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The human sides of organisational change: improving appropriation of project evolutions

Les aspects humains du changement organisationnel : améliorer l'appropriation des évolutions liées aux projets

Aspectos humanos del cambio organizacional: mejorar la apropiación de las evoluciones de los proyectos

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Abstract

This paper deals with the success of organisational change. Our empirical study starts with an illustration of our industrial problem: how to structure organisational change to ensure a future desired state is correctly appropriated. Based on an analysis of the literature, we propose considering organisational change as a dual appropriation process: the first at the company level and the second at an individual level. We then show that the project is a valid way to manage it and to structure a business' appropriation process. In order to support individual appropriation processes, we developed an approach consisting of managing individual change within the framework of projects. We propose the generic phasing of individual change management actions in relation to project phases, organisational and individual appropriation processes. Based on a three-year in-situ study of several major projects in a French aeronautical company, we verified the advantages of our approach with regard to organisational and individual appropriation.

Keywords: organisational change, individual change, change management, appropriation, project.

Résumé

Cet article traite du succès du changement organisationnel. Nous introduisons ces travaux empiriques par une illustration du problème industriel : comment structurer le changement organisationnel pour assurer une appropriation correcte de l'état futur souhaité. À partir d'une analyse de la littérature, nous proposons une vision où le changement organisationnel est supporté par un double processus d'appropriation : appropriation au niveau de l'ensemble de l'organisation d'une part, et appropriation par les individus d'autre part. Nous montrerons ensuite que le projet est un moyen valide de gérer le changement organisationnel et de structurer le processus d'appropriation global par l'entreprise. Dans

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l'optique de soutenir le processus d'appropriation de la nouveauté par les individus, nous avons développé une méthode d'accompagnement intégrée à la gestion du changement par projet. Nous proposons un phasage générique des actions d'accompagnement par rapport aux phases d'un projet, et aux processus d'appropriation du changement par l'organisation et les individus. A partir d'une étude de trois ans des projets d'un acteur majeur du secteur aéronautique en France, nous présenterons enfin les apports de notre méthode au niveau de l'appropriation organisationnelle et individuelle.

Mots clés : changement organisationnel, changement individuel, conduite du changement, appropriation, projet.

Resumen

Este documento trata de las condiciones del éxito del cambio organizacional. Nuestro estudio empírico empieza con una ilustración de nuestro problema industrial: como estructurar el cambio organizacional para asegurar una buena apropiación del estado futuro deseado. Basado sobre un análisis de literatura, proponemos ver el cambio organizacional como un doble proceso de apropiación: el primero se refiere a la apropiación del futuro al nivel de la empresa en su conjunto, y el segundo al nivel de cada persona. Demostramos después que el proyecto es un medio válido de gestión del cambio y de estructuración de su apropiación. Para apoyar la apropiación individual, desarrollamos un enfoque individual de gestión del cambio en los proyectos. Proponemos una estructuración de las acciones de gestión del cambio individual en relación con las fases de los proyectos, y la apropiación tanto al nivel de las empresas que de los individuos. Basándonos en un estudio de los proyectos en una gran empresa aeronáutica francesa durante tres años, ponemos a la luz los beneficios de nuestro enfoque sobre la apropiación colectiva e individual.

Palabras claves: cambio organizacional, modificación individual, gestión de cambio, apropiación, proyecto.

1 Introduction

When a company wants to remain competitive in the long-term it has to develop and adapt its global strategy in relation to a very complex and permanently evolving environment. In large international companies, very large increases in international trade, linked to the amplification of the material, financial and human flows between the world's states makes their environment global (Botescu, 2007). In order to take into account evolutions of the socio-economic environment, technological evolutions and the progress of knowledge, organisations must make themselves evolve; a phenomenon commonly referred to as organisational change. Hafsi and Fabi (1997) define organizational change as *"a radical or marginal transformation [...] which punctuates the evolution process of organizations"*. For Kotter (1995), successful organisational change is achieved when the company obtains a competitive advantage from its evolution. For Lewin (1997) change must unfreeze a present state, move to a new state, and refreeze this new state to be successful. Therefore, to make change succeed, it has to be managed. As Singh & Shoura said (2006), *"The management of change is a fundamental tenet of organizational development and modern organizational management"*. In our opinion, change management could be defined as *"the systematic approach and application of knowledge, tools and resources to deal with change"* (SFHRM, Nd.).

This paper deals with the success of organisational change appropriation at business and individual levels. Our case study, a large aeronautical company, was experiencing difficulties with creating and making some of its radical evolutions sustainable, mainly due to the resistance of organisational players to change, and the lack of appropriation of the desired new state. As shown by several authors (Couleau-Dupont, 2010; Godowski, 2004; Brewer, 1996), appropriation is a key concept in change. During the three year field study, projects on the company's evolution were compared so as to identify how and when change should be managed at industrial and human levels. This study proposes providing a comprehensive view of the industrial practises that positively influence the chances of a company successfully evolving, and providing a generic model for change management taking into account organisational and individual appropriation processes.

In this paper, we are going to present first our case study company, then in the second part, the difficulties it faced with regarding to making certain changes succeed. In the third, fourth and fifth parts, we will show the links between change and appropriation by an analysis of the literature, and we will propose a view where organisational change is supported by two appropriation processes, at business and individual levels. The sixth part will present our research methodology, and in the seventh section we will define an appropriate way to deal with these appropriation processes, and define a series of action that have been used to manage change in our case study company. We will then show how these actions influence appropriation processes through a study of two projects and discuss these results.

2 Industrial Context

Our study took place in an aeronautical company founded in 1938 in southwest France, and part of a large French industrial group. It designs, builds and repairs helicopter gas turbines and has been leader on this market ever since its creation. Today it has 14 sites worldwide and employs 6 000 people. This organisation is continuously evolving: over the last twenty years it has extended its presence across all five continents, it has changed its global organisation several times, and launched hundreds of projects of various degrees of importance. An important issue for us consists of understanding why the company has to change so much, albeit in a dominant position (46% of the market). Lewin (1997) identified new ideas, dissatisfaction, new technologies, legislation, and competition as the main forces in favour of organizational change.

For three years our intervention took place in the continuous improvement department of the company, and more precisely in the Change Management (CM) service. The main goal of this service is training project leaders, creating methodological approaches and tools, and following up the progress of change management actions carried out, to ensure projects correctly support the change they provoke. These activities involve a transversal vision of every important change that takes place in the company, which results in frequent information and consultations of the CM service by project leaders.

Our intervention took place in a large aeronautical company created in the first half of the twentieth century and a member of an industrial group. Our position in this company allowed us to have a comprehensive view of the numerous projects launched during our intervention. It is worth noting that the

need for this study emerged when some major organisational changes ran into difficulties to achieve the expected level of benefits (and lack of success, in the sense of Kotter, 1995). The following section will briefly describe two examples of difficult changes that took place in the company.

3 When change becomes complicated

In this section, we present two developments (global reorganisation and supply chain service reorganisation) that obviously encountered many unexpected difficulties: all the employees would agree that it could have been done in a better way, even if these changes were never qualified as a “failure”. However, during certain meetings these change were referred to as “what we shouldn’t do again”.

These changes were deliberate, the result of conscious reasoning and actions. This type of change is called planned change, as opposed to emergent change (Iles & Sutherland, 2001). We can see here that the company is not reacting urgently to an external parameter and could probably have avoided these situations. In our opinion, these cases provide an example of the appropriation difficulties companies can face, particularly regarding the time needed to return to a “normalised” state.

3.1 Global reorganisation: lack of synchronisation between decision-making and communicating

This major change consisted of a deep restructuring of the company based on its two main types of client. Using the same resources and activities, the company created two main management departments, and reallocated most of the operational activities according to these new departments. Changes were mostly hierarchical modifications, but some structures disappeared or were created, which involved many job changes for some employees. No staff reductions occurred during this reorganisation.

Difficulties were encountered after the reorganisation was announced due to the fact that the targeted structure was not clearly defined. This reorganisation **was not managed within the framework of a project**. Between the announcement of the reorganisation and the publication of notes making the new structures and employees’ jobs official, between a few weeks and six months lapsed. During this phase organisational players were not clearly informed whether or not their job was going to change, disappear or remain as it was. After a few weeks, an overview of the company’s structure was provided, but did not show details of departments and services. At this time some employees still did not know what their new job was going to be, and had to contact the human resources department to discuss their situation. This situation created anxiety, dissatisfaction and demotivation for those concerned. Moreover, the appropriation process of their new appointment started when it was announced to them, making the return to normalized functioning even longer.

As a reference point, a few months later, **a project** was launched to absorb a subsidiary and integrate its employees into the company’s staff. The proper planning of the actions, structured communication and early involvement of the human resources department allowed a shorter return to a stabilized situation (all integrated employees were informed about their new job earlier on), and reduced the time between the announcement of reorganisation and formalization of the new structure (around 3 months instead of 6-8 months for the global reorganisation).

We can see here that launching a project to deal with an organisation's evolution enables the time between the announcement and return to a normalized state to be reduced. Our opinion is that a project is an effective guideline to manage the tasks required to change. Projects appear here as a good way to structure organisational change and meet expected goals on time. *The other results of this work are all based on project-managed organisational changes.*

3.2 Supply Chain Service Reorganisation: bad choice of individual change management

In this case, only a service from the supply chain department needed to evolve. This evolution led to some functions disappearing, but the employees were offered other positions in the new service or in other parts of the company (no players were supposed to be laid off). The difficulties were encountered after the change had been announced and were apparently caused by the way this was done: the employees were asked to apply for the new jobs, almost as if they hadn't been previously employed by the company. The intervention of the trade union on behalf of the employees forced the project to stop until a new *modus operandi* was defined, including a more flexible and slower process, with a major intervention by

the human resource department. These cases of trade union intervention could have led to greater problems for the company, as a lawsuit could have been brought with potential prison terms and fines for those responsible for the project.

This example emphasises the risks associated with poor support for the employees when they are affected by organisational change. In our opinion, this has to be done within the framework of a structured change management approach (this has since then been approved by the company's trade unions).

4 Industrial Problem

These two difficult changes suggest that change management can be an issue for an organisation. A paradox takes shape here, as change is both necessary and risky for companies. Indeed, organisational change can create resistance from employees (Ford & Ford, 2009, 2010; Dibella, 2007; Piderit, 2000). As change deals with phenomena that differ a lot in terms of both scope and size. The uniqueness of each company, each project, each time creates unique change conditions. In this regard, Charpentier (1998) underlines that *“the one best way”* hypothesis about managing change is false. On the other hand, Siebenborn (2005) proved that a very methodical approach is needed to precisely define the different definitions, implementations and final steps of change phases. Therefore, **change management must be structured enough** to give a framework and markers, **but flexible enough** to take into account the uniqueness of change. A question arises here: how to structure the change process of an organisation to ensure effective socio-organisational appropriation and individual appropriation ? In other words, **what approach, tools and knowledge must an organisation implement and acquire to ensure that change leads to new integrated solutions and stabilised use of these solutions by employees, in a minimum time and with minimal resistance to change ?** In the following section we are going to present what the literature proposes as an answer to these questions. These elements will lead us to a change management approach that has been used with the company's latest projects.

5 Appropriation: a requirement for change?

Like any learning process, appropriation processes and change processes become entangled (Bateson, 1977). According to Houze (2001), an *“appropriation phase is the time that split two phases characterised by the stability of their routines. [...] The appropriation process ends when the stabilised routine incorporating the novelty is formed”*. Analysing literature shows that appropriation has two meanings: first, a system is appropriate if a user can easily learn how the system's functionalities act as resources for its action. Appropriation is also the user noticing the potential system's functionalities and understanding what resources the functionalities can provide him/her (Salovaara & Tamminen, 2009). As a result, two perspectives can be found in the literature with regard to appropriation, even although the two previous meanings emphasise the fact that users are the element that changes.

The first view focuses on the appropriation process at business level. Couleau-Dupont (2010), based on Godowski (2004) and Brewer (1996), proposes a model that describes the phases from the launch of the organisational change to its re-normalisation.

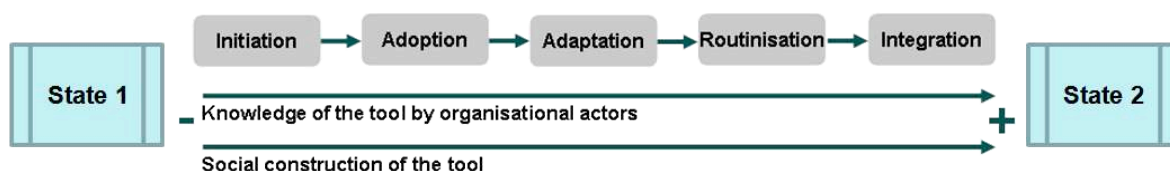


Figure 1: Appropriation process of a referential in an organisation (Couleau-Dupont, 2010)

On the other hand, the second perspective on appropriation focuses on individual appropriation of changes. For Nonaka & Takeuchi (1995), appropriation is complete when an individual transforms explicit knowledge into tacit knowledge. However, this vision only provides information on the initial and end points of the process. For this study, we will complete it with the vision of Millerand (2003) who identifies four main phases that represent the evolution of individuals toward something they need to appropriate.

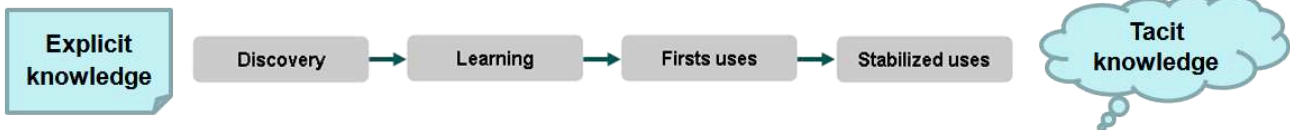


Figure 2: Individual appropriation process phases (Millerand, 2003)

An interesting analogy appears between this process and the classical three stage change process in the view of Lewin (1997), “defreeze, cognitive restructuring, refreeze”. Our position here is that individual change is about *people appropriating a future state to come*. A good image would be that “*it goes faster to walk, rather than driving a fast car, if you do not know/do not accept to drive it*”.

We think that **appropriation should be the main concern in change management**, whatever this change is.

To illustrate this concept, we propose a vision where organizational change, between the identification of the need to evolve and the achievement of desired benefits is supported by two parallel appropriation processes (Cf. Figure 3).

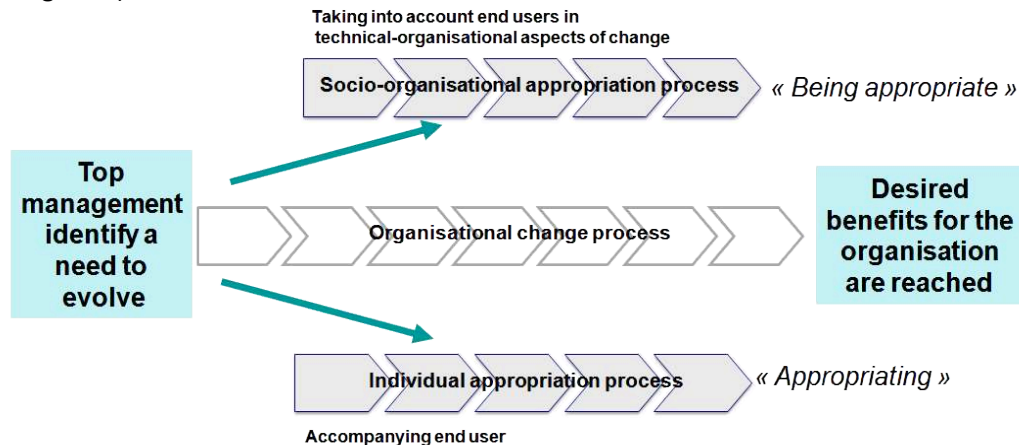


Figure 3: Appropriation oriented vision of change in organisations

The socio-organisational appropriation process can be made easier by proposing the most suitable solution to meet desired benefits, by taking into account the global context (human, technical, economical, social etc.) in which this solution is going to be implemented: the solution must be adequate. The individual appropriation process should also be supported by providing to every player concerned all the elements that can make his or her return to a stable routine easier. The idea is **helping people to appropriate the novelty**. Our position is that **appropriation is a key concept between organisational and individual change**; appropriation of the organizational change by the organisational players is needed for succeeding in evolving, but this appropriation is only possible if the change process at an individual level goes through an acceptance phase. Therefore, organisations should manage change at both organisational and individual levels with the idea of enhancing acceptance of desired technical and organisational evolutions by end-users.

An important point here is that appropriation processes cannot be directly observed, but some consequences of these processes can, such as speech elements, system use, etc. These elements denote the involvement of the players in these processes (Mallet, 2006). As a result, our search method reflects the need to collect the consequences of appropriation processes in a continuously evolving and complex industrial context.

5.1 Change at an organisational level: Managing organisational change through projects

A way to manage a change is using a structured method that aims to make it a reality. Over the last forty years numerous organizations have evolved from a bureaucratic way or working to a project based management strategy, mainly because projects are future oriented, generate more collaboration, more learning and allow dealing with manageable levels of time and complexity (Larrasquet, 1996). Project is now clearly identified as an industrial solution for generating and managing organizational change (Alsene, 1999; Hartmann & Skulmoski, 1999; Ibbs et Al., 2001; Partington, 1996; Stummer & Zuchi, 2010; Voropajev, 1998; Yeo, 1996). For Afitep-Afnor (1992) a project is “*a specific approach that methodically and gradually structures a future reality and (...) that implies a goal and needs to tackle with given resources*”. Indeed, projects are supposed to break up a specific context in order to change it and then refreeze the desired

state (Galoppin & Caem, 2007). What we see here is that the project is used to modify and then make a new routine durable: in this view the **socio-organisational appropriation of the new desired state has to occur during project phase**. The project can then be seen as a specific approach that methodically and gradually structures a future desired reality, by supporting the socio-organisational appropriation process of targeted goals and needs to tackle with given resources.

Many different project approaches exist and propose sets of tools and methods to manage organisational change. As this subject has already been dealt with extensively in the literature we will not present it in this work and will limit ourselves to our company's project management approach, as described in figure 5.

5.2 Change players: Making change & being helped changing.

According to Jaujard (2007), "*individuals systematically emerge as the main players of change, whatever this change is*". Mintzberg & Westley (1992) underline that important change occurs at both strategic and operational levels. As managers belong to middle hierarchy in companies, organisational change processes are generally under their responsibility. As said by Nonaka (1988), "*middle hierarchy players hold down a job ideally located to translate and communicate important information between hierarchic leaders and operational teams*". Carton (1997) underlines that change is a retroactive phenomenon (Cf. Figure 4): typically, change process players would be managers, between the source (top manager) and the individuals (end-users).

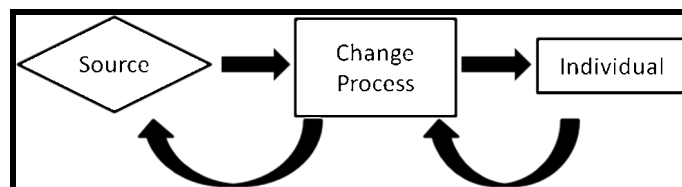


Figure 4: retroactive change loop (Carton, 1997).

This intermediate position allows them to have visibility and understand company strategy as well as operational issues and concerns. This activity can help each type of player improve the representation they have of other types of players' points of view, in the sense of Roussel (1996). More pragmatically, managers involved in change processes receive goals from higher management levels, and must make change occur at lower hierarchic levels using appropriate operational solutions. Around the manager in charge of the project (project leader), other "middle managers" are involved in the project. This "project team" takes into account the skills needed and the required taskforce to achieve the goal on time, with given material resources (Alsene, 1999; Musztyfaga & Skotud 2007). Stelzer & Mellis' study (1999) emphasises the importance of middle management in change processes by placing management commitment/support and staff involvement as respectively the first and second most influential change success factors in organisational change.

Organisational change is about people changing. It is a very complex process that must take into account how end-users respond psychologically when asked to make a major change at work (HSR&DS, 2000). Individual change is not an easygoing phenomenon: it can produce potentially dysfunctional stress, defensive reactions, and, as shown by Kotter (1995), individuals can saturate and reach their "*tolerance to change*" boundary. For many authors (Kotter & Schlesinger, 1979; Oreg, 2003; Piderit, 2000; Strebels, 1996), organisational change's main cause of failure is organisational agents' resistance to change. For Morin (1996), this resistance is a restrictive force that goes against working situation transformations and the acquisition of new skills. Folger & Skarlicki (1999) add, "*organisational change can generate scepticism and resistance from employees, sometimes making it difficult or impossible to implement organisational improvements*". Thus, **difficulties at an individual level are therefore the main source of difficulties during organisational change**. From the organisation's point of view, the risk is not achieving the expected benefits of the change, from not fully achieving the goals, to a complete failure, followed by a return to the "pre-change" state. From business to individual points of view, lack of appropriation of change by the organisational players is an important concern; it can be either a consequence of a negative reaction of individuals during change or a cause for the partial/total failure of organisational change.

In order to address this problem, an approach has been developed and used within the framework of projects. The following section will present the different aspects of this approach.

6 Change management approach: how to take end-users into account in project management

Accepting end-users' resistance to change as a rational reaction allows considering this phenomenon as manageable. Among multiple approaches, four main principles have been identified in the literature to support end-users during change phases (Bassetti, 2002; Ben-Zaida, 2008; Zephir, 2009). These principles have been incorporated in a change management approach and translated into four main types of actions: communication, training, on field coaching and individual support. The following table sums up the links between theoretical elements studied in the literature and standard actions carried out by projects teams during projects.

CM principles CM standard actions	Building a vision of desired state	Mobilisation of players	Individual resistance management	Communication
Communication	Transferring to all players concerned the need to change and visibility on desired state	Explaining the role of all the players during the change phase and in the future desired state	Allowing end-users to express their doubts, worries, questions, etc.	Using all adequate means of communication at the right time
Training	Providing the needed knowledge to carry out future tasks	Giving the first experience of the future tool / tasks to be performed		
On field coaching		Maintaining contact between project team and end-user after the training	Enabling dialogue between project team and end-user	Providing post training information, directly answering technical / strategic questions
Individual support	In some case, defining with end-user their future role with the human resources department	In some cases, have career meetings with human resources department	Detecting any individual problem within the framework of the change and assessing it through the human resources department, working medicine department	

Table 1: correspondence between change management principles and standard actions

Understanding which parameters positively influence individual appropriation processes is not enough to provide clear industrial guidelines for managing the “human side of organisational change”. Individual appropriation processes follow distinct phases, and we think that providing the right type of individual change management action at the right time is essential to see benefits with regard to the appropriation process. As individual appropriation processes take place during organisational transformation, it is important to understand that some individual change management action could not be carried out without preliminary actions that are part of organisational change management. For instance, it is impossible to provide full visibility on future desired states to end-users before the project team defines it or to train end-users before a detailed assessment of required future skills.

We think a generic model of individual change management can be defined by taking into account the previously presented appropriation phases and the concrete industrial action carried out to manage organisational and individual change. The more organisational change moves forward, the more the project team can give meaning to change, and the easier it gets to provide elements that positively influence the individual appropriation process. During project phases, hierarchical involvement is easier to obtain through milestones and communication meetings. Middle managers in charge of projects can use these meetings to obtain information from top managers and provide them with visibility with regard to the progress of actions and operational issues. As end-users are supposed to use the project's solutions and adapt their practices to future desired states, a major issue in the project is considering these. Furthermore, some phases of project management approaches offer a valid surrounding to provide end-user information, training and support, likely to make the individual appropriation process progress: Minel (2003) underlined the efficiency of communicating, cooperating and negotiating directly (same place and same time) within the framework of projects. The concept is **defreezing the system's initial state through**

massive communication, allowing cognitive restructuring through training and helping to refreeze the future desired state through support (on-field coaching + individual resistance management). With time the number of communication actions should be reduced in order to allow more on field coaching activities, and starting to consider individual problems through individual resistance management actions. We propose synchronising organisational and individual appropriation processes as described in the following figure.

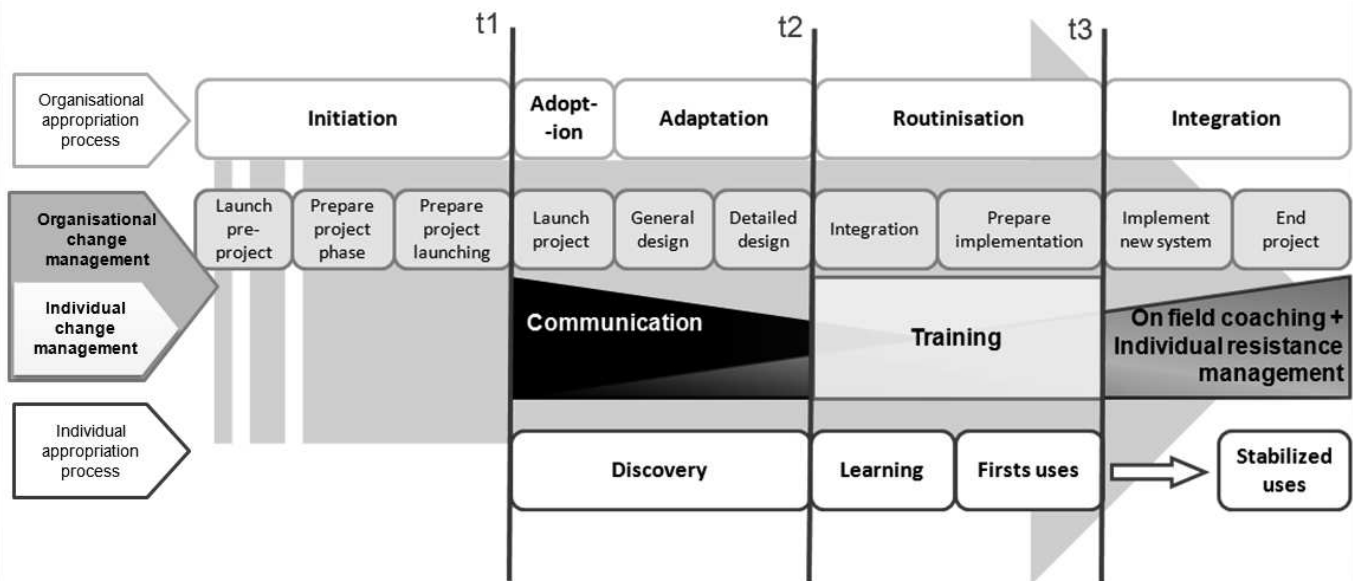


Figure 5: Phasing of organisational change management processes/appropriation processes.

- t1 is the moment defined by the official launch of the project. Before this only a pre-project is launched, a preliminary study. At t1 the initialisation of the individual appropriation process can be carried out, mostly through communication. Explicit knowledge is available and can be given to end-users. Before, the project is not officially launched, even if organisational appropriation has started.
- t2 is characterised by finalisation of the project solution, the future desired state. At t2, it becomes possible to start learning phases for the individual appropriation process because the future desired state has been designed. Training can be started and we first suggest concrete contact and uses of the new system during this training.
- t3 is the moment when the new system is implemented in the organisation. For a software related project, it is the time when the project team would install the software on computers. It is the starting point for the return to stabilized use for the individual. In our opinion, the best way to make it easier is focusing on on-field coaching and individual resistance management. As the new system is implemented, helping end-users to use it is a good way to re-launch their operational activities, and by doing so, ensure completion of the organisational appropriation process, as well as organisational change.

Here we consider that the organisational change process is complete when the organisational appropriation process is complete, ie. the when individual appropriation process is completed. This assumption comes from a *reductio ad absurdum*: organisational appropriation cannot be over before end-users stabilize their uses, and end-users cannot stabilize their uses before the novelty has been integrated into the organisation by implementing the new system.

Training is a fundamental tenet of the individual change management process as it provides the precise elements one will have to integrate to perform well in the future desired state. The human resources department has to be involved in planning training, as a necessity it identifies the gap between current skills and required future levels of performance. Training has to be carried out before the effective implementation of change in order to prepare players for the use of future systems. However, in line with Mihall & Belletti (1999), we think it is counter-productive to train end-users a long time before they have to use future systems: Adults tend to expect what they are learning to be immediately useful. Furthermore, the without using knowledge, the more will be forgotten. We suggest training should be given less than a month before effective implementation of a project's solutions.

As every change is unique, not every project in the company used all four actions in the same way and the amount of effort associated with them varied a great deal. Our methodological position to use multi-angulation allowed us to solidify through different projects the effects of these actions on appropriation. In the following chapters, we are going to study the efficiency of this sequencing of actions on appropriation within the framework of projects that applied this approach to deal with individual change.

7 Methodolgy

This study has been carried out according to the intervention research principle. For David (2000) it consists of interactively improving and within the context of organisation management models and tools. Indeed in CIFRE⁴ PhD, the researcher is an integral part of the company's activities.

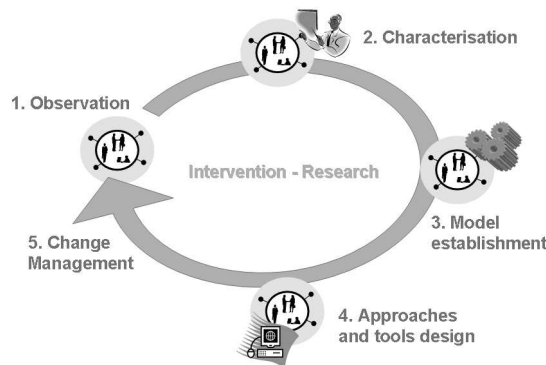


Figure 6: Intervention research model

Intervention research is in itself a change management approach: it allows, via observation, to find out axes for improvement and to develop and implement improved systems. In this view, our study presents typical intervention research work as we here present the result of the implemetation of an approach we specifically developed for our case study company.

To provide an overview of company change management practice we adopted the multi-angulation methodology as described by Hlady-Rispal (2002): data sources and collection processes were multiple. During a two year period data were collected from different projects in order to provide feedback to project teams as this optimizes future project realisations (Renaud et.al. 2009). These data were collected from two projects' documentation and interviews with the project teams, operational managers and end-users. For all data collection, a panel consisted of randomly chosen employees. Several *modus operandi* were used to access these data: semi directive interviews, surveys, questionnaires and documentary analysis, depending of project 's size, required level of detail, and time/cost related constraints. This approach allowed us to collect two main types of data: speech elements and results of actions. These data are analysed in the following section.

8 Results

As mentioned in previous sections, the literature provides evidence that projects, change management, and middle management as change managers are efficient in making organisational change easier. However, we saw during our research-intervention work that other parameters such as the amount of effort and planning of change management actions have a significant influence on a project's evolution. Our results are based on projects, whose types extend from IT tool implementation and reorganisation of the company structure to ERP deployment. Although different in terms of defined target, they all share the fact that they were initiated by the company's French department, and affect several hundred employees. The following sections present the results of our multi-angulation study on the company's projects.

8.1 ERP deployment

⁴CIFRE stands for: Industrial Formation Convention by Research. It can be described as an industrially oriented shared time thesis between a company and a research laboratory.

Enterprise resource planning (ERP) systems cover a variety of activities with the help of software that assists businesses in managing different functions, such as product planning, purchasing, inventories, suppliers, customer service and order tracking (Klaus et Al., 2000; Lee et Al., 2003). ERP implementation in our case study company started in 2003 with an initial project that deployed certain functionalities of the IT tool and set the adequate organisation in the three main French plants. It has been since then been completed by two other projects, incrementally adding more activities to the system. Project teams were made up of technical and informatic experts from the company, with excellent knowledge of the company's activities, processes, and also of numerous consultants used for ERP tool informatic parametring, and training/coaching activities. As said by Moon (2007) ERP implementation is a very risky and complex change. Therefore, the implications from the company's top management to operational managers were highly significant.

This system was not implemented in the same way for all the employees concerned. The target for change was to deploy the ERP informatic tool and adequate organisational structure, but it was not formalized and announced to the system's end-users. The mobilisation of players was achieved by collecting their needs (to parameter the informatic tool's functionalities and roles allocation), and training sessions. Individual resistance management was not structured, but the project team answered the managers' questions during weekly meetings, and provided support, documentation and training for operational teams.

A questionnaire was sent to 450 randomly chosen end-users of the ERP system to evaluate the perceived quality of the support provided. A 10% answer rate was recorded. An interesting point is that 90% of these end-users were using the ERP system every day. Our point here was to identify whether or not communication, training and support had an impact on individual appropriation. To do this, ERP end-users were asked to evaluate their perception with regard to received communication, training and support. These results were then correlated identifying a moment where their comfort with regard to the ERP system improved enough for them to notice it.

8.1.1 Communication

First, we analysed the impact of received communication on 49 end-users' perception of the ERP system. We asked them to evaluate the quality of the different received communication (via meetings, e-mails, internal newsletter, article etc). We then linked these results to the perceptions they have of the ERP system based on 4 criteria:

- perceived attractiveness of the ERP system
- perceived ability to use ERP
- perceived legitimacy of completing this evolution
- and perceived personal benefits of this evolution

For each question, 4 answer levels were proposed: 1 stood for the lowest level of answer and 4 for the highest. The results are shown in the following chart.

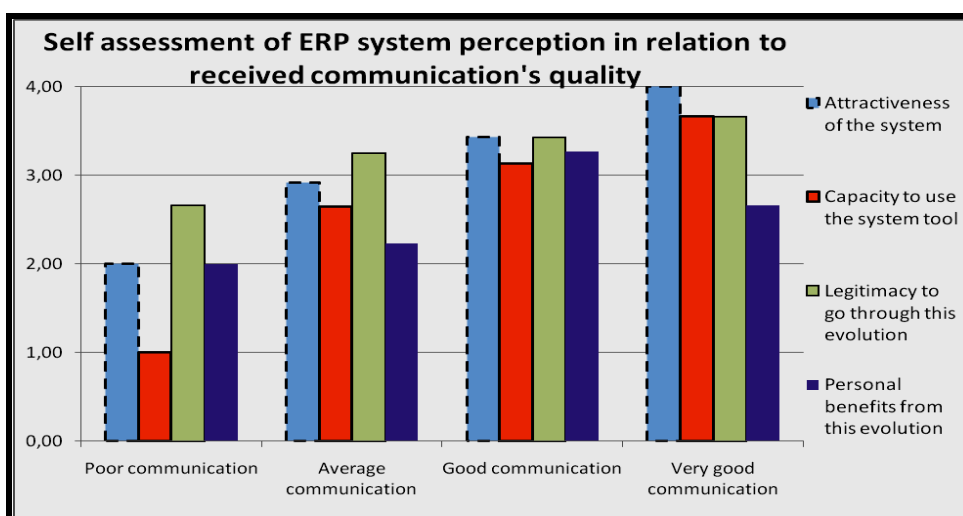


Figure 7: Perception of the ERP deployment project in relation to evaluated communication quality

A correlation can be found between the evaluated quality of the received communication and the global perception of this ERP system. This result emphasises the importance of communication within the change processes not only in discovery phases, but also during the whole return to a stabilized routine: these results concerned a change that happened between seven and three years prior to the questionnaire. The feelings of these employees toward a system which most of them used every day still show traces of the received communication even after several years of use. These results tend to be confirmed by the “Palo Alto School”, which considers communication to be a key factor in change success (Marc & Picard, 1984; Wittezaele & Garcia, 1992).

Communication is a major parameter for end-user perception of change, and also the only way to make project teams cooperate during the entire duration of the project, transfer information from top management to operational teams, transfer to every organisational player a vision of the desired future state etc. In our opinion, communication should be carried out with all the players concerned during the entire project phase, but it is crucial during the project's initial phases. Indeed, it is the only way to make someone “defreeze” from old habits and routines.

8.1.2 Correlation with Appropriation Signs

As previously mentioned, appropriation cannot be directly measured. Our choice here was to identify if any speech elements showed an evolution of the feeling of appropriation. When end-users were asked if there had been a time when they felt more comfortable with using the system, 81% answered “yes”. For 59 %, this time was between 1 and 3 months after the system was commissioned, for 7 % after a few weeks, for 10 % after less than a week, and the remaining 24 % was unable to identify the moment when it happened.

The following chart presents a cross between perceived communication, support, training quality and the detection of an appropriation sign: our goal is to see if users are satisfied with the change management actions they received and detect more signs of appropriation.

	Communication quality	Training quality	Support quality
Detected an evolution to more comfortable system use	Between average and good communication	Between insufficient and adequate training	Between average and good support
Did not detect an evolution to more comfortable system use	average communication	Between bad and insufficient training	Between no support and average support

Table 2: correlation between appropriation detection and perceived support levels.

These results show that people able to identify a “return to normality” were more satisfied with the individual change management actions they received. As appropriation cannot be measured directly, we consider this result very important: feeling like one no longer has any problems with using a new system is for us the most obvious sign of effective appropriation.

These results emphasise the fact that communication, support and training have an impact on appropriation, and that the feeling toward this appropriation is still vivid after several years. Apart from the appropriation aspects, we believe that satisfaction with regard to what changed is also linked to the perceived quality of these three change management actions. The work of Pilniere (2007) shows that appropriation can be observed through speech elements, but that the appropriation process is achieved only if these elements are transformed into actions. This work also highlights the importance of support during the appropriation phase. The following section will more specifically focus on the what was achieved in on-field coaching actions during two other projects, and will present appropriation signs based on end-users' actions.

8.2 Focus: On-field Coaching

On-field coaching refers here to the actions carried out by members of project team with employees on their workstation, after the change had been implemented. More specifically, members of project teams planned interventions in a department or a service periodically for two or three months, and answered questions, and carried out additional training for individuals or small groups of employees.

This section compares the reduction of the number of questions asked, requests for making corrections or the evolution of new IT tools collected by the project teams during these on-field coaching actions.

8.2.1 Holiday Management Tool Deployment Project

This project implements an informatic tool replacing holiday and absence paper vouchers. The huge number of vouchers (200 000 each year for the company's French sites) had to be dealt with manually by the human resources department and recorded in an informatic system. This new tool allows employees to directly input their holiday and absence schedule on the computer system. This tool is currently deployed on the company's three French sites for all employees (4 500). As the main goal of this project was to reduce the amount of work for the human resources department, the active involvement of this department's operational team and top managers was noticeable. While testing the tool during the first stage of deployment, close cooperation between the project team and end-users allowed the tool's functioning and functionalities to be improved. A clear target was defined and the vision of change was communicated through several vectors such as emails, specific booklets, meetings and articles in the company's in-house magazine. Players were mobilised during plenary training sessions, by project leaders and technical experts, followed by question/answer sessions. A high level of support was provided with 30 members of the department spending one month in situ after the tool's implementation, helping managers as well as operational team members. Furthermore, an employee spent one more month individually coaching all the managers in certain manager specific functionalities.

The change management realised for this project took into account the end-users' number to proportion the support team to ensure good presence on field, during its end phase.

8.2.2 ERP Deployment

A very similar support structure was used for this project, with a notable difference in the number of people involved in on-field coaching actions. Only one person in this project dedicated time to this action, and only worked with managers; the latter were in charge of helping the

group of employees they managed, and sending their requests, problems, etc. to project teams. Here we can notice a more limited approach with regard to the number of people involved in the support team.

Both of these projects kept track of the questions, required evolutions and looked at the problems of employees since the end of the training. Concretely these so-called "events" were collected during on-field coaching actions for both projects. For this study, the number of events collected every day was analysed so as to identify how these requests/remarks from end-users decreased with time.

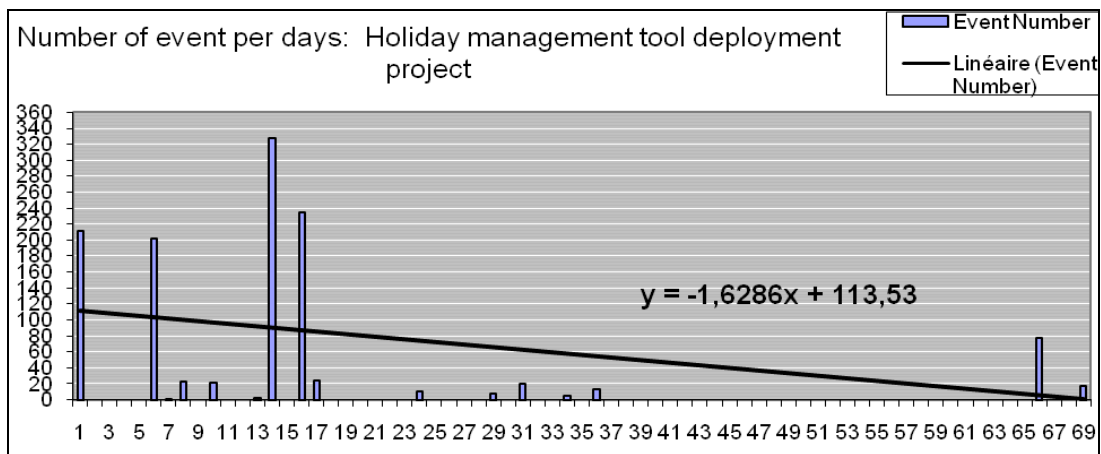


Figure 8 : Number of events per day for the holiday management tool deployment project

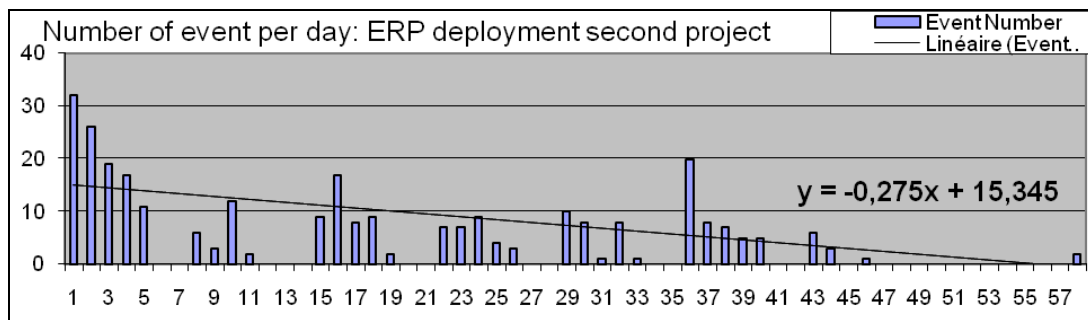


Figure 9: Number of events per day for the ERP deployment project

We can see here that many more events were initially collected by the holiday management tool project, but also that the decrease in collected events each day is greater. As more people were proportionately involved in support actions, more questions could be dealt with at the same time, with an earlier return to a more normalized activity. In first case, a clear reduction of events occurred around the 37th day, while in second case this reduction occurred around the 47th day.

These results show that on-field coaching is an effective way to shorten the time required to return to a stabilized use of these systems and therefore to reduce the duration of individual appropriation processes. They emphasise the importance of support during individual appropriation processes as it reduces the amount of time needed for most people to feel more comfortable in using a new system. An interesting point is that support is not an action when people in charge of the change “give” something to end-users (contrary to communication or training). In our opinion, support should focus on making end-users express their feelings with regard to change, their problems and question the new system. Besides allowing change owners to answer these questions, support introduces an interpersonal dimension into the change process whose main advantage is that it restores the confidence of end-users with regard to their ability to perform well in the new system (Perotti et Al., 2010). We will discuss these results in the following section.

9 Discussion

The aim of this study was to identify different types of management and change management action that support organisational change and contribute to its success and the adequate structuring of these actions. Our results show that change management actions have a positive effect on the performance of organisational change and the perceived appropriation of change, as well as the evolution of observable effects on appropriation processes. Using a structured approach to manage change allows players to be mobilised over a more manageable period of time and creates change process boundaries: the end of the project is a time when goals are expected to be met, creating a sense of urgency. Moreover, organisational players in charge of change are allowed to spend less time on their daily operational activities, devoting more time to project-linked activities. We confirmed the importance of providing end-users with necessary information and skills to solve or help them solve personal issues with regard to change, and more importantly, support to reduce their possible resistance to change.

The main advantage of the change management approach presented is the low impact on time and cost: every resource used was already present in the company and the time spent on promoting the approach and training the project leaders was short (less than a day for major projects). Overall opinion of the approach was positive, from both top management and the perspective end-users. The first appreciated the reduction of social risks at project level and end-users recognised a noticeable effort to take into account the human aspects of the company’s evolution with regard to project management.

We consider this work to be a starting point for further industrial applications of theoretical multidisciplinary research on learning, collaboration, organisational change, psycho-sociology, appropriation, etc.

The proposed change management structure offers, in our opinion, an optimal sequencing of change management actions in regard with project phases. However, the more projects progress, the more the project team’s workload (relating to “traditional” project activities) increases and our model suggests adding more activities, especially at the end of the project. Communication actions are time consuming and have to be prepared carefully to meet the expected goals. Training involves a substantial amount of planning and training course delivery implies that somebody has to be present with end-users. On field coaching is even more time consuming, as the result is strongly related to the number of people involved,

and the time spent with end-users. Even if planning can be started before “t1” (Cf. Figure 5), and subcontracting can be used for some activities within the framework of project or change management, our study did not investigate the effect of these propositions on the overall appropriation of a project’s solution. Moreover, the sequencing of the change management actions still has to be tested on several projects to consolidate our vision.

10 Conclusion

Organisational change is a complex process, both necessary and feared by modern companies. In order to stay adapted and competitive in the ever-evolving globalised market, top managers in companies have to identify the needs to change and the most adequate way to achieve this. Two main appropriation processes sustain organisational change: organisational appropriation and individual appropriation. This paper provides elements showing that the project is an eligible way to manage organisational change by structuring organisational appropriation, but that other parameters are also required for ensuring the success of organisational change. First, middle management should be in charge of organisational change management. Their position allows them to both have the necessary technical knowledge and understand strategy, and are therefore able to efficiently pass on information between hierarchical levels both above and below them. Second, taking into account end-users in project management through change management is fundamental as they are the most affected population in the evolution of companies. In order to help end-users appropriate the desired future state, middle management should provide them with visibility with regard to the future system, their role in this system and help them acquire the necessary skills, listen and understand their concerns, and support them on the field when operational activities restart. This can be done through communication, training and on-field coaching actions, plus the effective use of the human resources department for individual concerns. As each of these actions needs to be prepared and is constrained by project management activities, a phasing model for these actions has been proposed in comparison with typical project phases, organisational and individual appropriation phases.

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