Explaining Stakeholder Negotiation
Using Social Goal Networks

Samuel Fricker

University of Zurich and ABB Switzerland Ltd.
fricker@ifi.unizh.ch and samuel.fricker@ch.abb.com

1. Introduction

Strong stakeholder networks are important for the success of engineering efforts. Such networks reflect the results of negotiation activities among stakeholders in terms of needs, capabilities, backing and knowledge. The larger and more distributed an engineering organization is, the more important it is to understand how such stakeholder networks are built and evolve. Social Goal Networks (SGNs) have been developed to answer an industrial need to understand stakeholder orchestration in a product management context.

2. Social Goal Networks

2.1. Elements of Social Goal Networks

Social Goal Networks describe stakeholder networks by modelling facets of goals and stakeholder relationships. To explain the negotiations among stakeholders, which are fundamental for network formation, the following three facets of goals [5] are useful: who benefits from the goal? What is the result of the achieved goal? What other goals are believed to contribute? To describe ownership of goals for the purpose of goal specification, it is useful to describe which stakeholder represents which other stakeholder. Figure 1 summarizes the SGN modelling notation.

A goal is stated and perceived as worth to be pursued because at least one important *stakeholder* benefits from the goal. He or she may also benefit from other goals, which together comprise a domain.

A *goal* describes a desired situation or property, which is effected as a result from achieving the goal. A goal is considered to be achievable with a combination of *contributing* goals from other beneficiaries and to contribute to the achievability of goals from again other beneficiaries. These contributions are a belief of the negotiating stakeholders and subject to *claims*,

which may lead to the identification of additional stakeholders and intermediary goals. Goal contributions describe how stakeholders are dependent on each other through the dependency of benefits they are expecting.

A stakeholder may act as a *representative* for other stakeholders when expressing desired benefits. While this speeds up the negotiation process, such representation leads to the need for validation of goals and goal contributions.
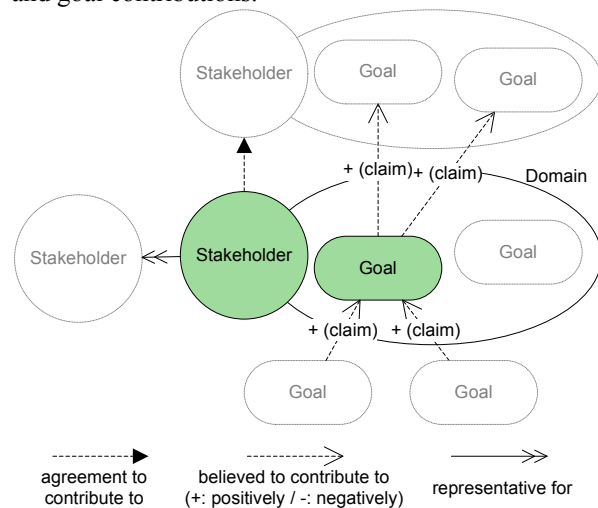

Figure 1: Elements of a Social Goal Network (SGN). While the notation is inspired by [6], the semantics are different: here a stakeholder is not an agent, but a beneficiary of a goal or represents another stakeholder that benefits from the goal. Goal contribution links may jump many levels of abstraction at one time and are supported by claims.

2.2. Seeds for Negotiation

To understand how stakeholders engage in negotiation and commit to relationships, it is important to understand the factors that motivate such behaviour:

a personal need for seizing benefits, capabilities to realize benefits, backing to enable the use of capabilities, and knowledge about stakeholder goals and goal contributions.

Goals describe the *benefits* that stakeholders are interested in. They reflect the motivation factors to engage in or to back work. *Capabilities* include engineering competence or assets like technology platforms that enable engineering work. *Backing* enables the use of capabilities and may include funding to finance staff. *Knowledge* reflects the level of understanding of goals, of benefiting stakeholders, of goal contributions and of claims.

2.3. Evolution of Social Goal Networks

For their expectations to be realized, stakeholders need to become part of a network of dependencies. Their goals need to be considered in the use of capabilities, and in the provision of backing.

Depending stakeholders engage in handshaking activities, where negotiation is performed [3]. Such a handshake results in an agreement that identifies contributing goals and claims that justify the validity of the goal contribution, while establishing mutual understanding and trust.

Handshaking activities are used by stakeholders when identifying and committing a partner. Partners need to be found to provide capabilities for realizing expected benefits, to back the use of capabilities, and to assure the validity of claims.

Goal networks can be prepared by people experienced in the overall problem domain to increase the efficiency of the overall negotiation process. Such preparation, however, introduces the need for validation of the goal network with those stakeholders that become the ultimate beneficiaries of the goals.

3. Related Work

SGNs explain how people negotiate to define goals for an engineering effort while building a stakeholder network for that effort.

Stakeholder models such as the Onion Model of Stakeholder Relationships [1] provide a taxonomy-based approach for discovering stakeholders. Of interest are the direct dependencies between stakeholders and a product. SGNs focus on the inter-stakeholder dependencies.

Goal-oriented requirements engineering methods such as GBRAM [2] guide requirements engineers in the development of goal models and requirements specifications. SGNs explain analyst-independent evolution of a stakeholder and goal network.

The goal modelling approach i* [6] provides a means for describing how stakeholders build a plan that satisfies their objectives. Stakeholders commit to actions that contribute to achieving objectives of other stakeholders. SGNs provide concepts to understand dependencies of expected benefits of passive stakeholders, to understand refinements of claims behind assumed goal contributions, and to describe delegation of goal ownership.

4. Conclusions

Social Goal Networks (SGNs) are applied as the underlying principle in the development of release definition processes in an ABB product organization. SGNs are used to define how stakeholder networks are formed and how goal negotiation and validation activities are performed among the stakeholders. The collection and analysis of experiences is ongoing work.

SGNs represent a step towards a better understanding of how people interact for defining and refining goals over multiple domains. For this, SGNs link goals with representatives of these domains and uses goal contributions and claim verbalization to better understand how requirements and solutions are weaved together in an incremental refinement process [4].

Current work includes the validation of SGNs in above-mentioned industrial setting. Further formalization of SGNs is required to improve tool support for stakeholders, which engage in or are dependent on inter-stakeholder negotiations.

References

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