

More than Requirements: Applying Requirements Engineering Techniques to the Challenge of Setting Corporate Intellectual Policy, An Experience Report

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Abstract—Creation and adoption of corporate policies requires significant commitment of scarce senior management resources. In the absence of processes and tools, convergence upon final policy and may not be achieved in a timely manner. Significant similarities between policy and requirements documents suggest that requirements engineering techniques could be used to generate policy. However, neither evidence of feasibility of this approach nor theoretical investigation is present in the research literature. This paper reports upon our experience from an exploratory study where well-established requirements engineering methodologies were applied to generate corporate intellectual property policy. Interview, brainstorming and survey techniques were used to successfully apply structure and process to the task, generating a new corporate intellectual property policy that met or exceeded all stakeholder goals. The materials gathered during stakeholder interactions and analysis not only provided functional guidance for the policy itself, but also non-functional guidance with respect to the diversity of stakeholder opinions and the strength with which opinions were held. This knowledge greatly facilitated the creation of draft policy: this insider knowledge increased our expectation of stakeholder acceptance and also facilitated subsequent negotiation efforts. The feasibility of applying RE techniques to crafting corporate policy has been demonstrated and the results show sufficient promise that further investigation is warranted.

Keywords: Requirements elicitation, negotiation, corporate policy, intellectual property.

I. INTRODUCTION

The creation and adoption of corporate policies requires significant commitment of senior management resources. Senior management must address their attentions to identifying the stakeholders and their needs then formulating a policy proposal in response. Discussion and negotiation occur among the team members, principally focusing on the effects of the policy upon business-case scenarios. Over the course of these iterations, convergence occurs and the final policy is formulated.

This sequence of events is quite similar to a typical requirements engineering process: it appears that the output (policy rather than requirements artifact) may be the principal difference between the two efforts. And, just as

in typical requirements engineering efforts, the rigor and efficiency used in policy generation can vary widely.

These parallels led us to posit that requirements engineering techniques could be used to address capturing and representing corporate policies, applying structure to what may otherwise be an *ad hoc* process. This topic has not been addressed in the prior work and we report herein upon our experience crafting an Intellectual Property (IP) policy using techniques from the Requirements Engineering (RE) practice. The resulting IP policy was developed in a timely manner, met the stakeholder's needs, and the RE techniques employed resulted in the development of a greater breadth of use-cases and validation scenarios than expected.

The case company is described in greater detail in Section III. The task of creating a new IP policy was set by the Board of Directors in response to customer stakeholder feedback. Existing policies were inherited by the current management team and efforts to develop new policies tended to meet business goals but in a way that were usually too resource-intensive to implement. The use of RE techniques was then chosen as a means to facilitate formation of an IP policy that would meet the business goals.

In Section II we review the related work and in Section III we describe the case company. In Section IV we present a description of the methodology then report upon the RE techniques used in Section V. The survey used is discussed in Section VI and our experimental observations are reported in Section VII. Section VIII presents the final IP policy and discussion. Section IX presents conclusions and directions for future work.

II. RELATED WORK

Requirements engineering is recognized as a key component of successful software development [3]. A requirements engineering effort identifies and endeavors to understand stakeholder needs, then elicits and manages requirements as necessary [7]. These efforts are complicated when the stakeholders are geographically distributed [9], [8], [6] as in the current work.

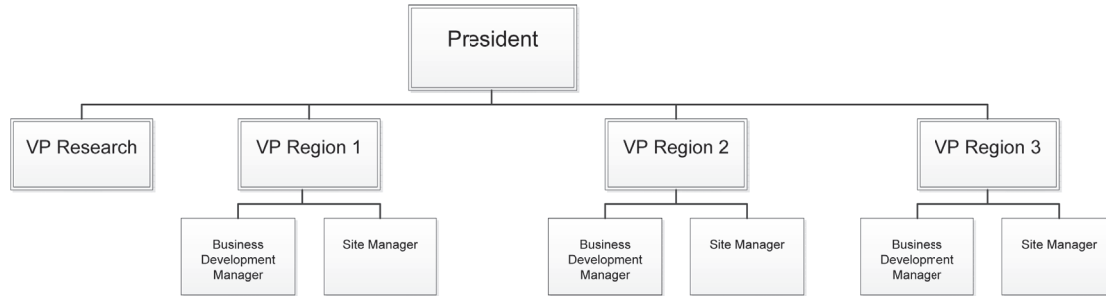


Figure 1. CASECO Organization Chart

Breaux and Anton [5] investigate the interaction of requirements with privacy policies through the use of semantic models to extract goals from policy statements. As such, this work is aligned with the current work, at least in intent.

The application of requirements engineering techniques to the task of setting corporate policy for Digital Rights Management is suggested by Morin and Pawlak [13] in their future work, stating that “requirements engineering techniques could prove to be particularly useful in initial phases of defining and formalizing policies from unstructured heterogeneous sources [p.196]”. Suh *et al.* [15] identify IP practices (and, by implication, IP policies) in South Korean firms and investigate correlations between these practices and the financial performance and with the perceived economic health of these firms. The study is interesting in intent but the reported results only indicate that financial performance is weakly correlated with IP policy; the number of potential confounding factors in their underlying data sets appear to restrain them from drawing stronger conclusions. Nevertheless, the work does show some support for considering IP policy as a key element of corporate guidance.

Barney *et al.* [4] address prioritization of aspects of intellectual capital within an organization. They propose a weighted voting scheme with strong stakeholder participation. In the context of the current work, one could argue that a similar techniques could be used to formulate IP policy at the highest level. Alternatively, it could be argued that the prioritization process should be a logical consequence of extant IP policies.

Alspaugh *et al.* [1] investigate IP rights and responsibilities and how IP licenses can have unexpected or unintended effects upon an organization. Their work identifies the need to proactively consider the effects of IP licenses upon corporate planning, particularly in the area of software product development. They propose considering IP rights and responsibilities as a new class of non-functional requirements and investigate mechanisms (such as tool support) for managing and resolving potential conflicts. The issues investigated in their work are the logical consequence of the issues investigated in the current work. However, their

work does not address the application of RE techniques to the elicitation, negotiation, and formulation of IP policies. Rather, they investigate the consequences of the IP policies *upon other organizations*, an issue that (in retrospect) the case company could have given greater consideration.

III. THE CASE COMPANY

The subject company, referred to hereafter as CASECO, is a 25 year old Information and Communications Technology (ICT) sector company with five locations, each in a different city, spread across 3 jurisdictions. Each location has permanent employees, contract employees and interns (both student and professional). The management structure is hierarchical on the organization chart but is relatively flat in practice – senior management and junior management interact in an informal manner.

CASECO is a not-for-profit economic development organization. Their mission is to “enhance industry through ICT innovation” which translates, in practice, into accelerating the technological and business growth of Small and Medium sized Enterprises (SMEs) throughout the operating region. This growth is achieved by making in-kind investments of highly-skilled manpower on specific projects done in partnership between CASECO and the project company (the client, referred to hereafter as PROJECTCO).

The senior management team (Figure 1) is composed of the President, four Vice-Presidents (with authority along jurisdictional boundaries), the most senior Manager at each site and the Business Development Manager for each region. Senior management does not have a financial interest in corporate outcomes but they are personal stakeholders as corporate policies affect their ability to deliver upon their personal performance metrics. The stakeholders with a direct financial interest exert influence via corporate guidance from the Board of Directors. One financial stakeholder also seconds a senior manager into one of the Vice-President positions, providing a greater degree of support to the company while ensuring that their interests are appropriately represented.

Each Vice-President is responsible not only with performing the tasks associated with their positions but also

with representing jurisdictional interests. As a result, the Vice-Presidents are cautious to ensure that all of their responsibilities are discharged appropriately. Management decisions are gently guided by the President but require significant consensus building within the senior management team. As stakeholder representatives, senior management is often asked to simultaneously represent multiple stakeholder interests – interests that can be conflicting and which may not represent the personal position of the representative.

A. The Task

CASECO received Board of Directors guidance to undergo a substantial change in business direction. While CASECO was to remain focused on the ICT sector, how it participated in that sector was to change significantly. A new *modus operandi* was to be adopted and the organization's mandate changed from “generating revenue by licensing technology to members of the consortium” to “facilitating technology commercialization by consortium members”.

As a result, corporate policies and procedures required significant revision.

The current senior management team had inherited their processes from prior senior management; few of the the existing processes were developed by current management. The overall mindset was still on “delivery under prior guidance”, no-one knew what the new rules would be so adaptation efforts were stalled. When efforts were made to begin development of the new policies, there was a tendency to develop policies that readily meet business goals but in a way that were infeasible in practice: the suggestions were usually too resource-intensive to implement. This *ad hoc* approach to developing policy was inefficient and, to accelerate the effort, the first author was tasked with leading the development of a new IP policy, subject to the following conditions:

- 1) Ensure that the stakeholders are adequately represented.
- 2) Meet the guidance of the Board of Directors, as expressed via the Business Plan.
- 3) The final IP policy must be readily expressed, communicated, and understood.
- 4) The final IP policy must be implementable as part of daily operations within existing resource constraints.

Permission was received to pursue task delivery using requirements engineering methodologies (biased strongly by the authors' expertise in the area) and to treat the effort as an empirical case study (for publication in this work), subject to constraints that, when necessary, business needs must come before study needs. Neither author is a member of the CASECO senior management team.

B. Complicating Factors and Constraints

It may seem that the formulation of an IP policy should be a relatively straightforward matter. Superficially, one

must address the needs of the stakeholders and publish the results. For CASECO, stakeholders are identified by their economic influence – stakeholders that pay more tend to have more influence than those that pay less. CASECO has both external funding sources (organizations that provide part of the operating budget) and internal funding sources (means by which CASECO can self-fund operations). There are four external funding sources: national government, state/provincial government, large industry, and small industry. CASECO also has two internal funding sources: services revenue and IP licensing revenue.

It can be appreciated that formulating an IP policy satisfactory to such a diverse range of stakeholders can be quite challenging.

CASECO is configured as a consortium. Therefore, IP held by CASECO can be held for the benefit of CASECO, for the benefit of a single member of the consortium that is not CASECO, for a subset of the members of the consortium, and for all members of the consortium. Licensing arrangements may be reciprocal, they may have a nominal fee associated with them or they may be negotiated at full market value. Further, IP may be constrained to licensing to or between non-competing entities only. And, there may also be interactions between CASECO IP policies and IP policies of current and potential customers.

Formulating an IP policy that met funding stakeholder needs *and* customer needs while also meeting the identified constraints required significant discussion and negotiation.

C. IP Policy Guidance

Initial guidance for the IP policy was drawn from the CASECO business plan, parts of which are presented here. Of necessity, certain elements have been redacted or paraphrased to protect commercial interests but the authors have done their best to present the intent of the guidance in an intact manner.

The intent of the IP policy is to ensure that daily operations delivers projects that meet the guidance provided in the business plan for IP ownership, stated as follows.

- 1) All IP created via work with an external partner, where the external partner is funding at least 50% of the R&D costs, is owned by the external partner. *[As a result of this statement, the final IP policy does not differentiate between different types of IP (such as patents, copyright, etc.)]*
- 2) All IP created via work with an external partner, where the external partner is funding less than 50% of the R&D costs, is owned by CASECO. CASECO is incented to support all external partner efforts to commercialize technology and have the external partner own this technology. *[This statement implies that CASECO does not want to own project IP.]*
- 3) All ownership claims to prior IP must be declared before a project begins and negotiated with the external

partner upon initiation of a new project. This facilitates protection of the external partner's interests and provides greater clarity for other potential participants to consider investment in the project.

- 4) Inventors must be protected and rewarded for their IP or they will have no incentive to participate in the process. Any model must protect IP for benefit in the jurisdiction and clarify the business relationship with the inventor.
- 5) IP must be transitioned to industry without encumbrance. This is a fundamental requirement for any venture capital firm to consider investment.

A complicating factor when converting these statements into a coherent IP policy is institutional history and momentum. CASECO operated for more than 20 years using a substantially different business approach: maximizing IP ownership and IP licensing revenue. There are internal and external interests who wish to maintain the status quo for reasons that include philosophic disagreement as to the proper form of the new direction.

IV. METHODOLOGY DESCRIPTION AND THREATS TO VALIDITY

In this section we look first at the manner in which the empirical case study was guided and performed then we review the requirements engineering techniques used to develop the new IP policy.

Given the mandate to deliver the IP policy subject to business constraints, the investigation could not be structured as a strict research effort and is, therefore, presented as an experience report. As we pursued this empirical investigation, we were guided by the following questions. These questions should be considered motivating, rather than definitive, guidance to this initial exploration of the domain.

- 1) *RQ1*: Did the application of requirements engineering techniques to the task of IP policy generation result in the production of the required artifact (the corporate policy)?
- 2) *RQ2*: Did the artifact meet the needs of the stakeholders and how do we evaluate the results?

This study took a pragmatist stance [10], employing mixed methods to achieve our goals. The results were qualitative rather than quantitative: the small number of stakeholders and the mandatory requirement to produce results precluded, for example, controlled experiment methodologies. At its core, this was an action research study; a real-world problem had to be solved and the first author was a direct contributor to the solution. The first author studied the experience of developing the solution using, as much as practical, an exploratory case study approach. Industrial constraints dictated that the research question(s) were broader than we would have preferred.

The first author, as an integral member of the process was obliged, at times, to identify requirements that had been

missed by other members of the senior management team. The first author was responsible for formulating drafts of the policy and for performing some of the business-case validations. As a result, the first author could also be viewed as providing a degree of quality-control on the process that may have biased the results. We note that this same criticism can be made of any RE practitioner, on any project – it is the nature of requirements engineering to be as interventionist as necessary, but no more.

A combination of interviews and written survey techniques were used to gather the requirements. During the study, the first author had significant concerns about introducing bias in the written survey instruments and affecting internal validity. It may be as a result of this concern that the survey questions were considered by some respondents to be too vague “*I don't know the context within which to answer the question. . .*” and may have led to inferences regarding requirements, motivations and rationale during analysis by the first author that were not accurate.

Requirements were elicited from the participants before formulating draft policy to promote buy-in among the management team. Given the significant divergence of opinion identified in early discussions, we promoted the perspective “my opinion was considered before the first draft” rather than “a draft was composed (and imposed) before my opinion was solicited and considered”.

Ethnographic techniques [14], [10] were used in a subjective evaluation of the participant's responses to the survey instruments. Responses were analyzed to identify divergent opinions, to evaluate the degree of divergence, and to evaluate the strength of the held beliefs and opinions. This effort was performed to provide a form of scope analysis (in the context of negotiating conflicting requirements), developing an estimate of the anticipated effort required to achieve convergence upon the final policy.

Traceability to the individual was made possible via the survey instrument. Notes taken during discussions and negotiations also allowed us to identify advocates for and supporters of a given position.

V. REQUIREMENTS ENGINEERING TECHNIQUES USED

The geographic dispersion of the participants constrained the range of elicitation techniques that could be employed to those that could be used at a distance: to telephone and videoconference interviews and brainstorming sessions, and oral and written survey instruments. How those tools and techniques were guided into achieving the goal is the subject of this section.

The overall process was inspired by the Accelerated Requirements Method (ARM) by Hubbard *et al.* [11]. ARM is described as a three-phase facilitated requirements elicitation and description activity: a Preparation Phase is followed by a Facilitated Session Phase and the work is completed via a Deliverable Closure Phase. By promoting full team

participation in the process, management hoped to reduce the anticipated resistance to change.

The principle goal was set by the President at the start of the preparation phase: to deliver a new IP policy for CASECO, an IP policy that would meet the direction set by the new business plan. The new IP policy would also have to be acceptable to the President and to the key stakeholders identified in Section III. The remainder of the preparation phase consisted of the first author reviewing prior IP policies at CASECO and reviewing the business plan for guidance toward the new IP policies. Initial telephone sessions were held with all stakeholders to describe the process and the expected deliverables.

The facilitated session phase was structured as survey distribution to, and completion by, the stakeholders. The authors analyzed the survey responses and the first author held follow-up interviews and discussions with stakeholders when needed to clarify survey responses. The response analysis was summarized for the President and the remaining issues were identified.

CASECO is undergoing a significant change in business direction and estimating the level of commitment to, or resistance to, the new direction was a desired secondary outcome of the policy generation process. The response analysis presented to the President reported upon the discussions and positions espoused by the stakeholders. This analysis was a form of critical discourse analysis [2], constrained by the aggressive delivery schedule to analysis of participant submissions to identify the bias(es) exhibited by each stakeholder and the strength of these biases. Further, wording of the draft IP policy took into consideration the insights provided by this analysis. Validating our interpretations of the stakeholder positions was performed by observing stakeholder responses to policy proposals – by direct observation during videoconference discussions and by analysis of written responses.

The President then directed that a draft IP policy document be created, using best efforts to resolve the outstanding issues in a manner consistent with business constraints. The draft policy was written in the English language using relatively formal grammar. The draft IP policy read like a cross between ‘legalese’ and formal requirements (formal in the sense that the constituent elements of the sentences were much like predicates in a first order system). This draft IP policy was then circulated for discussion. After a period of approximately two weeks, characterized by email exchanges, one-on-one discussions and group brainstorming sessions, a revised policy was formulated.

The revised policy was circulated and then discussed and negotiated in an in-person session. This face-to-face meeting was explicitly *not* in the original planning. However, the meeting was enabled by other business requirements and the stakeholders took advantage of the opportunity to greatly reduce the time required to achieve closure on the final form

of the IP policy.

In the closure phase, the final IP policy was formulated and delivered to the stakeholders for final approval. The final policy was accepted with minor grammatical changes. Related information on the revision process is also presented in Section VII.

VI. SURVEY

The survey instrument was formulated by the first author and distributed to 11 participants. The survey queried the respondents for how they believed the IP policy should be interpreted in particular business cases, identifying the operations constraints within which the IP policy must function. The survey responses also generated many of the business cases for which the IP policy must be used to provide guidance. This is similar to use-case and scenario exploration in requirements engineering for software artifacts. In all cases, whenever deemed necessary, the survey instrument was supplemented by interviews with the respondents.

The survey questions were open-ended, designed to facilitate respondent self-elicitation of information that might affect the IP policy and subsequent implementation. Four of the questions addressed interactions between IP policy and business goals. Eight questions addressed general IP policy issues and four questions addressed specific IP policy issues. Finally, six questions addressed constraints upon IP policy.

There were 22 questions in the survey instrument; for confidentiality reasons we can present only two of the main questions here, along with their sub-questions.

- 1) Does our IP Policy leave the project in an investable state (a state worthy of investment)?
 - a) What are the characteristics of an investable Project?
 - b) If our IP Policy does not leave the project in an investable state, what do we need to change, and how can we make these changes?
- 2) If we are proposing investments in the range of 50% to 90% of total project costs and we own the IP under any project in which we invest, what is the process whereby PROJECTCO regains control or ownership of the IP?

A. Sample Survey Responses

We present here some sample survey responses to the two sample questions. The responses are set in *italics* and our comments complete each paragraph. The responses can all be considered to be operations requirements. As such, each response represents a use-case or operational scenario for which the IP policy must provide guidance. The survey proved effective at identifying many of these operations requirements that had not been addressed within the business plan.

Some of these requirements are functional (*e.g.* detach CASECO from the University IP ownership policy) and

others are non-functional (e.g. the difficulties associated with determining the actual value of a contribution constrain the utility of policy guidance in this regard). The survey responses provided useful feedback for both types of requirements.

Clean up the IP ownership rules to reduce ambiguity and risk, detach CASECO from the University IP ownership policy. Historically, there have been numerous projects carried out between CASECO and regional Universities. The complexities of managing the multitude of IP policies, and their interactions, was making it very difficult for CASECO to function in an effective manner.

The ownership of IP based on a 50% contribution is effectively arbitrary and open to disagreement (what is the actual value of a contribution, did it turn out to be 49% and not 50%, etc.). And since most of the subsidization is being quoted as 50-90%, it sounds like most/all of the work will not be owned by the industry from the initial phases. In this response, the respondent has identified that the use-cases identified in the business plan appear to be contradictory: The example cases in this clause seem to state that the IP will not be owned by industry, yet the basic policy principle is that we will not own IP. The derived requirements must resolve these contradictions.

Rather than the arbitrary 50% level, it should be set as always owned by industry BUT with CASECO having an encumbrance (e.g. IOU) against the IP of the value of the subsidization (plus some reasonable multiplier factor?). Thus the company/investor can always buy out CASECO interest for a known and fair amount. We do NOT want ongoing licensing agreements of x% of sales. A different respondent has identified another issue with the 50% threshold, and an issue with ongoing management of the IP asset(s), both of which must be resolved in the requirements specification (the final IP policy).

In the case where an IP is not pursued and CASECO has an interest, would want to have a mechanism where CASECO could try and farm out the IP to a third party. In this case the original company contribution could be viewed as an encumbrance (if they still exist) but this may add an unacceptable (to CASECO) level of complexity – it may be more cost effective for CASECO to simply insist that IP ownership reverts to CASECO if the IP is abandoned. This respondent goes even further into operational issues associated with the IP policy but also provides reflective comments on the complications associated with the requirements.

We will have some internal R&D projects which we are using to keep our team technologically current and on the bleeding edge. These projects may not be investable in the short term but they should spawn future projects with our industry partners that will be investable. In these situations, CASECO will need a selection criteria matrix and a review process to ensure that the rationale for the R&D project is sound and the probability for future investable projects

is high. While this response appears to address long-term operational planning, it is also indicative of a desire to maintain the status quo (CASECO has a substantial track record in successful delivery of applied research projects).

In general, the comments indicate that the respondents have a wealth of practical experience against which they are testing the concepts and proposals. Harnessing this domain expertise, generally identified as subject matter expertise in RE, is a fundamental technique in RE practice, further indicating that RE techniques are applicable to this domain.

VII. EXPERIMENTAL OBSERVATIONS

The total effort expended upon this work was on the order of 120 person-hours. While this may seem like a significant effort for such a seemingly small result (see Section VIII for the final result), we feel that it was well worth the expenditure. While the focus of the effort was IP policy, the effort also resulted in a significantly greater understanding and acceptance of the general changes in corporate direction. The true value of this byproduct is beyond our ability to accurately estimate but we feel comfortable asserting that it was likely “time well spent”.

The manner in which the stakeholders approached the formulation of the IP policy is of interest to the RE community. All of the stakeholders have extensive, formal training in engineering or related disciplines. Some also have formal training in business schools, others have extensive practical business experience. We observed that the participants each carefully articulated their perspectives on the problem, then gave their (expert) opinion as to how to best resolve the issue, often including (at least elements of) the arguments they would use to support their position. The observed behavior is stereotypical of that in Issue-Based Information Systems (IBIS) [12].

While this trait led to well-articulated responses, we also observed that it led to greater than expected intransigence on the part of participants when their positions were challenged. Requirements negotiation, embodied here as IP policy negotiation, was the dominant task – the elicitation process required approximately 30 hours, final policy drafts approximately 10 hours, and the remaining 80 hours was dominated by discussion and negotiation. In this context, the application of RE techniques helped to ensure that the topics being discussed were the topics that needed discussion – the conflicting IP policy requirements and not other issues such as operational matters.

In preparation for these discussions, the survey responses were analyzed and the following observations were made.

- 1) None of the responses explicitly referred back to the Key Performance Indicators (KPIs) by which CASECO’s performance is measured. When making these responses, we expected that the respondents would refer to how the IP policy would meet the needs of the KPI deliverables.

- 2) There is significant historical momentum in the thought processes and opinions. Everyone has a different opinion as to how much of a change is occurring at CASECO, how quickly that change can or must occur, and what that change really means.
- 3) There is still a significant bias toward the perception that CASECO is synonymous with applied research.
- 4) There is enough diversity in the replies that an effort should be made to unify the vision across the team before making the decisions.
- 5) Respondents identified use-case contradictions.
- 6) There are challenges when creating a survey instrument. Efforts to remove bias can lead to perceptions of vagueness.
- 7) The respondents tended strongly to respond in terms of operations issues, set in their own contexts. This is to be expected; the survey instrument was constructed in this manner. However, we expected to see greater emphasis on policy, as guidance for operations, in the responses.
- 8) There is some evidence of resistance to change due to implementation challenges: policy change is acceptable but cannot be delivered due to resource constraints. Therefore I will resist such change to protect myself.
- 9) Resource constraints, such as travel constraints, prolonged the data gathering and resolution phases.

In retrospect, these observations could have been used to predict that an intense period of discussion would be needed to resolve the final form of the IP policy.

The substantial questions regarding practical issues of valuation presented in Section VI-A led to another round of analysis and the following questions were put to the President.

- 1) Does CASECO need to recover their investment in a project?
- 2) If CASECO does not need to recover their investment in a project, how does this affect your direction on IP policy?
- 3) If CASECO does need to recover their investment in a project, *[REDACTED. Numerous follow-on questions were present in the report.]*

In response, the President provided answers and directed the preparation of a draft IP policy to focus discussion on the remaining issues. That policy was drafted and circulated to the senior management team.

VIII. FINAL IP POLICY

As noted earlier, the opportunity to have an in-person meeting, shortly after the revised IP policy was circulated, helped the team to reach closure more quickly than predicted by our analysis of the survey responses. However, the knowledge obtained from this analysis facilitated resolution

more quickly than if the positions of the parties were only discovered during the meeting. During this meeting, the concept that policy is *not* operations, just as requirements are not design or architecture, was firmly agreed to and supported for the crafting of the final policy.

For example, operations guidance, as derived from the IP policy may be expressed (in part) as follows.

- 1) Establish prior knowledge for all parties.
- 2) Establish prior art, not from project participants.
- 3) Identify scope of work, domain of interest, and anticipated IP.
- 4) Identify terms under which PROJECTCO (the client) gains control of IP.
- 5) Identify terms under which PROJECTCO loses control of IP.
- 6) All IP is owned by CASECO for duration of project.
- 7) Upon PROJECTCO meeting control terms, transfer IP ownership from CASECO to PROJECTCO.

We observe, in retrospect, that most of the Policy Guidance in Section III-C is actually operations guidance.

The final IP policy, presented here, is more abstract – it must guide operations decisions as opposed to define operational practices. Of necessity, the details have been paraphrased for publication purposes.

FINAL IP POLICY

CASECO is directed to generate project-related IP in partnership with PROJECTCO. CASECO shall not own project-related IP except under the following conditions:

- 1) For the duration of a project, CASECO shall own all IP, said IP ownership transferring to PROJECTCO upon project completion.
- 2) If PROJECTCO defaults under the terms of the contract with CASECO, ownership of all project-related IP transfers to CASECO.

CASECO shall generate non-project-related IP only under the express direction of the President.

The final IP policy may appear to be rather short to the reader. The study participants were also somewhat surprised to realize that they were able to state the policy so succinctly. The breadth of validation cases afforded by the requirements gathering process was felt to contribute to the ability to remove unnecessary policy elements.

IX. CONCLUSIONS AND FUTURE WORK

We report in this paper on our experiences while applying requirements engineering techniques to the task of creating and defining corporate IP policies. We conclude that interview, brainstorming and survey techniques have been effective at gathering the information needed to support the development of a corporate intellectual property policy and we have seen no evidence that would indicate that the techniques would not be applicable to other types of corporate policies.

We were able to use these RE techniques to effectively elicit the operational guidance and constraints necessary to inform the policy definition process in an appropriate manner. The resulting intellectual property policy met or exceeded all goals set at the beginning of the study and was accepted with only minor grammatical changes.

Therefore, we conclude that we are able to answer both of our research questions in the affirmative. Requirements engineering techniques can be successfully applied to the task of IP policy generation, resulting in the production of the corporate IP policy. Given that the corporate IP policy was accepted by senior management, we conclude that it meets the needs of the stakeholders.

Practitioners and researchers should remain aware that the process used in this work does not directly generate the IP policy. The output of the requirements process was a body of knowledge regarding the operational requirements and operational constraints within which any practical IP policy must function. This body of knowledge, combined with guidance from the business plan and senior management, led to the formulation of the IP policy. The IP policy was then validated against the use-cases, business cases, and operations scenarios generated by the requirements process, a validation suite far larger than anticipated at the start of the study. As such, we expect that the resulting IP policy will prove to meet the needs of CASECO at this time.

The effort expended on analyzing the emotional position of each participant was useful, even if the timetable estimates were not used due to the serendipitous in-person meeting opportunity. The first author felt that the ‘inside knowledge’ of each participants emotional commitment to the aspects of their position helped to reduce stress levels during negotiations at that meeting and allowed the team to expose and address hidden agendas in an expeditious manner.

This work reports on a single case at a single organization, developing IP Policy; the resulting observations and data will allow us to focus the work more closely in the future. Further policy cases are under investigation at this time and our expectation is that we will be able to compare the results to support more generalized direction for practitioners. Replication of this work by others is likely infeasible but more research into the applicability of requirements engineering techniques for the general task of creating arbitrary corporate policies could be done by the community.

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