Itemized Strategic Dependency: a Variant of the *i** SD Model to Facilitate Knowledge Elicitation

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Introduction . . .

- **My area of research**
  - **Software Development Methodologies**
    - **Method Engineering (ME) / Software Process Improvement (SPI)**
  - **Conceptual Modeling**
    - ***i**-based Goal/Agent Oriented Modeling**
- **Involved in a SPI initiative**
  - **Ericsson Italy,** *Since August 2009*
  - **A software development team**
    - **9 coders, 6 testers**
    - **Middle Managers:**
      - **Requirements Managers (3 persons)**
      - **Project Manager**
      - **Team Managers (2 persons)**
 - **Willing to move to Agile**

Introduction . . .

- **Knowledge Elicitation** *is one of the early steps of any SPI initiative*
    - **Two Rounds of interviews**
        - **1st round:** Getting an initial understanding of organization
            - Process Flow Diagrams:
                - The order of activities in the as-is software development process
            - *i** SD diagrams:
                - Org complexities in terms of dependency relations among actors
        - **2nd round:** Verifying/Completing our understanding of as-is process

- **Problem:**
    - **As the number of actors and dependencies increased:**
        - Diagrams became cluttered and cumbersome to extend or modify
        - Participants became reluctant to use the models
            - KE meetings, which were designed based on the use of models, turned to story-telling sessions: unstructured, hard to manage . . .

i * Strategic Dependency (SD)

- **Conceptualizing the collaboration complexities that exist as dependency relations among organizational or system actors**
  - **Requirements Engineering**
  - **Process Engineering**
- **Problem:**
  - **As the number of actors and dependencies increases, the diagram becomes cluttered and cumbersome to extend or modify**
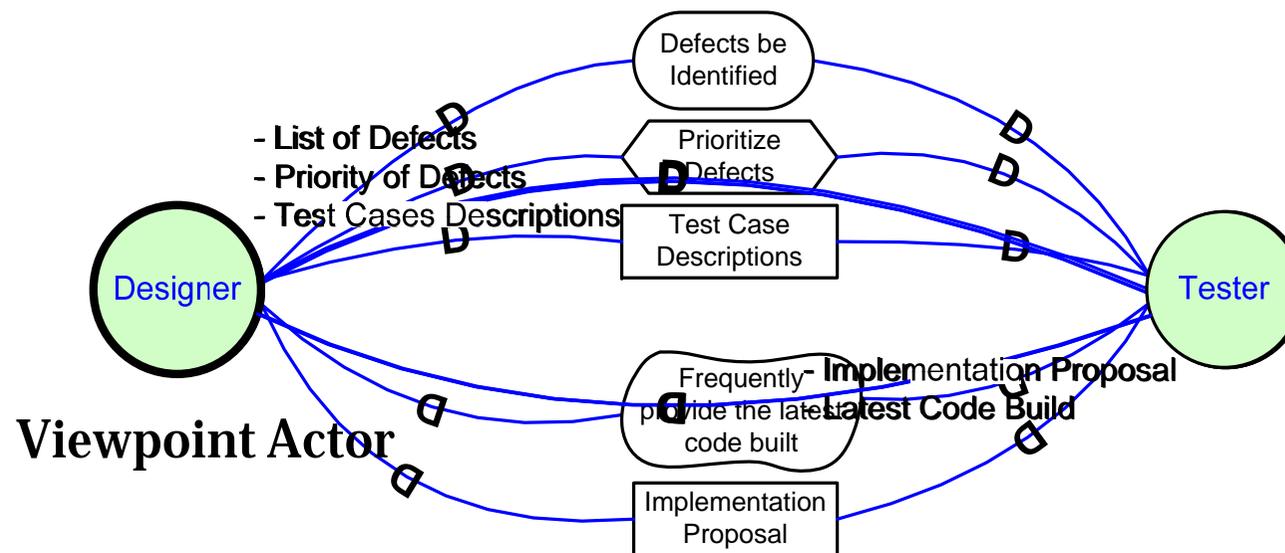
When the number of dependums increases . . .
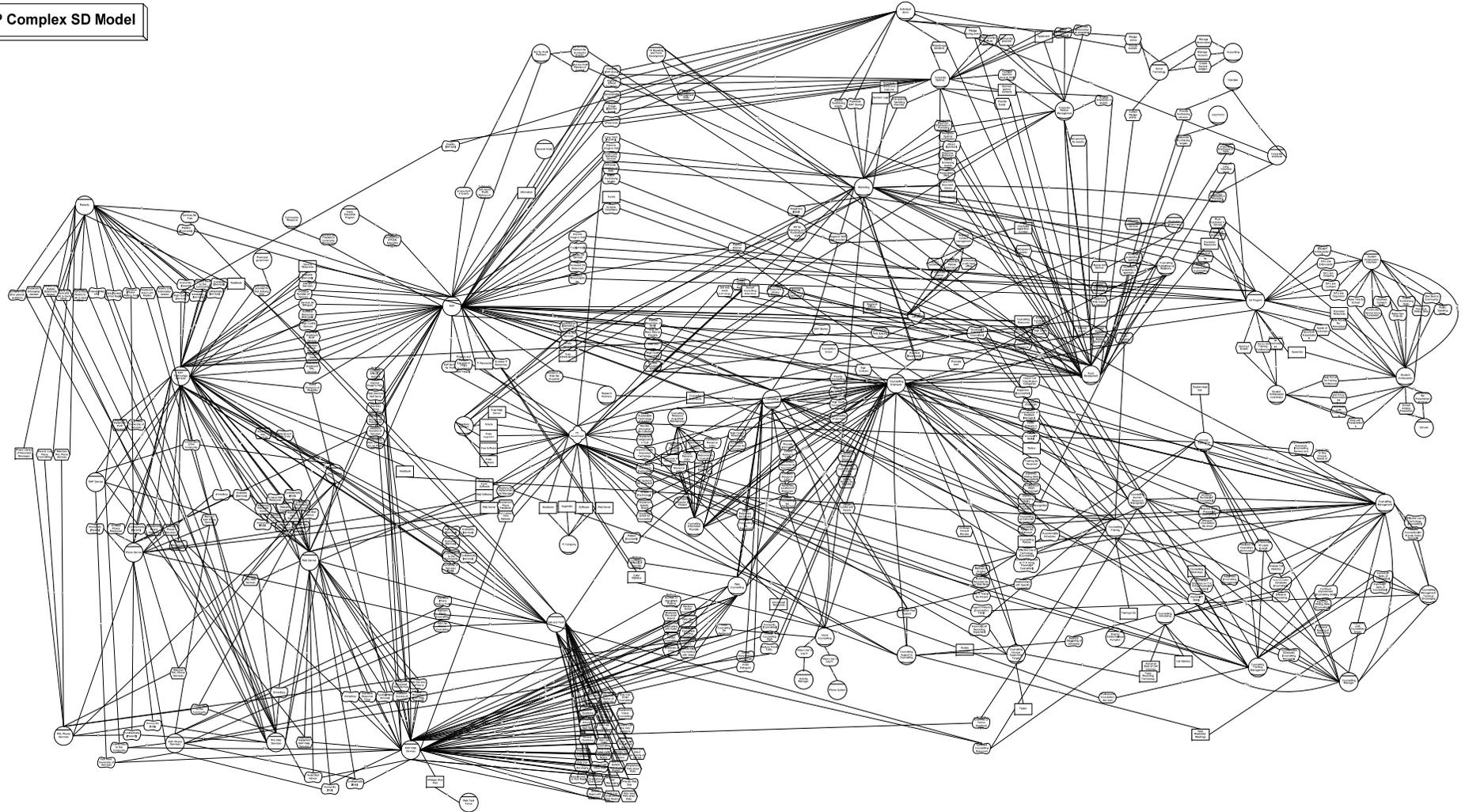
Itemized Strategic Dependency (ISD)

- **Visually simplified SD**
  - **Reducing the number of dependency links**
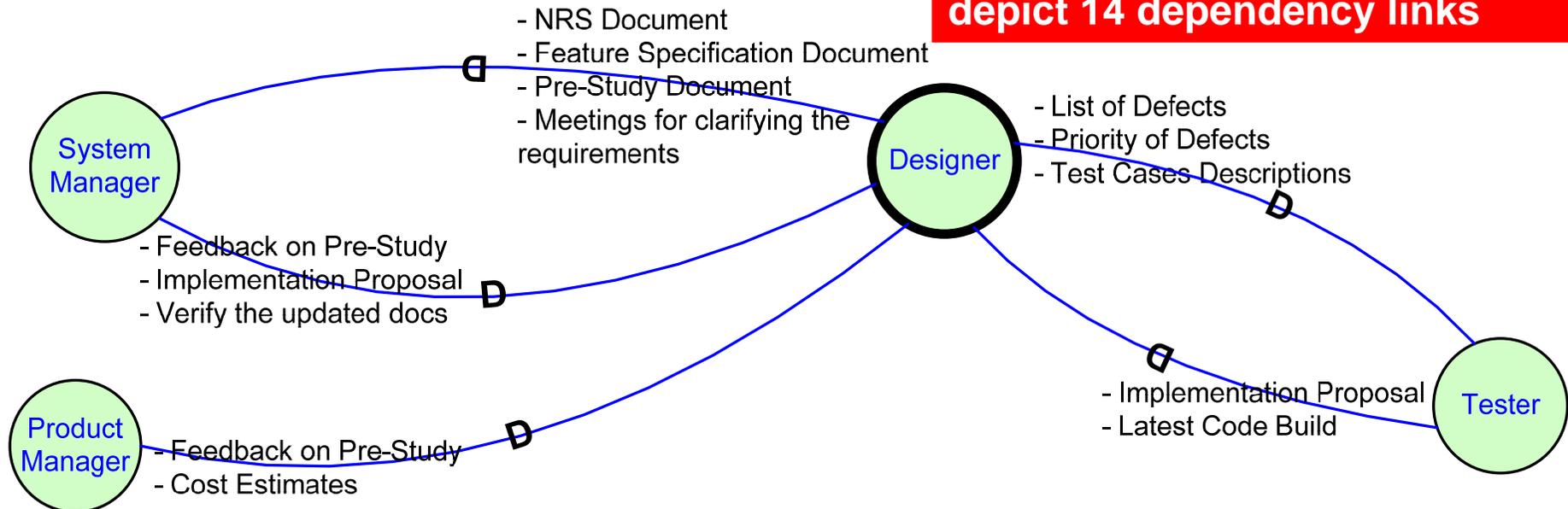 - **Grouping dependums into a single dependum list**

- **ISDs:**
  - **Functional (FISD)**
  - **Quality (QISD)**
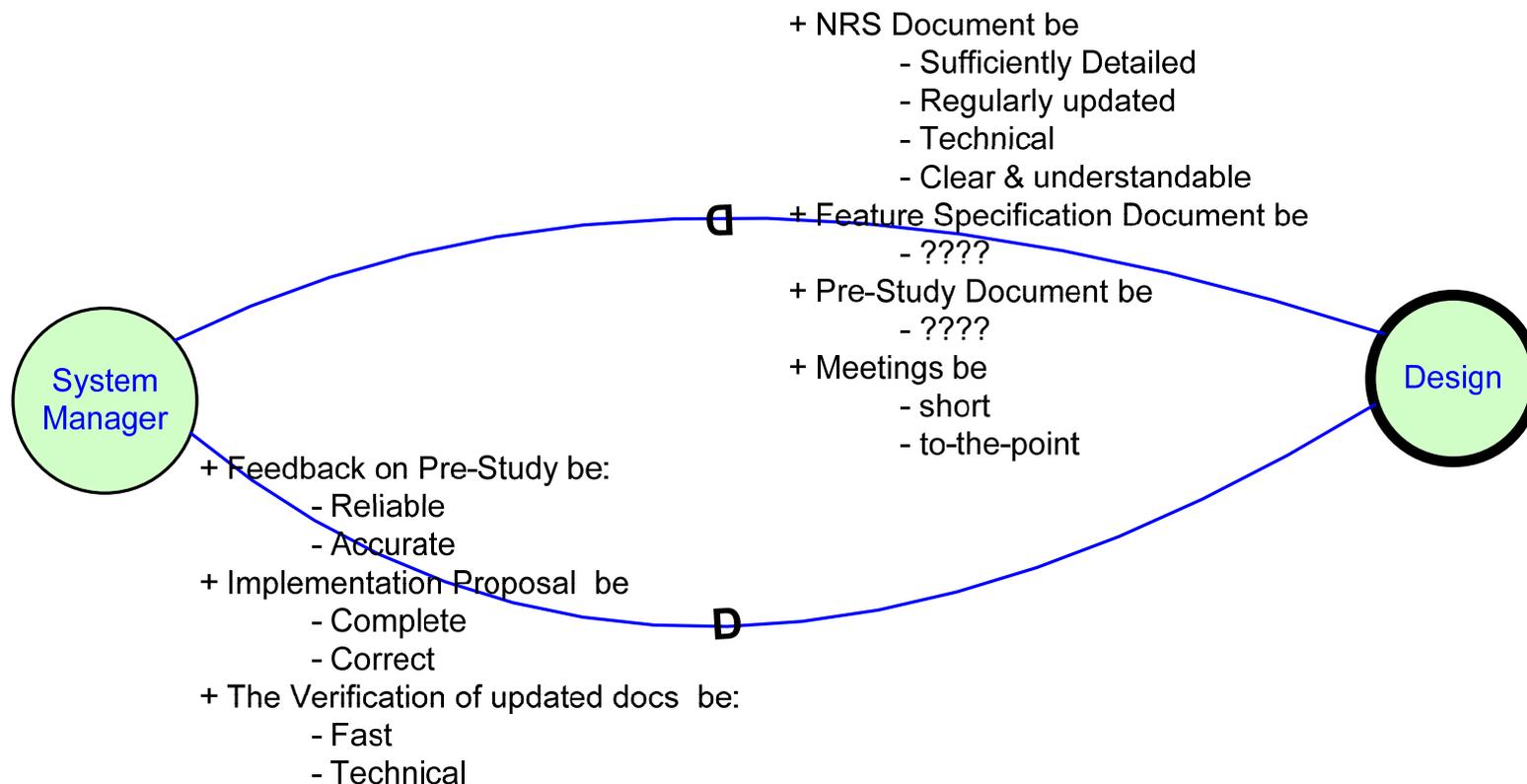
FISD:
Functional Itemized strategic Dependency

- **Functional dependencies of Viewpoint Actor and others**

- *functional dependency* - **dependency relations that are not related to any particular** ~~quality attribute~~

If we wanted to represent these dependency relations in original SD models we had to depict 14 dependency links

- NRS Document
- Feature Specification Document
- Pre-Study Document
- Meetings for clarifying the requirements

- List of Defects
- Priority of Defects
- Test Cases Descriptions

System Manager

Designer

- Feedback on Pre-Study
- Implementation Proposal
- Verify the updated docs

- Implementation Proposal
- Latest Code Build

Product Manager

- Feedback on Pre-Study
- Cost Estimates

Tester

QISD:
Quality Itemized strategic Dependency

- **listing the quality attributes of the functional dependencies represented in FISDs**

+ NRS Document be
    - Sufficiently Detailed
    - Regularly updated
    - Technical
    - Clear & understandable
+ Feature Specification Document be
    - ????
+ Pre-Study Document be
    - ????
+ Meetings be
    - short
    - to-the-point

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System Manager

Design

+ Feedback on Pre-Study be:
    - Reliable
    - Accurate
+ Implementation Proposal be
    - Complete
    - Correct
+ The Verification of updated docs be:
    - Fast
    - Technical

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We used the ISD models for . . .

- **the early phase on a Software Process Improvement (SPI) initiative in one of the R&D units of Ericsson in Italy**

- **to identify the problematic issues of the current process**

- **we conducted two rounds of interviews**

  - **First round: general description of process**
  - **Second round: initial ISD models, looking for process inefficiencies**

We used the ISD models for . . .

Using ISD models we guide the interviewees to:

- Visually observe their collaborations with other organizational actors, in terms of the mutual dependency relations.

- Validate our initial understanding of dependency relations in that R&D unit.

- Express the functional or quality dependencies that they did not expressed during the first round of interviewees.

- Identify process problems, which were due to:

  - The quality attributes associated with functional dependencies, but were not met by the dependee

  - Missing dependencies (i.e. dependencies that should have been exit for facilitating the work).

  - Unnecessary collaborations and dependencies

Conclusion

- **This visual design of ISDs greatly reduces the number of lines on the dependency diagram**

- **The itemized text block of dependums can be easily edited or added to**

- **The main drawback is that the block of dependums is now visualized as a single unit, while semantically each item should be treated as independent**
  - It is therefore harder to visualize redirecting one of the dependums to a different actor

Thanks

Q&A ?
  Discussion . . .

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