

# **PILOTING KNOWLEDGE TRANSFER IN IT/IS OUTSOURCING RELATIONSHIP - TOWARDS SUSTAINABLE KNOWLEDGE TRANSFER PROCESS**

**LEARNINGS FROM SWISS FINANCIAL INSTITUTION.**

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## **Abstract**

*Successful transfer of knowledge between two organizations is of particular importance for outsourcing relationships and even more so for relationships within IT/IS domain where the relationship often needs to be rapidly redefined or terminated. Transferring knowledge in IT/IS outsourcing relationships requires empowering of both teams of outsourcer and service provider towards achieving knowledge transfer goals set by outsourcing organization. We focus on the Transfer Team which consists of knowledge keepers (service provider) and receivers (outsourcer) and propose a framework for piloting knowledge transfer initiative in IT outsourcing set-up. To empower the outsourcing Transfer Team we propose two tools to support the process: Transfer Profiler and Transfer Instruments Catalogue. Swiss financial institution used an approach based on this framework and tools for knowledge transfer pilots in their outsourcing transfer initiative. We describe this framework and the related tools as well as offer first lessons learned from using them in the field.*

*Keywords: knowledge transfer, knowledge transfer instruments, IT outsourcing, piloting knowledge transfer*

## Introduction

What happens to knowledge in IT-outsourcing relationships is a question which gets a proper attention usually only as late as in an exit phase of IT-outsourcing cases or when there is a strong business need for rapid redefinition of such relationship. Additionally, the rising pressure for competing in sourcing projects requires from both client and IT service supplier to focus more on processes of knowledge transfer in outsourcing to profit from such business relationship (Lacity 2004), Willcocks 2006). Knowledge transfer between individuals in the same organization is far from trivial (2001; Gupta 2000; Szulanski 1996). Adding the complexity of transferring knowledge between two service bounded organizations (Ko 2005) creates an environment with a clear need for supportive tools and processes to serve goals set by the business.

In IT/IS outsourcing domain the difficulty of knowledge transfer is often linked to the stickiness of knowledge which needs to be transferred and the lack of communication skills in the IT/IS teams (Carmel 2005; Kogut B. 1992; Lane 1998). Additionally, the transfer of knowledge within the team developing software means transferring knowledge within environment characterized by constant pressure of releasing new version of software, continuous need for solving ill-structured problems requiring involvement and cooperation of individuals with diverse skill-sets belonging to different organizational structures using different communication protocols and working in environment with unbalanced knowledge distribution across teams (Carmel 2005; Craig 2005). Furthermore, transferring knowledge in IT outsourcing relationship is very often a trigger for an organizational change for outsourcer, which results in perceiving the existing knowledge sharing barriers (Chase 1998; De Long 2000; von Krogh 1996), (Gurteen 1999; McDermott 2001)) as even more extreme than they are. Currently, the attention is focused on drafting better knowledge transfer contracts. However, we believe that to succeed with knowledge transfer initiative it is crucial to focus more on empowering the line teams which conduct the transfer of knowledge between the organizations.

We investigate an outsourcing relationship between a Swiss financial institution and an outsourcing partner who supports the development and maintenance of a strategic transaction processing software-bundle. Currently the partners work on redefining their relationship and postulate the transfer of knowledge from service provider to outsourcer to balance the know-how in relationship. We proposed a framework for piloting knowledge transfer to offer a financial institution a sustainable process for transferring knowledge in outsourcing relationships.

In this article we first present background studies on knowledge transfer instruments and frameworks. Second, we describe a framework for knowledge transfer pilots in outsourcing relationships. Later, we introduce two tools which support the process of pilot design – a Transfer Profiler which collects information important for choosing appropriate transfer instrument and Knowledge Transfer Instruments (KTI) Catalogue which consists of collection of interdisciplinary transfer instruments. In addition, throughout the entire article we offer first lessons learned from using this framework while conducting knowledge transfer in Swiss financial institution. Finally, we present conclusions and outlook for knowledge transfer in IT-outsourcing relationships.

## Background and research questions

One of the most crucial factors influencing the success of IT outsourcing relationships is knowledge transfer. In eSourcing Capability Model (Hyder 2004) Carnegie Mellon Team names “Capturing and transferring knowledge gained to the client during contract completion” as one of the critical issues in eSourcing. Consequently, the study performed by Accenture and Economist Intelligence Unit (Wire 2003) reveals that the risk of losing valuable data to the competitor due to sourcing was considered true for more than half of respondents and more than 40% believes that sourcing leads to in-house knowledge erosion (Business Wire 2003).

Due to the complexity of knowledge transfer in IT outsourcing, the transfer teams will face many unforeseen problems. Learning from the experience of others is always financially attractive, and often sparks innovation by opening new learning frontiers. The popularity of sharing “Industry Best Practices”, “Best of Breed” or even existence of “International Competition in Business Practices (English 2006) show the importance and need for inter-organizational sharing. However, sharing practices on knowledge sharing is not simple. Not only measurements of effectiveness of particular practices in knowledge sharing are intrinsically complex and frequently have only soft metrics (if at all) available, but also many practices are often simply deemed as very context dependent and therefore not transferable.

HBR Series (Harvard Business Review Cases) offers well written cases on knowledge transfer and sharing usually with underlined link to organizational strategy and importance for proper handling of change triggered by outsourcing. Such cases describe processes in well known global organizations. However, oftentimes the abstraction in which these cases are presented hinders their re-usage, since much of the crucial information is not provided in a given case (e.g. see the case of Home Depot’s Cultural Change (Charan 2006). Often the question “So how was it exactly done?” remains unanswered.

Additionally, some cases put strong emphasis on peculiarity of the organization or, at the other extreme, the complexity is too high to understand the real transfer methods used in the case and to what results they actually lead. At the end, very often the knowledge transfer cases are deemed to be too broad, not really relevant (we are in a different industry) or simply not applicable (we are smaller or more local).

Current literature on knowledge transfer proposes also lists of cases from various international companies as a base for providing knowledge transfer frameworks with different organizational focus. Based on numerous cases of multinational organization, Dixon (Dixon 2000) proposes a decision tree model for choosing the right type of transfer for business needs. She defines five types of knowledge transfers (serial, near, far, strategic and expert transfer) and describes them with examples of industry best practices. This decision tree, attractive in its simplicity, offers a rapid choice of the type of transfer the team should follow. The choice is exercised by answering questions about e.g. knowledge receiver, frequency and routine of transfer process or type of the knowledge (tacit, implicit or explicit). Types of transfers are further described by definitions, and are supported by available transfer design guidelines and case based example. Further example of methodology for fit “between knowledge transfer situation” and transfer method can be found in the “Evaluator for knowledge transfer” (Hutzschenreuter 2004). This evaluator collects information about the transfer situations, e.g.: location of knowledge keeper and receiver, time pressure, degree of pre-knowledge or culture of sharing. Subsequently, this information is used by an expert to offer an advice for a “fitting” knowledge transfer method. Thatchenkery et al (Thatchenkery 2005) take another approach and propose a process to identify unique attributes which describe existing organizational sharing of knowledge. Those attributes, values or competencies currently available within organization, if removed, may fundamentally change the flow or character of knowledge sharing. Additionally, these attributes describe so called “non-negotiable aspects” that, if “left unattended”, “will lead to gradual decline in knowledge sharing” (Thatchenkery 2005). Furthermore, authors point out that while knowledge enablers are specific to individual organizations, the so called “knowledge infrastructure factors” are the same in all organizations (“without them the knowledge enablers” can not exist p.60). Knowledge infrastructure factors include: decision making, leadership (legitimacy and acceptance), organizational practices and routines (e.g. weekly meetings) and incentives for knowledge sharing and communication (quality and style; horizontal channels). Finally, interesting recent work of (Mulder 2007) presents a methodology for emerging and capturing tacit knowledge of knowledge workers in the organization by providing (under bounded conditions) a “shared sense of purpose and an iterative process where ownership was possible”.

## **Research context and methodology**

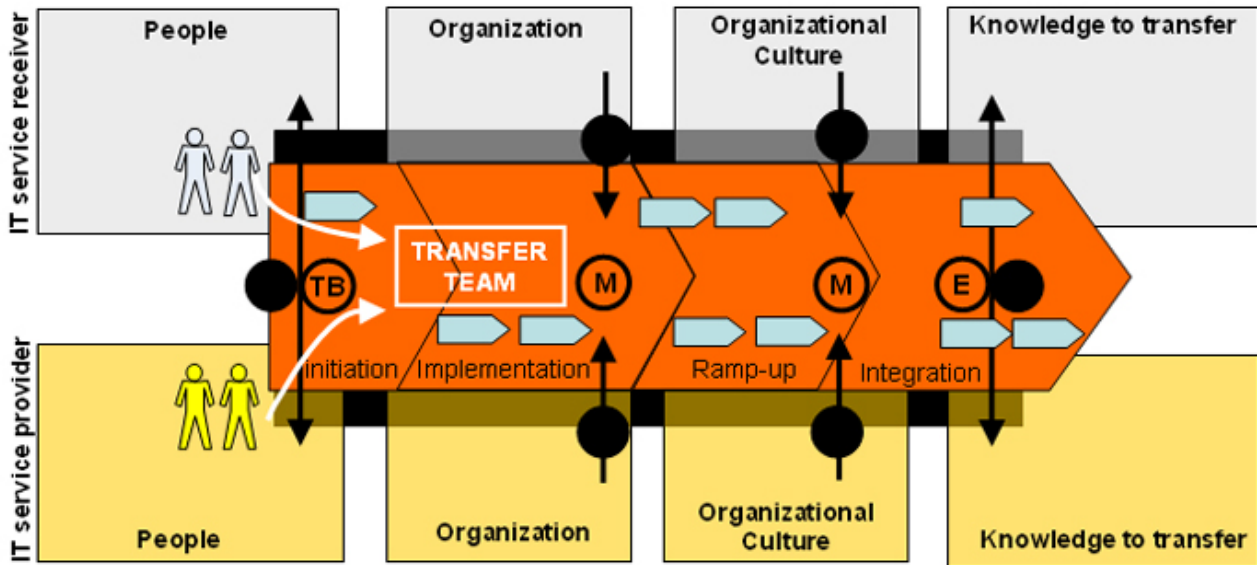
For the past two years we have worked extensively with a large Swiss financial institution in developing a sustainable method for transferring knowledge in IT outsourcing relationship. This company and their service provider were in the phase of redefining their outsourcing relationship. The goal of the partners was to transfer the knowledge about the strategically important software packages co-developed by the service provider back to the client. We took the research approach which is a blend of “pilot study research”, design sciences (Hevner 2004) and action research (Baskerville 1999). Based on the Yin (Yin 1994) case study framework, we collected the data by participant observation, interviews (more than 20), co-design, moderation and evaluation of seven knowledge transfer pilots. Furthermore, we use the insights from two workshops (with around 15 participants each) with management and line employees from both service provider and client teams. Additionally, we supported our investigation with extensive literature review of knowledge transfer cases, interviews with knowledge transfer champions (like Xansa or IBM) and gathering best practices already present within studied financial institution.

We worked together with software developer teams of both partner companies. The teams were characterized by an imbalanced set of knowledge, skills and operational task distribution and shared different cultural and communication qualities. In a stressful, release driven software development environment, outsourcer and service provider teams need to conduct transfer of knowledge to fulfill the goals set by management. Based on the results of the knowledge demand analysis performed earlier (Bugajska 2006), the management set up the goals regarding the knowledge which needs to be transferred and decided on the time frame for such transfer. Furthermore, in line with the sourcing strategy of the company, the management defined “Knowledge Items” which the financial institution needs to transfer to be able to use the required knowledge internally. We conducted five pilots using the piloting process described below and we present our first lessons learned.

## **Role of Knowledge Transfer Team in Transferring Knowledge in IT /IS Outsourcing Relationship**

To design knowledge transfer pilots we turned our focus onto valuable qualities already present within operating outsourcing teams, namely their ability to focus on teamwork while working within complex and stressful environment. And to respond to

the need of result oriented knowledge transfer between organizations in outsourcing relationship, we focus on the Transfer Team – a team consisting of service provider(s) as a knowledge keeper and an outsourcing individual (or team) as a knowledge receiver.



**Figure 1: Knowledge transfer process in IT outsourcing (represented by orange arrow with four phases (Szulanski 1996) is influenced by four categories: People, Organization, Culture and Knowledge to be Transferred. These categories include attributes (e.g. “People Oriented Skills” in category People) which have different values for both partners in outsourcing relationship. Individuals joining Transfer Team bring with them the qualities and skills influenced by the company they are coming from (e.g. formidable communication skills or quality of interpersonal sharing). Black elements symbolize the IT tools which can help the Transfer team along the transfer process. Smaller arrows inside the process arrow symbolize the use of Knowledge Transfer Instruments to empower the Transfer Team in their process of transferring knowledge from Knowledge Keeper – Service Provider to Knowledge Receiver – the Client.**

Such team takes responsibility for transferring knowledge from service provider to the outsourcer. One of the elements of transfer success is quality of work performed by the receiving team after the transfer. Similarly, in the context of IT, the concept of self-managed teams with high degree of collaboration, and the goal to become a high-performing team became popular in the nineties. Such team could be successful when it received an appropriate personal and organizational commitment from team members and management. One of the main objectives of such a team is to be “flexible enough to resolve unforeseen problems when they occur” (Mochal 2003). Additionally, such teams operate within organization supported by “coaches” (in contrast to “supervisors”) whose role “is to guide team members and help them improve their decision-making skills through experience.” Responsibility of the team members of the self-managed team shifts from “getting work done to developing the capabilities of team members”, writes (Mochal 2003). This is achieved through fostering discussions, asking questions or empowering self-directed learning to raise the team’s ability for dealing with change spurred by the knowledge transfer process. Recently, “Agile Alliance” ([www.agilealliance.com](http://www.agilealliance.com) 2007) proposed a similar concept of self-managed teams called “Agile teams”, which postulates to build projects around motivated individuals and in an environment which supports their needs and trusts them to get the job done.

Furthermore, we noticed that high performing individuals on the transfer teams were demonstrating readiness for learning and were open for accepting tools which could help them to achieve the transferring goals. To take advantage of the qualities and high learning momentum we proposed a process allowing for a rapid and flexible response to the knowledge transfer tasks (English 2006). Therefore, we chose to focus on three prepositions for transferring knowledge in IT-outsourcing:

- take “lean” approach in designing knowledge transfer initiatives
- take “blitz” approaches for piloting the approach to channel all the positive energy which the Transfer Team already possesses and
- make the approach sustainable for further reuse in organization

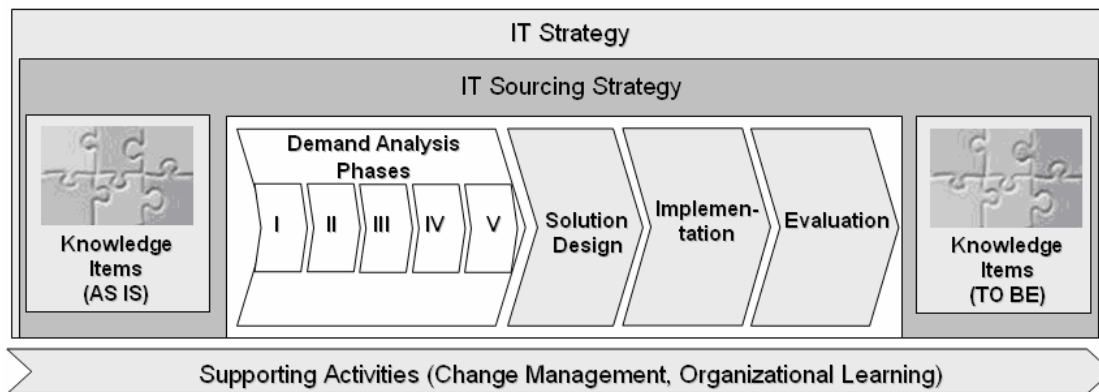
The “lean” approach requires a process which takes advantage of already existing resources (people as well as tools) to fulfill certain business goals. Therefore this approach takes into consideration the existence of information about knowledge demand analysis and knowledge audit. “Blitz” projects, in contrast to “legacy projects” (Davenport 2005), are conducted in short period of time (max 3 months) and the quality of the results the project is bringing can be investigated after the project

is closed. “Blitz” pilots are directly embedded in the daily activities of the knowledge workers. “Just Do it, Do it Now, Do It Fast” attitude unlocks the positive attitude towards knowledge sharing and builds upon already developed working relationship present in the outsourcing team. This attitude steers towards using the “lean” approach instead of extensive and elaborated project setups. Additionally, the results of the process of piloting knowledge transfer activity are quickly available and they can be reviewed and fed back to new pilots, thus facilitating an incremental learning in the knowledge transfer process.

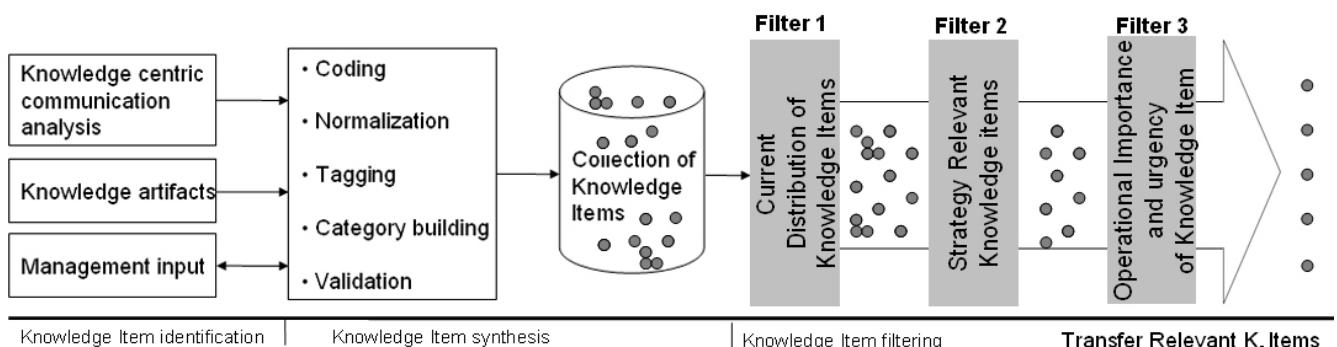
In the chapter that follows, based on already gained insights we present a process for designing knowledge transfer pilots with focus on “lean”, “blitz” and sustainable transfers for financial institution.

## Designing Pilots for Transferring Knowledge in IT /IS Outsourcing Relationship

We propose a six steps process for designing knowledge transfer in IT outsourcing (see Figure 1). We believe that one of the most important elements of knowledge transfer, and one which requires the attention of the outsourcer, is the ability to define and describe the “knowledge” considered for transfer, and then define an economic and sustainable way to conduct such a transfer. Therefore, a prerequisite to conduct the knowledge transfer processes is to define what knowledge needs to be transferred. We describe the process of outlining demand analysis for defining “Knowledge Items” to transfer in (Bugajska 2006). Here we present the steps for piloting the knowledge transfer. Transfer Profiler and Knowledge Transfer Instrument Catalogue tools are presented at the end of the process description.



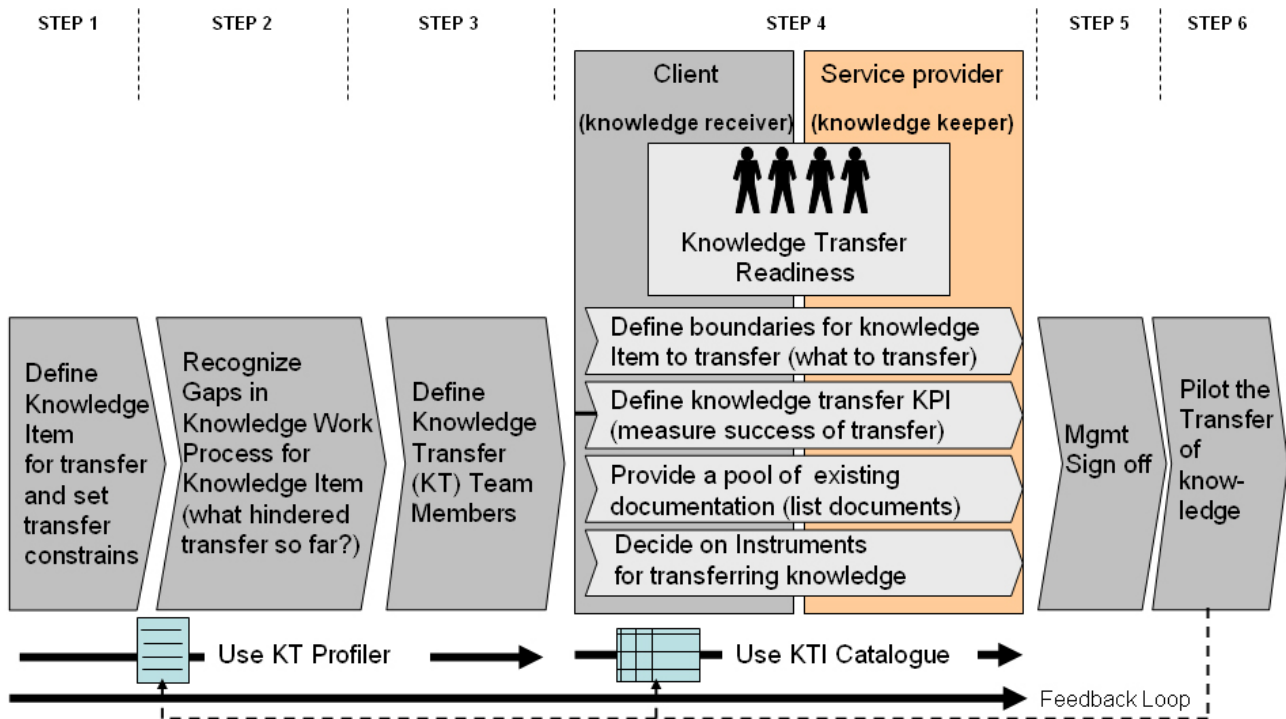
**Figure 2: Five Phases of the Demand Analysis Method are embedded in the Knowledge Transfer Process: Phase One - Identification of the Transfer Relevant Knowledge; Phase Two - Identification of existing Knowledge Items Gaps.; Phase Three - Characterizing the Knowledge Items Gaps; Phase Four - Defining Reasons for Knowledge Gaps ; Phase Five - Identification of possible solutions (Bugajska 2006)**



**Figure 3: Phase Three of Demand Analysis requires characterization of particular items from Collection of Knowledge Items (in the middle of the image) to filter these which need to be transferred. For Filter 1 we consider the distribution of Knowledge Items between service provider and service receiver (the client). Only Knowledge Items not present in the client organization are being considered for the transfer. Applying Filter 2 results in identifying Knowledge Items which have strategic relevance to the organization and Filter 3: defines operational importance and urgency for transferring particular Knowledge Item (it often requires the IT service provider domain experience)(Bugajska 2006)**

### Step 1: Define Knowledge Item for transfer and set transfer constraints

We define a Knowledge Item as the smallest package of knowledge to be transferred between organizations. Such item is best derived and packaged using the organizational tasks for which the knowledge is needed. Additionally, transfer constraints are set in this step (Bugajska 2006). Transfer constraints include the time frame for transfer as well as other constraints derived from operative/line tasks (deadlines for releases, quality checks etc.). The case we were working on demonstrated that definition of constraints may significantly hinder the transfer of knowledge process itself, particularly if knowledge transfer is considered to be an additional, low priority task. We observed that the presence of a line manager and the middle manager in this step may speed up the process of defining the transfer constraints. Here it is especially helpful to convey to the knowledge workers the connection between the successful transfer and the strategic goals of the IT department (e.g. reducing dependency from the service provider or further sourcing initiatives). This step requires presence of the team leader and manager of the outsourcer.



**Figure 4: Process of designing pilots for knowledge transfer in IT/IS outsourcing relationship. Dark grey process steps represent steps with managerial leadership. Light grey phases represent phases where transfer team-leadership is exercised. Knowledge transfer Profiler and Knowledge Transfer Instrument Catalogue are empowering tools used for designing the knowledge transfer process.**

### Step 2: Recognize Gaps of “Organizational Knowledge Work Process” for Knowledge Item (What hindered knowledge transfer of this particular item so far?)

This Step requires a workshop with service provider and client team members to understand gaps in the organizational Knowledge Work processes. These processes include the knowledge generation, distribution, usage, storage, activation of organizational memory, how to retrieve knowledge from it and update it. The workshop participants need to answer the question why the transfer of a particular Knowledge Item has not brought the expected results so far. To understand where the problem of knowledge transfer lies (e.g. knowledge generation, distribution, knowledge storage, or updating the organizational memory) we discussed with both service provider and service receiver the possible gaps and reasons for them (see also (McDermott 1999)). For example, during the workshops participants pointed out that the knowledge which had been transferred previously was never used and the transfer itself, although it took place, failed in delivering the expected results because of lack of the relevant documentation. Commonly reported problem is that the updating of organizational memory becomes a daunting task since sometimes documentation about the software design only contains the information about the updates and the “whole picture is not available any more”. Often we were informed that the whole process of the generation of knowledge was conducted by the outsourcer and the recipient team members were not included in the process. This of course handicapped the client in receiving the knowledge from the transfer process since their knowledge in the respective

domain was very limited from the start. Information about the reasons for not being able to successfully conduct the transfer of knowledge serves as one of the attributes for choosing appropriate transfer instrument (see Figure 9)

### Step 3: Define Knowledge Transfer Team Members

The third step calls for creating the Knowledge Transfer Team. Members of the Transfer Team are recruited from both organizations of service provider (knowledge keeper) and service recipient (knowledge receiver). Depending on the pattern of transfer ( $n \rightarrow 1$ ,  $n \rightarrow m$ ), we deal with groups of min 2 people but often with a group of several employees which need to work towards the goal of transferring knowledge, even though the differences in culture of knowledge sharing, preferred communication and coordination patterns are common attributes for this type of cooperation. The information about the knowledge keeper (or keepers) and knowledge receiver (or receivers) is collected from all members of the Transfer Team as well as the line management (from both companies). It is important to learn about the knowledge receiver's current capacity of understanding the knowledge which she needs to absorb. Such assessment is conducted by the knowledge keeper and the management (e.g. head of team) as well as knowledge receiver herself. Similar procedure is used to assess the readiness for transfer. Here the knowledge receivers and keepers assess themselves and then the assessment made by the management is recorded. After collecting this information management decides which candidates will be effectively taking on the job of transferring chosen Knowledge Item. In our research case we collected Transfer Team relevant information during interviews with employees selected by a manager responsible for particular software package. We encountered responses offering honest motivation for assessment regarding understanding of a particular domain element where the transfer will take part, while at the same time offering us information about the employees' personal views on sharing culture, personal motivation towards sharing as well as revealing the motivators or listing the activities which can hinder the transfer. e.g.: "Yes, I can do it but I need sufficient room for experiments as a software developer. Only when I'm granted this I can proceed with the transfer", or "I will do anything to keep my job, including things I do not particularly like". Interestingly, knowledge keepers as well as receivers were moderate in sharing negative characteristics about their counterparts, and we felt the respondents were quite happy to inform us about their personal views and motivations. This is the last step where the leadership is exercised by the head of the software development team. In the next step the Transfer Team takes over the leadership.

### Step 4: Knowledge Transfer Readiness

From the fourth step the chosen Transfer Team is responsible for successful transfer of the particular Knowledge Item. The nature of software development makes the definition of knowledge to be transferred (Knowledge Item) quite a difficult task. Therefore, the Transfer Team takes the responsibility for outlining very precisely what belongs to a particular Knowledge Item and what procedures, skills and documents need to be transferred to secure achieving expected quality of the transfer (the transfer is successful if the person receiving knowledge is able to perform the task previously conducted by the knowledge keeper on the agreed quality level). The team creates an outline of Knowledge Item by forming a document with a detailed description of knowledge to be transferred, such as acquiring a particular skill with certain proficiency, acquiring knowledge about a particular process with particular ability to alter that process. With the help of transfer moderator knowledgeable in the area of learning processes, the knowledge keeper designs a document which specifies a set of exercises to test the acquisition of knowledge by the knowledge receiver. Furthermore, such document also specifies KPIs for the transfer. This is often the step when the Transfer Team members can recognize/define what type of knowledge (explicit, tacit and implicit) and kind of knowledge (procedural, domain or skill related) need to be transferred. This is also the moment when the qualities of the KTI Catalogue (Knowledge Transfer Instrument Catalogue described below) are being exploited. From now on the Transfer Team is working on finding the appropriate transfer instruments to secure the accountability of just started transfer project. Both knowledge keeper (keepers) and receiver (receivers) are jointly responsible for creation of the document describing Boundaries for Knowledge Item to be transferred and for documenting the success in solving problems by means of a Learning Book. It is the first collaborative activity with clear deliverables for this team; therefore it is important that this activity enjoys sufficient managerial interest and support.

### Step 5: Managerial Sign-Off

We proposed that after a period of team preparation, the Transfer Outline Document (with Learning Book) receives a managerial sign-off. It is important to note that during the process of sign-off it is up to the management to decide if the transfer initiative needs to be supported by additional (not already present in the organization) set of organizational incentives. The personal incentives of members of the Transfer Team have been recorded while selecting the members of the team (Step Three).

### Step 6: Pilot Knowledge Transfer

The Transfer team is fulfilling the obligations from the Transfer Outline Document. The team consults the moderator (who is present in the first meeting) on problems which the team may encounter. Often the moderator proposes additional transfer instruments to support the Transfer Team in fulfilling their tasks. The support we gave as moderator often included the life demonstrations of use of the Transfer Instrument. During the keeper-receiver-meetings we encouraged the keeper to tell stories (use "War Story" Transfer Instrument) to help him convey complex and interlinked know-how about ways of effort estimation for software development tasks. Another time we supported the knowledge receiver by encouraging him to use

the “5-Why” Transfer Instrument (ask five times “why” to get to the root cause for the problem) to “recover” know-how about a decision of major change in architecture of the software package.

Six steps of Piloting Knowledge Transfer presented above are conducted using the Knowledge Transfer Profiler Tool and KTI Catalogue. Next chapter describes the tools and their value for the successful piloting process.

## **Knowledge Transfer (KT) Profiler**

Along the first three steps the team is using the KT Profiler – a document which serves as a collector of information about the transfer. This document is used further in the process for preparing a managerial sign-off and as a knowledge repository about the transfer process and about particular Knowledge Item. For example, KT Profiler contains a description of Knowledge Item which is characterized by the knowledge workers who create and use it during the moderated workshop with service providers and receivers. Knowledge Items are described using characteristics of degree of codification, proficiency (how well the knowledge needs to be acquired), diffusion (one person or the knowledge is spread across a group of individuals), lifespan (how long do we need this knowledge for), urgency of knowledge as well as perceived complexity of the transfer (Bugajska 2006).

Furthermore, the Profiler includes information about the knowledge keeper. Based on the interviews with employees we created a Knowledge Map which revealed the experts in particular tasks or domains. This served as a first source for choosing the knowledge Keeper. In the Profiler we also note how the Keeper himself qualifies the knowledge he possesses and finally how the manager performs the evaluation and makes a decision (choice of the knowledge keeper). The Organizational Knowledge Work Process is documented and the gaps as well as reasons for these gaps are filled in as a result of the workshop with knowledge keepers, receivers and responsible line manager from the outsourcer line.

After conducting the fourth step (Knowledge Transfer Readiness), the relevant Transfer Instruments are selected using the KTI Catalogue filtering features described in the next sections. Subsequently, they are entered into the Profiler together with the list of the documents describing the work process, organizational rules, other involved experts or already available transfer templates.

## **Role of Knowledge Transfer Instrument (KTI) Catalogue for knowledge transfer process**

KTI Catalogue is a structured collection of interdisciplinary instruments for supporting knowledge Transfer Team in the outsourcing project. It is a collection of Transfer Instruments extracted from transfer cases available in interdisciplinary literature and transfer instruments which have been already used in our Swiss financial institution. This collection includes Instruments which describe the transfer using four groups of transfer characteristics (see Figure 4). Based on designing and moderating transfer pilots we see the role of the catalogue as follows:

It helps in finding right transfer tools which fit the communication patterns and skills of both knowledge keeper (service provider) and knowledge receiver (outsourcing client).

Catalogue works as a “boundary object” (Hinds 2003) by fostering discussion and elaboration about successful transfer of knowledge (with great component of tacit knowledge).

For designing a transfer pilot it helps to work with field examples to minimize level of abstraction (Dixon 1993)

Examples from other industries allow the curiosity to overtake the fear of “not invented here syndrome” and consider the logic of the transfer example. Additionally, an example from different industry/domain minimizes a cognitive limitation impact in knowledge transfer (Hinds 2003) by encouraging a two-way interaction (question about the case, method of applying, likeness of a match with our domain etc).

It helps in redirecting the discussion about the cultural and organizational differences between outsourcer and service provider towards shared qualities which support effective knowledge transfer using Instruments in the Catalogue as a starting example. Team members belong to different organizations with different communication, coordination and control policies (Carmel 2005). Culture is inevitably different, even in case of national outsourcing cases very often there is a difference on professional level (e.g. engineers vs. business –IT trained employees).

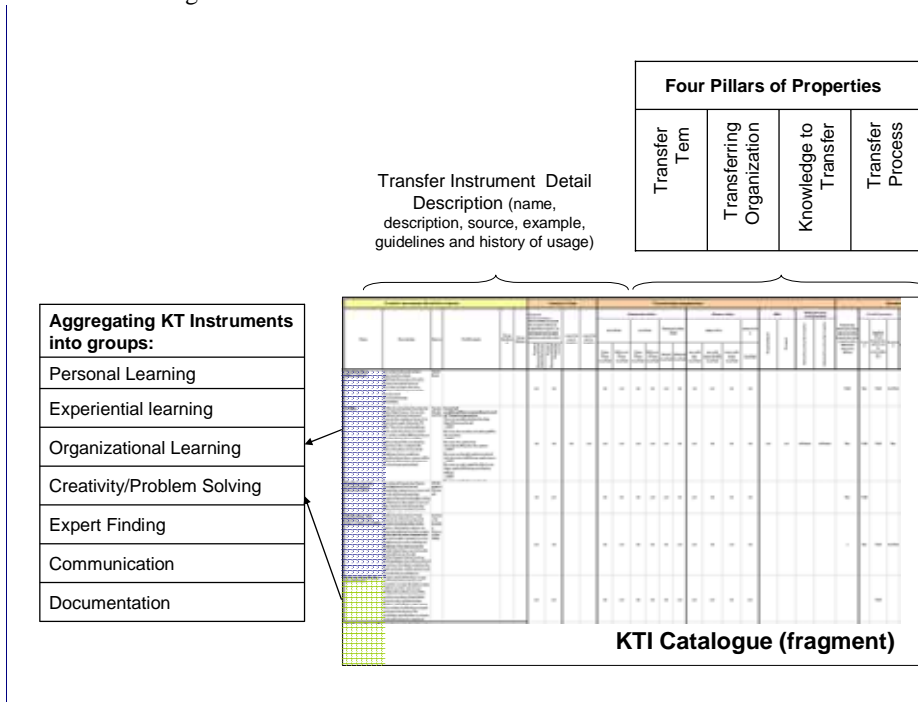


## Building the Knowledge Transfer Instruments (KTI) Catalogue - Extracting the Instruments

The sources of Transfer Instruments are usually widely published cases for knowledge transfer and sharing; the quality of such cases varies and, as already mentioned, such cases often do not tell exactly what method of transfer has been used to achieve a particular effect. Internal best practices represented an important source for Transfer Instruments in our project. We learned about the best transfer cases during the workshop with service provider and outsourcer by enquiring about the most successful transfer projects and rationale behind them. The list and description of the transfer form a basis for the next step, which requires extracting enough details (see structure of the catalogue) to be able to use the case as an instrument for transfer in a different setup. Extracting the instrument from often elaborated description of transfer (or change management cases) brings results if we are able to answer two questions: what has been done to transfer the knowledge and how was it done? As we present in the next chapter, the KTI Catalogue with its categorization of the Transfer Instruments helps the Transfer Team to choose Instruments appropriate for transferring the relevant Knowledge Items.

## Categorization of Transfer Instruments in KTI Catalogue

We categorize Knowledge Transfer Instruments along two dimensions. The horizontal dimension contains both a detailed description of an Instrument as well as four pillars grouping certain properties used to categorize Instruments. The vertical dimension shows how the Instruments can be grouped according to their main work related usage (see Figure 5). Below, we describe this categorization in more detail.



**Figure 5: The structure of KTI Catalogue with four pillars of instruments' properties (vertical values) and horizontal grouping of instruments in seven groups which are later used for choosing right KT Instrument in regard to gaps in Knowledge Work Process (see Figure 9 )**



provider and service receiver. In the pilots we implemented, we noticed the strong correlation between the type of education (engineering degree vs. business or IT degree) and the type of communication style preferred by an individual.

We find important to list the KPIs measurement while using a particular instrument. Although the literature of published cases is not rich in listing KPIs for knowledge transfer, we found that in case of the financial institution we worked with, many internal best practices adopted clearly defined KPIs for achieving a success in the transfer. For the purpose of KT in IT outsourcing we propose to design and specify not only KPIs for achieving organizational goals (knowledge transfer goals) but also KPIs for personal development (for knowledge keeper and receiver).

It is helpful to define the organizational support needed for successful use of particular transfer instrument. As an example, the organization may decide to propose a special type of gratification system as an incentive for supporting inter-organizational team work. We place these properties on the level of relationship management of the outsourcing relationship.

To understand which instrument can be used successfully for transferring certain type of knowledge we suggest distinguishing among the following properties characterizing the “**Knowledge to Transfer**”: Explicit, Implicit, Tacit as well as describe the level of Ambiguity of the knowledge which can be transferred. Additionally, for transfers within IT domains, types of Knowledge to Transfer are of great importance: transferring Skills (e.g. programming), Process (e.g. methodologies), Domain (e.g. business IT systems) or Norms: Work and Cultural ones (e.g. willingness to share) require use of diverse transfer instruments. Particularly in outsourcing relationships differences in organizational culture (a set of behaviors distinguishing the members of one group from another (Hofstede 1997)) play an important role in the knowledge transfer process.

Finally we distinguish properties which characterize transfer process itself. These properties, included under the Transfer Process pillar, are important for understanding the dynamics of a change process which an organization is facing when knowledge transfer processes are affecting the organization. Therefore, we categorize Transfer Instruments by specifying if their usage requires a routine approach and what the frequency of the usage should be (a continuum, hourly, daily). Additionally, we estimate the “Degree of Organizational” influence needed to make the Instrument work: formality of the transfer (high/small), need for new organizational adjustments (e.g. acceptance of failure) and need for managerial sponsor or managerial process to conduct the transfer process using particular instrument.

These pillars of properties describe Knowledge Transfer Instrument to better understand the context in which the Instrument was used. Additionally, to facilitate the selection and application of the Instruments to solving real life problems within organizations, we aggregated those Instruments sharing similar qualities and attributes into 7 groups introduced in the next section

### ***Grouping of Transfer Instruments***

We propose to aggregate the Transfer Instruments in groups sharing similar qualities and attributes. We list following seven groups:

1. Personal Learning Transfer Instruments (essential for change processes)
2. Experience-based learning Transfer Instruments (very important for the IT/IS outsourcing domain),
3. Organizational learning Transfer Instruments (both the software provider and the client in our case reflected on the quality of their organizational learning when browsing through the instruments grouped here)
4. Creativity/Problem Solving Transfer Instruments (crucial for innovation aspects in the IT/IS outsourcing domain)
5. Expert finding Transfer Instruments
6. Communication Transfer Instruments (in the IT/IS domain ability to communicate is essential but very often not satisfactory)
7. Documentation Transfer Instruments (externalization of the software design process)

The structure of categorizing KT Instruments’ properties as well as grouping them is used for finding the most appropriate Knowledge Transfer Instrument(s) for the Knowledge Transfer Process at hand. Below we present three approaches for finding such Transfer Instrument(s).

First and the simplest approach (Simple Filtering) can be described as Filtering of the KTI Catalogue. The user of the

**Second approach is called Property Filtering (see**

[illegible]

Phase 1, where the matrix designed by us is used to define which property pillars, or sub-group of these pillars are more important than others in the knowledge transfer process for the respective Knowledge Item and Knowledge Transfer Team. Such matrix (

Pillars of Properties for Transfer Instrument		Transferring Organization					Knowledge to Transfer		Transfer process	
Attributes of Knowledge Item & Transfer Team Members		How important are characteristics of the transferring team for the success of instrument usage?	Importance of understanding of Communication for successful use of instrument	Importance of knowledge of Cooperation Aspects for successful use of instrument	Importance of KPI for successful use of instrument	Importance of relationship management for successful use of instrument	How important for choosing an instrument is the knowledge about the AmbiguityType and/or Kind of knowledge to transfer?		Level of importance of information about the transfer process	
Level of Importance		Transferring Team	Communication Aspects	Cooperation Aspects	KPI	Outsourcing Relationship Management	Knowledge Kind	Knowledge Type	Transfer is routine	Need for non routine approach
<b>Tacit Degree</b>	high									
	medium									
	low			X	X	X		X	X	
<b>Proficiency</b>	high	X	X	X	X	X				X
	medium									
	low									
<b>Diffusion</b>	high									
	medium									
	low	X			X					
<b>Lifespan</b>	high									
	medium									
	low	X								
<b>Transfer Complexity</b>	high									
	medium									
	low			X	X		X	X	X	

**What is Knowledge Receiver's current capacity of understanding of knowledge to be transferred according to:**

Knowledge receiver												
high											X	
medium												
low												
<b>Management</b>	high										X	
	medium											
	low											
<b>Knowledge keeper</b>	high										X	
	medium											
	low											

**What is the Readiness for Transfer according to:**

Knowledge receiver											
high			X	X	X		X		X		
medium											
low											
<b>Management</b>	high		X	X	X		X		X		
	medium										
	low										

1. Figure 8) uses inputs already gathered by means of the Knowledge Transfer Profiler, namely:

- attributes of Knowledge Items (knowledge package which needs to be transferred) like tacit degree or diffusion of knowledge in organization (see sub chapter Knowledge Transfer (KT) Profiler). These values resulted from workshop(s) with the group of specialists working in the particular domain of software development from both service provider and client team.
- attributes of Knowledge Transfer Team such as proficiency in a particular Knowledge Item and capacity of learning (of Knowledge Receiver) as well as the Team's readiness for transfer. Consequently, the matrix depicts the importance of particular properties of Knowledge Transfer Instrument depending on values of listed attributes on Knowledge Item and Transfer Team members. These attributes are gathered by the transfer coach from Knowledge Keeper, Receiver and the Management (team leader) in the beginning of the piloting process (Step 3 in Figure 4).

2. Phase 2, in which "Simple Filtering" is used to filter the KTI Catalogue by concentrating on property pillars selected in Step 1.

This approach, although more complex than the previous one, reduces the number of pillars ( or their sub-groups) on which Transfer Team should focus with respect to the Knowledge Item at hand (e.g. focusing on only 15 instead of all 30 properties) and hence the number of potential Transfer Instruments which should be used in the transfer process and hence it improves the efficiency and effectiveness of the entire knowledge transfer process.

Third approach (Figure 9), called Process Filtering, uses as input the information about gaps in the Knowledge Work Process (see Step Two of the Piloting Process in Figure 4). These Gaps inform us what contributed to previous failures in transferring

knowledge relevant for particular Knowledge Item. This information is gathered during the Transfer Team meetings and can help in filtering the Transfer Instruments which the team should consider. This approach was positively received by the Transfer Team since it required that only one matching step be conducted.

In the field work the moderator was using the first and second approach to pre-prepare the list of relevant instruments which the Transfer Team may consider valuable. The first approach was also used by the team leaders and the members of the Knowledge Transfer Team (often in a playful manner). The third approach was often used already during the workshop with knowledge keeper and receiver when the discussion turned towards main levels of the organizational knowledge work process (Schwabe 1999) which the financial institution wanted to improve, or if the reason for not performing the knowledge transfer earlier was that the members of the client team were not yet involved in the particular task (status of novice).

Pillars of Properties for Transfer Instrument		Transferring Organization					Knowledge to Transfer		Transfer process	
Attributes of Knowledge Item & Transfer Team Members		How important are characteristics of the transferring team for the success of instrument usage?	Importance of understanding of Communication for successful use of instrument	Importance of knowledge of Cooperation Aspects for successful use of instrument	Importance of KPI for successful use of instrument	Importance of relationship management for successful use of instrument	How Important for choosing an instrument is the knowledge about the Ambiguity/Type and/or Kind of knowledge to transfer?		Level of Importance of information about the transfer process	
Level of Importance		Transferring Team	Communication Aspects	Cooperation Aspects	KPI	Outsourcing Relationship Management	Knowledge Kind	Knowledge Type	Transfer is routine	Need for non routine approach
<b>Tacit Degree</b>	high									
	medium									
	low			X	X	X		X	X	
<b>Proficiency</b>	high	X	X	X	X	X				X
	medium									
	low									
<b>Diffusion</b>	high									
	medium									
	low	X			X					
<b>Lifespan</b>	high									
	medium									
	low	X								
<b>Transfer Complexity</b>	high									
	medium									
	low			X	X		X	X	X	

**What are the Attributes of Knowledge Item**

		Transferring Organization					Knowledge to Transfer		Transfer process	
		Transferring Team	Communication Aspects	Cooperation Aspects	KPI	Outsourcing Relationship Management	Knowledge Kind	Knowledge Type	Transfer is routine	Need for non routine approach
<b>Tacit Degree</b>	high									
	medium									
	low			X	X	X		X	X	
<b>Proficiency</b>	high	X	X	X	X	X				X
	medium									
	low									
<b>Diffusion</b>	high									
	medium									
	low	X			X					
<b>Lifespan</b>	high									
	medium									
	low	X								
<b>Transfer Complexity</b>	high									
	medium									
	low			X	X		X	X	X	

**What is Knowledge Receiver's current capacity of understanding of knowledge to be transferred according to:**

		Transferring Organization					Knowledge to Transfer		Transfer process	
		Transferring Team	Communication Aspects	Cooperation Aspects	KPI	Outsourcing Relationship Management	Knowledge Kind	Knowledge Type	Transfer is routine	Need for non routine approach
<b>Knowledge receiver</b>	high								X	
	medium									
	low									
<b>Management</b>	high								X	
	medium									
	low									
<b>Knowledge keeper</b>	high								X	
	medium									
	low									

**What is the Readiness for Transfer according to:**

		Transferring Organization					Knowledge to Transfer		Transfer process	
		Transferring Team	Communication Aspects	Cooperation Aspects	KPI	Outsourcing Relationship Management	Knowledge Kind	Knowledge Type	Transfer is routine	Need for non routine approach
<b>Knowledge receiver</b>	high		X	X	X		X		X	
	medium									
	low									
<b>Management</b>	high		X	X	X		X		X	
	medium									
	low									

Figure 8. Property Filtering is one of the approaches supporting the decision process on the choice of Transfer Instrument(s) for facilitating the knowledge transfer process. This approach offers browsing through the Transfer Instruments by filtering out properties (or group of properties) which will not be considered relevant for choosing the right Transfer Instrument. "Property Filtering" has two phases. This figure shows the first phase in which a matrix, together with relevant matching rules, is used to define which property pillars, or sub-group of these pillars are more important than others in the knowledge transfer process for a sample Knowledge Item and Knowledge Transfer

Team. Such matrix uses attributes of the Knowledge Item and Transfer Team and describes for which values of these attributes (high, medium, low) which properties or property pillars need to be considered (here we use only one example and mark it with X). The second phase of the Property Filtering approach is described in text.

	Knowledge Work Process	Groups of KT Instruments						
		Personal Learning	Experiential learning	Organizational Learning	Creativity/Problem Solving	Expert Finding	Communication	Documentation
Gaps in Knowledge Work Process yes/no	Knowledge work process in the Organisation is present	X						
	k. Generation				X		X	
	K. distribution and sharing		X	X		X	X	
	K. usage			X			X	
	K. storage in organizational Memory							X
	Activation Organizational Memory		X	X				
	Information retrieval from organization memory						X	
	Reusing the retrieved information						X	X
	Updating organization memory			X				X

**Figure 9:** During the workshops, a Transfer Team defines the gaps in Organizational Knowledge Work Process responsible for failure of transferring the Knowledge Item earlier. Later, the Transfer Team uses Process Filtering approach presented here for consulting only some relevant groups of Knowledge Instruments. Development of this matrix is based on the studied transfer cases and literature review.

## Conclusion

In this paper we presented the framework for piloting knowledge transfer initiative in an IT/IS outsourcing initiative and Transfer Profiler and Knowledge Transfer Instruments Catalogue (KTI Catalogue) tools for supporting the team during the transfer process. We have used this framework and the tools to pilot five transfer initiatives at a large financial institution. Transfer Profiler tool became an important document for designing the pilot as well as a document which recorded the “snapshots” of knowledge transfer in the organization. KTI Catalogue was used by different Actors of the transfer process along the series of pilots. In the first pilots the Catalogue was used as designed by the Transfer Team to support their choice of most appropriate transfer instrument. While working with the Transfer Instruments Catalogue in the field, users reported that this tool encouraged them to believe that the knowledge transfer process can become a success. They became engaged in the discussions about the transfer instruments. Additionally, the presented instruments worked as an invention seed for designing new transfer tools like “check out templates” for transferred knowledge packages or a Wiki-based list of Knowledge Items with the detailed description edited collaboratively by both service provider and the client. Learning about the instruments provoked discussions and cooperative activities motivating the Transfer Team to fulfill the transfer goals. Furthermore, working together on choosing the right Transfer Instrument and adapting it (if needed) brings the focus back to the issue of transfer instead of focusing on the personal advantages/disadvantages embedded in the transfer process.

Our pilot users listed two main challenges regarding the Catalogue. Firstly, the amount of properties describing Transfer Instruments is quite overwhelming for a user, even for users contributing to the internal best practices in the Catalogue. Secondly, there is a need to “stay on a “concrete” level” with the description and properties of the Instruments so the knowledge workers can relate to these Instruments. Thirdly, the filtering mechanism needs to be automated. Hence, the next step in the research requires a redesign of the catalogue to strengthen its “boundary object” qualities and thus minimizing its complexity. As a consequence, in the latest pilot the Transfer Team used Transfer Instruments recommended by the team leader from the client organization. The recommendation was accepted and the transfer was conducted successfully. The team leader pointed out that he would also appreciate a possibility to choose and propose directly instruments to his subordinates receiving the knowledge from the service provider employees. Currently, the teams piloting knowledge transfer are using much smaller library of knowledge Transfer Instruments which are carefully structured in a form of a pattern that we will describe in the forthcoming publication.

Our matrix and its matching rules used in the Property Filtering approach for knowledge transferring has certain limitations, since it was built on the studied transfer cases and literature review of knowledge transfer cases (more than 40 cases) as well as experience of the two transfer coaches involved in our project.

Furthermore, we believe that certain degree of automation may bring additional value to the Catalogue and the Knowledge Transfer Profiler. Additionally, describing a Transfer Instrument in the form of patterns could reveal additional qualities of



such an Instrument and offer a more reusable approach which can be furthered applied by organizations in their future outsourcing initiatives.

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