The Potential for Synergy between Information and Software Engineering Visualization

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Purpose

- Attempt to define overlap between SEViz and InfoViz
- Look for where opportunities lie for marriage of ideas
Two Decades of SE Visualization

- Development of visual notations and techniques for defining and communicating the understanding of a problem, its requirements and possible designs
- The demand for shared conventions has ultimately led to the UML
Goals of SEViz

- **Visualization as Artifact**
  - Clearly fix and communicate structures to facilitate development.

- **Visualization as Activity**
  - Reveal and understand hidden structures
Requirements of SEViz

- **Visualization of Artifacts**
  - Communicate structures.

- **Visualization of Activity**
  - Reveal states and dynamics of lifecycle processes.
Uses of Visualization

Requirements Engineering

Design

Software Development

Upstream

Downstream
From page 157 of [1]:
Req #: 75
Req Type: 9 (functional requirement)
Event/Use Case #: 6
Description: The product shall issue a warning when a recorded number of readings per hour is not within the manufacturer's specified range of readings.
Rationale: Failure to transmit readings accurately when the product is connected to a weather station is faulty and needs maintenance, and that the data fails to transmit readings.
Source: Road Engineers
Fit Criterion: For each weather station the product shall communicate to the user when the recorded number of readings per hour is not within the manufacturer's specified range of readings.
Customer Satisfaction: 3
Customer Dissatisfaction: 5
Dependencies: None
Conflicts: None
Supporting Materials: Specification of Rosa Weather Station
History: Raised by GBS, 28 July 99

From page 159 of [1]:
Req #: 110
Req Type: 11 (non-functional requirement - usability)
Event/Use Case #: 6, 7, 8, 9, 10
Description: The product shall record all the roads that have been treated.
Rationale: To be able to schedule untreated roads and highlight potential danger.
Source: Arnold Snow, Chief Engineer
Fit Criterion: The recorded treated and untreated roads shall agree with the drivers' road treatment logs.
Customer Satisfaction: 3
Customer Dissatisfaction: 5
Dependencies: None
Conflicts: None
Supporting Materials: None
History: Created February 29, 2006

From website of [1]:
Req #: 74
Req Type: 9 (functional requirement)
Event/Use Case #: 7, 9
Description: The product shall record all the roads that have been treated.
Rationale: To be able to schedule untreated roads and highlight potential danger.
Source: Arnold Snow, Chief Engineer
Fit Criterion: The recorded treated and untreated roads shall agree with the drivers' road treatment logs.
Customer Satisfaction: 3
Customer Dissatisfaction: 5
Dependencies: None
Conflicts: None
Supporting Materials: None
History: Created February 29, 2006

To This:

Magnus Rembold & Jürgen Späth in *Total Interaction*, Princeton Architectural Press, 2005,
Or This?

Arc Diagram of 63,000 Bible Cross-References,
Chris Harrison (CMU) and Christoph Römhild
Overlapping Concerns

- Information Visualization
  - Representational techniques to yield structure
  - Data yet to be structured
  - Metaphors used to yield structure

- Software Engineering Visualization
  - Complex structured data
  - Unstructured data
  - Structured data

- RE visualization

- Visual notations
Questions

- What are we looking for?
- What are the challenges?
- Where are the opportunities?
- How can we jumpstart research?