Chapter 7

ROLE MODEL FOR THE ORGANISATIONAL IT DIFFUSION PROCESS

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Abstract: Organisational IT diffusion is a complicated process. Certain roles have to be filled and enacted to ensure success. However, in diffusion and adoption projects is it often forgotten to fill the roles appropriately. Based on an empirical study in a Scandinavian company this paper presents a model to be used for filling and handling the primary roles in an organisational IT diffusion process. The model was developed using action research with three cycles of diagnosis-action and learning. The main sources of the model were change management theory, diffusion of innovation theory and soft systems methodology. The role model has been used in a large number of projects with a positive outcome; the model can be used to identify some important potential IT diffusion problems at an early stage, thereby making it possible to avoid the problems.

Key words: IT diffusion, organisational roles, action research

1. INTRODUCTION

In a study from 1998 IT managers were gathered in Asia, Europe and USA to identify software project risks. The following list came out as the five most prominent risks (Keil et al. 1998):

1. Lack of top management commitment to the project
2. Failure to gain user commitment

3. Misunderstanding the requirements
4. Lack of adequate user involvement
5. Failure to manage end user expectations

The interesting thing about this list is that development oriented things such as "short-changing quality" or "developer gold plating" or "overly optimistic schedules" which were often mentioned in the past (cf. Boehm 1989, Jones 1994, McConnell 1996) as major concerns are absent from the list. Instead we find *key roles* in the IT diffusion process – such as users and top management – that seems to be either unfilled or not enacted appropriately.

The notion of key roles is not new in research on organisational diffusion. Research in organisational diffusion has highlighted the existence of *key roles* for individuals. For example: the gatekeeper who brings information into the organization, the champion advocating and supporting the diffusion, and the opinion leader who is connected to many people and thereby influences adoption decisions.

However, a majority of the research in organisational diffusion have been confined to describing roles found in studies of individuals, groups or organisations. Whereas studies prescribing what key roles to fill in a concrete organisational diffusion project have been scarce. Therefore this research project set out to develop recommendations for key roles through an action research undertaking.

The paper will be developed as follows. In section 2 we will give a thorough account of the action research that has led to the role model. We focus on the diagnosis, the action, and the learning. In section 3 we give an account of the role model with a focus on how to use the model. It is our hope that this paper can serve as a knowledge transfer mechanism to other organisations facing similar diffusion problems. Therefore the account is relatively detailed. In section 4 we then give examples of the impact that the model has had. And finally in section 5 we summarise and conclude the paper.

2. ACTION RESEARCH PROCESS IN SCANDI

The research described in this paper was carried out in a large Scandinavian organisation. The organisation as a whole has more than 20.000 employees but only 10% of them are developing IT. For easy reference we will call the organisation SCANDI in the remainder of the paper.

In 1997 SCANDI became aware that many new IT products and processes were *not* diffused and adopted as intended. A task force including the author of this paper and two practitioners from SCANDI were formed a group to cope with this diffusion problem.

We decided to use action research. Action research is an interventionist approach to the acquisition of scientific knowledge (Baskerville & Wood-Harper 1996), and a key aspect of action research is the "collaborative nature of the undertaking. The research scientists work closely with practitioners located within the client system. These individuals provide the subject system knowledge and insight necessary to understand the *anomalies* being studied."

In our case the *anomaly* being studied was the lack of diffusion in SCANDI. Several things were done to cope with the problem, but in this paper we will concentrate on the modelling of key roles in organisational diffusion – even though in reality this was only part of the solution framework developed.

Besides collaboration another distinguishing feature of action research is iteration. Baskerville and Wood-Harper says: "The distinguishing characteristic of iterative action research is the overall repeating sequence of major activities such as diagnosis, action and learning". In the concrete we executed three major iterations and several minor ones. Below we give an account of the three.

2.1 First Round of Diagnosis, Action and Learning

Our first diagnosis took place in 1998 when a number of experienced project managers from SCANDI meet at a workshop. Each participant in the workshop was asked to bring with them documentation on a successful and a failed project. A main part of the workshop was then used to diagnose why the projects were a success or a failure. Table 1 shows the findings from the workshop.

While studying the organisation's successes and failures we realised that attempts to ensure diffusion by adding some additional activities at the end of the project is doomed to fail. It is necessary to start such attempts so early in the project that they will have an effect on the product itself. Therefore, we decided that we would try to come up with techniques to be used in a project right after the requirements had been defined. At that specific point of time, the project group knows roughly how the product is going to work although no specific solutions have yet been prepared.

When analysing the 10 projects after the workshop we also found that no single role – such as top management – could ensure or explain diffusion success or failure (cf. italicised text in figure 1).

Table 1. Major Reasons for Success or Failure in 10 SCANDI Projects. In Each of the 10 Projects the Key Roles Involved in the IT Diffusion are Italicised.

Successful projects The diffusion and implementation of this project went well because:	**Failed projects** The diffusion and implementation of this project was a failure because:
Project Alfa The implementation were planned long before it should happen Training was developed and given in time to *target users* There was a support strategy ready for use after the launch of product - and *people* were allocated for support	**Project Foxtrot** It was difficult for the *users* to understand the system A *colleague (to users*) came around and informed - months before the system was launched Written documentation on the system was unfit for use - and had to be explained to *users* in numerous emails.
Project Bravo The system was intuitive for *users* to use There were clear advantages for *the users* - each and every one saved time The system was "transparent" - there was a built-in map that showed a *user* exactly where and how far they were when a *customer* called with a question	**Project Golf** There was *not one person* that took responsibility for the whole diffusion process and co-ordinated across departments No *person* in the project had sufficient in-depth knowledge to deal with external partner in the project
Project Charlie *User* expectations were harmonised early in the project i.e. through several visits by *developers* at the user site System and workflow descriptions matched each other	**Project Hotel** The system should launch at a certain date. Therefore training was rushed and given when *many users* were on holiday It was a totally new graphical user interface including new terminology which took time for the *users* to get acquainted with *The users* expected a "Rolls Royce" but got a "Skoda" *User* support wasn't sufficient nor obtainable
Project Delta *Managers* were prepared in advance to engage in dialogue with their *associates* At the right time information was published to *target users*: Why, when and how? And after the information it was clear to *the user*: What do I get out of this system?	**Project India** *The users* experienced many deficiencies due to unclear expectations and misapprehensions on requirements *Developers* had made way too optimistic an estimate - which led to time pressure and then to a system filled with defects
Project Echo *Pilot customers and customer* service were involved early There was *top management* backing all the way (also because it was a so-called focus project) Quality meetings were conducted en route	**Project Juliet** Technical problems: It was not possible to print colourful screen content because there were no colour printers *The Headquarter* didn't inform *the users* and didn't support the system with allocation of necessary resources

Our first action was to take Soft Systems Methodology (Checkland 1976, 1981, Checkland & Scholes 1990, Checkland & Holwell 1998) and ask ourselves; wouldn't this methodology be useful for our problem? We then desk-tested SSM and found that especially the CATWOE mnemonic could be useful. CATWOE stands for Customer, Actor, Transaction, Weltanschauung, Owner and Environment. This mnemonic is used formulate a careful statement about purposeful activity for a "relevant system" in a given (soft) situation.

However, when desk-testing – that is analysing the 10 projects (see table 1) at a desk asking for example; could this have been prevented – SSM and CATWOE we found that the diffusion situation was ignored. We then made a literature search and found a number of other diffusion roles such as change agent, opinion leader, sponsor, champion, gate keeper that were not mentioned in CATWOE.

Our first action was then to combine SSM with the roles we had found in diffusion theory into what we called a role model – shown in figure 2.

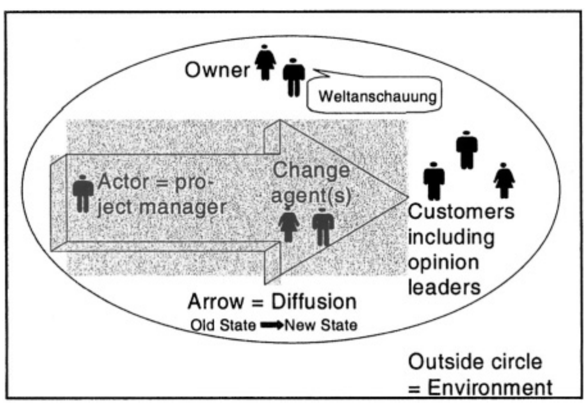

***Figure 1.* The First Role Model Derived from SSM, CATWOE and Diffusion Theory**

This model was tested the model in three IT projects. In the concrete we asked the project manager and project participants to name the people filling the roles in their project. Very often it was not possible for the project to put names on one or sometimes two of the roles.

Some of the learning from this phase (phase 1) was:

- In practice it was difficult to distinguish between opinion leaders and change agents.
- There were often two project managers, one in the development organisation responsible for the IT product, and one in the user organisation responsible for diffusion

- Many projects mentioned the CEO as their owner well knowing that due to pressure of work they couldn't expect any real active participation or intervention from the CEO. Using diffusion and adoption theory as inspiration we coined this positive but inactive role "sponsor", and decided to distinguish between owner and sponsor
- There often were many other stakeholders than the few key roles shown in figure 1. In fact several projects recommended us to combine figure 1 with a traditional stakeholder analysis.

2.2 Second Round of Diagnosis, Action and Learning

We then decided that our next action was to implement stakeholder analysis together with the role model in figure 1.

A *stakeholder* is a person, groups or organisation with interests in the IT project. To get an overview of your stakeholders a stakeholder analysis is carried out. This often includes identification of stakeholders, evaluation of their importance, and decision on how to handle the most important ones (Boddy & Buchanan 1992, Turner et al. 1996, Yeates & Cadle 2001).

In the concrete we came up with a process where we asked the participants in a project to identify all the stakeholders in the project using a brainstorming techniques. The stakeholders found were written on yellow stickers. The stickers were then sorted in a stakeholder grid (inspired by Turner et al. 1996 and Andersen et al. 2001 as shown in figure 2). The stakeholder grid was used to identify candidates for diffusion roles, thus the italicised text in figure 2 show where possible candidates for key roles could be found.

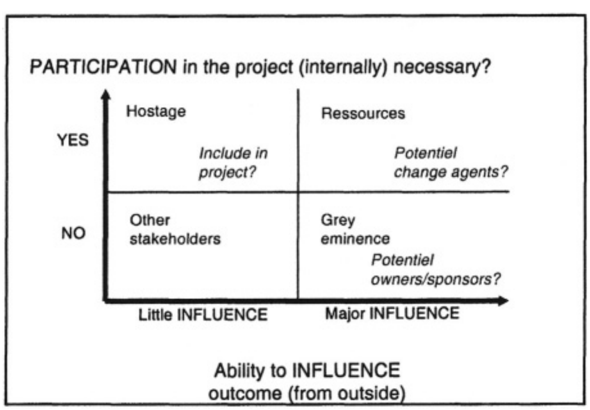

Figure 2. Stakeholder Grid for Sorting Identified Stakeholders

We tested this combination of stakeholder analysis and diffusion roles in a number of projects. But the outcome was negative. We identified too many stakeholders. We used too much time to discuss each and every stakeholder. And we couldn't see the wood (=diffusion) for trees (= stakeholders).

Thus our learning from this second phase – which took place in the spring of 2000 – was that a model of stakeholders in diffusion of an IT project needed to be simple, nimble, fast and easy to use.

2.3 Third and Final Round

We then returned to some of the learning from the first phase. We decided to stop trying to distinguish between opinion leaders and change agents. The person that actually brings about a change in the target users behaviour we decided to call "champion". We also decided to stop distinguishing between two project leaders – one for the product development and one for the organisational diffusion – and only focus on the management of the organisational diffusion. Finally we decided to stop trying to distinguish between the owner and the sponsor because we found that in 3 out of 4 projects the two roles were filled by the same person.

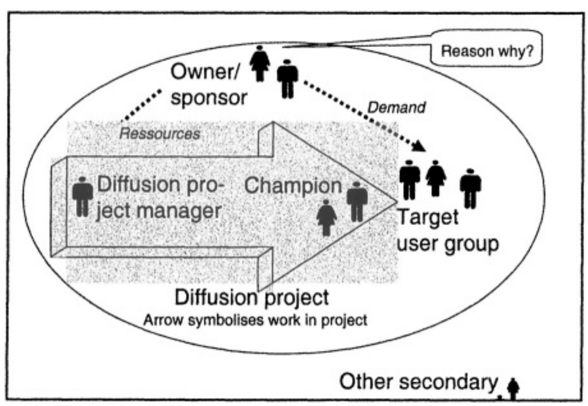

Figure 3. **The Final Model of Primary Stakeholders in IT Diffusion and Adoption**

So our third round diagnosis ended up with the model shown in figure 3. This model is now (2003) in regular use in SCANDI. Recently (late summer 2002) approximately 20 new facilitators at SCANDI were taught how to use the model. How the model is used and what impact it can have is described in the following sections of this paper.

2.4 Validity of this Action Research Study

When using action research for the kind of study described here there is a number of things to be aware of. First of all you need to strive for rigorous and disciplined action research (Baskerville & Wood-Harper 1996). To ensure that all our data collection was done during and immediately after the workshops. We videotaped every testing of the model and used the tapes to make sure that we had captured every important piece of information. And we wrote a summary for each instance of testing that were send to the participants so they could acknowledge that we had captured all decisions and discussions correctly.

Furthermore when we adjusted our role model – as described above – we always tried things for a minimum of three times (that is in three different projects) and looked for at least two consistent observations of non-satisfactory results before we adjusted the model. The interpretation of results was done in a group of two or three persons with at least the author and one practitioner from SCANDI taking part. The decision to change or adjust the role model was agreed by the whole group every time. Thus by doing the adjustments in such a rigorous way we hoped to avoid the danger of making to many "in-flight changes" that complicated or compromised our model instead of improving it.

For evaluation we used a questionnaire that all testing event participants filled out. This gave us valuable information that we used for diagnosis and re-design.

3. THE ROLE MODEL DESCRIBED

The role model for key roles in organisational IT diffusion (figure 3) is about change from one state (today) to another (hopefully better) state. In the role model the change is symbolised with a large arrow from left to right. It is not incidental that the arrow points towards the target user group. The reason is that most changes is not about producing IT but about getting some people to change their behaviour with IT.

For example it is not enough to develop and install a tool that can measure customer satisfaction. Someone has to use the tool before any change happens. It is especially here that a change project reaches beyond a traditional IT development project. A software development project typically includes analysis, design, coding and testing. While a change project really begins when the newly developed IT system is ready for someone to use it.

The four key – or primary – roles in the model are:

- Owner – or Sponsor – the person or group endorsing the project, providing resources, and demanding the results.
- Diffusion project manager – the person heading the group that implements the change
- Champion – the person that in practice affects the target user and ensures the accomplishment of the change.
- The target user group – the users, specialists or managers that are to adopt something new, typically a new IT system.

Besides the four central roles there are two other core elements in the role model:

- The reason why? This is Raison d'etre for the change. Or the Weltanschauung (Checkland 1976, 1981) as we first called it. The question here is: Why is the change feasible and desirable? We have shown the reason why as a speech bubble issued from the Owner to indicate that it is important for the diffusion or the change that the Owner can argue why the arrow "points" towards the wanted change for the target group.
- Other secondary stakeholders. In many (all?) projects there are more stakeholders than the four primary ones that we are focusing on.

3.1 How the Role Model can be Used?

The purpose of the role model is to give full consideration to who occupies or is supposed to occupy the four key roles in an organisational diffusion process.

Start by identifying the desired end state for the change. Try to define the end state as something *someone* can do different than today. "Someone" doing something is then the target user group.

For each of the four primary roles – one by one – try to put a name on. And "put a name on" is meant literally. In figure 4 there should be names on each of the small figures. The cause for this is that if you just say "a department manager" then none has responsibility, but if you say "Anne Andersen" (or another name of an existing person) then there is no doubt about who is to be hold responsible.

Finally – as soon as all the roles has had a name assigned – the reason why is defined for the project.

In figure 4 we have shown the template used in practice in SCANDI.

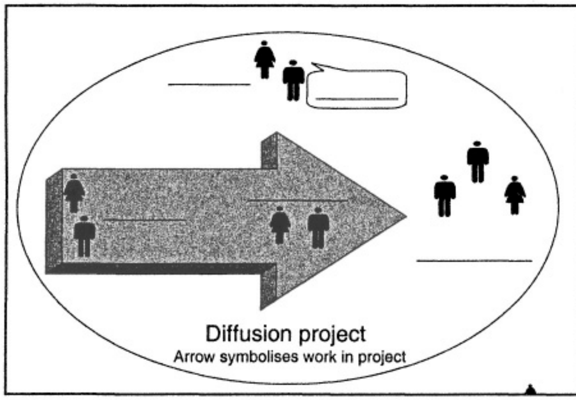

Figure 4. **The Template Filled out by Projects in SCANDI**

4. USING THE ROLE MODEL AND IDENTIFYING DIFFUSION RISKS

In the four sub-sections below we go in-depth with each of the four key roles. We also consider the risk of having a role not filled, and what can be done if a role is not filled.

4.1 The Owner

The owner is the person or group that endorse the project and demands the results. To endorse implies formal and real power to allocate the necessary resources, including the appointment of a project group or a t least a project manager.

It is also the task of the owner to stake out or scope the change project i.e. in the form of a goal or rationale for the project. To stake out the project is no easy task. If one goes too much into details it may stifle the project manager's initiative. If one on the other hand doesn't stake out the project then the project manager will paddle his own canoe – and who knows where that leads?

Projects don't exist in a vacuum. There will be many other projects going on at the same time. Here the owner has the task of smoothing out conflicts among projects. In general one can say that the owner shall remove the barriers that the project encounters – especially if they are outside the projects area of competence.

To demand or ensure results are no easy task either, but it is a core role for the owner. Dozen of projects have “grinded to a halt” after delivery of something new simply because the target user group found that no one demanded the results from using the new thing, and then they stopped using the new thing off course.

Often it requires involvement of the line organisation to establish a demand. Let us take an example from SCANDI. We are to create a new way of doing estimation of future projects. We develop a techniques and a process and teach all project managers in the organisation to use it. Now they will most likely start using the new estimation techniques. But if a project manager experience that his nearest superior(s) doesn’t demand estimates made the new way, but in the old way being it a ballpark figure or a political game, then the project manager quickly will learn not to estimate the new way any more.

As it appears it is demanding to fill the role as owner. Therefore the owner is most often found among top management. Only there one has enough power and influence. This means that most people in top management will have more than one project that they are owner for. Some times this means that it is appropriate to intercalate a person between the owner and the diffusion project manager – a mentor who can coach the diffusion project on a day to day basis. I.e. a person from top management can be owner and a department manager can fill the role as mentor.

4.1.1 The Risk of Not Having the Role as Owner Filled

In SCANDI we found two typical reasons for not having the role as owner occupied. One was that the change project was pushed forward by a group of users. An urgent need among the users was so motivating that they succeeded in getting a project started. The other reason is that someone from below has taken the initiative. A department, a group or maybe even an individual is dying to implement an idea, and has succeeded in starting a project to implement the idea.

4.1.2 Situation 1: User Group has Taken the Initiative

In the first situation – a user group has taken the initiative – it is most likely that the user group and the development organisation are out of stroke. This may for example mean that the two parts of the organisation sees different objectives or disagrees about the means to be used. Here experience shows (cf. Mintzberg 1994) that it is far more important to agree on the process than on the objective. In organisations where one agree on the objective but not in the means no change happens, whereas in organisations where disagreement is about the objective but there is agreement on the means lots of changes may be seen. In the concrete we learned at SCANDI that one can bring the user group together with potential owners to see whether the two parts can get in step in the project.

4.1.3 Situation 2: The Project Initiated Below

In another situation where the initiative came from below it is extremely important to get the top of the organisation to join in. The project may well be carried out without support from the top (when it is running – and nobody steals away the resources), but if no one from the top demands the results it is often doomed to collect dust on shelves. An example of this in SCANDI was a very enthusiastic individual that managed to get funding for building a project managers dashboard using a statistical tool to manipulate existing figures in the organisation. In the concrete potential owners have to be contacted; find out what is on the agenda and sell the idea as a solution to an issue that is being discussed.

4.2 The Diffusion Project Manager

This diffusion project manager is the person or persons that in practice prepares and carries out the diffusion. Or said in another way: This is who carries out work. The diffusion project manager is often the same as the development project manager.

4.2.1 The Risk of Not Having the Role as Diffusion Project Manager Filled?

Not much happens in a project where nobody is working. Thus the risk is minimal!

If an owner/sponsor wants something to change then a project has to be initiated and resources have to be allocated. If the search for a project manager is unsuccessful then it is probably because the conditions offered are too inferior. The risk for failure may be imminent and who wants his name attached to a failure? As owner one can command an individual to be project manager. However, this seldom leads to a motivated or hard-working project manager. Instead it is better to conduct negotiations with potential project management candidates aiming at agreeing on some satisfying conditions – being it calendar time, resources or the scope that has to give in.

4.3 The Champion

Champions are the persons or groups that in practice influence the behaviour of the target user group and ensures the accomplishment of the transformation wanted. We know that transformation happens one person at a time (cf. Weinberg 1997). We also know that some (groups of) persons transform their behaviour before anyone else. Rogers (1995) call these persons innovators or early adopters. If you can get these persons to transform behaviour then the likelihood increases of transforming the whole group of target users.

The idea in having a Champion is exactly to use this mechanism. That is to find some persons for which other persons notices their action and behaviour (opinion leader in the terminology of Rogers, 1995) or who are capable of convincing and changing other people behaviour (change agents in Rogers, 1995). By having the role as champion occupied the change of successful diffusion increases dramatically.

However, to ensure that the Champions are eager supporters is easier said than done. Nobody will support something they don't understand or believes in. Therefore it is important to identify potential Champions early in the project and involve them in the project. And if the involvement is real and they have real influence it can expected to lead to some very enthusiastic project participants that are looking forward to "selling" the idea to the target user group.

Often the Champions are found among line or functional managers (middle management) in the organisation. The reason for this is that in such a position one can easily follow up and ensure change of behaviour on a daily basis – making sure that the new thing becomes part of a routine way of working.

4.3.1 What if the Role as Champion is not Occupied?

If the role of Champion isn't occupied you may experience slow or no diffusion at all. However, it is never too late to identify and engage Champions, but the earlier it is done the higher the success rate. Therefore: Think early, who can be Champions? Involve them. Give them real influence. And make them ready for the role i.e. by having meetings where champions meet and exchange experiences.

4.4 The Target User Group

The users, specialists or managers that are to take something new into use are called the target user group. Who that is off course depends on which project and product we are focusing on.

Many diffusion projects at SCANDI failed because a project group thought they had enough knowledge about the target user group, or because they just assumed that the user group was like themselves.

Therefore one should ask "Do we really know the target user group?". If not you can use interviews or focus group meetings to get an insight into how the users think. Such knowledge will also make it easier to target information and communications in such a way that the target user group experience that there needs are addressed.

5. SUMMARY AND CONCLUSION

In this paper we have presented a model used to identify key roles to be filled and enacted in an organisational diffusion project. The model was developed in the period 1998-2003 in SCANDI. Action research was used to develop the model. First the model was developed partly from theory on diffusion, adoption, change and soft systems methodology, and partly from an analysis of successful and failed projects in SCANDI.

Second we developed an approach where we used a traditional stakeholder analysis to identify all stakeholders. In one case we identified more than 30 stakeholders. Unfortunately we could not use all that information for anything meaningful. Therefore we ended up with a more simple and nimble role model (figure 3).

We believe the role model covers the major roles in any organisational IT diffusion and implementation – at least the ones we have met in SCANDI. And we have often found that one or even two of the roles was not filled with "actors" from the organisation in the concrete project.

So the use of the role model often leads to the identification of a major potential problem, namely that an important role is not filled or enacted causing a risk for diffusion failure if not addressed.

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