Departamento de Eletrônica e Sistemas

Centro de Informática U·F·P·E

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

On the Variability of Business Process Models

Emanuel Santos, Jaelson Castro

1 Motivation

- Organizations have processes to support their business activities

- These activities can be performed in several ways
  - even for different organizations performing similar business
  - Example: A conference organization process

1 Motivation

- The variation of business process can be a challenge for the software developers

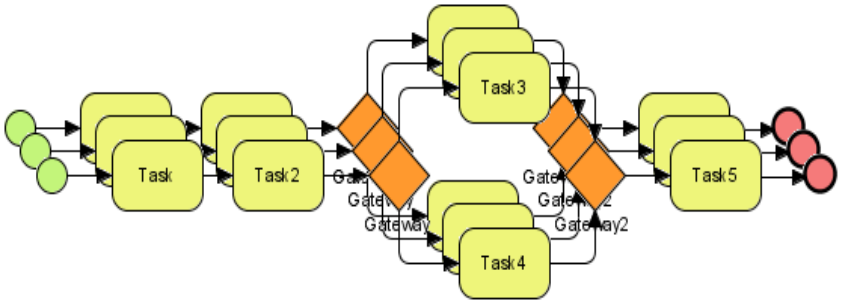
- The variability analysis helps to promote reuse of chuncks of business process models

1 Motivation

- **Business Processes Modeling**
  - **involves capturing an ordered sequence of activities and supporting information.**
- **Configuration of Business Processes Models**
  - **Variability in business process**
    - **The activities can be performed in different ways**
  - **Configuration of Business Process**
    - **Choice between the possible ways to perform an activity**

1 Motivation

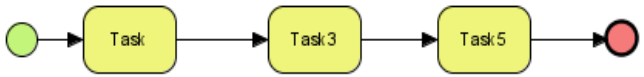
Configuration of Business Processes Models

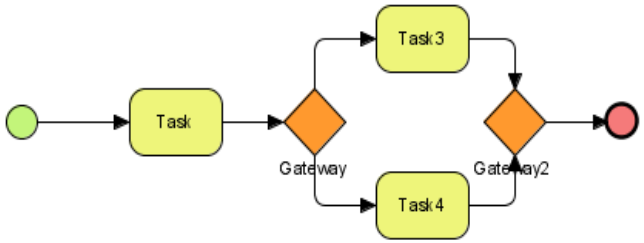


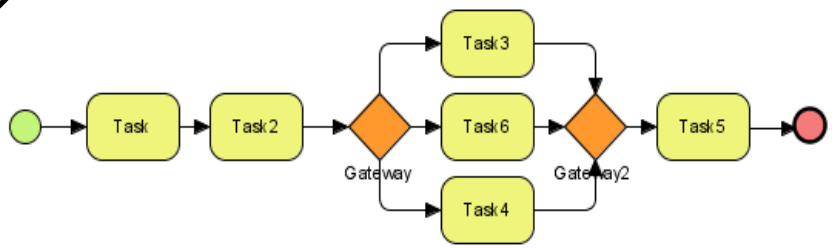
Business Process Models

Configuration and Instantiation Mechanism

Processes alternatives







Process Instances

1 Motivation

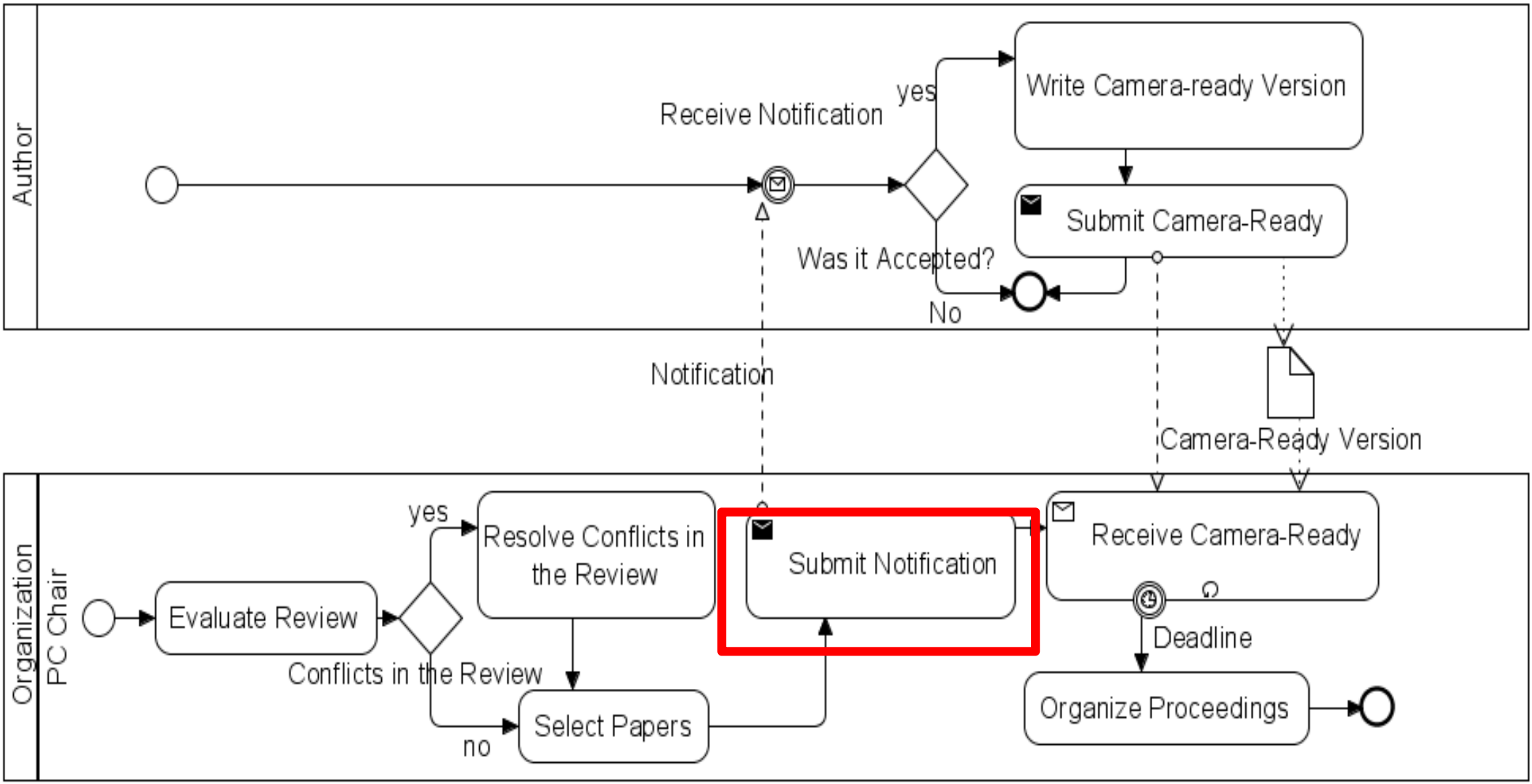
- **Problem**
  - **Current BP configuration methods support**
    - Elicitation of variability
    - Representation of variability
  - **Problem with current methods**
    - Little Guidance on model configuration
    - Non-functional requirements are critical for process configuration but are not represented in the business process models

1 Motivation

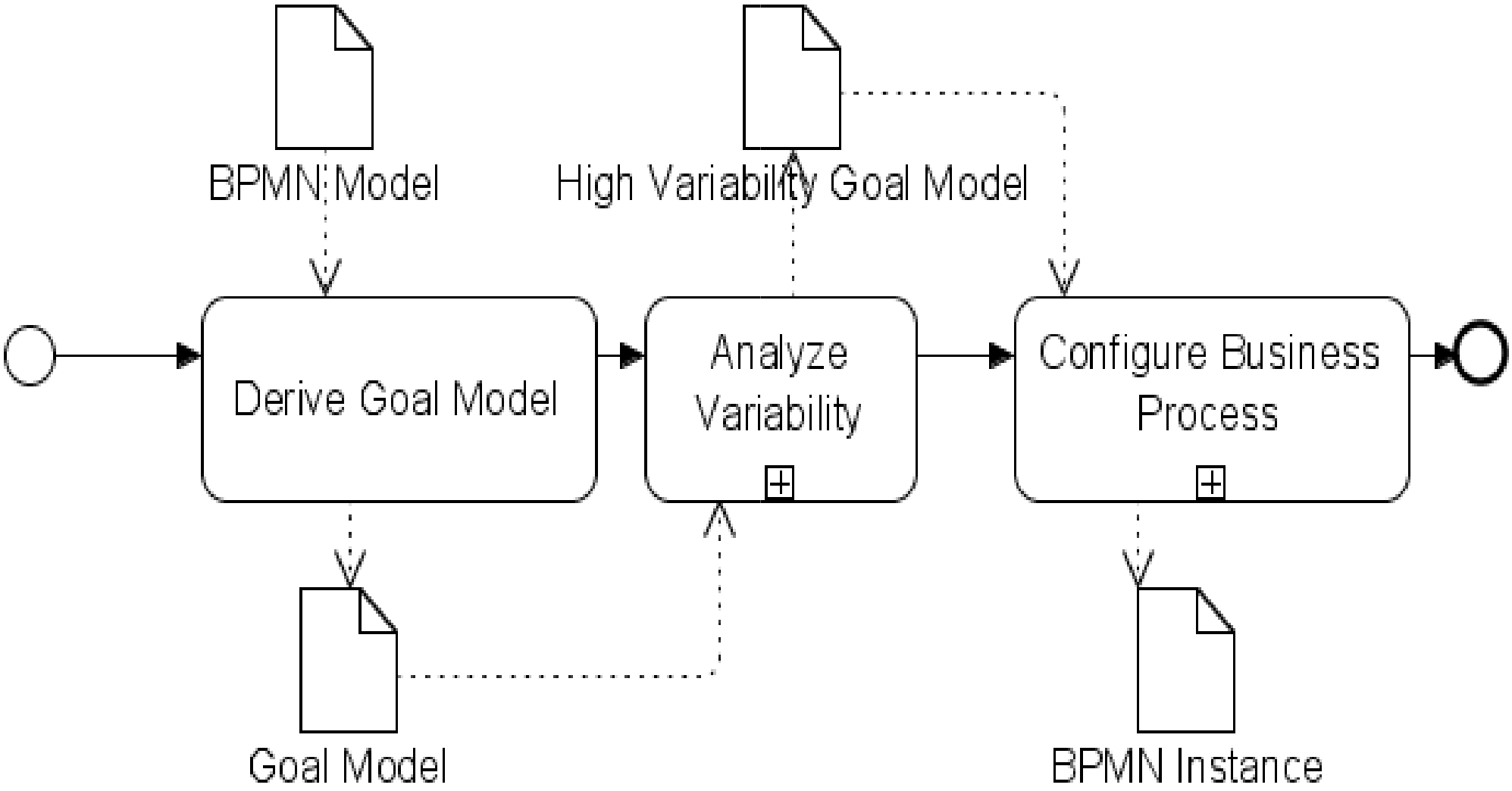
- **The Proposal**
  - **External models to represent Business Process variability**
  - **Apply analysis of non-functional requirements to drive the configuration of business processes**

2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Example of BPMN

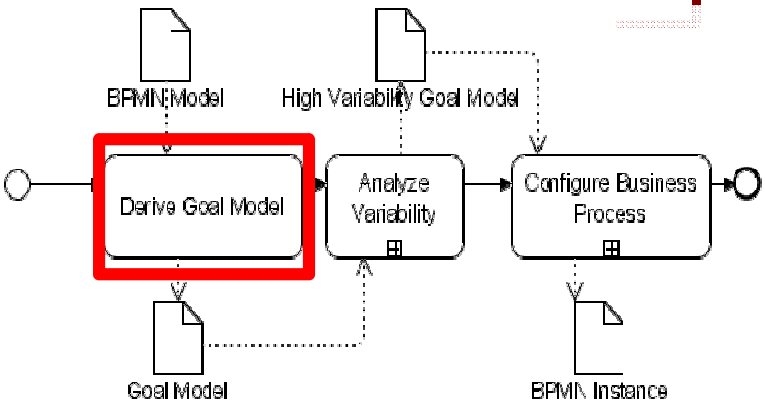


2 GV2BPMN - Goal-Oriented Variability Analysis of BPM



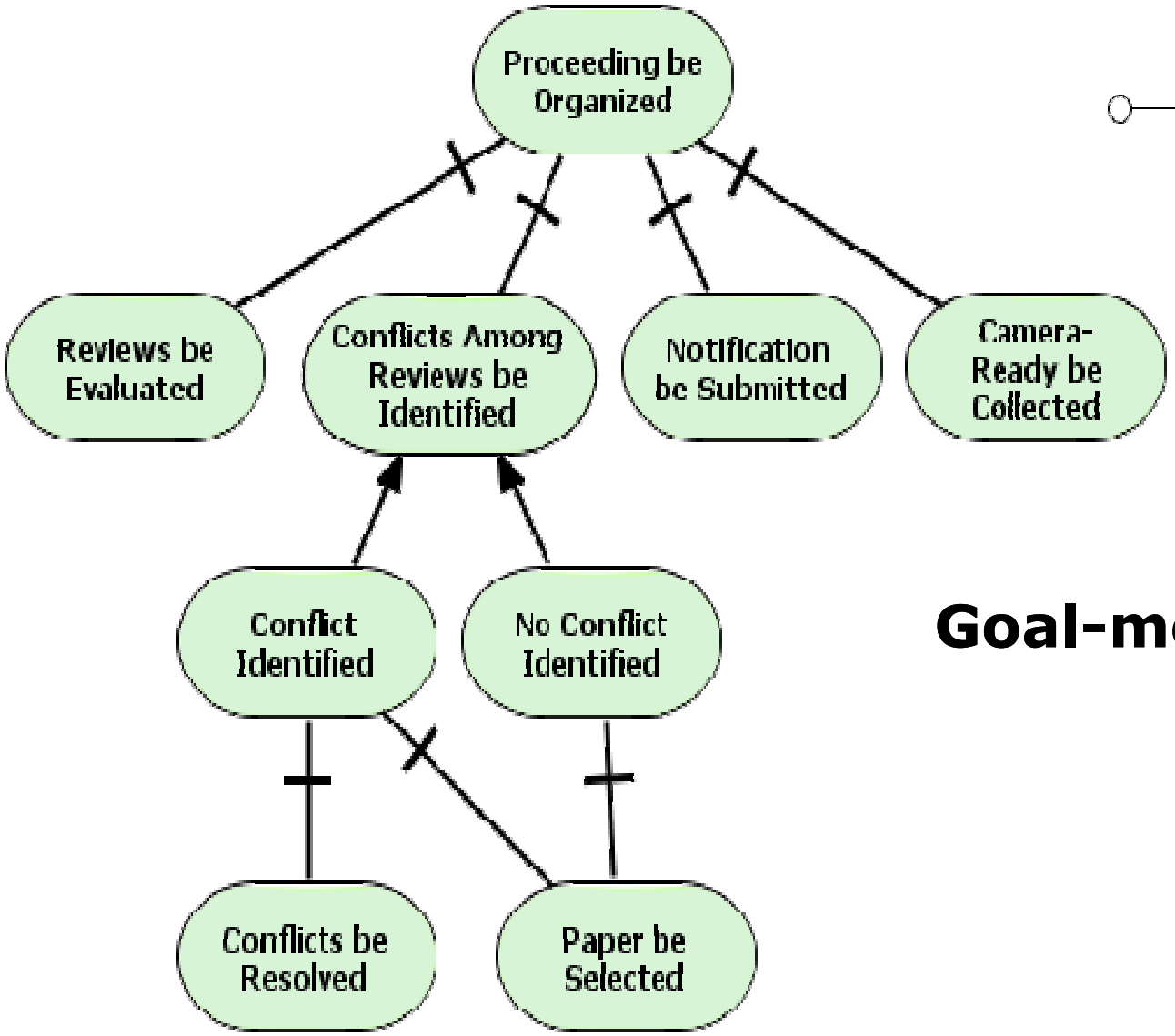
2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

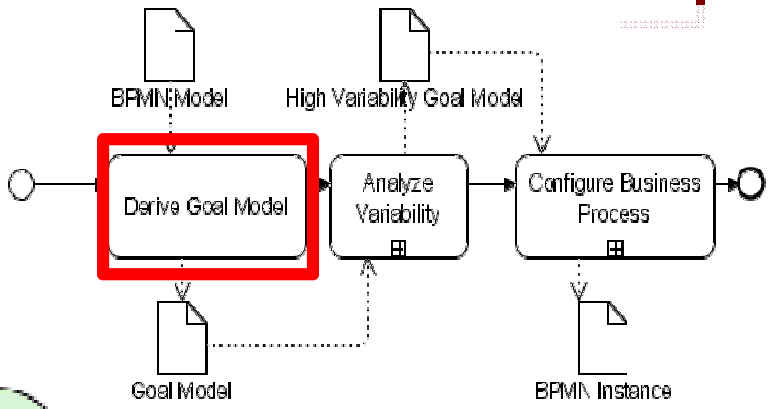
Derive goal model



- Relating BPMN to Goal model
  - BPMN Tasks to Goals
  - Decision Gateways to Or-Decomposition
  - Fork/Parallel Gateways to And-Decomposition
  - Sequence of Tasks to And-Decomposition
- Objective
  - Obtain a goal-model that could be manipulated in further steps

2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

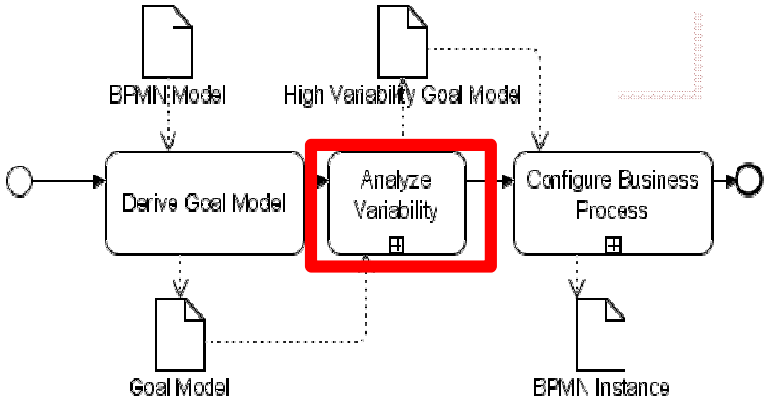


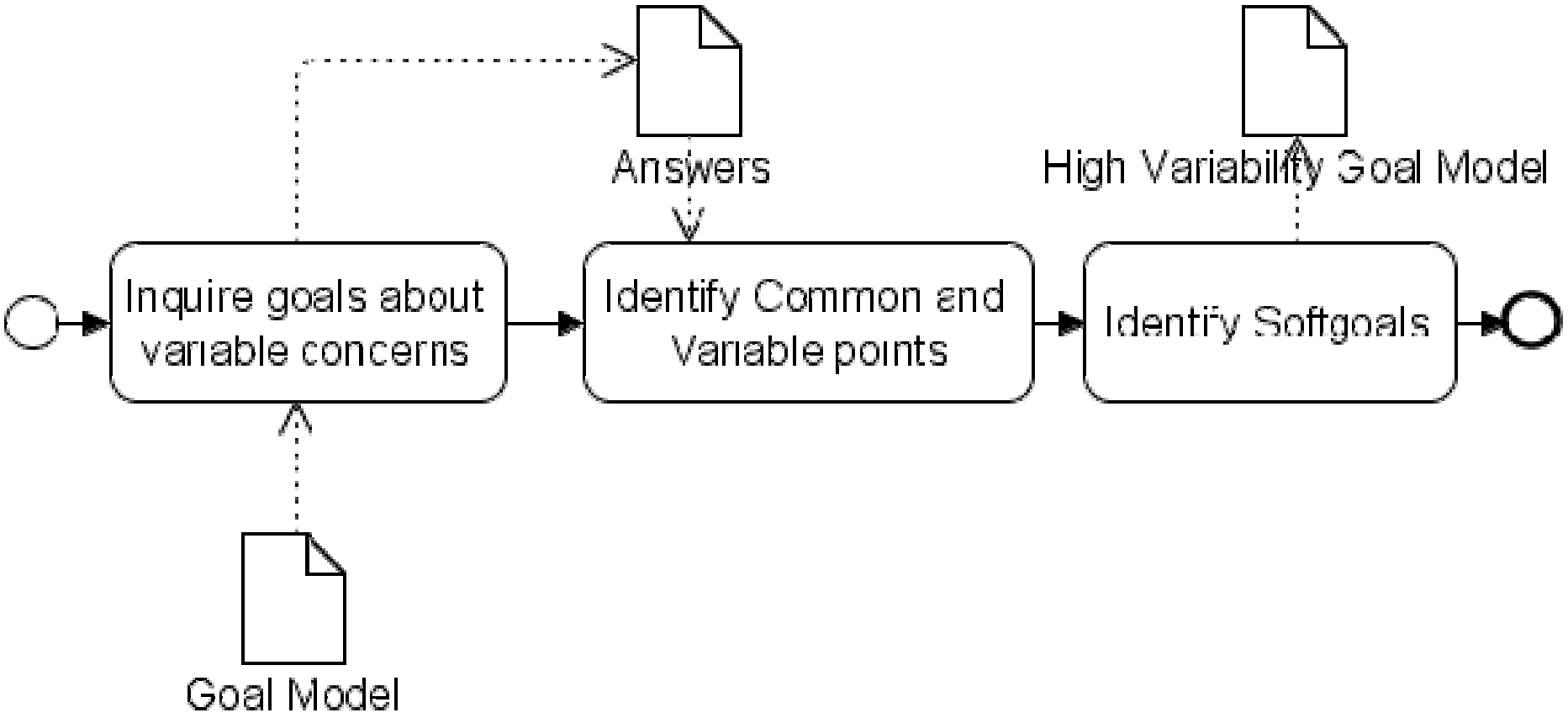


Goal-model from BPMN

2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

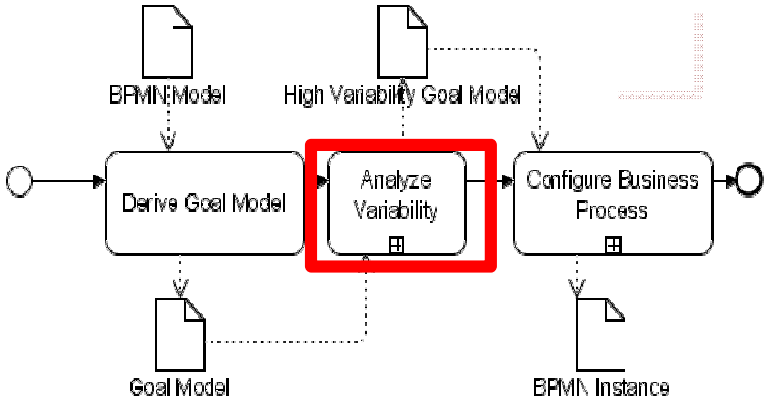
Analyze Variability

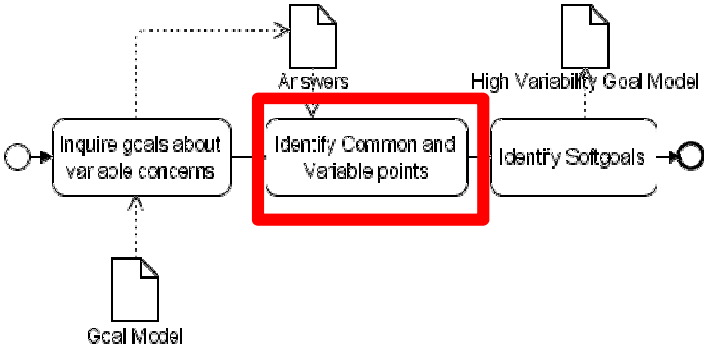


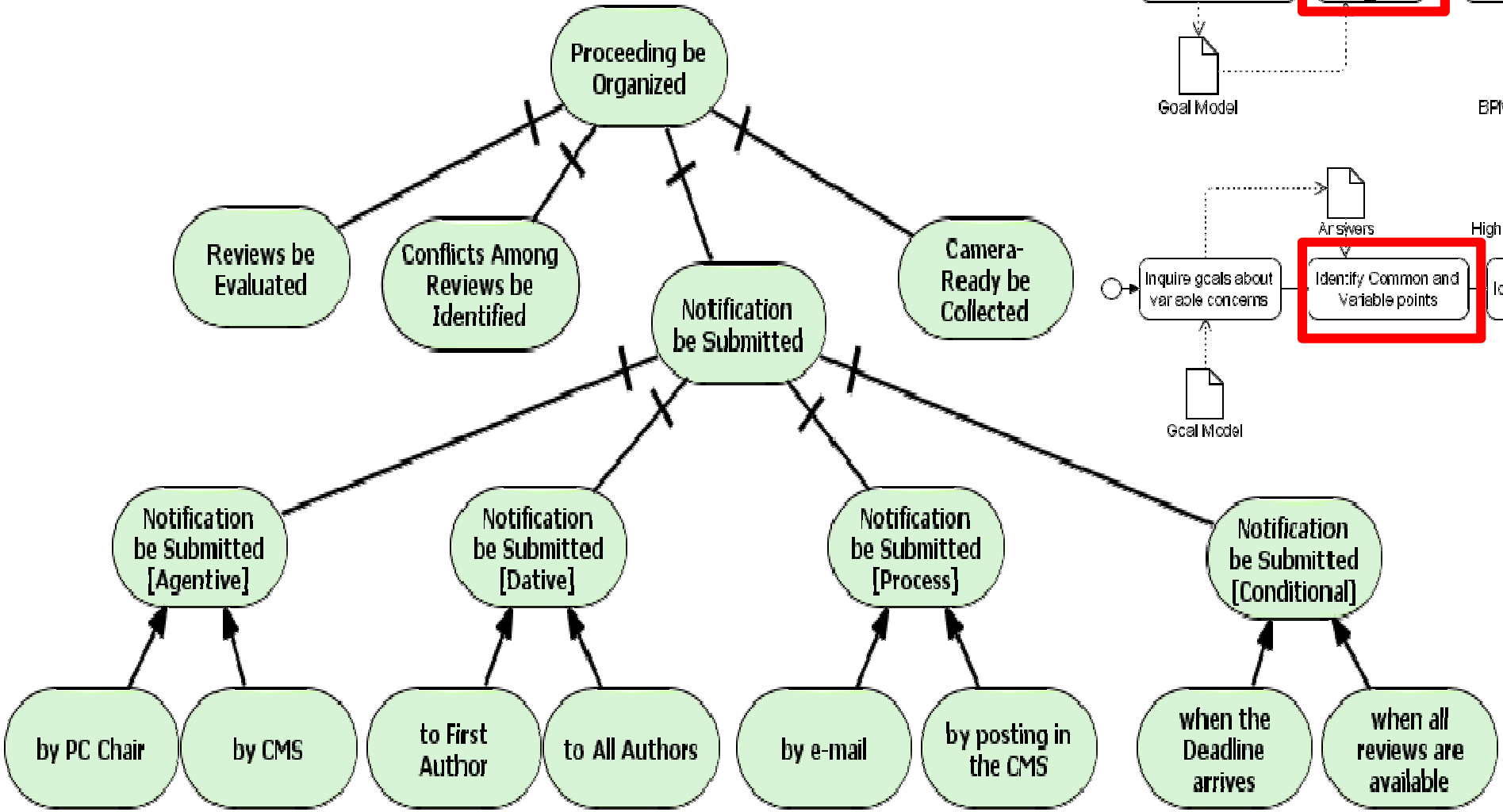


2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Goal Model with Variations (Notification be Submitted)

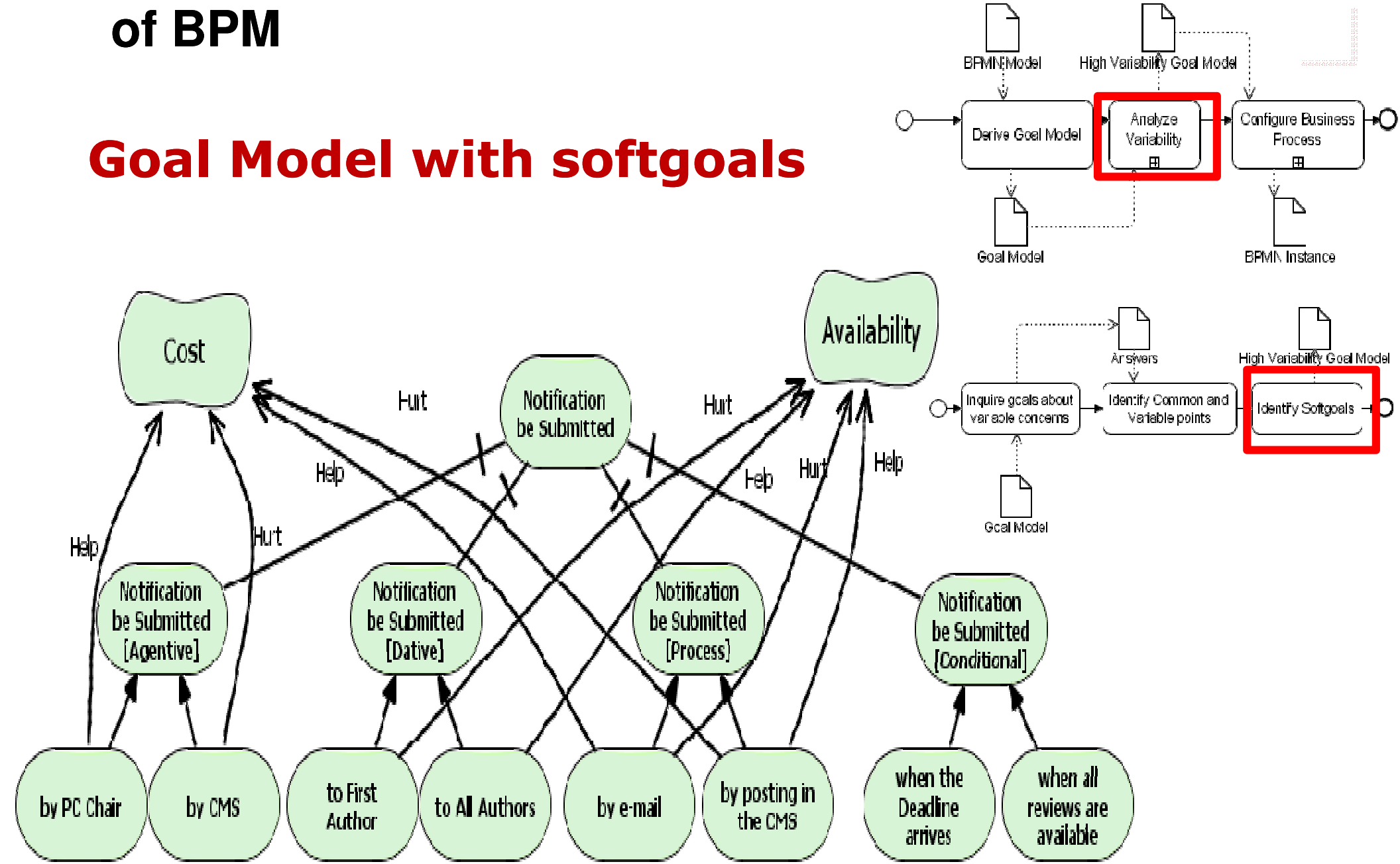




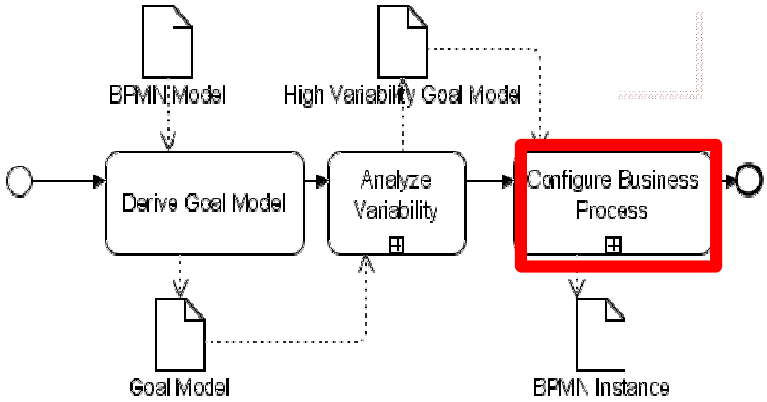


2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Goal Model with softgoals



2 GV2BPMN - Goal-Oriented Variability Analysis of BPM



Configuration of Business Process

- Top-down
  - Select softgoal and obtain configuration
- Bottom-up
  - Select leaf goals and analyze results

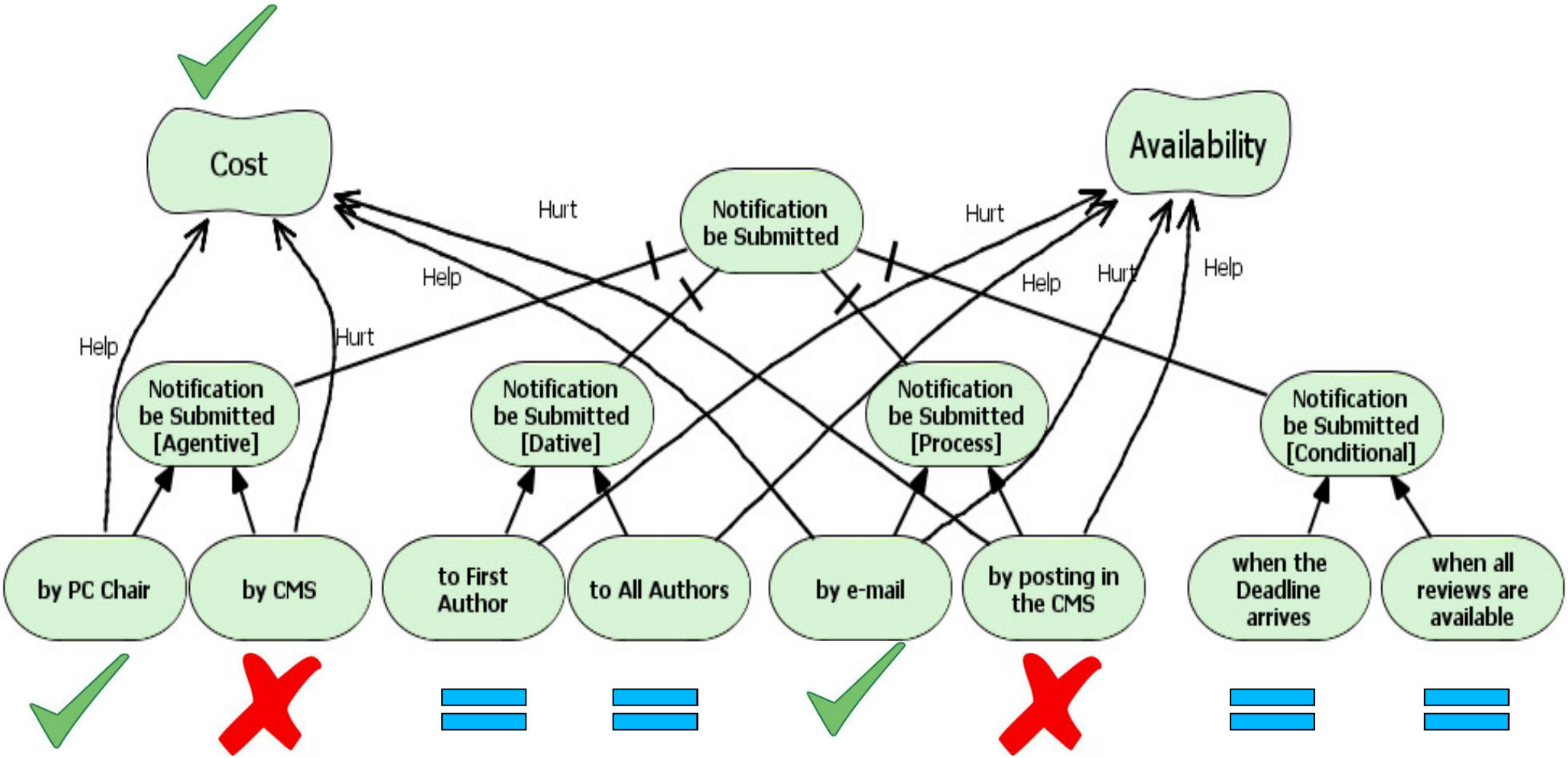
2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Example of Top-Down

- Select the Cost softgoal
- Evaluate consequences
- Generate Instance

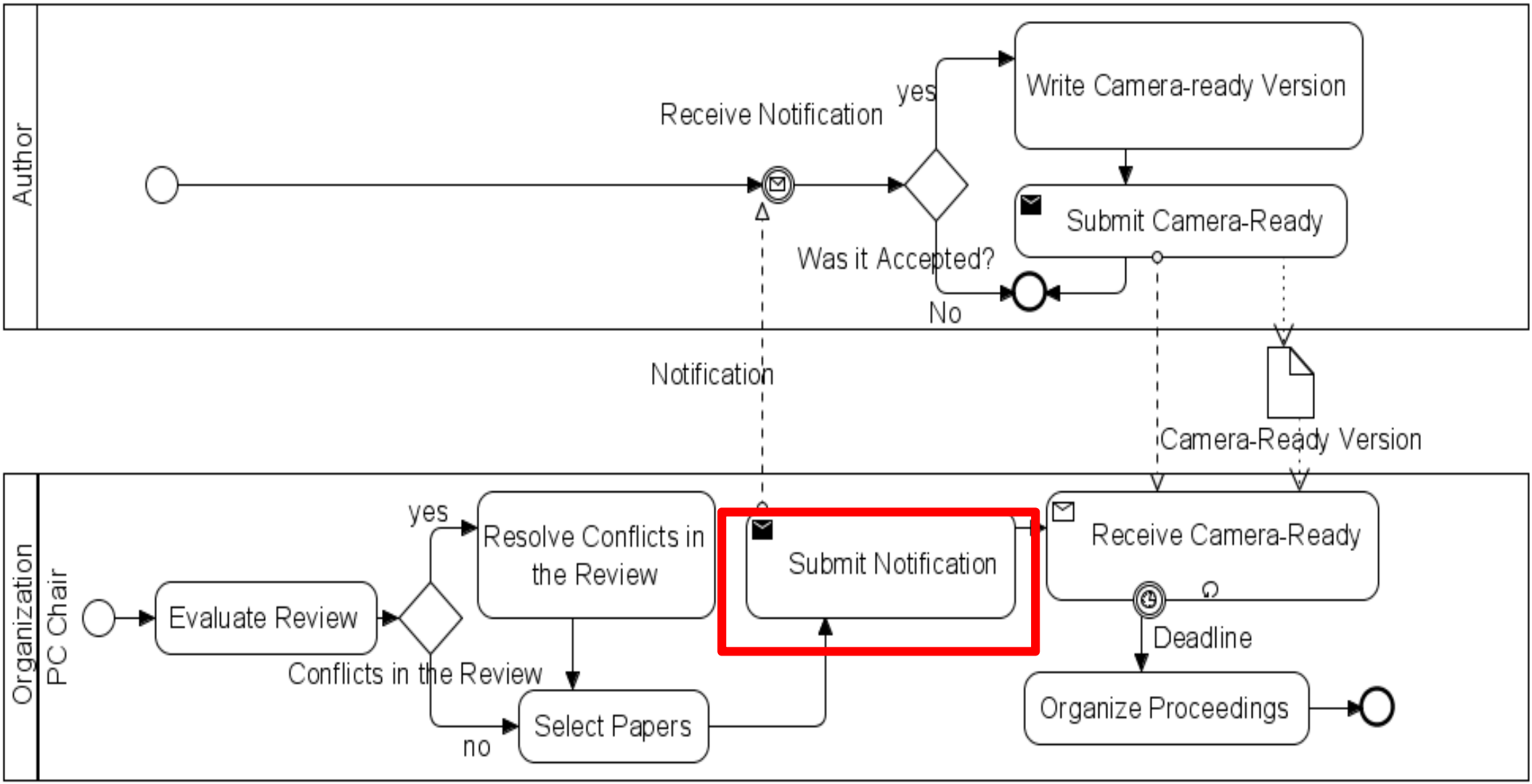
2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Selecting Cost

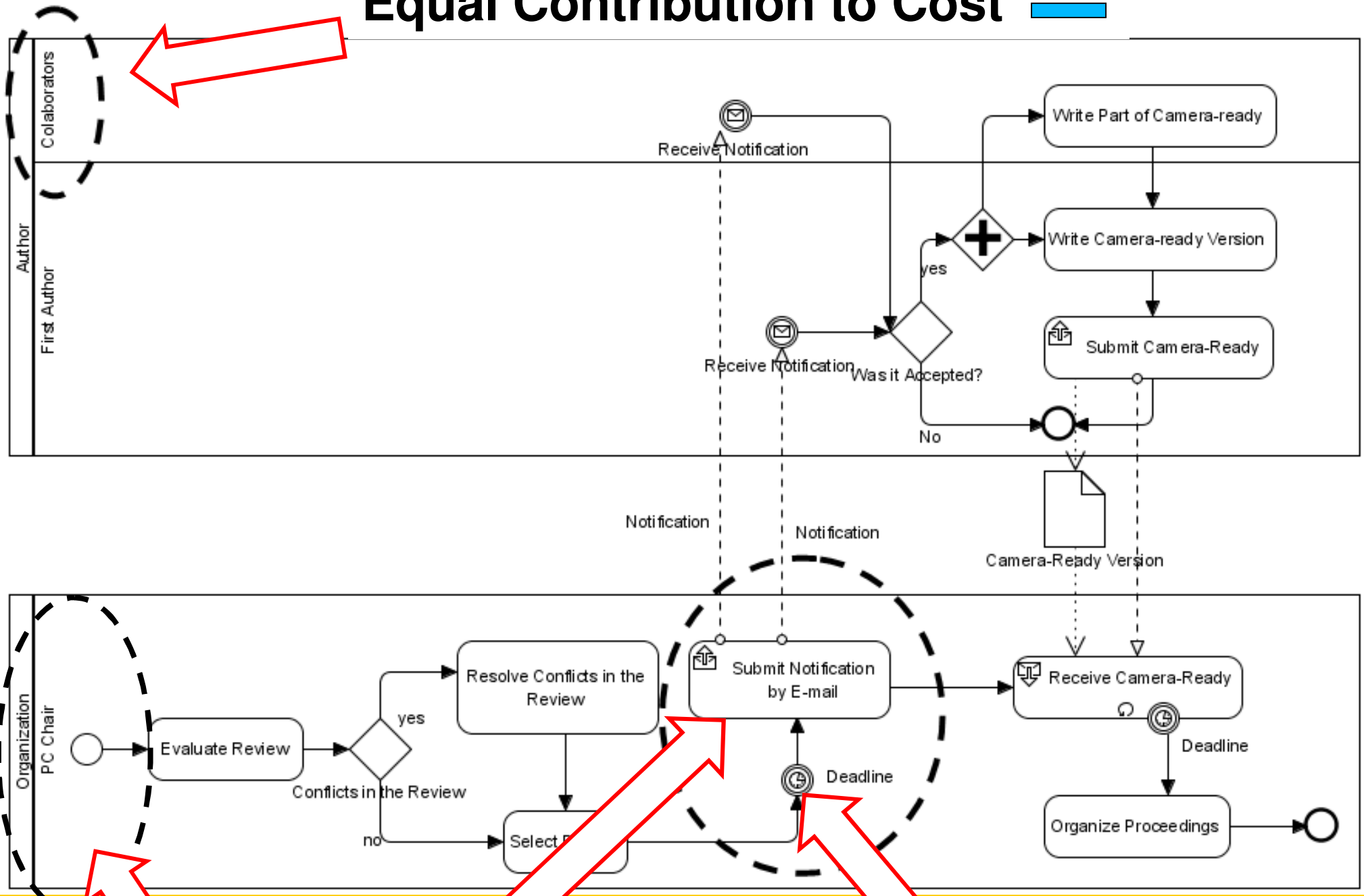


2 GV2BPMN - Goal-Oriented Variability Analysis of BPM

Example of BPMN



# Equal Contribution to Cost



Positive Contribution to Cost

Equal Contribution to Cost

3 Future Works

- Formalize the transformations among models (MDD)
- Development of a traceability reference model
- Extend an exiting variability analysis method to address current limitations
- Tool support
- Improve the prioritization used in the top-down analysis

4 Publications

- Santos, Emanuel, Jaelson Castro, Juan Sanchez, and Oscar Pastor. 2010. A Goal-Oriented Approach for Variability in BPMN. In *Proceedings of 13th Workshop on Requirement Engineering, WER 2010*. Cuenca, Equador.
- Santos, Emanuel, João Pimentel, Jaelson Castro, Juan Sanchez, and Oscar Pastor. 2010. Configuring the Variability of Business Process Models Using Non-Functional Requirements. In *Proceedings of 15th International Conference on Exploring Modeling Methods for Systems Analysis and Design, EMMSAD 2010 (to appear)*.