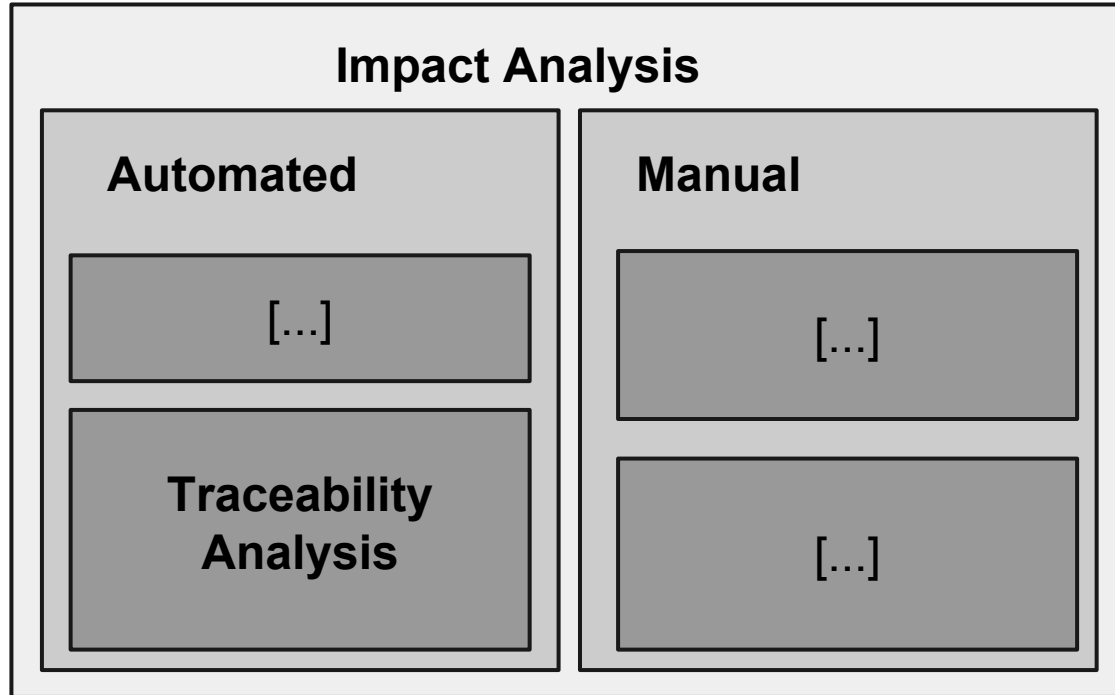
AIS = Actual Impact Set

⇒ There are dependencies
between SLOs

⇒ Dependencies need to be
known

2. Traceability Analysis

Context



Disambiguation

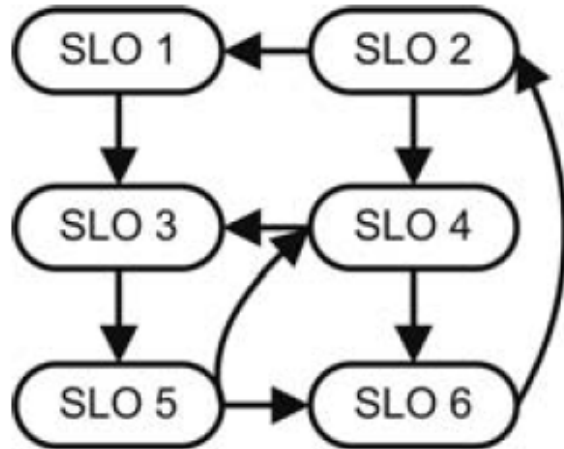
Dependency Analysis:

- Low level dependencies from source code analysis
- $\Rightarrow$ Very mature and precise, BUT not available until late in the project

Traceability Analysis:

- Relation among all types of SLOs

Basic Concept

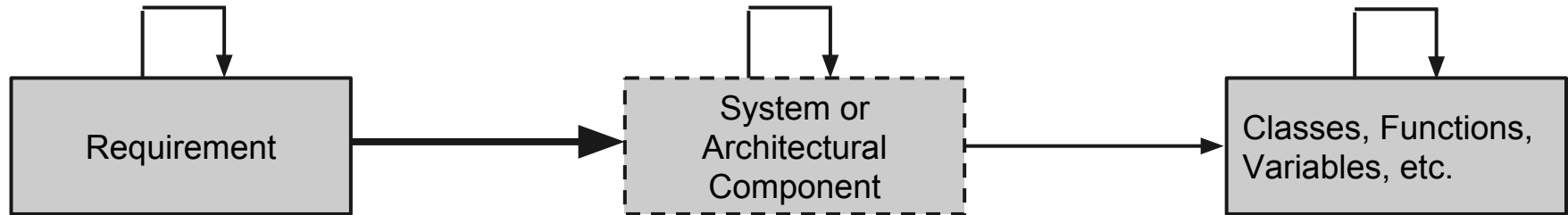


Connectivity graph

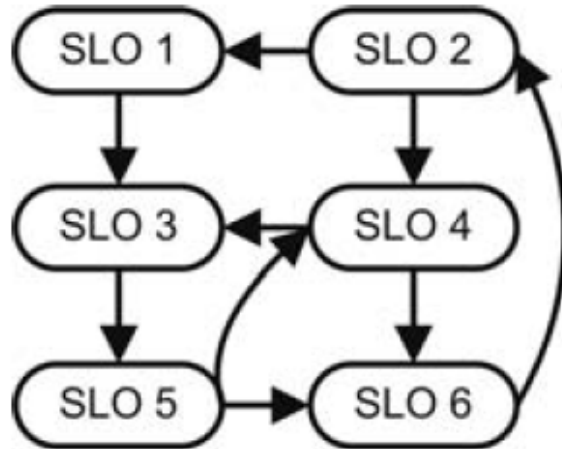
	1	2	3	4	5	6
SLO 1			⇒			
SLO 2	⇒			⇒		
SLO 3					⇒	
SLO 4			⇒			⇒
SLO 5				⇒		⇒
SLO 6		⇒				

Traceability matrix

Post-Requirements Traceability



Reachability



Connectivity graph

	1	2	3	4	5	6
SLO 1			⇒			
SLO 2	⇒			⇒		
SLO 3					⇒	
SLO 4			⇒			⇒
SLO 5				⇒		⇒
SLO 6		⇒				

Traceability matrix

	1	2	3	4	5	6
SLO 1		⇒	⇒	⇒	⇒	⇒
SLO 2	⇒		⇒	⇒	⇒	⇒
SLO 3	⇒	⇒		⇒	⇒	⇒
SLO 4	⇒	⇒	⇒		⇒	⇒
SLO 5	⇒	⇒	⇒	⇒		⇒
SLO 6	⇒	⇒	⇒	⇒	⇒	

Reachability matrix

Semantic Relationships

Different Types of traceability relationships

- Representation relationships
- Refinement relationships
- Dependency relationships

Thank you for your attention!

Questions?