A Catalogue of iStar Extensions

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05th September 2018

Summary

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Introduction

- Since its proposal by Yu (1995), iStar is often extended to incorporate new constructs
  - Due to the proposal for a new version of iStar (Yu,1995), we believe this is the suitable moment to discuss how iStar extensions could be systematized
- We performed a set of previous works to identify the existing iStar extensions, to identify the opinion of experts and to mitigate existing conflicts
  - These results pointed the need to propose a catalogue
- This paper aims to present a catalogue of iStar extensions, including its constructs and analysis about both.
  - This catalogue is useful to facilitate the identification of the existing extensions and constructs previously proposed

Background about iStar Extensions

- iStar (YU, 1995) Extensions have been proposed in different ways:
  - Describe in detail the new constructs
  - The extension is presented along with a method
  - Presenting a case study or modelling tool

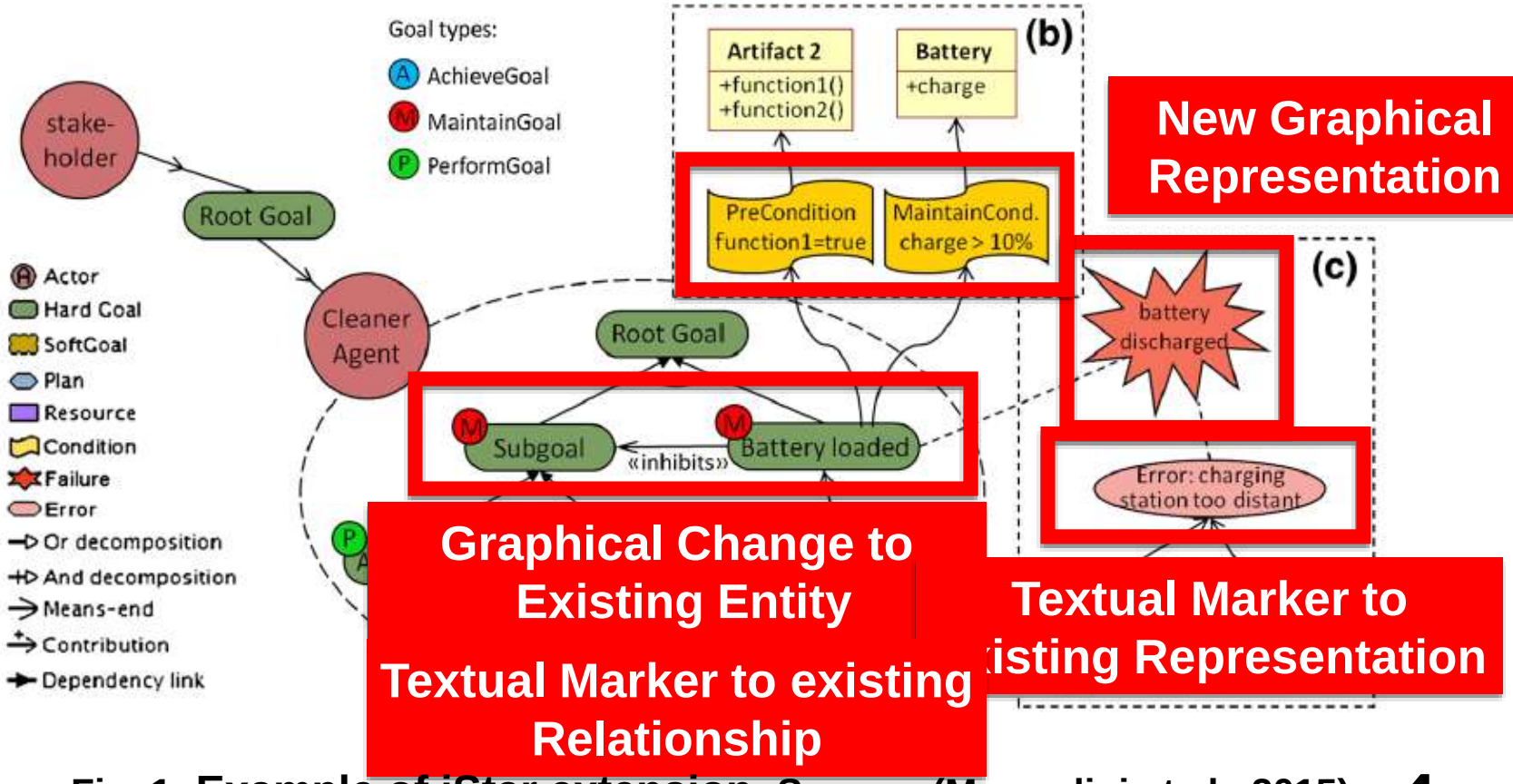

Fig. 1: Example of iStar extension. Source: (Morandini et al., 2015)

Related Work

- **We did not find a catalogue of iStar extensions**
  - **However, catalogues have been proposed to contribute to join the knowledge of other aspects of the requirements engineering area.**

- **Examples of catalogues in requirements engineering:**
  - **A gamification requirements catalogue for educational software (Peixoto and Silva, 2017)**
  - **A catalogue of Functional Software Requirement Patterns (Palomares et al., 2013)**
  - **A reusable catalogue of legal requirements derived from specific legal texts regarding security and personal data protection (Toval et al., 2002)**

Methodology Overview

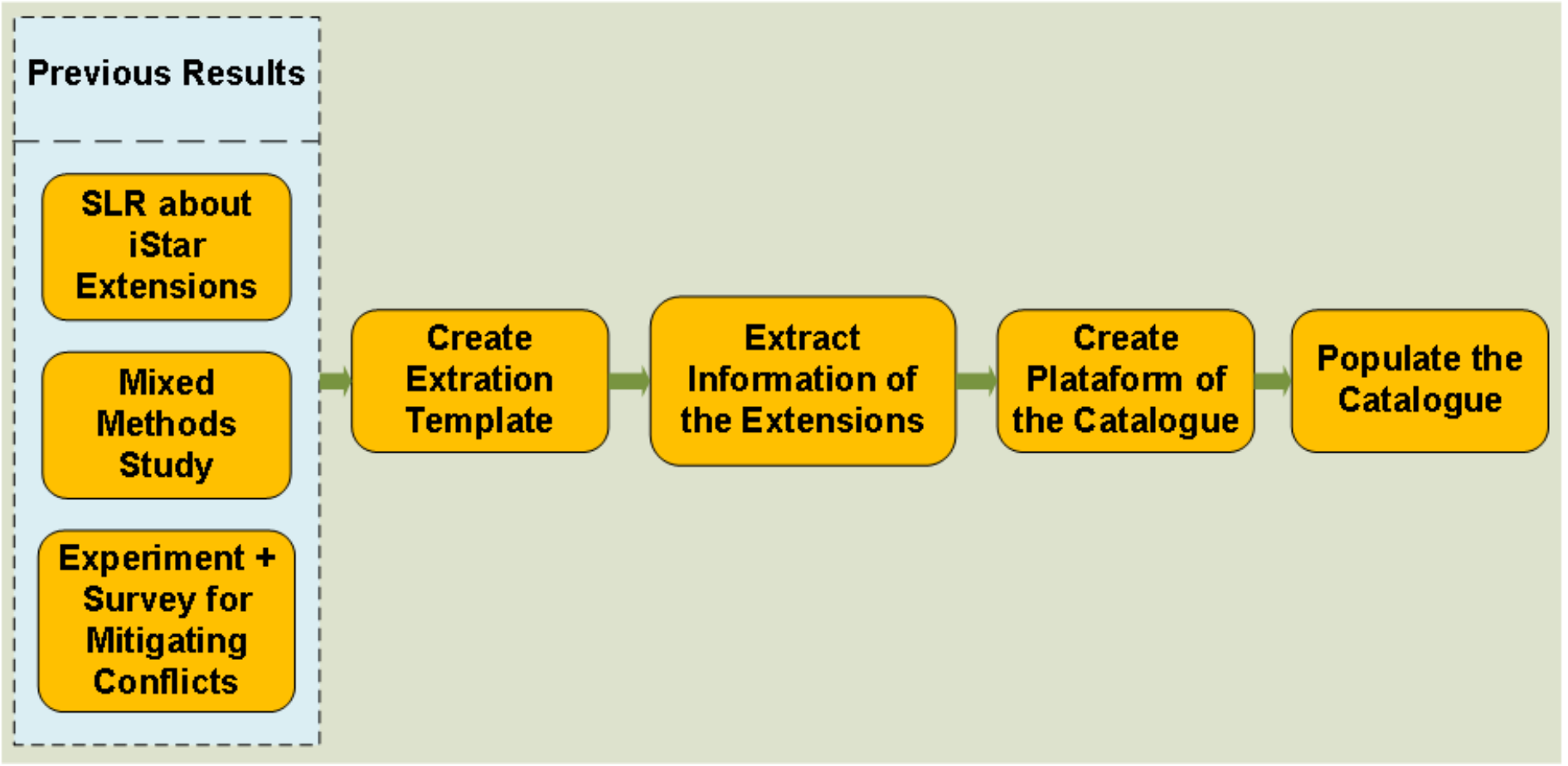

Fig. 2. The method used to create the catalogue of iStar extensions.

Previous Results

- SLR about iStar Extension (Gonçalves et al., 2018a)
  - Identified the papers which propose iStar Extension
  - Search in the principal research databases
  - Until 2016

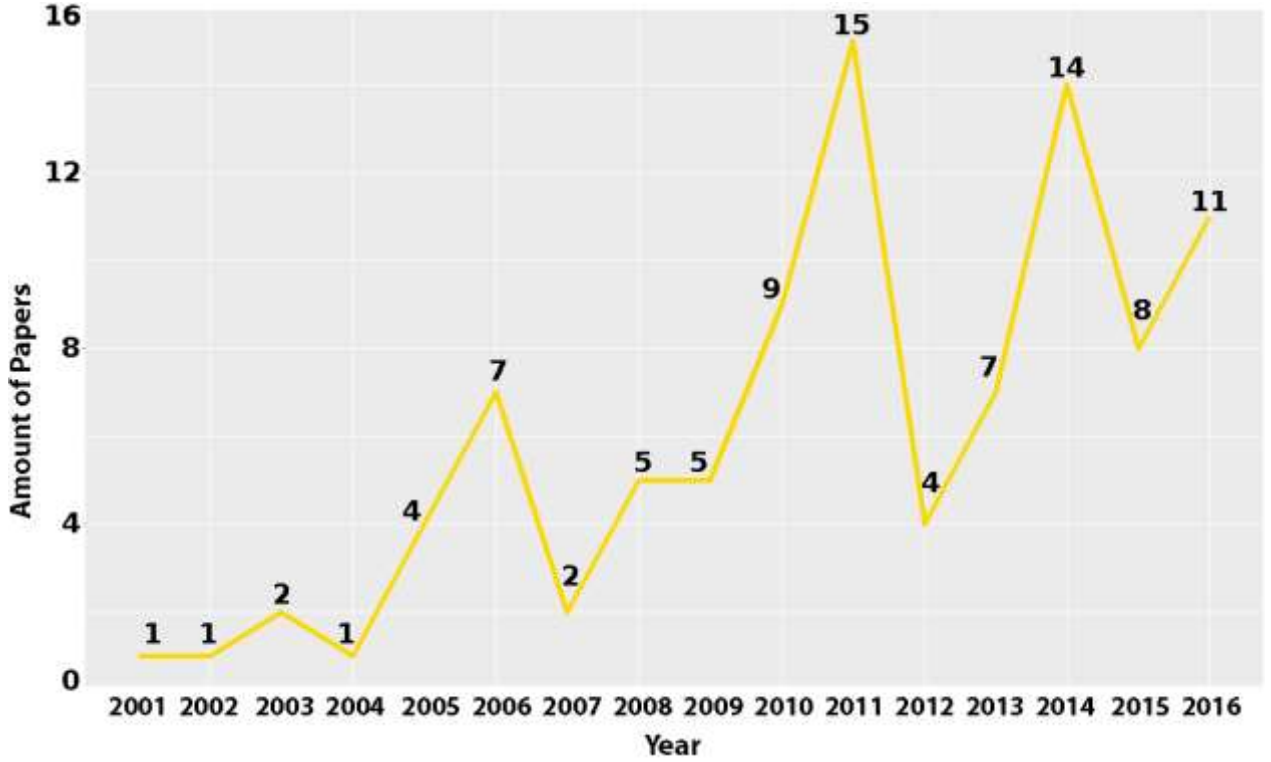

Fig. 3. Distribution of selected papers per year.

Previous Results

- **Mixed methods study with extenders (GONÇALVES et al., 2018b)**
  - **Interviews with 20 participants ~> Categories and statements**
  - **Survey with 30 participants ~> Guidelines**

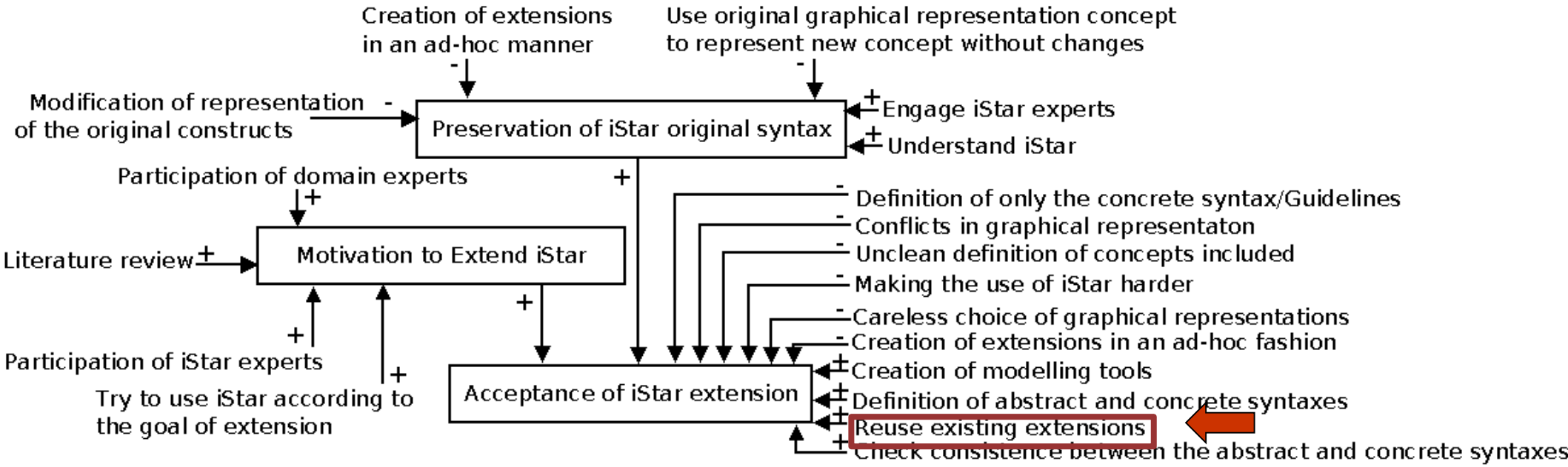

Fig. 4: Categories and Their Relationships.

Previous Results

- **Mitigating conflicts in the graphical representations (Gonçalves et al., 2018c)**
  - **Experiments (new representations) and survey (prioritization)**

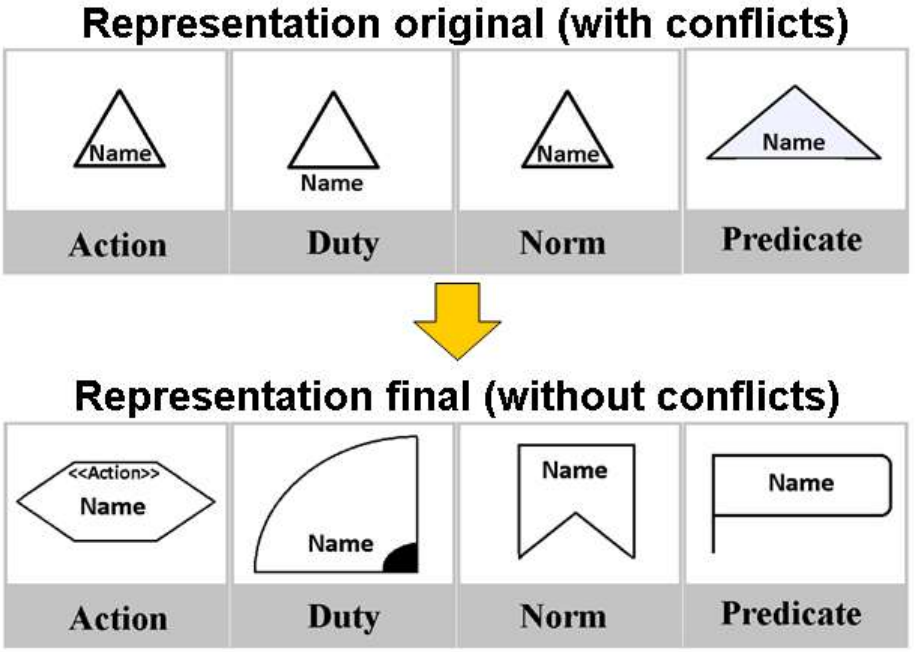

Fig. 5: An example of mitigated conflict.

  - **The new representations and prioritization were included in catalogue**

CATIE: A Catalogue of iStar extensions

- Catalogued the extensions identified in SLR (Gonçalves et al, 2018a)
- Used a extraction template with predefined fields to extensions and constructs
- istarextensions.cin.ufpe.br/catalogue/

Extension List

- **Two views are available: List (a) and Tree View (b)**

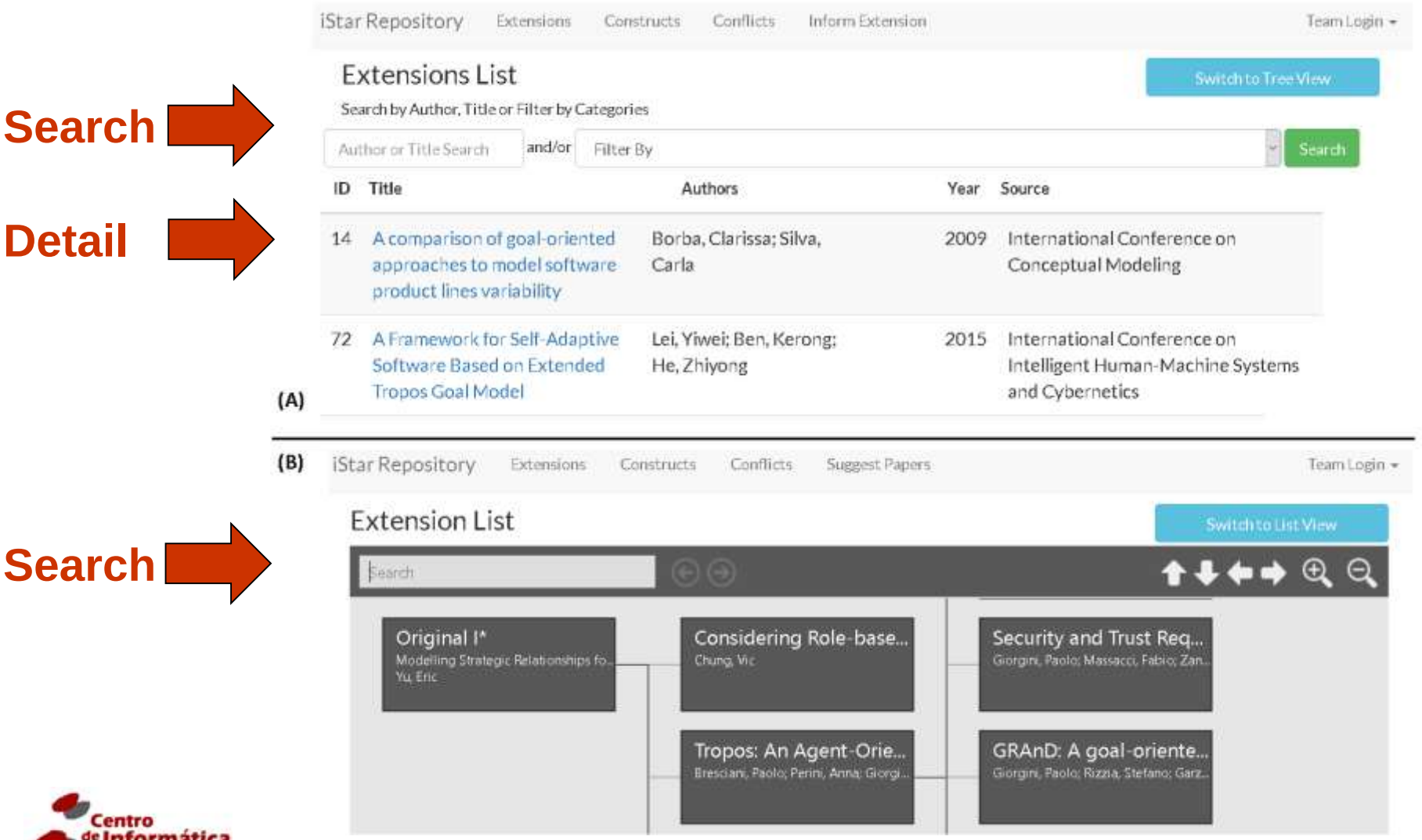

Fig. 6: Extensions list

Detail extension

- **Show the information of the extraction fields to the selected extension**

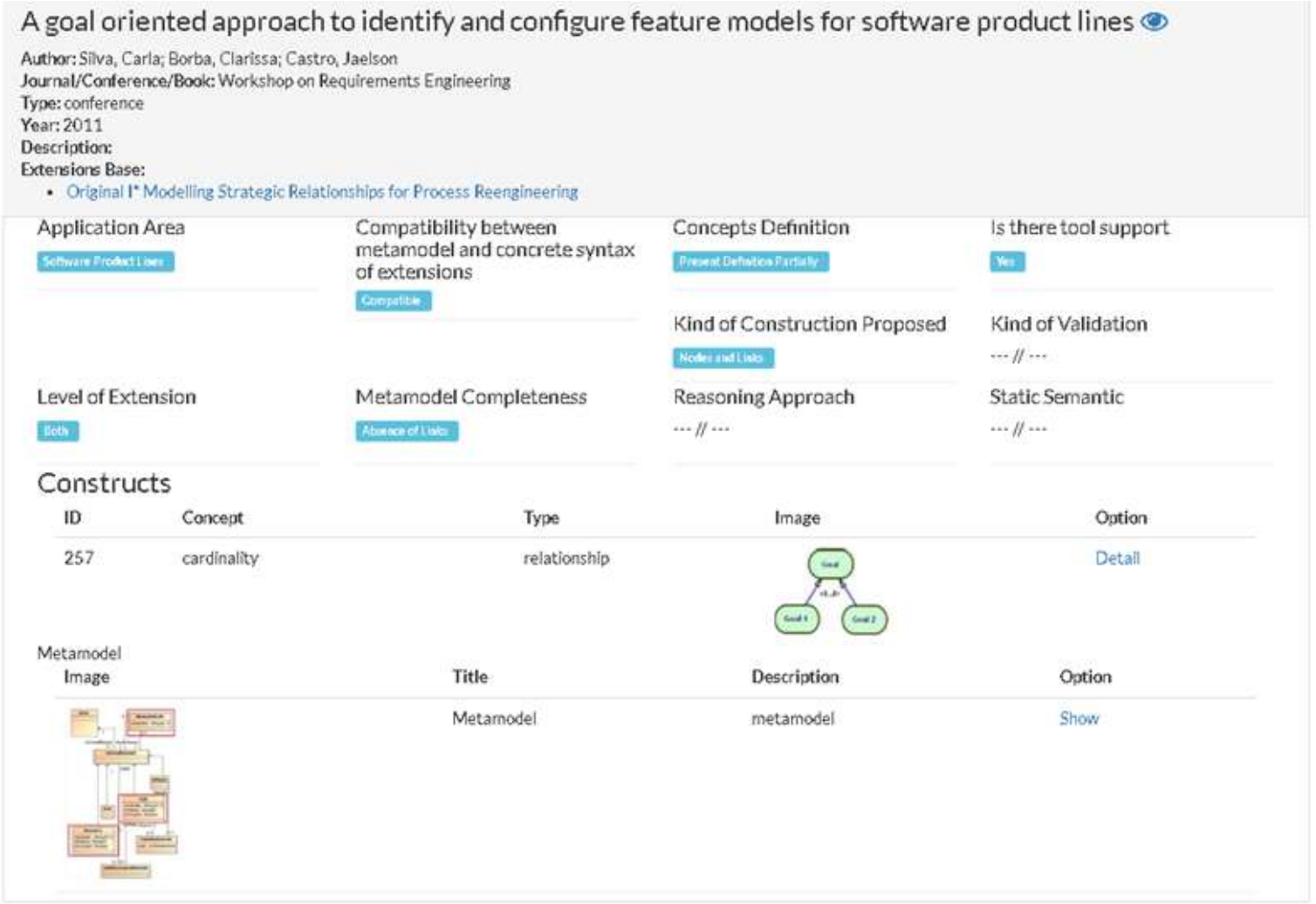

Fig. 7: Extensions details

Show construct list for extension

- Show the list of the constructs (a)

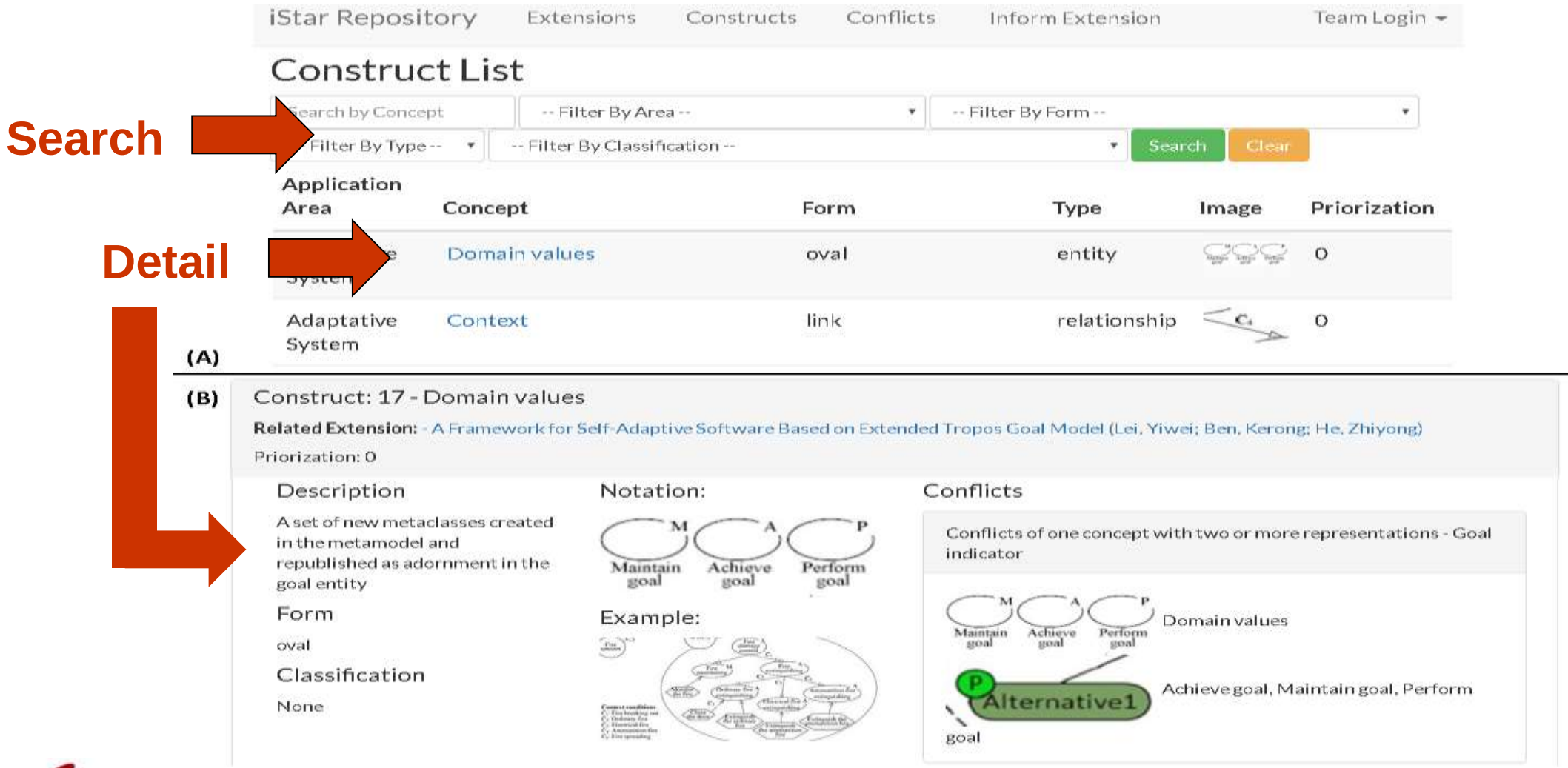

Fig. 8: Constructs list and details

Show conflicts list for extension

Search

Detail

(A)

Conflicts List

-- Filter By Type --

Search

Description	Constructs Involved
Conflict of new constructs in conflict with the iStar default syntax	8
Conflict of one concept with two or more representations - Conflicts of Nodes Identifier in Nòmos	4

(B)

Conflict: 1 - Conflict of one concept with two or more representations - Plan

Type: One concept with two or more representations in concrete syntax

Constructs

Concept	Form	Description	Priority	Image
Plan	Parallelogram as a arrow	A new representation of this construct based on the results of an experiment.	1	
Plans	octagon	Octagon represents Plans, in the original Tropos is a hexagon	2	
Plans	hexagon	Plans are represented as tasks	3	

Fig. 9: Conflict list and details

Submitting a new extension

- **Based on two steps: Inform Extension (a) and accept extension (b and c)**

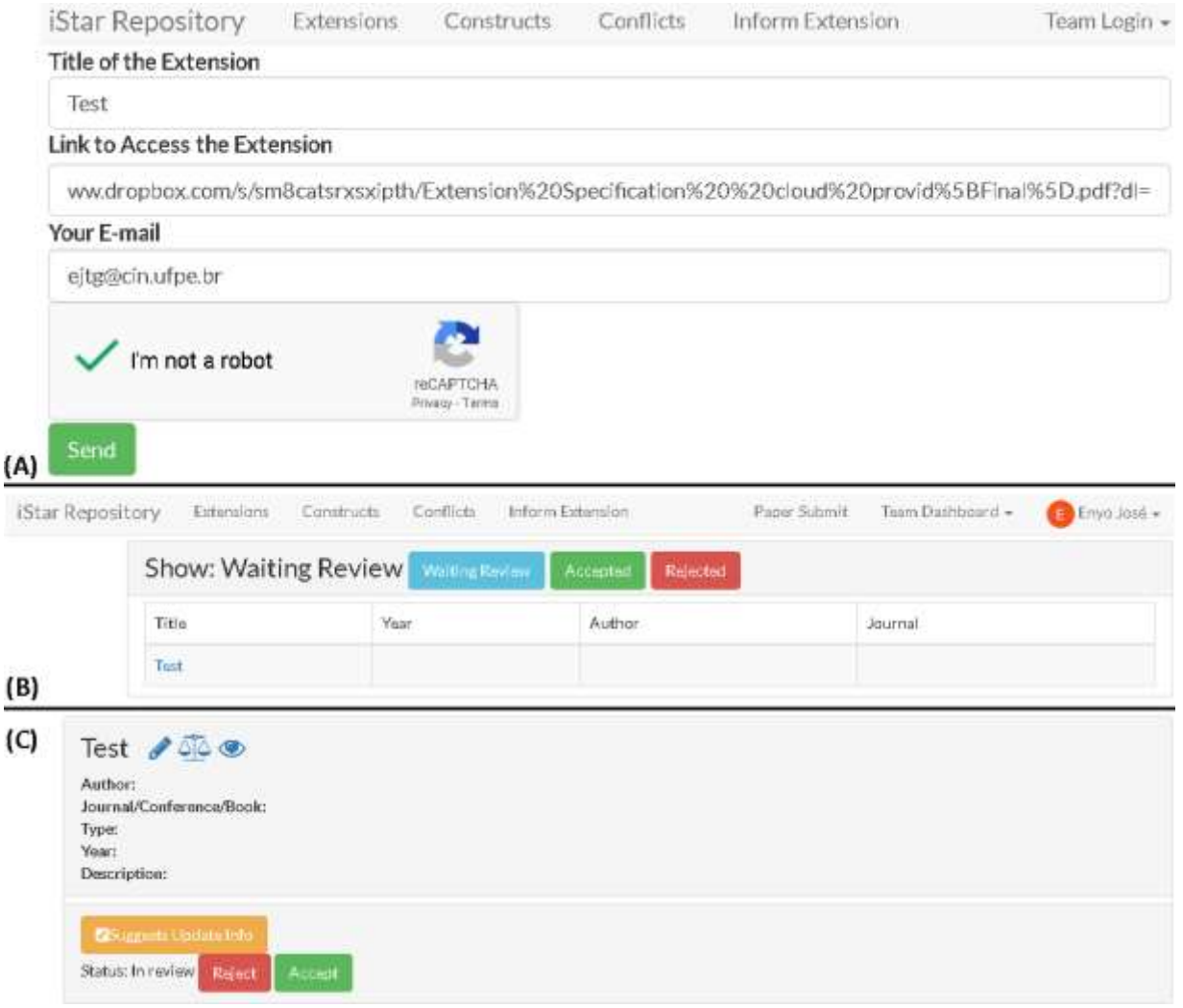

Fig. 10: Submition and acceptance of a new iStar extension

Conclusions

- Many extension have been proposed since 90's
- Find a specified iStar extension based require extra time
- It is relevant to analyse these extensions and extract information to easier the identification
- CATIE Catalogue facilitates the identification of existing extensions and their constructs by extenders or users

Future works

- We are working in the definition of a process to conduct iStar extensions
- This process uses the CATIE
- The set of all constructs of iStar extensions of CATIE can be formalised by a conceptual model, metamodel or ontology

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05th September 2018