

Emergence of RE in Large Corporations: Lessons Learned From an RE Project at P&G

Gil Regev¹, Julien Favre², Erich Hayek², Paul Wilson², Alain Wegmann¹,

¹*Ecole Polytechnique Fédérale de Lausanne (EPFL), School of Computer and Communication Sciences, CH-1015 Lausanne, Switzerland*
{gil.regev, alain.wegmann}@epfl.ch

²*Procter and Gamble Information Technology (Information and Decision Solutions, IDS)*
{hayek.e, wilson.pa}@pg.com
favre.j@gmail.com

Abstract

In this paper we describe the successful use of RE methods in a project at Procter and Gamble UK. We identify two main elements for this success. The first element is the combination of methods from P&G and academia (Adoption Methodology and Lightswitch). The second element is a new focus of the IT department of P&G on providing business solutions and is reflected in the name change from IT to IDS (Information and Decision Solutions). This shift is accompanied by a move from writing specifications of IT systems towards defining business requirements. We discuss how these elements explain the success of the RE phase of the project and propose research directions that may ease the introduction and use of RE methods in organizations.

1 Introduction

The promotion of the use of requirements engineering (RE) methods in industry is a major concern of the RE community [1]. In this paper we describe the successful use of a blend of industrial and academic RE methods for an IT system development at Procter & Gamble.

Procter & Gamble (P&G), one of the leading global manufacturers of branded consumer goods, aims to touch and improve the lives of millions of people around the world on a daily basis. Almost 140,000 employees in over 80 countries worldwide are working to achieve this vision with one of the strongest portfolios of trusted, quality, leadership brands¹. In

¹ including Pampers(R), Tide(R), Ariel(R), Always(R), Pantene(R), Mach3(R), Bounty(R), Dawn(R), Pringles(R), Folgers(R), Charmin(R), Downy(R), Lenor(R), Iams(R), Crest(R), Oral-B(R), Actonel(R), Duracell(R), Olay(R), Head & Shoulders(R), Wella,

P&G, the IDS is part of the internal business unit “Global Business Services” (GBS) which provides top quality business process services as well as business process transformation to all other business units. IDS focuses on service creation and service management while operations and transactional processes are mostly outsourced. IDS acts as mediator between the business-related organizational units and the service vendors (see Figure 1). Business transformation is enabled by IDS in 3 main ways: (i) analysis of the needs (i.e. the requirements) expressed by the business organizational units, (ii) the technology and vendor selection as well as (iii) set up of end to end service. The IDS contribution is evaluated in terms of their impact on the P&G Brand’s “in-market” performance.

Amongst Procter & Gamble's key business drivers are innovation and focus: strategies are clear and focused by business and by industry. P&G worked hard on managing the innovation and growth process, while remaining focused on keeping financial performance in the top third of the industry peer group every year. This is done via very vigorous tracking of how many of P&G's ideas get prototyped, how many of the prototypes get developed and qualified, and how many of those get test marketed and then successfully commercialized. Procter & Gamble has taken its success rate, which in 1999 was about 15 percent or 20 percent to above 60 percent today.

P&G uses the concept of “initiative” for the development of any new product, a change of an existing product or in general any project that implies involvement of resources or capital across the organization.

Consequently, the initiative Tracking and initiative Management Optimization has become one of the key focus areas of IDS. The opportunity and goal is to

Gillette(R), and Braun(R). Visit <http://www.pg.com> for more information about P&G and its brands.

create high value for P&G by improving initiative success and reducing initiative development costs and time.

The management of initiatives today is a complex task due to the large number organizational units, functions and IT systems involved (spanning from R&D via Supply Chain and Sales and Marketing Analysis) and the difficulty to obtain the necessary data to monitor an initiative's progress.

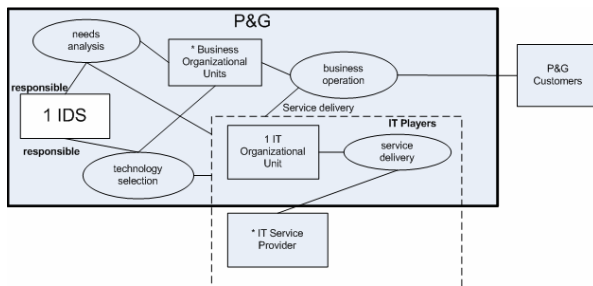


Figure 1. P&G IT project organization

The project on which this paper is based was aimed at defining the requirements for an integrated IT solution for the part of the initiative that monitors the success of the initiative once it was launched. The project was performed as a Master's project by Julien Favre. It was deemed a success by P&G as well as from the academic standpoint. For P&G, the project established a firm set of requirements and prototypes that is now being used by the development team

2 The Requirements Methods Used

At the initial stage of the project, it was decided to use Adoption Methodology because it is the recommended approach inside P&G. The use of Adoption Methodology was supplemented by the use of Contextual Inquiry (Holtzblatt and Jones 1993) and Lightswitch [4]. Contextual Inquiry improved the collection of information. Lightswitch, an early requirements method, increased the focus on certain elements, such as relationships between stakeholders and improved some aspects of Adoption Methodology.

2.1 Adoption Methodology

The goal of Adoption Methodology is to improve technology adoption, and hence project success rates. It has the secondary benefit of ensuring IT project leaders understand the business implications of their technology.

The need for focusing on adoption came with the change of the definition of success for an IT project. The definition of success evolved from the roll out of a

product to the actual adoption of the product by its intended users. This change triggered the need for developing a standard approach, that is, Adoption Methodology. Technology adoption is a term now used broadly within IDS. It is widely understood that adoption should be the end goal of any IT project. By leveraging Adoption Methodology, IT project managers can now set realistic technology adoption measures, and take specific steps to deliver on them.

Adoption Methodology, based on [3], was initially developed in 2002 to increase adoption rates of Procter & Gamble IT projects in North America. The Adoption Methodology blends IT industry best practices, user psychology, macroeconomics, specific training techniques, market segmentation methods, and business understanding to create an optimal training and deployment plan for any IT project. Adoption Methodology provides a way to translate the business understanding into a business validated IDS solution. To perform this task, the methodology introduces the concepts of segmentation and scenarios.

The segmentation is the fact of grouping the potential users of the system by their way of using it. For example, if some users will use a subset of the capabilities of the system and other users will use another distinct subset, they will form two segments.

Scenarios represent a way of communicating a functionality to a particular segment of users. The scenarios are also used to assess their value and probability of being adopted.

Adoption Methodology is strongly "value focused" and helps to understand where the value of a product comes from. It gives a very realistic view on which functionality provides which value to which user.

Adoption Methodology addresses several steps in an IT project: the business understanding, the complete requirements (including changes to the business processes), the system roll out, the users training and the marketing of the solution. The concrete adaptation of Adoption Methodology to this project involved the following steps:

1. Early requirements – business understanding
2. Initial users involvement
3. 1st round of interviews – business understanding
4. Scenarios development
5. 2nd round of interviews – scenario assessment

In its simplest form, the Adoption Methodology addresses nine core questions:

1. Who is the target customer?
2. What is this customer's compelling reason to use the envisioned solution?
3. What is the whole product solution that fulfills this reason?

4. Who are the key partners and allies who might be part of this whole product?
5. What is the optimal deployment method or scheme (online, face to face, etc)?
6. What is the customers' cost of using the envisioned solution?
7. Who, what, and where are there competing solutions?
8. What is the optimal positioning of the envisioned solution?
9. Who is the next target?

These questions are asked for each functionality. Going through these questions leads to:

- A clear vision or goal articulating the project's desired end state (what work will be done differently, and by whom).
- A clear action plan that optimizes available resources and delivers on the vision or goal.

In the second round of interviews, we made several iterations. We started with a very simple set of requirements and a very simple mock-up.

Then, during each interview we improved the mock-up and got more and more details about the requirements. In order to validate the addition of the requirements, we systematically asked two questions:

- Why do you need this requirement?
- Which precise actions can you take with this functionality?

The 9 questions of the adoption methodology and these 2 questions have two distinct uses. The two questions provided us a good and rigorous way of selecting the more interesting functionalities. To assess the value of those selected functionalities and their chances of being adopted, we used the 9 questions listed above. They were also the base for defining the compelling reasons to buy and the value of a given functionality.

2.2 Contextual Inquiry

For the interviews, we used some guidelines from Contextual Inquiry [2]. The main constraint was the time in our case; consequently, we haven't been able to use every aspect of this method.

As a general principle, we tried to optimize the time we spent with system's users and sometimes this optimisation was not compatible with the contextual inquiry principles.

On the other hand, we maximized the time we spent with the users by attending various meetings as observers. We also simply spent time in one of the

users' areas to observe the relationships between the individuals.

2.3 The use of Lightswitch

The first element that was used from Lightswitch is the relationship analysis. We oriented the first round of interviews so that we could clearly understand the relationships between the different actors. It really focused the analysis around the relationships.

The analysis was also modified to be more goal-oriented. In effect, Adoption Methodology doesn't really emphasize this aspect. Lightswitch and goal oriented RE in general influenced this aspect of our approach.

To be precise, we used a hybrid version of the goal/belief approach described in Lightswitch. Lightswitch considers maintenance goals of the organisation and individuals at the beginning of the analysis. We considered the performance goals of individuals. The performance goals of an individual are all the elements on which the individuals are evaluated. The salary and the career of the individual will depend on achieving those goals. The approach was a bottom-up individual to organisation analysis.

Concretely, we focused the interviews on the goals, belief and interests of the users. In order to optimise the limited time we had, we took into account for the first round of interviews the double challenge of asking enough why questions but not too many. It helped us to improve our analysis and understanding of the business processes and current practices.

The performance goals of every individual are influenced by the maintenance goals of the organisation. However, in the case of this project, it was more realistic to identify the performance goals of each individual and then understand which maintenance goal was influencing them rather than the other way around.

In conclusion, the two approaches have the same objective. The bottom-up is more realistic in a Procter & Gamble context and has the important advantage that it allows focusing directly on the target

The goal analysis of Lightswitch helped us to narrow our focus on the goals of the users. Lightswitch also raised the importance of understanding the external factors that impact the work of the users. The organisation we considered in the analysis is not directly connected to the external world, but the external influences are represented via different ways. We modified our approach to identify those factors and tried to understand their impact on the users' goals.

3 Key Learning Points

In this section we describe the main points that we believe made this project successful and that can serve other RE projects in industry.

The emergence of units such as IDS makes RE visible in large corporations:

The shift in the mission of P&G's IT department from the specification of IT systems to a focus on providing value to its (internal) clients meant that IDS had to implement RE methods. This in turn made RE visible to both clients and management. Note that we have seen this trend in another large corporation as well.

The adoption of RE methods in industry requires industry tuned methods:

The first element to recall and it was the main driver of our methodology choices is that the Adoption Methodology is a recommended standard by Procter & Gamble.

The employees of a company are used to principles and not theory. They don't have enough time to understand a theory, but they can apply principles. To be used in industry, RE methods need to be tailored to the specific needs of each organization so that clear principles can be given. The key benefits of principles are that they are easy to communicate and implement.

Combining industrial and academic methods:

The combination of Adoption Methodology with Contextual Inquiry and Lightswitch is an illustration of collaboration between industry and academy. Adoption Methodology captures requirements from a management standpoint.

Adoption methodology addresses business and user benefits (strategic and operational issues). Lightswitch was used to analyze relationships and goals. Contextual inquiry was used to understand current practice.

Adoption Methodology specifies concrete principles such as the use of segmentation and scenarios. It doesn't provide a theoretical basis. Conversely, Lightswitch is grounded in theory but provides guidelines that are more difficult to apply. By using the principles of Adoption Methodology with a mindset inspired by Lightswitch we were able to define better requirements than was possible with the use of just one of these methods.

RE can become a strategic tool for enterprises:

This is very important for the requirements gathering area and for the IT system development in general, because sometimes those domains lack senior management support. This approach can really

stimulate their interest and make them realise the potential impact of an IT system.

It is important to approach senior management with concrete proposals of requirements that can have a strategic impact rather than waiting for them to identify those opportunities.

At the end of the project, senior management was interacting proactively with IDS to discuss those aspects. Their interest and involvement changed dramatically between the start and the end of the discovery phase. This is mainly due to the fact that they realised the possibilities of influencing employees' current practices.

4 Conclusions

We believe there will be a steadily growing need for RE methods in the industry as IT departments of large organizations are shifting their focus away from technology and operations towards tangible business impact. RE methods represent, in theory, a perfect fit for this new kind of industrial IT. The study presented here has 2 major conclusions:

(i) Today's research based RE methods seem difficult to implement in business organizations due to their high level of abstract complexity and the in-depth knowledge required for their implementation. Both elements do not support industrial IT departments in their key task, namely to interface with the business users in the users own "language". Hence, the industry is forced to create a set of different methods with clear and simple guidelines and easy end user communication tools. To address this need for RE methods in industry, we recommend specific research geared towards the creation of industry oriented methods. In this research we need to analyze the strengths and weaknesses of industry developed methods. This will enable blending existing research methods with industry methods so that the products are simple and quickly usable by the industry.

(ii) This project showed that RE methods can provide a very powerful tool for triggering the interest and engagement of senior management. This may make RE a strategic tool for management especially when combined with change management methods.

5 References

[1] Berry, D.M.; Damian, D.; Finkelstein, A.; Gause, D.; Hall, R.; Wassyn, A., "To do or not to do: If the requirements engineering payoff is so good, why aren't more companies doing it?" *Proceedings of the 13th IEEE International Requirements Engineering Conference (RE'05)*, Paris, September 2005.

- [2] Holtzblatt, K. and Jones, S., "Contextual Inquiry: A Participative Technique for System Design." in Schuler, D., and Namioka, A. "Participatory Design: Principles and Practices", Lawrence Erlbaum, 1993.
- [3] Moore, G.A., *Crossing the Chasm*, HarperBusiness, NY, NY, 1999.
- [4] Regev, G. and Wegmann, A., "Defining Early IT System Requirements with Regulation Principles: The Lightswitch Approach" *Proceedings of the 12th IEEE International Requirements Engineering Conference (RE'04)*, Kyoto, Japan, September 2004.