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Final thesis

An explorative study of the technology transfer coach as a preliminary for the design of a computer aid

by

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**Abstract**

The university technology transfer coach has an important role in supporting the commercialization of research results. This thesis has studied the technology transfer coach and their needs in the coaching process. The goal has been to investigate information needs of the technology transfer coach as a preliminary for the design of computer aids.

Using a grounded theory approach, we interviewed 17 coaches working in the Swedish technology transfer environment. Extracted quotes from interviews were openly coded and categorized. The analysis show three main problem areas related to the information needs of the technology transfer coach: awareness, communication, and resources. Moreover, 20 features for future computer aids were extracted from the interview data and scenarios and personas where developed to exemplify the future use of computer aids.

We conclude that there is a need for computer support in the coaching process. Such systems should aid the coach in; awareness, aiding the coach to focus on meetings; communication, aid the coach to transfer commercialisation knowledge; and resources, aid the coach in accessing and delivering of resources to the coachee. However, it is imperative that the computer aids do not interfere with the coach current process; and that the computer aid is not seen as the sole solution.
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“it is my ambition to say in ten sentences what others say in a whole book”
(Nietzsche 1895)

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1 Introduction

State-financed research should benefit the society. Common practices in the research community are to publish research results academically. This means that the knowledge is transferred from individual researcher to a community of researchers. However, a common view is that the theoretical results are not put in to practice thus leaving the society development potential overlooked. Hence, it is important to encourage researchers into consider practical aspects and applications of their research.

Swedish universities have a background of doing technology transfer but it was not until the government accepted Proposition 2008/09:50 it become organized formally (Leijonborg 2008). It also became official in an amendment to the law that the Swedish universities shall strive after benefits from research results. As a result, university technology transfer offices have been established with the aim to commercialize research results. Technology transfer can be seen as the process of transferring research results developed within a specific environment to the market.

The university technology transfer coach has an important role in assisting researchers. Typically this means supporting the researcher in commercialising research results. To accomplish this, the coach aids them in allocating resources for market analysis and funding etc. This can also be in the form of developing an intellectual property strategy or building a team and finding an entrepreneurial champion. Foremost, the coach uses coaching (Whitmore 2013) to advance researchers.

InnovationskontorEtt is the university technology transfer office at Linköping University, Sweden. InnovationskontorEtt is working with technology transfer and is looking for new ways to improve its processes. Personnel with a coaching role stand for one third of the manpower at InnovationskontorEtt making this a significant role to enhance. A question is how they can improve their coaching processes and develop tools that aid the coach.
1.1 Goals and objectives

The goal of this thesis is to understand information needs of the technology transfer coach as a preliminary for the design of computer aids. The objective is to investigate perceived problems in the coaching process and identify common needs. Moreover, an objective is to identify preliminary features of a computer aid.

1.2 Delimitation

Focus for this thesis lay on coaches working with Swedish Universities and their technology transfer offices. Thus, we did not interview coaches in other field such as sport, employment or life coaches. In this thesis, we did not observe actual meetings between the coach and the coachee. The thesis will discuss features for a future system and not display a final product or system specification.
2 Background
This section describes the coaching process and how the coach work. Moreover, we go through commonly used tools of the technology transfer coach.

2.1 Coaching theory
Around two and half millenniums ago the philosopher Socrates began asking questions to his students for them to answer their own questions. The idea was to stimulate reflection and thinking. The method also teaches ways to reflect and solve problems. The terms coach derives from the late 1800s where oxford students used it as slang for when a professor helped a student to pass an exam. Not long after it would get its meaning that is used today in sports but more than hundred years for the term to get into workplaces around the world and even more for it to develop to today’s meaning (Bachkirova, Cox et al. 2010).

Coaching can be seen as a communication process between two parties, where one is a coach and the other is the coachee (Bond, Seneque 2013). Coaching acts as a tool to improve the performance of the coachee and to reach its full potential (Bond, Seneque 2013). The coach/coachee could be an individual or a group. Coaching can also be sub-divided into different profession groups such as executive coaching, business coaching and life coaching (Bond, Seneque 2013).

Whitmore (2013) emphasizes the psychological aspects and inner development of the coachee. According to Whitmore it is important that the coachee finds his [sic] way and that the coach’s role is to guide the coachee into a wider consciousness. Landsberg gives us a definition that points out the roles of the coach and coachee:

“Coaching aims to enhance the performance and learning ability of others. It involves giving feedback, but it also includes other techniques such as motivation and effective questioning. ... Overall the coach is aiming for the coachee to help her – or himself. And it is a dynamic interaction – it does not rely on a one-way flow of telling or instruction.” (Landsberg 2003)

Expert knowledge in a specific field as a necessity to coach in that field is described as the older view of coaching and today coaching focuses more on knowledge of the coaching process. This means that a coach could coach in any field of expertize as long as it has coaching skills (Whitmore 2013, Bachkirova, Cox et al. 2010). As Whitmore strongly empathizes (Kauffman, Bachkirova 2008), it is the coachee who assets the wisdom and the coach can advance this wisdom to surface.
“Sir John Whitmore – Coaches don’t bring wisdom but they evoke it in people! Coaches can draw wisdom out of people. If coaches have a wider or spiritual perspective, they are in a better position to dig down to foster wisdom in leaders, not just cleverness.” (Kauffman, Bachkirova 2008)

The effects of coaching are debated since measuring the benefits of outcome are subjective in terms of how large portion is due to coaching. There are reported figures on financial Return Of Investment (ROI) for executive coaching, which ranges from 500% to 700%. Though, these records are both subjective and contextually bound variables (Grant 2012). The efficacy of coaching can be measured in other terms than financial ROI, like goal actualization and well-being, but lacks consistent practice (Lawrencea, Whytea 2013).

The GROW model
The GROW model (Landsberg 2003, Whitmore 2013) is a technique that the coach can use to structure the coaching session or the coaching as a whole. GROW is an acronym for goal, reality, options, and wrap-up. The origins of the GROW model is uncertain as some sources claim authorship and some say it has been a corporate development. Nevertheless the GROW model is an essential technique in modern coaching and is used both for framing the current meeting and also to structure the coaching process as a whole. If the coaching is structured in this way it becomes effective and focused (Whitmore 2013, Landsberg 2003).

GROW stands for:

- Goal; what is the purpose?
- Reality; what today look like?
- Options; what can we do and will do?
- Wrap-up; what and when will we do it?

Setting up a goal for the individual session and also for the coachee to define a goal for personal development is needed to give focus and bearing. It differs from the end goal, described as a final destination; and achievement goal, the deed that will make you achieve the final destination. Further it is important that the goals are being SMART, PURE and CLEAR to be effective (Whitmore 2013).

For reality to be an effective part, the coach has to be objective and not reflect personal views while questioning the coachee. Questions like what, when, how much and who are often used to bring out the coachee’s reality. It is important that the reality become accurate for the continued coaching to become successful (Whitmore 2013).
Finding the right path to the goal comes from generating a lot of options. The coachee or coachees need to be able to speak freely in the session to see all options and not only the secure ones. For the coach a lot of “What if?” questions works as an effective tool (Whitmore 2013).

Completing the coaching session with a wrap-up, a concrete plan of action for the coachee to reach its goal is done in the end of the meeting. Making the coachee to choose paths and define a time and place for execution can be tough for the coach and firm coaching is needed here. Asking the coachee to evaluate the plans achievability on a scale of 1 to 10 is a great tool for the coach to use. Whitmore states that any number under 8 is likely to fail and the plan should be revised (Whitmore 2013).

Coaches and advisors have similar goals for the coachee but the approach to the client differs. The coach uses efficacious questioning to guide the coachee whereas the advisor uses its own knowledge and expertise to guide the coachee. As we stated earlier, it is not necessary for the coach to have domain knowledge in the area in which the coachee operates but for the advisor this is a necessity (Whitmore 2013).

2.2 Tools of the technology transfer coach

A technology transfer coach can encounter a wide variety of situations and can use different tools to control them. In this section we will mention the most common ones that the Swedish tech transfer coach uses.

The NABC method

NABC is a method used to structure ideas, projects, sales pitches and more (Wallentén 2013). This approach was developed by Stanford Research Institute as part of “The SRI Five Disciplines of Innovation®”. NABC is acronym for Need, Approach, Benefit, and Competition. The method should be performed iteratively and should not stop since the world and environment we act in is dynamic (Wallentén 2013).

- **Need**: First looking at the need of the project, what is the need? It can also be a problem that will be described here.
- **Approach**: How will the project build to satisfy the need or solve the problem described at first? When the need and approach are defined the utilizer will confirm on the last two steps if the approach is valid.
- **Benefit**: Confirming the benefit of the project to see if it is valuably according to the cost of performing the approach. Will the recipient of the project be benefited?
- **Competition**: Finally in this iterative process reviewing the projects competition; will the project hold against others on the market?
The coach can use this method in the coaching process, generally used as a communication aid due to its strict layout to describe and develop the idea. It is also common to transfer the method to the coachee to use it to formulate business proposals, pitches etc. that can be discussed in follow-up meetings or in a value creation forum, see next section.

**Value creation forum**
The value creation forum was created by Stanford Research Institute International and a part of Stanford Research Institute Internationals “The SRI Five Disciplines of Innovation®”. Value creation forum can be used in multiple ways, were enhancing a project manager offer or a pitch often constructed with NABC is one of the more common (Wallentén 2013).

Value creation forum is a tool for a discourser to receive quality feedback. A value creation forum is a controlled arena where the discourser presents a project and receives feedback in a specific process controlled by a facilitator. The facilitator issues different roles to the audience in the beginning of the value creation forum; the roles are defined as positive feedback; constructive feedback; customer feedback; and investor feedback. After the presentation, the audience will one by one give the feedback to the discourser. The discourser must receive the feedback without commenting or replying and another project member will take notes.

**Business model canvas**
Osterwalder and Pigneur define a business model as “A business model describes the rationale of how an organization creates, delivers and captures value” (2010). To grasp and understand how to work with a business model the researchers have composed a concept for organizations and companies that offers a shared language for discussions. This concept is the Business model canvas and it is divided into nine ordered building blocks: customer segment, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnership and cost structure (Osterwalder, Pigneur 2010). Figure 1 shows the Business model canvas outline.
The Business model canvas originates from Alexander Osterwalder’s work from 2004 and he and many more have developed it further since. Today there are various variations of the business model canvas and people have adopted them to value their own field of expertise (Osterwalder 2004). The business model canvas is a tool that technology transfer coach can use to get an overview of the business and to elucidate missing pieces in business ideas. Further, it works as an educational communicational tool towards the coachee.

**Intellectual asset inventory**

Intellectual asset inventory (Vasell 2013) was developed by Innovationskontor Väst in Sweden as a tool to aid researchers and the technology transfer coach in identifying intellectual assets. The Intellectual asset inventory was developed with the motive that researchers are not always aware of all the resources they possess. Intellectual asset inventory guides the researcher to identify and categorize research results, outcomes and findings. Moreover, it helps define the ownership and application. The Intellectual asset inventory can be used either on a regular basis in a research group or as a stage in a research project. The technology transfer coach can use this approach in meetings or to give it as an assignment. To apply Intellectual asset inventory, a full review of the research is required and during this review the Intellectual asset inventory will act as a guide and be composed at the same time.
Open innovation accelerator

Open innovation accelerator (Swartz 2013) is a web-based platform to connect supply and demand related to research results and early ideas for example it can be in form of connecting a patent to a company or a start-up with a champion entrepreneur. Open innovation accelerator is an initiative from Linköping University and was developed by InnovationskontorEtt. Open innovation accelerator is used by the coach to access and distribute resources the coach is connected to. The coach can aid the coachee to access Open innovation accelerator.
3 Method

This thesis started with a qualitative explorative process focusing on the technology transfer coach. The goal was to understand the coach and working process to find preliminary factors leading to a computer aid. Grounded theory (Corbin, Strauss 2008) was used for this problem. Interviews (Kvale 1996) were used for data collection.

3.1 Research process and analysis

17 interviews were held with coaches working in the Swedish university technology transfer environment to collect their perceptions on problems and needs in the coaching process. Initially, eight interviews where held focused on coaches at University technology transfer offices in Sweden. To expand, nine interviews were held with eight coaches at Swedish university based business incubators and one coach at Drivhuset, to validate the data that was obtained in the initial process. Figure 2 show the research process.

![Figure 2: Research process flow](image)
The interviews were conducted by phone using an interview template and audio was recorded. Each interview recording was analysed iteratively at least two times after the initial interview session to find nuances and for the interpretation to be solid. Quotes were extracted and logged, openly coded and categorised iteratively. The first iteration of interview analysis led to 54 quotes which were textually analysed into 15 different codes. The second iteration expanded the quotes to 87 and 24 codes. Lastly, using the Grounded theory approach, we categorized into 3 problem areas experienced by the technology transfer coach.

To examine these subjective problems and investigate how computer support could be utilised, we developed a persona and a scenario. From the persona and scenarios, we could extract 20 features for computer based aid for a coaching process.

3.2 Grounded Theory

Grounded theory (Corbin, Strauss 2008) method is a qualitative research method (Bryant, Charmaz 2011) that is used to generate knowledge inductively without a targeted question or hypothesis. Instead, the investigator goes head first into specified research area and start asking questions and looking for questions and answers. During the research, data collection and analysis goes hand in hand and the research is very much alive until the last stroke of the pen.

“Grounded theory is a method of qualitative inquiry in which researchers develop inductive theoretical analyses from their collected data and subsequently gather further data to check these analyses.” (Bryant, Charmaz 2011)

According to Corbin and Strauss is knowledge created around actions and reactions. To evolve our knowledge, we need to act and reflect on our actions in the world. The world is dynamic and we are changing with it. We also control how our world is experienced and our solutions and truths are only so for the time they are stated (2008).

“The world is very complex. There are no simple explanations for things. Rather, events are the result of multiple factors coming together and interacting in complex and often unanticipated ways. Therefore any methodology that attempts to understand experience and explain situations will have to be complex.” (Corbin, Strauss 2008)

Analysing data using Grounded theory is an art mixed with science (Corbin, Strauss 2008). The researcher needs to have the science on how the work could proceed and the transcendental view to be able to find concepts from the data. It is also the researcher interpretations of the data that is presented in the final result, thus having the responsibility to have done a thorough and balanced analysis.
Central is the process of taking concepts of the data and considering all possible variations, comparing them against each other and forming categories. The process of analysis starts from the first collected data and will continue throughout the research until the researcher “feels right” and has formed a thesis. This lends the use of open coding that gives the researcher room to balance art and science. A tool researchers in grounded theory uses to validate results is writing memos - a written record of what is done during the research. This is done to preserve thoughts on analysis and induce other perspectives that can be considered relevant for the research. Memos are recorded, preferably, with time stamps for easier follow-up and to get a view on how the research has progressed (Corbin, Strauss 2008).

3.3 Interview method

Interviews (Kvale 1996) were the chosen data collection method.

"Conversation is the basic mode of human interaction. Human beings talk with each other – they interact, pose questions, and answer questions. Through conversations we get to know other people, get to learn about their expectations, feelings, and hopes and the world they live in." (Kvale 1996)

Thematizing should answer the questions why and what the interviews are for (Kvale 1996). The interviews in this thesis were semi-structured and conducted to investigate the coach process and its relations to technology. To gather this information from the interviewees, a combination of understanding modes were accentuated; Deliberate naïvité, Qualitative and Focused (Kvale 1996). This was the basis for the interview template.

The author of this thesis work as a technology transfer coach, thus, there could be a biasing issue during interviews. To mitigate this risk, the interviewee was only told that the interviewer was a student at Linköping University. Further, the interviewer was well understood of the problems with preconception (Dalen 2008).
3.4 System design method

Persona (Goodwin 2009) is a design tool to get a better understanding of a user; by giving the potential user a name, a photo, a narrative and a set of goals. This approach gives the data a personality and something that can be reasoned in terms of how well it suits the persona instead of reasoning about specific data sets. A persona is a type of user and not an average; it is therefore common to have multiple personas in a design project. For a team it is a tool to create a consensus on how users act and react to your design (Goodwin 2009).

“Personas are archetypes that describe the various goals and observed behaviour pattern among your potential users and customers.”

(Goodwin 2009)

Persona is not a tool to represent segments of size and value but a tool to represent a type of user with certain skills; behaviours; mental models; and goals. It also differs from a role definition that can be used in design in a way that a role is broader in the sense of how the user acts and reacts. A role definition is more focused on how the user supposed to act by a pre definition (Goodwin 2009).

Scenario based design (Rosson, Carroll 2002) is a broad set of techniques that can be used to describe future events in a design process. A scenario is a rough narrative description containing sequences of actions and events leading to an outcome. Scenarios are often based on a type of character or persona to give it more meaning and relevance. Using scenarios is way to envision the future and thus see complications of the design at an early stage. The use of scenarios is also a tool for the designer to raise questions on the design and to develop further alternatives for the design.
4 Result

The analysis revealed three main areas in which the interviewed coaches perceived problems: awareness, communication, and resources.

Awareness
The most significant problem area was awareness. We describe awareness as the general worry to have the correct information saved and accessible at the right time. This worry is found in questions like who am I meeting today?; What did we talk about last time?; and who do I need to get back to? It can affect the relations with the coachee in building a trust; a commitment requisite the coach to emit confidence; a confidence that can easily be broken when a problem with awareness occurs.

"If you booked a meeting one hour you don’t got time to close the first one before they wait outside" (Interviewee quote #23)

We found that the coach needs to be calm and confident and have room for the coachee’s perspective for an effective session. Issues we found hinder the coach to be connected with the coach workload and information needs.

"there are many contacts that has to be made, that’s why I think, not a conscious shortage but a shortage caused by to many things going on at the same time" (Interviewee quote #18)

Awareness is further describes as the coach searching for full focus on the coachee during the meeting. This focus is needed for the coach to be an efficient listener and pay attention to the coachee leading to better coaching sessions. Environmental factors play an essential role in this area. We found that mobile devices, laptops and other equipment are left outside of the meeting environment to avert distractions.

“I don’t want to stress the client … and as I said I carefully try to note during the meeting and afterwards I supplement in peace and quiet, without stressing the client” (Interviewee quote #57)

Communication
It was found that communication is a main area in which the coach perceives problems. Specifically found in the information exchange between the coach and coachee. A part of this we could derive to cultural and lingual differences but the biggest difference lay in knowledge around the technology transfer process.

It’s about the language, how you talk about your idea ... that you understand that you need to protect your idea ... that you think commercially. (Interviewee quote #14)
The coach quarrel in communicating how technology transfer processes works and this takes resources in form of time that could be spent on coaching or development. Common is also a miss communication in assignments leading to slower process and results that are inadequate.

There are several advantages to open up and view ... allowing them to be presented to the process ... the communication would be simpler. (Interviewee quote #8)

Resources
In the coach’s daily routine, resource problems are experienced. It can be in terms of assisting the coachee or the coach’s own activities.

One wishes to be accessible for everyone (Interviewee quote #61)

We found that the coach can feel powerless in the assistance of the coachee, especially in assisting with team assembly. There are few systems that aid the coaches in finding a specific resource, but the general coach feel that there is no need to use these systems since every resource that need to be found has its unique path and to have a system for each would be saturating.

Some projects also find us to be project manager for them that we are not; we are supposed to coach them forward. (Interviewee quote #87)

To connect these perceived problems to a possible computer aid we developed a persona representing a typical Swedish technology transfer coach and derived scenarios from it. Using this new set of data we could extract features to see what a suggested aid could resemble. Arguing about the suggested aids we could form an opinion on a computer aids and their pros and cons in a coaching process.

4.1 Persona: Kristina Lejonstad
Kristina Lejonstad is proud to be 40 soon, mother of a 5-year-old girl and happily married. Her career has been rich and she has accomplished most of her childhood dreams.
Today she works as a business developer at a Swedish university technology transfer office. As a business developer she mainly takes the role as a coach and her rich baggage also makes her a good advisor when needed. She takes her position very serious and sometimes she puts her clients need before hers. She meets over hundred new clients a year and a little less than half she continues to meet with. Figure 3 illustrates persona Kristina Lejonstad in meeting with a client.

She commutes to work in her car, a trip that takes roughly 40 minutes during which she tries to work, usually by calling a colleague or to do a follow up on a client. This allows her to leave the office a little earlier than her set working hours.

When she books a meeting it is usually at a current one; meeting with new clients she books either by phone, email or in person. She uses a digital calendar to log the dates and times and a data sheet on her computer to log information about the client. She thinks her system works well but when she is stressed some information will slip. Also when stressed she do not have the sufficient time to read up on the client from her sheet which makes her feel unprofessional.

Sometimes to get all the information right she supplements it at home, though she would rather have it done at the office. But she does it to make her feel in better control for the coming day. She loves her daughter but can catch herself thinking of work while playing with her. She would like to leave the work at the office but are usually worried over something that she forgot or needs to plan.

She has a dream about the day when all information handles itself and she can focus in full on her clients and her daughter. Table 1 shows the specifications of persona Kristina Lejonstad.

<table>
<thead>
<tr>
<th>Current state</th>
<th>Married</th>
<th>1 child (age 5)</th>
<th>Commute, 45 minutes one way by car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current position</td>
<td>Business developer at a Swedish tech transfer office</td>
<td>Meet with 130 new clients per year</td>
<td>Meetings take place in a conference room</td>
</tr>
<tr>
<td>Technical tools</td>
<td>Smart phone, everyday use</td>
<td>Laptop, everyday use</td>
<td>Tablet, seldom used</td>
</tr>
<tr>
<td>Goals</td>
<td>Letting go of work while home</td>
<td>Feeling in control before and after meetings</td>
<td>Have full focus on client</td>
</tr>
</tbody>
</table>
4.2 Future scenarios

In this section, we will present two different scenarios “The meetings” and “Communicating resources” suggesting how Kristina could work in the future.

The meetings

Kristina has a stressful day; she has her calendar filled with client meetings.

Kristina has just got up and now is in her kitchen making breakfast she reminds herself not to access her system from home. She knows that the system will alert her if there are any events that need her attention. She finishes her toast and tea and gives her daughter a kiss on the cheek before she leaves in her car for work. In the car she asks her system for an update of today’s meetings, she gets it read up for her since she is driving. She decides to call her colleague to prepare for a joint meeting they have before lunch. Figure 4 illustrates persona Kristina Lejonstad.

She arrives at work ten to eight to grab a cup of coffee before her first meeting. Her system notifies her on the upcoming meeting; she acknowledges and reads up on her eight a clock client to recall what they talked about last and what actions they decided on. The client arrives and they sit down for the meeting in the conference room after the client is offered coffee from the pantry. Kristina puts her system in meeting mode and the system starts to log. During the meeting Kristina and her client work up a plan of action and settle on a date and time for the next meeting. The systems silent alarm notifies Kristina that the meeting time is about to end and that she has a new meeting shortly, so she start to do a wrap up of the meeting. After the wrap up is done she turns off meeting mode on her system. The next client is already waiting outside in the waiting area for her when she says goodbye to the first client. She takes a quick glance at her system and gets a short description of her next client and can great him properly.

After saying goodbye to her last client of the day she sits down with her system and checks her action list. She adds a few items on the list that she forgot to mention during the meetings and also removes one that she manage to do during lunch. She then checks her calendar and can see the newly booked meetings are there and she feels prepared for the next day.
Communicating resources

It is lunch in half an hour and Kristina has already met three clients. Today’s clients have had some struggling starts on their projects and Kristina offered to aid them in their challenges.

Kristina sits down in her office again after the meetings. She used her system during the meetings and she now looks at the short recaps of each meeting. Her first morning client had a great idea and good energy but needed a team member of a specific profession to get the project in motion. In her system she gives her client access to the profession section. Now when the client have received access she suggests 2 individuals to the client she knows could be suitable.

Her second morning client has been coached by Kristina for over a year and she now thinks it is time to give the client some new perspectives. She accesses her system and assigns the client to her colleague. Her third and last morning client was a new client and Kristina performs the normal procedure of adding the client to the system. Kristina specifies what information the new client needs to add and then sends access information to the client so that the client can add the necessary information about the project.
### 4.3 Suggested features

Kristina today experiences problems in awareness, communication and resources. We propose the following features to be included in full or partial in a future system. Table 2 shows system features and its textual context.

Table 2: System features with textual context (A – Awareness; C – Communications; R – Resources)

<table>
<thead>
<tr>
<th>System features</th>
<th>Textual context</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Can adjust modes to current environment (A)</td>
<td>In the car she asks her system for an update of today’s meetings, she gets it read up for her since she is driving.</td>
</tr>
<tr>
<td>2. Can communicate to user through sound (A)</td>
<td>She arrives at work ten to eight to grab a cup of coffee before her first meeting. Her system notifies her on an upcoming meeting;</td>
</tr>
<tr>
<td>3. Can notify user on events (A)</td>
<td>She acknowledges and reads up on her eight a clock client to recall what they talked about last and what actions they decided on</td>
</tr>
<tr>
<td>4. Can present client information to user (A)</td>
<td>Kristina puts her system in meeting mode and the system starts to log.</td>
</tr>
<tr>
<td>5. Can log a meeting (A)</td>
<td>During the meeting Kristina and her client work up a plan of action and settle on a date and time for the next meeting.</td>
</tr>
<tr>
<td>6. Have situation modes with pre-set properties (A)</td>
<td>After saying goodbye to her last client of the day she sits down with her system and checks her action list.</td>
</tr>
<tr>
<td>7. Can identify actions in a conversation (A)</td>
<td>The systems silent alarm notifies Kristina that the meeting time is about to end and that she has a new meeting shortly.</td>
</tr>
<tr>
<td>8. Can log actions to client (A)</td>
<td>Kristina sits down in her office again after the meetings. She used her system during the meetings and she now looks at the short recaps of each meeting.</td>
</tr>
<tr>
<td>9. Can identify scheduling of meeting in conversation (A)</td>
<td>In her system she gives her client access to the profession section. Now when the client has received access she suggests 2 individuals to the client she knows could be suitable.</td>
</tr>
<tr>
<td>10. Can schedule a meeting (A)</td>
<td>She accesses her system and assigns the client to her colleague.</td>
</tr>
<tr>
<td>11. Have alarm only user will notice (A)</td>
<td>Her third and last morning client was a new client and Kristina performs the normal procedure of adding the client to the system.</td>
</tr>
<tr>
<td>12. Have actions lists (A)</td>
<td>Kristina specifies what information the new client needs to add and then sends access information to the client so that the client can add the necessary information about the project.</td>
</tr>
<tr>
<td>13. Can abstract meeting logs (A)</td>
<td></td>
</tr>
<tr>
<td>14. Have multiple user types (C)</td>
<td></td>
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<tr>
<td>15. Have a resource database (R)</td>
<td></td>
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<tr>
<td>16. Have specific interfaces for user types (C)</td>
<td></td>
</tr>
<tr>
<td>17. Have user to user communication (C)</td>
<td></td>
</tr>
<tr>
<td>18. Have user specific permissions (C)</td>
<td></td>
</tr>
<tr>
<td>19. Can add new clients from schedule and log data (A, C)</td>
<td></td>
</tr>
<tr>
<td>20. Can input from external source (C, R)</td>
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</tbody>
</table>
Discussion

This work comprised 17 interviews with technology transfer coaches working in the Swedish University technology transfer environment. At the onset of this thesis, we had prior experiences of the technology transfer setting. The primary investigator is a coach at InnovationskontorEtt and, accordingly, a somewhat subjective approach was taken in writing this thesis. Focusing on Swedish University technology transfer environments resulted in interviewing fellows at other technology transfer offices and business incubators with close connections to Swedish Universities.

One of our first observations from the interviews was that coaches generally do not use computer aids during coaching meetings. The meeting is generally focused in full on the coachee and some notes if any. With this fact in mind, we saw it as important to widen the perspective; what daily problems does a coach face and what is the general information need to fulfil commitments?

Our future scenarios envision how Kristina will work in the future. We can see that she is using computer aids in new situations. At work, her coaching process is mainly intact. We envision that Kristina in the future interact more through check-ups and amendments. We do see a bigger trust in the systems; Kristina knows the system inform her about the upcoming meeting and supply her with timely client information. We can also see some new ways of allocating resources that Kristina uses.

We would argue that Kristina acts more composed and controlled with the new computer aids – systems that acts as one and gathers the information that Kristina needs. The system monitors Kristina, voice and environment and able to adjust to handle her information in a precise manner. Kristina has ubiquitous access to this information when she is both in the office and on the run. This system can alert her on situations that are urgent or things that need Kristina’s attention. And foremost the system is not interfering with her coaching process.

A conclusion of his thesis is that Kristina can be aided through the use of computer aids in her coaching process. Her problems and needs were classified in three major areas; awareness, communication and resources.

Kristina is aided in awareness, that is, helping her to focus on meeting topics and allows for easy information input and output in daily activities. Kristina is aided in communication, that is, support to transfer commercialisation knowledge to the client. Moreover, Kristina needs support in accessing and delivering resources to her client especially in terms of team recruitment. For a future system to be purposeful, we suggest 20 features to be included in full or partial. We have stated which problem areas the features mainly are connected to; features that can have
multiple uses. A future system should leave possibility for the coach to be flexible since the transfer coach is agile and the system should be able to adapt to the coach’s environment and state. The following is a discussion on possible system features:

**Main features**

1: Can adjust modes to current environment (A) 
   *e.g. when driving a car*

7: Can identify actions in a conversation (A) 
   *e.g. a conversation containing “contact the factory in china”*

9: Can identify scheduling of a meeting in a conversation (A) 
   *e.g. a conversation containing “let’s have next meeting on the 6:th of mars at 10:am”*

8: Can log actions to client (A) 
   *e.g. a client says “I will contact the factory in china”*

10: Can schedule a meeting (A) 
    *e.g. Adding the meeting to calendar*

13: Can abstract meeting logs (A) 
    *e.g. Identify meaningful sentences and omit small talk*

19: Can add new clients from schedule and log data (A, C) 
    *e.g. Pre-set data fields with client information*

Features 1, 8, 10, 13 and 19 are the main features and suggested to make the system able in terms of collecting and presenting the correct information to the coach. These features implicate that a future system should be able to process data from various sources. To allow these features to be effective the system will need to process knowledge on coaching processes and routines.
Support features
6: Have situation modes with pre-set properties (A)
es.g. meeting, conference, lunch

12: Have actions lists (A)
es.g. contact factory in china, call client at 3pm

14: Have multiple user types (C)
e.g. coach, client, administrator

18: Have user specific permissions (C)
es.g. client can only access the profession section

Features 6, 12, 14 and 18 are supporting features that have the role to complement
the main features. The system needs personalization in order to be of use to more
than one user. We have seen that the technology transfer coach today criticizes
rigid system implementations. Allowing the user to control the system will give
coaches more confidence and acceptance for use. Support features we further see
to be implemented to build additional functionality are the following:

Secretary features
2: Can communicate to user through sound (A)

3: Can notify user on events (A)

4: Can present client information to user (A)
es.g. clients name, project, last date of encounter.

5: Can log a meeting (A)
es.g. collecting a conversation

11: Have alarm only user will notice (A)
es.g. through a haptic device

Features 2, 3, 4, 5 and 11 are secretary features and suggested to relive the coach
and increase awareness. However, due to the role of the coach a Secretary
function is not always applicable to use. Considering trust, the joint meeting is
taken place between two individuals and it is worth mentioning that using these
features can have a backside if they are not communicated properly to the
coachee. Therefore, it is of importance that these features are implemented with a
high security level. Further, since these features communicate with the coach they
have to be non-intrusive.
We need to give the coach with effective communication tools. Our study shows that today’s tools for communicating are problematic and we suggest the following system features to improve this:

**Communication features**
16: Have specific interfaces for user types (C)
   * e.g. client have direct access to profession section and educational information

17: Have user to user communication (C)
   * e.g. coach can leave a message to client

20: Can input data from external source (C, R)
   * e.g. collecting data from web forms

For the coach to be able to communicate well with the coachee, we propose features 16, 17 and 20. We believe that giving access and allowing the coachee to connect with the system will lead to better communication. Further, this can unburden the coach in adding certain data of which the coachee possesses.

**Resource features**
15: Have a resource database (R)
   * e.g. a collection of projects in need of competence

Our study has shown extensive resource usage among the coaches. We propose feature 15 to support the coach in having the resources directly accessible in the system. Allowing the coach to get an easier access to resources, such as entrepreneurs looking for new project and seed money would increase the rate of successful commercialisations.
This study was exploratory. A qualitative research method, Grounded theory, was therefore chosen. Since grounded theory studies are open, it is – at the onset of a study – difficult to say what type of result is obtained. The result in this study was satisfactory, especially for future work, where new ways of advancement where identified. With Grounded theory, researcher preconceptions can be a problem. For this study, this can be a problem due to that the primary investigator is having the same profession as the objects of the study.

Our interviews went, in general, well but there were some initial problems with the time allocated for the interviews. Along the way the interviewer grew more confident and could achieve greater control of the interview. We diversified our interviewees, interviewing only one coach from the same office but still withholding our initial base of Swedish technology transfer environment offices. This gave a good overview of how the general technology transfer coach in Sweden is working. To mitigate investigator bias during the interviews, the interviewees were initially told that the interviewer was a student at Linköping University. Further, the interviewer was well understood of the problems with preconception (Dalen 2008). Interviews were held by phone and recorded and this could lead to some confidence concerns (Basson 2005).

Developing a persona was something that emerged throughout this thesis. Following the path of first getting to know the users through interviews and working with coding, led us to a persona description we felt was true to a type of technology transfer coach. Initially a storyboard was planned but omitted. A storyboard had to include some view of how the persona should interact with the system; and this is not something we would like to specify in this stage. Instead we leave the “How” and “What” in system interaction open.
6 Conclusion

This thesis studied the work of technology transfer coaches exploring their information needs. 17 interviews with coaches working in Swedish University tech transfer environment were made to investigate problems and needs in the coaching process.

The study indicates that the coach perceive problems in the areas of awareness, communication and resources. Awareness is the general worry to have the correct information saved and accessible in the right time and the ability to have focus in a coaching session. Communication is the information exchange between the coach and coachee and the quarrel to communicate the technology transfer process. Resources is perceived as the coach sense of insufficiency in the assistance of the coachee and in particularly team assembling.

We conclude that there is need for computer aids in the coaching process. Such systems should support the above discussed problem areas. Awareness, that is aiding the coach to focus on meetings and allow for easy information input and output in daily activities; communication, hence aid the coach to transfer commercialisation knowledge and allow for coachee to be a part of the information exchange; and lastly support resources, aid the coach in accessing and delivering of resources to the coachee especially in terms of team assembly. However, it is imperative that the computer aid does not interfere with the current coaching process.

Future work includes observation study of the technology transfer coach to validate the problems and needs. Study on how environmental factors connect the problems and needs and how changes in the coach environment could be of benefit.


SWARTZ, M., 2013. *OIA project manager*.


Glossary

Coachee – Person receiving coaching
Coach – Person that coaches
Computer aid – System containing a computer that acts to assist in some way
Memo – Written note of progress, usually time stamped for retrospect
Memoing – Writing memos continually

List of abbreviations

SMART – Specific, Measurable, Achievable, Realistic and Time bound.
PURE – Positively stated, Understood, Relevant and Ethical.
CLEAR – Challenging, Legal, Environmentally sound, Appropriate and Recorded.
TT – Technology transfer
UTTO – University technology transfer office
NABC – Need, Approach, Benefit/cost and Competition
På svenska

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