Abstract
The planning phase of empirical studies is a success-critical key activity in empirical research to achieve best benefits for contributing stakeholders, e.g., researchers and industry partners, and to reduce study risks, e.g., insufficient validity and unaddressed stakeholder win conditions. The design of empirical studies typically covers issues of empirical methodology, but seldom explicitly discusses tradeoffs between conflicting study goals. This work proposes a value-based empirical research planning framework for eliciting and reconciling stakeholder win conditions in order to compare the benefits and risks of empirical study variants and reports on findings from an initial feasibility study in a recent ISERN meeting of empirical research experts.

1. Introduction
In recent software engineering research two trends can be observed: (a) empirical evidence has become an explicit evaluation criterion, which fosters the need for appropriate empirical study planning [1], and (b) value-based software engineering [2] has gained momentum in linking technical research and development to project stakeholders and their win conditions, which may conflict and introduce new demands and risks on project planning. Practitioners often complain about empirical studies that seem to focus on academic needs and seem to provide less value to industry stakeholders. These symptoms reflect the need to consider both academic and industry stakeholders in study planning to strengthen the value of an individual study for building a body of knowledge in EMSE.

2. Empirical Study Planning Issues
In the last few years researchers interested in building a body of SE evidence from related studies found a number of issues in comparing the results and contributions of different studies [1]. As a consequence they have proposed standardized ways to report empirical studies more comprehensively [3]. Further, many sessions at recent ISERN meetings raised the question on how to improve the value of empirical studies for the EMSE research community and/or industrial stakeholders and identified a set of challenges: (a) stakeholder value differs depending on the individual role and may change over time; (b) SE phenomena tend to change faster than in other disciplines; (c) data is often competitively sensitive. Thus, it seems that empirical study planning can benefit from a value-based approach similar to planning a software development project.

3. VBER Framework
The proposed Value-Based Empirical Research (VBER) framework[1] (Figure 1) supports researchers in empirical study planning and evaluation with 4 major steps: (1) characterization of the empirical study and its key deliverables and identification of potential dependencies between key deliverables; (2) elicitation of key stakeholders (industry and academia) and their value propositions; (3) identification of potential support (+) and conflicts (-) between expected value propositions, and (4) linking deliverables to stakeholder propositions either directly or with new countermeasures or study improvements.

4. Feasibility Study at ISERN 2006
We conducted an initial feasibility study in a session on “Value-Based Empirical Research” at the ISERN 2006 meeting of empirical research experts, where teams of experienced empirical researchers (ISERN members) applied the process to their studies. The goal of this initial feasibility study was to find out whether the VBER framework could effectively support researchers in planning empirical studies regarding key deliverables, stakeholder value propositions, and risks. Further, the participants were asked to consider the time horizon of stakeholder value in empirical study planning, i.e., to clarify whether stakeholder benefits were rather “short term” or “long term”. Main results were: (a) the participants found the proposed process useful and easy to apply for providing the big picture of a study; (b) additional stakeholders and win conditions came up during brainstorming and analysis which were not addressed in the original study; and (c) there was a short-term focus of study goals regarding industry stakeholders.

5. Conclusion
Appropriate plans are a key to conducting valuable empirical studies and need to be evaluated accordingly. The new value-based framework for the evaluation of empirical research planning supports (a) success-critical stakeholder elicitation; (b) identification of potential clashes between stakeholder value propositions; (c) identification of deliverables that do not address stakeholder propositions; and (d) unaddressed stakeholder win conditions.

References