On Usability in Requirements Trace Visualizations

Stefan Winkler `<stefan.winkler-et@fernuni-hagen.de>`

FernUniversität in Hagen

Charts and Tables

failed • untested • passed
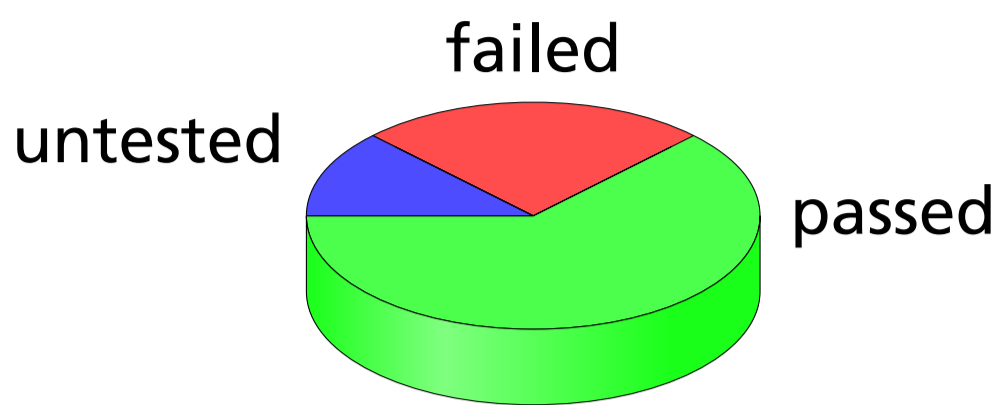
	#Req	LOC
Module 1	56	15823
Module 1.1	26	10536
Module 1.2	30	5287
Module 2	24	3578

Cross-References

id	content	traceability links
Req 1	The system shall…	▶ Req2 ▶ Req3 ▶ Class1
Req 2	The system shall…	▶ Req3 ◀ Req1 ◀ Req3
Req 3	The system shall…	▶ Req2 ◀ Req1 ◀ Req2

Traceability Matrices

	Req1	Req2	Req3
Class1	■		■
Class2		■	
Class3		■	■
Class4	■		

Trace Networks / Graphs

SysReq1 — The system shall…
SysReq8 — The system shall…
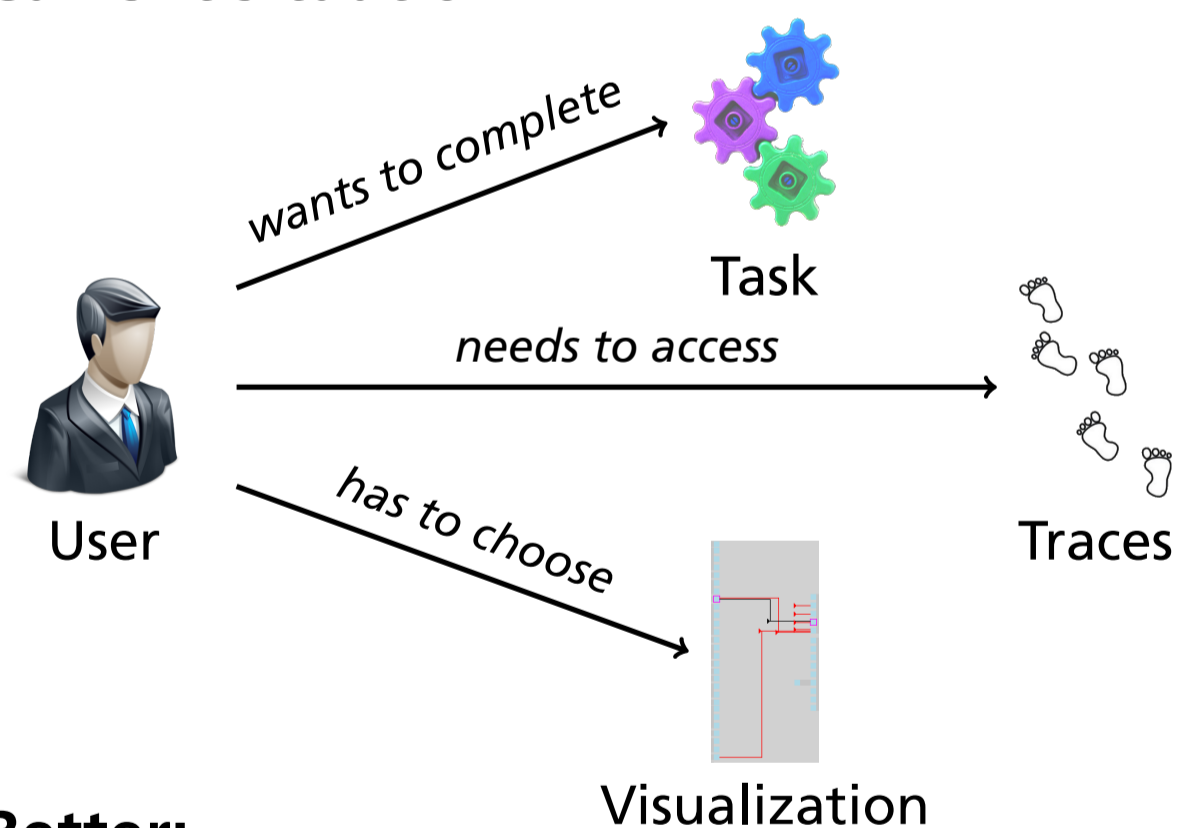SoftReq5 — The system shall…
Class 1
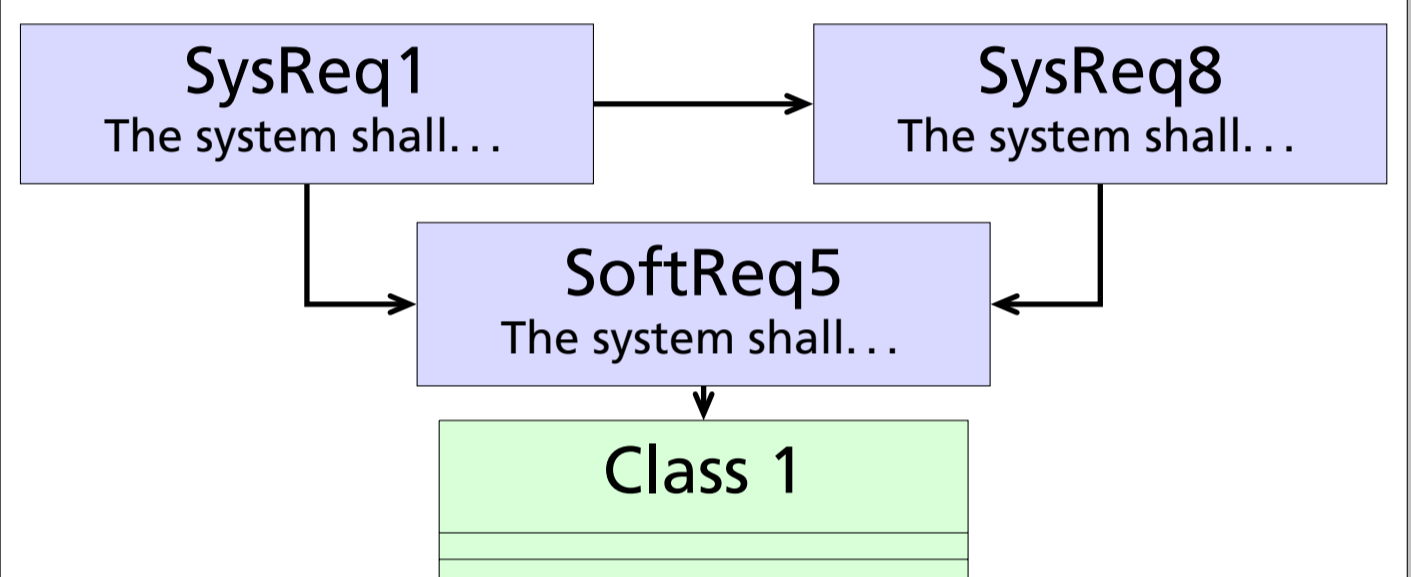
User roles, tasks, and access modes

	Process Mgr.	Customer	Project Mgr.	Auditor	Req. Engineer	Designer	Maintainer	Report	Search	Browse
			user role					access		
Prioritize requirements		×			×					×
Estimate change impact		×	×		×	×	×	×		×
Prove adequateness		×	×	×				×		
Validate artifacts			×	×	×	×			×	×
Test the system		×		×				×		
Support audits		×		×					×	
Improve changeability					×	×	×			×
Extract metrics	×		×					×		
Monitor progress			×					×		
Assess the process	×		×					×	×	
Track rationale					×	×	×			×
Understand the system					×	×	×			×
Establish accountability			×		×	×				×
Document reengineering					×	×				×
Reuse elements	×		×		×	×				×
Extract best practices	×							×	×	

Preliminary data – derived from literature

…should drive visualizations

Current situation:

User — wants to complete → Task
User — needs to access → Traces
User — has to choose → Visualization

Better:

what (task) • who (user role) • how (access) — results in → adequate visualization
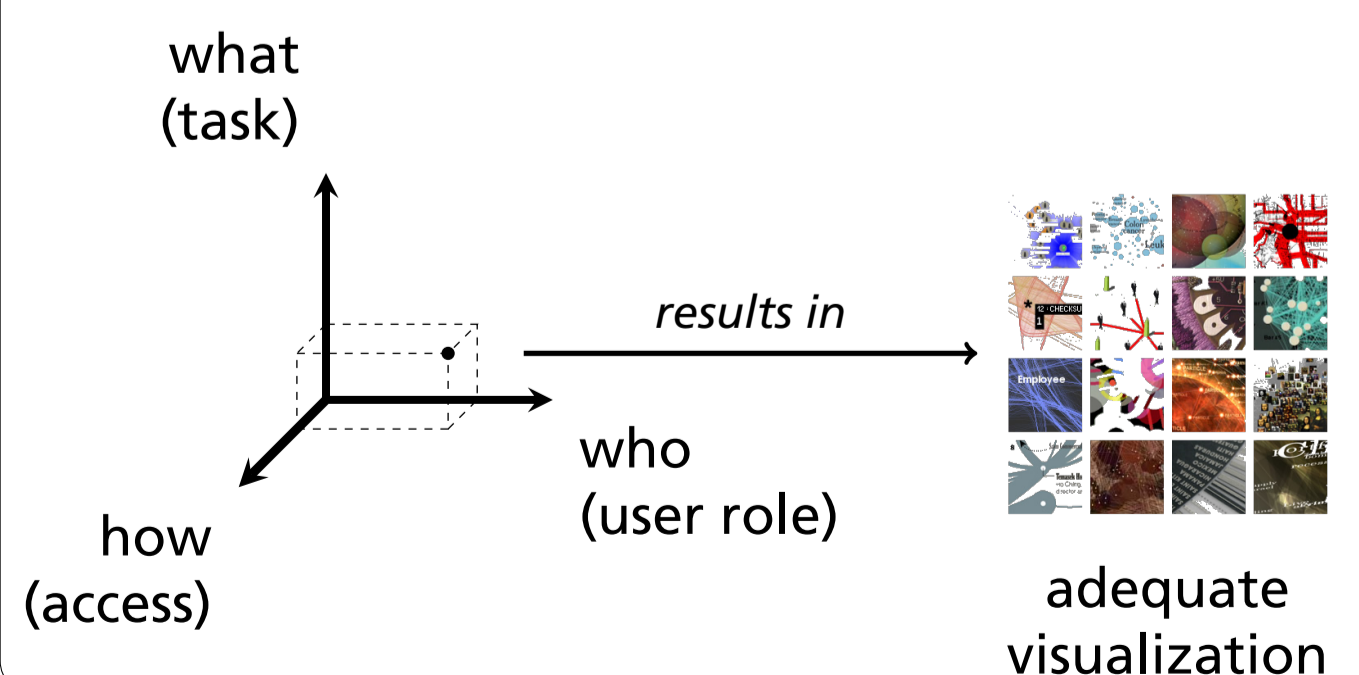
Making visualizations usable will better expose the benefits of traceability.