DES
Departamento de Eletrônica e Sistemas

Centro de Informática U·F·P·E

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Towards Modular i* Models

Fernanda Alencar, Jaelson Castro, Carla Silva, Marcia Lucena, Emanuel Santos, João Araújo, Ana Moreira

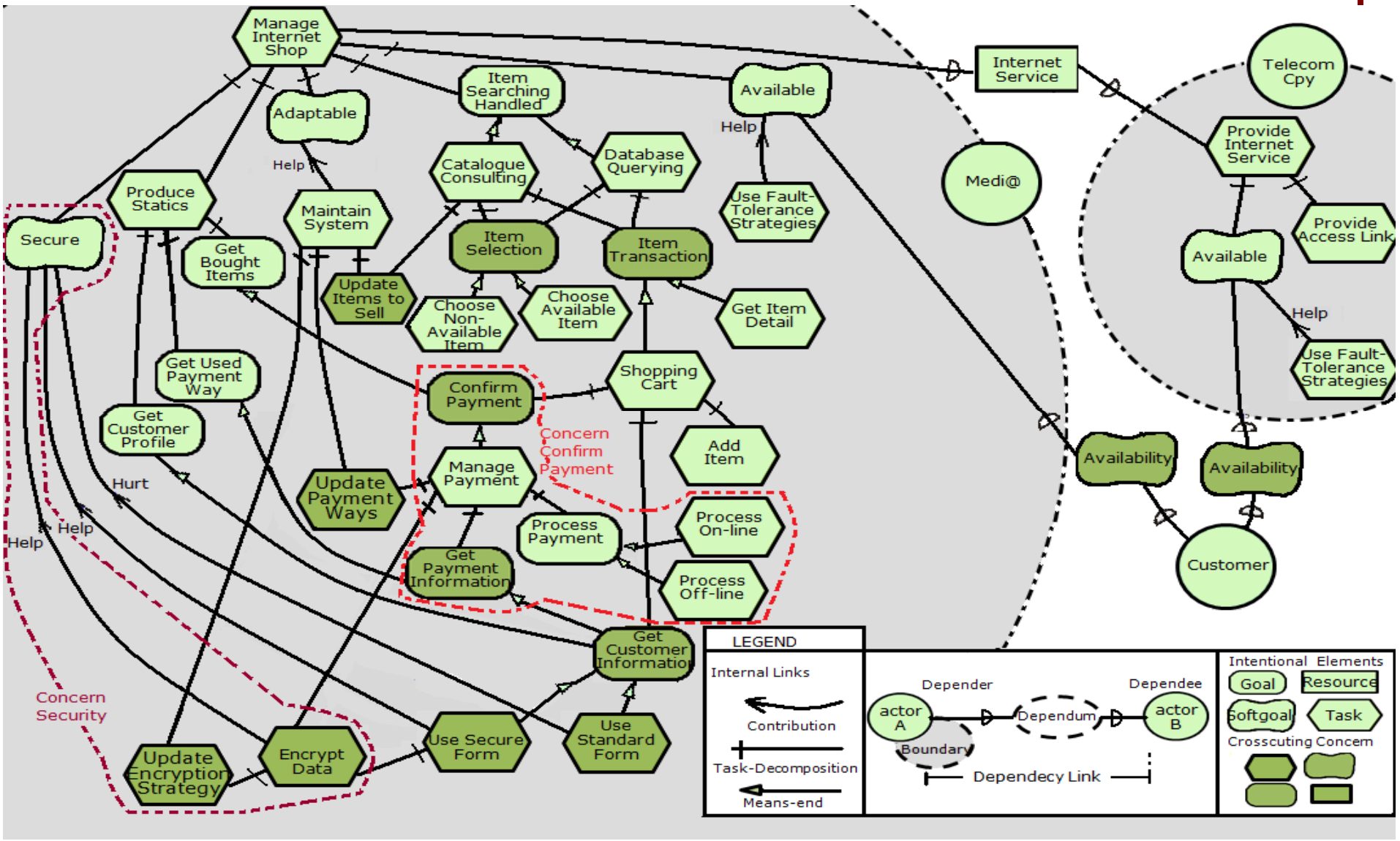
UFPE, UFPB, UFRN, UNL

LER Laboratório de Engenharia de Requisitos
www.cin.ufpe.br/~ler

The i* Problems

- i* models may become cluttered, compromising their evolution and scalability.
- A lack of modularity in the i* framework.

The *Medi@* Strategic Rationale Model - SR



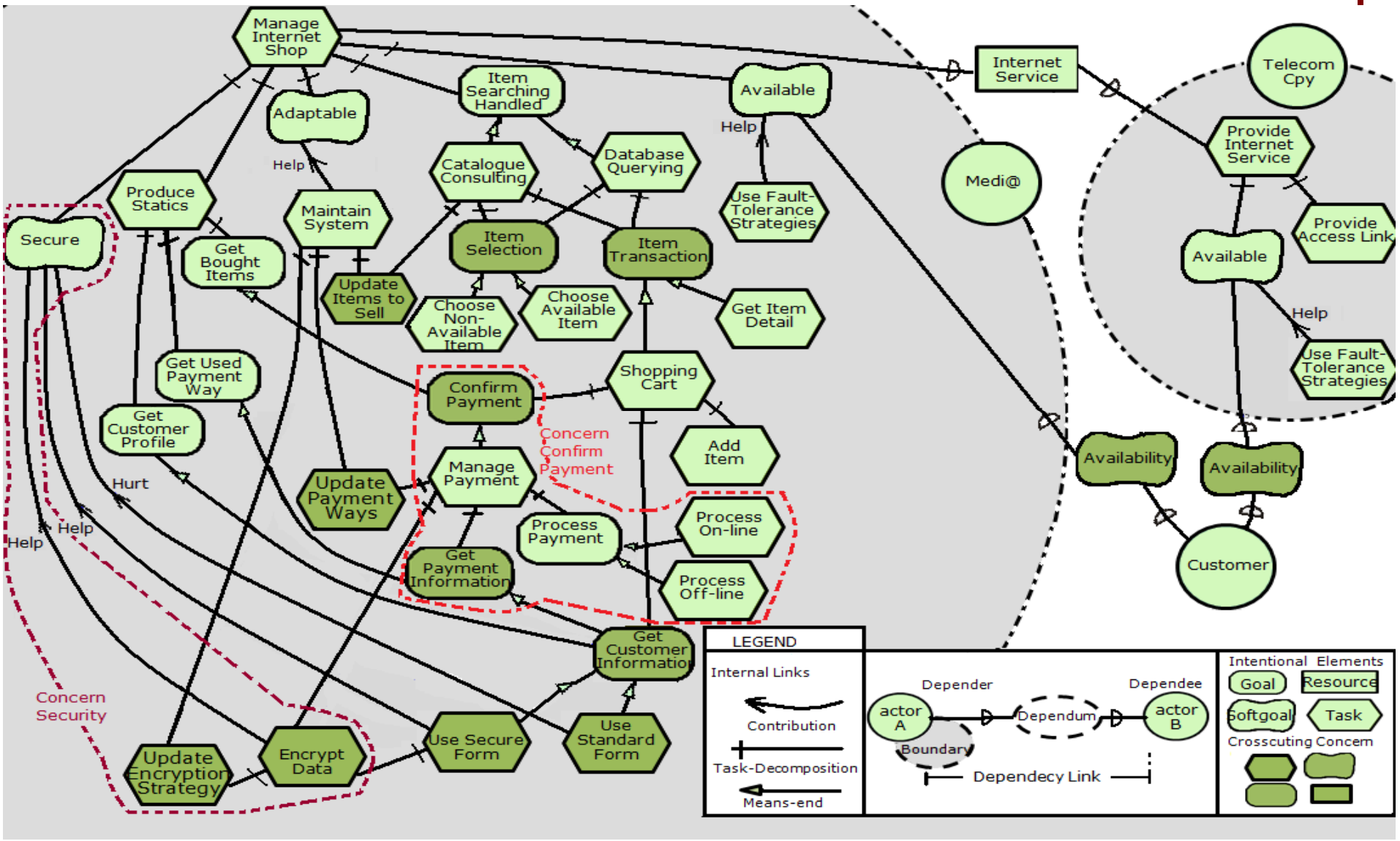
The Proposal

- An i* extension
  - A set of guidelines to identify crosscutting concerns in i* models; and
  - inclusion of aspectual constructors to modularize crosscutting concerns and to allow its graphical composition with other system modules.

The Aspectual i* Approach

- Three basic activities:
  - identify and modularize aspectual elements;
  - identify the relationships among aspectual elements; and
  - represent aspectual elements using the aspectual i* notation.

The *Medi@* Strategic Rationale Model - SR

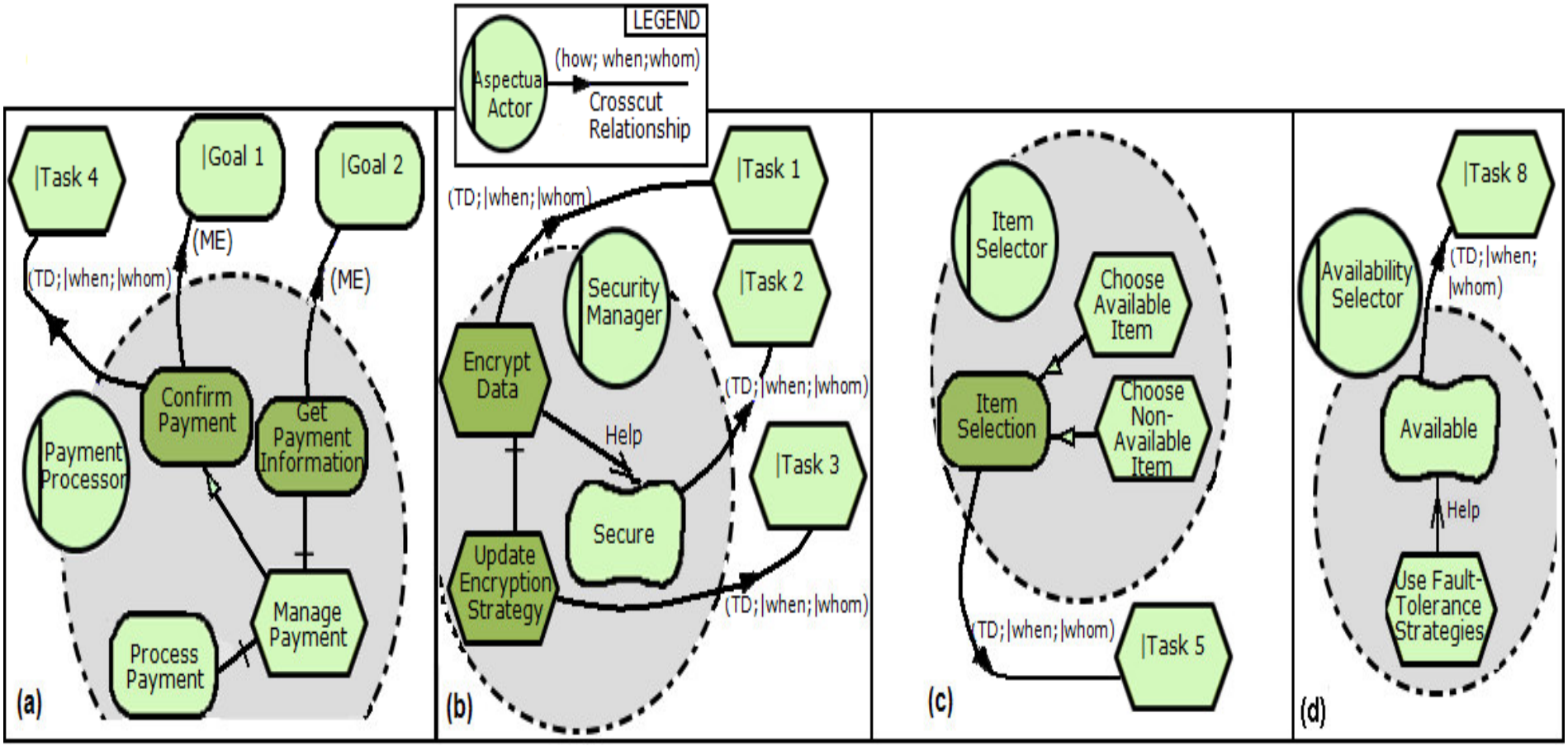


The Aspectual i* Approach

- Identify and Modularize Aspects
  - Guideline G1 (Repeated dependum)
  - Guideline G2 (Shared intentional element)
    - Guideline G2.1 (Intentional element in a task-decomposition link)
    - Guideline G2.2 (Intentional element in a means-end link)
    - Guideline G2.3 (Intentional element is found simultaneously in a task-decomposition link and in a means-end link)
  - Guideline G3 (Redundancy)
  - Guideline G4 (Cohesion)

The Aspectual i* Approach

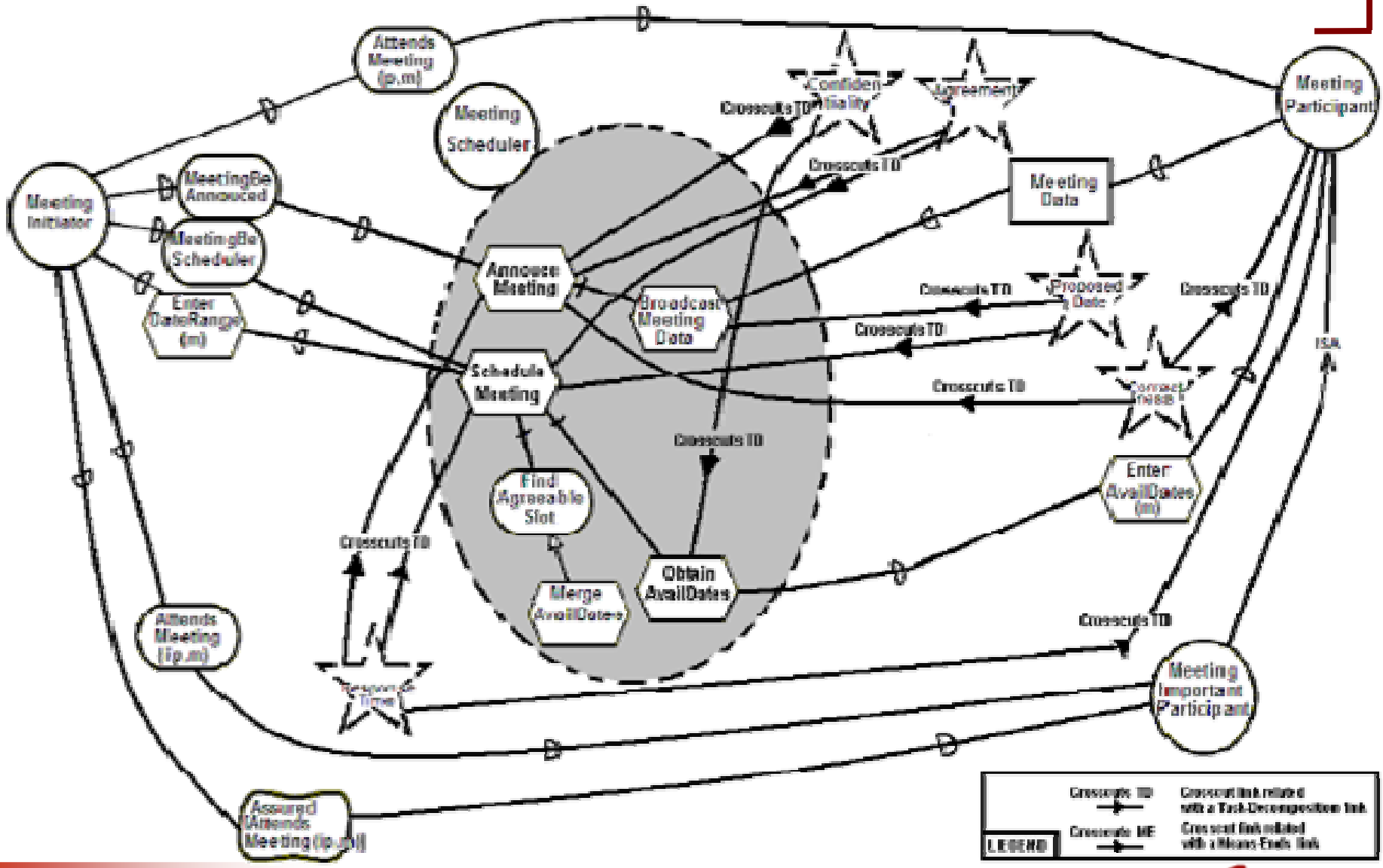
- **Represent Aspectual Elements Using the Aspectual i* Notation**



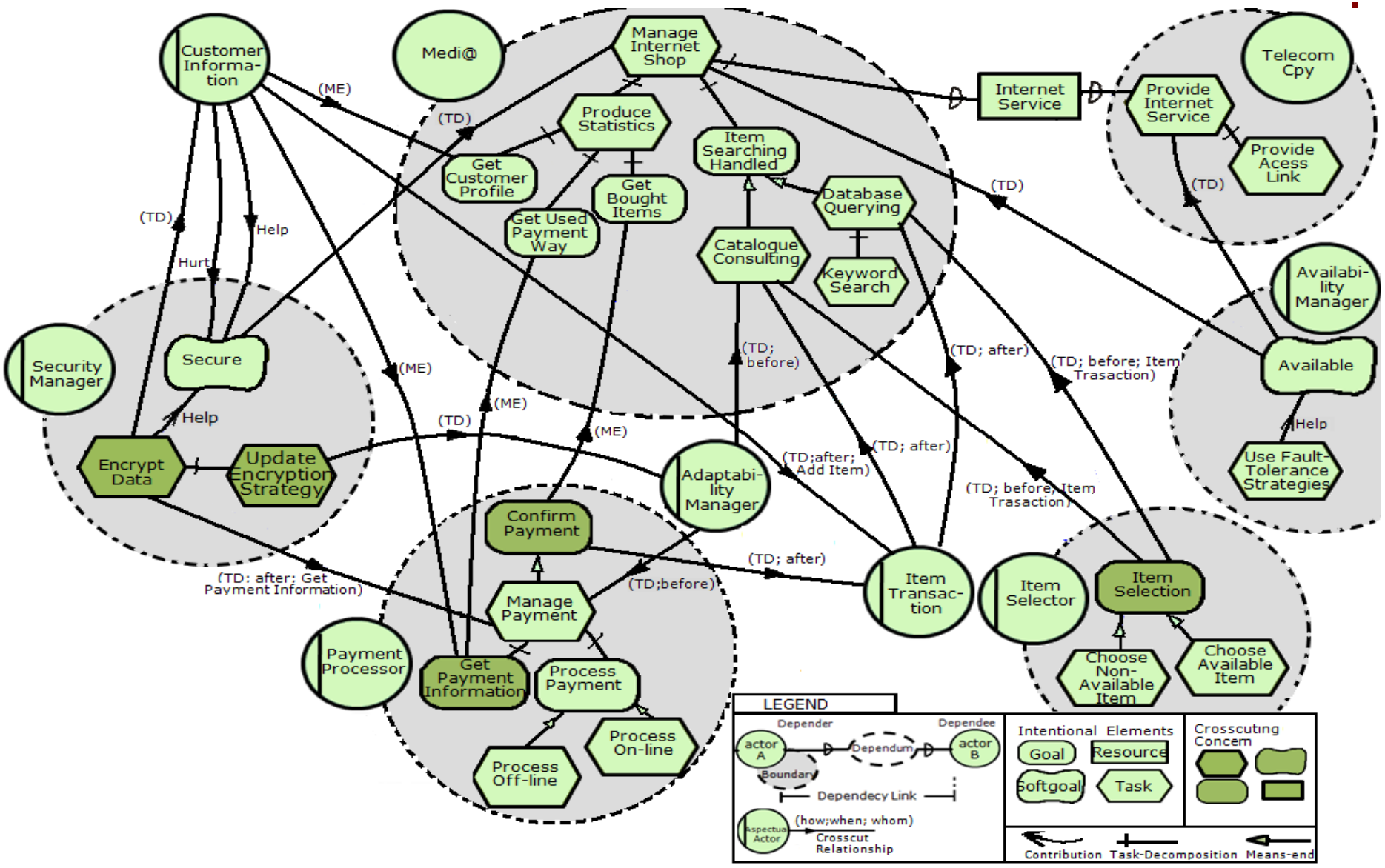
Evaluation Results

- Concern Diffusion over Operation (CDO)
- Concern Diffusion over LOC (CDLOC)
- Coupling between Components (CBC)
- Lack of Cohesion in Operations (LCOO)

Initial i* Aspectual



Evaluation Results



Conclusions

- Introduction of modularity (it creates units that are strongly cohesive and loosely coupled).
- Reduction of the scalability (removing the redundant elements and links).
- Improvement of the reusability of concerns.

Future Works

- Use of aspectual-i* for SPL-RE
- Evolve istar tool to support these new guidelines and new notation.
- Evaluate the quality of models
- Define a trade-off analysis method to complement the proposed process.
- Relate Requirements and ADL