Developing the knowledge-developing knowledge

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Introduction

In chaos theory, quantum leaps in development happen by introducing a singularity. Many will argue that the singularity in knowledge management is the art of effective collaborative thinking. When different multidisciplinary fields meet, they usually need a robust knowledge-development process to guide their creative collaboration towards mental fusion in their search for excellence. The paper presents a method for facilitating a collaborative knowledge development process for teams.

The concept is being developed and tested trough research in collaboration with; Organizational Development Alliance (ODA) as, SINTEF Industrial Management, Experts in Teams at the University of Trondheim Norway, Oasis Idea-laboratory, Statoil and several small knowledge intensive companies. They have projects where the methodology is being tested and further developed.

About the paper
This paper and the models it contains are all abstractions of the tacit knowledge developed trough reading, dialogues, experimenting and testing. This tacit knowledge is again an abstraction of the phenomena creative collaborative knowledge-development that we probably newer will have the ability to understand completely. But like learning to swim some practise on land and some tricks; like walking out and swimming back are good. The goal has been to present a concept for implementation in knowledge-intensive projects and organizations, but the finished product is probably some years ahead.

About the papers structure
The paper starts with introducing the four stages in the knowledge development process. These stages are based on a matrix made up by known and un-known goals and strategies.

The four stages in the development process are like furnitured rooms designed ready with a different purpose, atmosphere, and pool of methods, rules and a state of mind. In chapter eight a wide register of methods that can be built inn to the work structure dependent on the needs of the actual process is presented. The work structure in this paper uses teams and teamwork in a great extent. Theory, tips and lessons learned about team collaboration in this work structure are presented at the end of the paper.

When do we need new knowledge?

Doing things for the first time acquires some new knowledge newer seen before. Creating knowledge is a human core capability; our fragile body has been dependent on a vast amount of innovations to survive in nature for thousands of years. The intellectual playfulness and creativity of humans have been manifested trough cave paintings that date back 15 000 years (Lascaux-cave -France). Knowledge development has always been a central part of our culture.

> *We humans are left with the job of generating the knowledge needed to fill the gap between what we know, what we doubt and don't have a clue about.*

Technology is helping us to automate standard work-processes away from humans in an ever-increasing rate. Automation of standard work processes where both the goal and the strategy are exact, force humans to work with the un-known. We are left with the job of generating the knowledge needed to fill the gap between what we know, what we doubt and don't have a clue about. But even in this sphere of the unknown, technology is helping us in an ever-increasing rate. Then as the tool witch does as it's told within the rims of the knowledge paradigm it has been developed to serve.

Organizations are becoming knowledge-creators. The .com bubble-burst learned us a lot about knowledge-based procurement. Companies worth zillions "disappeared" when people went home to sleep or quit to work for a competitor. With leased PC's and rented offices the companies were only priced by the financial potential of their idea. The synergy of a collective brain can produce a CD with content worth millions. And who owns these ideas and all this knowledge?

Creating knowledge means thinking thoughts not though before. But our culture is built around structure, hierarchy and byrocrosy. Trough education we are trained to learn and utilize the well known. A teacher has problems grading thoughts occurring for the first time, but is it right to focus so completely on old thoughts? Where will we learn how to think and do the un-though-of? Breaking through to new paradigms of knowledge like Newton's' Physics and then to the next, with Einstein's Theory of Relativity takes something not taught at school. The ability to transcend trough to the next knowledge-paradigm or level of consciousness by utilizing the collective knowledge many people is the core theme in this paper. I believe the ability to transcend to new paradigms of knowledge can be trained, and it has always been the hard core of human nature. Professor Per Arne Bjørkum at the College of Stavanger has written a good book on knowledge paradigm transcendence "Annerledes-tenkerne" – *The people who think different*. He goes trough the process behind every major scientific break-trough in modern history.

The knowledge-creating knowledge presented here is an innovation engine and it can always be further developed by using it on it self. This version is probably primitive compared to the ones we'll have after more people have worked on it. Every organisation, every team and every human being needs the ability to generate and share new knowledge. This is the search for the knowledge, which can help us develop this

ability. The methods and theories here can always be altered toward situational specification and further developed as new knowledge fusions in our exploration.

The work-structure:

This is the matrix that started the work with developing workshops and methods for generating the knowledge needed to go from unclear to clear goal and strategies. The matrix has been a good help when diagnosing how far the project has come and what to do to get the project to progress.

Fig.1

Unclear	If the goal is unclear but the strategy is clear, something is probably wrong: *We don't know where we are heading but we seem to be earning money doing what we do*. It will probably be a good idea to move into stage 1 The Life-Space Workshop to find ways of getting even better.	**1 The Life-Space Workshop** **2 The Goal Workshop** Something is wrong, we se an opportunity. Somebody has an interesting hunch, we need a new product/idea, we need to develop our selves but don't know what or how.
Clear	**4 The Planning Workshop** The goal and the genius way of getting it into life is clear, but we need the cunning plan for the implementation.	**3 The Strategy Workshop** The goal and intention is clear, but we need a genius way of getting it into life.

Goal (left axis label)

Clear   **Unclear** (bottom axis labels)

Strategy

1 The knowledge development macro-cycle

Here is an overview of the knowledge-development-process. To work trough a stage the team works trough the three states of mind (see under) in each workshop. To get trough a stage can take up to several rounds trough the three states of mind in the workshop. The instructions for staging each workshop are given under each of workshop description. A rough process of methods for guiding the work in each workshop and setting the right set of mind is given under. Product implementation will not be an issue in this article.
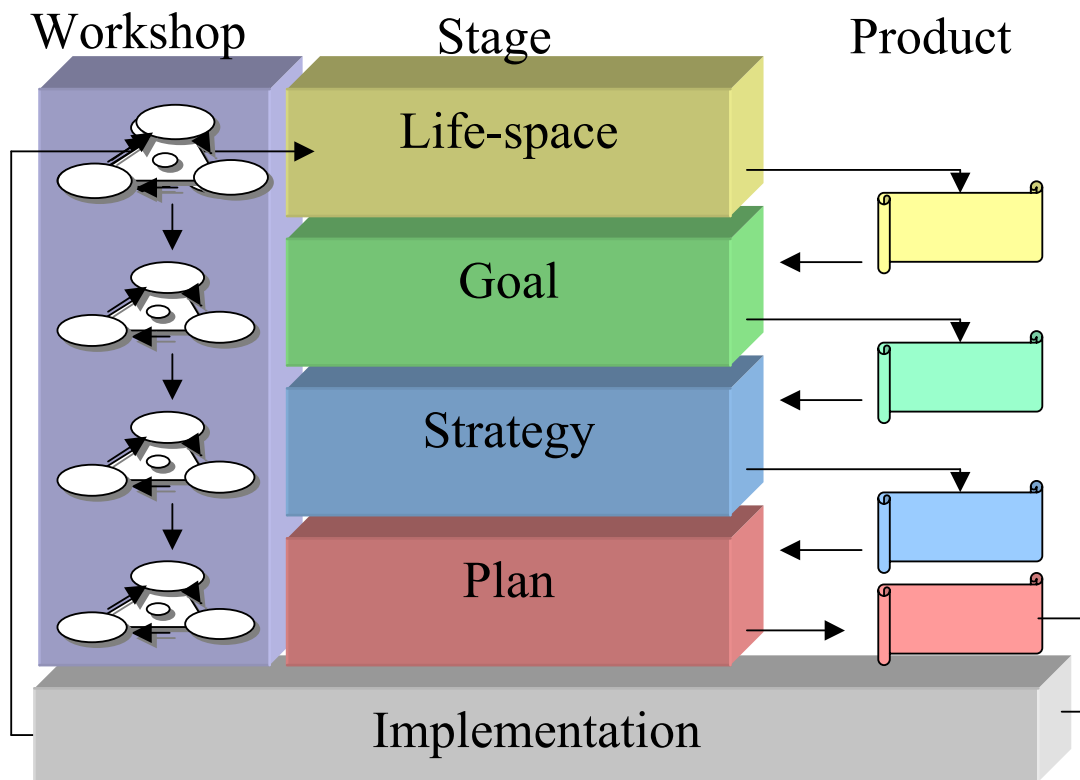

Fig.2: *The concept behind the knowledge development macro-cycle*

Entering the process:

When the new project starts up, the birth of the project should happen in the visionary first stage; Life-Space. No matter how well the project manager thinks the goal or strategies have been defined in advance, the whole team needs to do this journey together beginning at the top. That collective journey enables the team to generate high quality solutions along the way. It is probably a bit naive to think that the management can have an optimal understanding of the task and the best strategies without utilising the knowledge of all the team members first. But it is difficult to bring people together to discuss the unknown; therefore we need a robust but open work-structure.

The facilitator:

A small facilitation-team is selected for facilitating the workshops; they need to know the wide range of methods, the goal of the workshop and understand basic team-dynamics to guide the process. The role of the facilitator is so important and difficult that it will need an own paper to describe. But he knowledge presented here will be a good help in getting started. The facilitators usually have their own style. Research is being done by the Kaja Raa Storaker at the University of Trondheim NTNU (Norway) to explore this issue more in detail. Some core issues abut the facilitators role is described in chapter 7.

2 The three states of mind inside each workshop
-*The knowledge development micro-cycle*

Each stage and its belonging workshop has its own feeling or environment, from the dreaming visionary in the first to the stone cold calculating strategist in the last. But each stage has a changing environment inside which goes from the same visionary start to the calculating strategist at the end. The difference is that the dedication for the different environments evolve trough the workshops from abstract to concrete. Here is a presentation of the three states of mind in a workshop.

Creativity literature roughly divides the creative process into three different stages which is built into each workshop:

The sets of mind are Opening trough Soaking, Closing trough tidying/theorizing and gathering inspiration for transcendence trough relaxing and freedom of thought.

1. **Explore**
   We start with soaking in the problem/opportunity/phenomena to open it up and get to know it. This is not a phase for wrong or right questions and answers. It's a phase for openly and curiously getting to know the case like an explorer charting new territory. Fly around and gather inn the richness of information related to the topic. Intuition, inspiration and dedication are essential for "correct" navigation in this phase. We want to get to know the whole life-space of the phenomena. This makes it
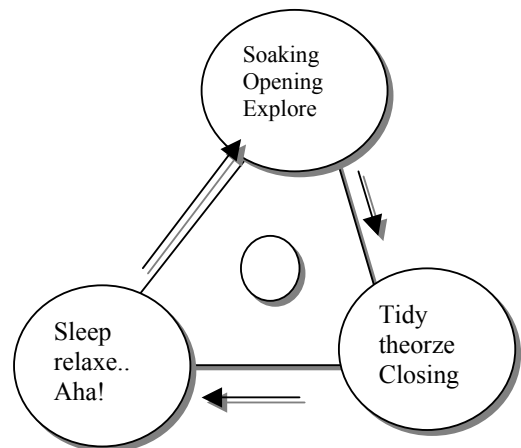
   important to bring together people representing a wide enough range of capabilities and functions to generate a "mirror" of the real life phenomena. Since the teams are trying to transcend beyond the well known, intuition is essential. This phase is a dance between logical deduction and inspiration driven intuition. Opening and opening the

Fig. 3: *The micro-cycle*

envelope of understanding. Use The path to FLOW as guidelines in how to set the atmosphere for this phase.

> **Methods:**
> - FLOW (se under chapter 9)
> - Using De Bonos thinking hats here is good: white, red, green, and yellow hats are welcome (see under chapter 8).
> - Brain sharing & Brain flowing (see under chapter 4).
> - Role playing, theatre and performance (se under chapter 8).

2. <u>Analyze & Concretize</u>

After the exploring we go over to the second state of mind where the teams analyze the big pool of knowledge generated in the first set of mind. This is a time for tidying and analyzing the richness down to early stage theories and thesis. If the phenomenon under investigation is complex enough, this work will be very difficult. If it goes to easily, somebody is usually not saying what he or she believes. This is not a stage where everybody has to agree, that can be very dangerous for the project. The disharmony in the conclusions will be brought into life when the project is implemented. It is also usual that a disagreement in one stage drives the knowledge creation process to transcend up to a higher level of understanding. This phase is usually very stressful for the participants because the richness of information generated by the first phase does not make sense. A lot of things don't fit together and people are disagreeing. This collective energy-build-up is essential for gaining enough momentum to connect individual's basic feelings, motivation and dedication with the task at hand. It is still a game but the players are now dedicated to the core, inspiration and intuition makes brainwaves dance in crazy collective tangos.

> **Methods:**
> - Jigsawing (see chapter 4)
> - De Bonos hats (green, black, blue, white and red, see chapter 8)
> - Activity generation (see chapter 4)
> - Bob Dicks FIDO method (see chapter 4)
> - Role playing, theatre and performance (see chapter 8)

3. <u>Incubation</u>

The important, but usually forgotten phase; incubation. Take a break from all the chaos and do something completely different. Do some physical activity; walk the woods, sleep, shower or what ever makes you relax. Talk people you never thought could contribute to the project. Solutions and ideas often comes while the conscious part of the brain is "busy" doing something monotony brainless work like driving, sleeping, showering or walking. One theory is that this laid back busyness puts the conscious part of the brain in a mode, which easier can communicate with parts of the subconscious brain doing complex problem-

solving. The start of this phase should have nothing to do with the project; the end of this phase should have a lot to do with the project but from a different point of view. If your blue-collar, talk to the white collars, if you're a white-collar talk to the blue-collar. Get inspiration and a lateral point of view by searching unorthodox places. After a while everybody come together for a new session in faze one. The interesting question is if the teams are ripe to move on to the workshop for the next stage, ore if they have to do another round at the same level.

Methods:
- Taking a short break to eat or get some air, going to bed for the evening.
- Sleeping, walking, playing music, meditating, bathing/showering…
- The workshop takes one hour free to eat lunch.
- Talking to strangers about strange things, painting, doing improvisation acts like theatre, performance, role-playing and storytelling.

Debrief and reflection
After each session, make sure the teams have enough time for a debrief- and reflection-round. Here the teams discuss how the day went, around the three points of view explained in chapter 7. They can start with writing down their own thoughts about implementations they did today, how the day went and which implementations they would like to do to the next session. Use the Think and Share described in chapter 4 and make sure the teams focus on the dynamics between the three points Product, Structures/methods and personal relations.

Lessons learned
The idea is to move strategically from one mental room to another dependent on how far the process has come in each state of mind. When progress has come to a halt for a long enough time (there is no fixed time for how long this is), move on to the next state of mind.

3 The characteristics of the different workshop-environments for each stage in the development process.
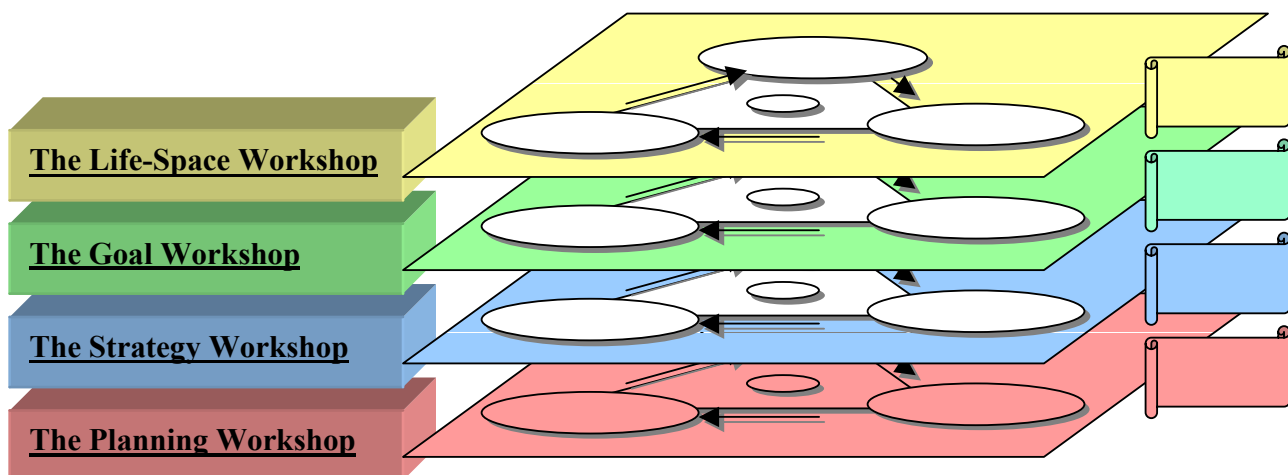
Each workshop is designed to stage for the development of knowledge needed to move down form the visionary ideas in the Life-space Workshop to the concrete implementation-plans developed in the Planning Workshop.

Workshop 1: The Life-Space Workshop -*Getting to know the cosmos of infinite opportunities*

Most projects come to life as a hunch for an opportunity or an observed symptom on a disease. In this early stage, most of the strategic decisions are made. This is a very delicate phase where there usually are few involved in the projects most important decisions. When so few people are involved a lot of important knowledge is missing around the table. In extreme examples this means that the projects are put together and designed in a knowledge-vacuum. The knowledge that comes into the project after, will work fulltime to mend the flaws instead of thinking out the best project. The mission of this workshop is to force the contenders and the projects to stay in a pondering, exploring and collective wondering state of mind for a long time. The Norwegian multi medium artist Anne Berntsen is a central contributor in the design of this stage in the knowledge development process. Her advice to the reader is: *never leave the first phase, bring it with you wherever you go and great thing will happen*.

The workshop usually starts with a pondering story about the initial hunch, how it came up, a description of it, but no conclusions! The goal of the session is to generate a complex wondering about the topic. It is extremely important to bring

the whole phenomena into the workshop. This means that people that know about the different disciplines or represent the diversities of functions that make up the phenomena must be together. Ore else the workshop is only handling a part of the phenomena and the forgotten elements will kill the solution when it meets reality.

Who is invited?
The hunch is a fragment of a bigger unseen vision, essential for transcending to somewhere new and handling the phenomena the right way. The originally invited people search their networks for interested people and after some screening and selection people come together for a big Hunch Workshop.

> *The hunch is a fragment of a bigger unseen vision essential for transcending to somewhere new.*

This process is designed to handle the work in the first workshop where both the goal and strategies are unclear or unknown. It handles groups from 4 to 80 people at a time. Marvin Weisbords Future Search Conference has been a central inspiration for the design of the workshop in this stage.

The mission of this first round is to generate a collective complex understanding of the life-space surrounding and making up the phenomena. We are not looking for goals or strategies only a greater and very divers wondering about the topic. This is not done trough discussion about right or wrong, but trough dialog and listening. Creativity and imagination is important here. Artists, philosophers, writers, painters are people witch often can give the process a push in the right way. The worst critics of the standing system are usually fantastic resources trough out the process. They have done a lot of thinking and are usually a great misused pool of knowledge. Using them means getting the knowledge needed to design high quality results and a commitment for the implementation process. But be careful that they dominate too much, or are used as hostages under the tyranny of the mass.

Concrete goals and strategies witch come up here are written down and illustrated on an A4 paper before handed over to the facilitator. This is then put in an envelope with team name and marked with goal or strategy. The goal/strategy envelopes are handed out to the teams they belong to in the goal/strategy workshop.

The products of this workshop must be taken care of in a medium with the ability to communicate the richness of the knowledge generated from these workshops. Videotaping, photos of people and illustrations are taken care of, written out and organized as a basin of knowledge handed over as a platform for the Goal Workshop.

Workshop 2: The Goal Workshop -*Hunting for the defined intention*

The Goal Workshop

Having a good goal is half the work. In this workshop the goal is to develop the goal(s) for the project. Goals are usually in one way or another tied to the ground. And when doing things for the first time, it's very important to keep in contact with the ground when you reach for the sky. In this round we use the knowledge form the Life-Space workshop to develop a concrete mission of goals and intentions. Open the team's goal-envelopes and tape them on the walls surrounding the team, again be aware that these ideas are only fragments of the genius goal developed in the end.

Bringing inn the knowledge from the first workshop is essential, but now the focus is to out crystallize a well-defined intention. All work through this session is purely localized around the search for the meaning-full goal. It is important to push up towards the highest level of understanding here. Usually the teams find several crude low level goals and miss-use their energy in endless discussions over which is worst or best. Instead energy must be generated in the search for the meta-goal hovering over the level of consciousness where the first goals came from. Stimulating and motivating individuals and teams to not stop in their search upwards to higher levels of collective consciousness is the most important role of the facilitation. Usually it is enough for the facilitator to give the impression that he/she sees a bigger picture and the teams will search and build one.

Concrete strategies witch come up here are written down and illustrated on an A4 paper before handed over to the facilitator. This is then put in an envelope with team name and marked with strategy.

Use the methods described under and make big wall paintings, role-plays and stories to illustrate the ideas and thoughts of the teams. It is very important to make rich models and descriptions of the level of consciousness so that ideas can be shared and new ones developed on the platform of old ones.

The products of this workshop are videotaped, written out and organized as a basin of knowledge handed over as a platform for the Strategy Workshop.

Workshop 3: The Strategy Workshop - *Hunting for the right path*

The Strategy Workshop

Scenario planning, prototyping, researching. Here it is essential to generate a vast amount of possible and impossible ways of getting the goal into life. Strategy generating has to be done in dance between the crazy ideas and a close communication with the reality the solution is going to interact with. This schizophrenic state of mind is essential for coming up with the genius solutions that bring knowledge to the next paradigm of knowledge. Open the team's strategy-envelopes and tape them on the walls surrounding the team, again be aware that these ideas are only fragments of the genius strategy developed in the end.

The usual mistake at this point is to embrace the first idea for how to get the goal into life. Usually this is only one of an infinite spectre potential solution. The main goal of the Strategy Workshop is to generate a wide spectre of potential solutions and use them to interact with a copy of reality or reality it self. In that way it is possible to play along with reality and the crazy ideas of the human brain to develop genius solutions. So first in Explore mode find all kind of crazy strategies, and in Analyse & Concretise mix the strategies with reality or a mirror of it. Then take an Incubation brake and start over again.

Just like in the goal workshop energy must be allocated towards the search for the meta-strategy hovering over the level of consciousness where the first strategies came from.

Ask for 50 ways of getting the idea into life, put them up on the wall. Start looking for the quality and the flaws in the ideas. Then start the process of developing the synergy solutions built on the basis of 50 ideas. The strategies must be tested and designed together in a functioning whole.

The products of this workshop are videotaped, written out and organized as a basin of knowledge handed over as a platform for the Planning Workshop.

Workshop 4: The Planning Workshop - *Generating the ultimate plan*

The Planning Workshop

re years of research and development have given us a lot of methods and skills. This paper will not go far in proposing alterative ways of doing the planning of projects. Total quality control and project management gives us valuable help when things don't change too much and the uncertainty-factor is low. But if a lot of things are uncertain and the surroundings are shifting rapidly, other strategies can collaborate with the traditional project planning methods.

Utilizing all the knowledge generated in the previous workshops open for interesting possibilities. When doing things for the first time it can be good to come prepared. High quality improvisation comes to the prepared mind. If the projects future is complex with multiple basins of attractions, scenario-planning can be a good tool. Like well-prepared mountaineers bring clothes for every kind of weather and equipment for every thinkable obstacle, the project teams can also utilize a well-prepared approach. When planning with a complexity approach using some game theory and intelligent weather forecasting, the teams can get help to improvise for the optimal approach to a dynamic reality.

The products of this workshop are videotaped, written out and organized as a basin of knowledge handed over as a platform for the teams who do the implementation.

The workshops don't stop here but can be used all the way down to the discussion the workers have about where to have lunch. This is a genetic description.

4 A rough standard workshop-method for working trough the stages:

An example of a standard process built up from methods and tools to guide the teams' trough their knowledge development process.

This process can be used in all stages because it does not manage the content in the process, only the structure in which the content handled. For content handling, look to the workshop descriptions over. Because this is a general description the user must do the important job of knitting together the knowledge here to fit the challenge at hand. The use of time is essential in some of the workshops. Giving the teams and individuals short time to produce results can in many times be very effective. Especially in phases where people have a lot to say, limited time trains people to come to the point faster. When letting them go afterwards for deep intellectual dives they will bring the goal orientation from the first sessions.

Facilitating style:
The goal should be to facilitate the process in a style of improvising according to how the work is going. It is impossible to make one design-fits-all, but this one is a general example to start the journey. The facilitators and best of all the team members should know and master a great range of methods and processes so they can lead themselves. This is an introduction to some methods and processes for teams and facilitators to master.

Tips:
This standard method uses mostly language and written words as the communicative medium. A medium that utilizes the home turf of the theoretical academic, but can be a dangerous clamp around the foot of the more bodily oriented individuals. A similar standard-process can be designed around richer ways of communication like theatre, dance, painting and storytelling utilizing the bodily knowledge of the contenders. Organizers and participants should go a very long distance to provide the individual with a way of communication they master. It is essential in creative work to master the basic elements in the environment for improvisation and a state of flow can be reached. The workshops under can usually be modified to fit other forms of communication than the oral dialog or discussion.

Reflective writing (combination)
For generating input the for the workshops described under, the team members can be asked to write their personal reflections about the topic on a bit of paper.

They get two minutes to do this, then one minute to under-line under the most important aspects. Then the sessions under are started.

Brain sharing (1 Explore)
Anne Berntsen's Timesharing method for good listening and conversation has been a central inspiration for this method. It is a modification of the Indian Talking-Stick. The workshop can take place in a big room in a cafe style with 4-5 chairs sharing one small table filled with paper and pencils and a flip over. But sitting outside in nature or in a big tent can be very fruitful as well. At one end of the room there is a big white-board and an overhead. The hosts start with welcoming all the participants as experts in the phenomena at hand. The participants stand up and say their name, their interest in the phenomena and something they wonder about.

This is a method developed for early stages in teamwork. When you want to drain the members for knowledge around a theme and build a common platform of shared knowledge. Each member use 3 minutes to give his or her view of the theme. This goes around the table for at least three rounds. After three rounds give the team 5 minutes for an unstructured discussion. If the theme is very abstract or multidisciplinary, the rounds can go one for hours and days. If several teams are sharing a theme in parallel, they stop to share common ground and chaos factors every third round. If the team is working alone, they make a presentation of their status and in both circumstances the presentation is filmed.

Everybody take notes under these sessions, these are together with the film and illustrations used in the three-minute sessions, digitalized and sent out by e-mail to all team members. Between each session all team members makes a one-page memo and a one-item illustration of the main aspects in the theme. They all share this memo by e-mail with the rest of the team and their network. And if time, they make a new consensus memo based on all the memos written, and send it to the other team members and their own network. Analytical brainwork and searching in the members network is essential in the work with the memos.

Lessons learned:
This is a powerful way to get people to listen to each other; it is a democratic way of sharing time. People, who say a lot without getting to the point, learn to get to the point faster. People who only communicate the essence of their thoughts don't need to fight for an envelope of attention. They can say pass when they are finished or have noting more to say. Some people say that this is a very structured and complicated way of communication that destroys the ability to associate and jump into a fruitful discussion. But others say it is essential for sharing knowledge and developing common ground. It is good for starting up groups and learning them to communicate in an including manner. It has been experimented with groups that first start with this way of communication and then are set free and control groups who start a free discussion. The first group is usually better at

searching for qualities in other team members and better at listening and building on others thoughts. The first group will some times return to using the method when they see that it will help their progress later in their work.

Tips for the facilitator:
Be strict an tell the group that this is not a discussion, tell them how much time they have and use a stop watch as a "talking stick" so the talker can track their own time. When people get ideas, questions and associations they write them down, this is not a discussion. Silence is loud and works as a source of creative power and thoughtfulness, embrace it. Nod and smile to the person talking, make them feel the importance of their valuable contribution.

Brainflowing (1 Explore)
This is a session which looks a bit like an ordinary brainstorm only everybody has a pen or pies of chalk each. When each team-player uses a different color its easy to track who wrote what when asking about what it meant. The mission of this method is to drain the team of all the points that came up in the previous session. Everybody write words and sentences to describe the issues discussed before. Drawing lines between and building on others work is encouraged. This method gives the team a greater sense of freedom and ability to build on each other than the ordinary brainstorming method does.

Lessons learned:
Think of silence as a period where people dive deeper into their minds to bring up valuable pearls from the bottom of their creative souls. After this session the group can go back to Brain-Sharing about what they wrote and understood about what is written on the wall.

Tips for the facilitator:
Use a big wall, put on some music, no talking. It is important to encourage free and open minded intuition mixed with good old association. Give the group time, also here silence and nothing happening for a while is good.

Jig sawing (2 Analyze & Concretize)
In this session each contender sit together with their team and make one A4 sheet of paper for every main aspect from the Brain-Sharing dialogs and Brain-Flow. They fill the paper with illustrations and words suited to communicate their aspect. Between one to five papers of points per team-member is usual. All the illustrations are taped up on a wall and explained to the others. No discussion about right or wrong is allowed, but clarifying questions are welcome. When all the sheets are on the wall the puzzle starts. Now the team searches for aspects, which are related or the same, and organize these together. Topics that are different or contradictory are put apart and they all are knotted together with lines of relations and are tagged with explanations. The team then has a dialog about

the jigsaw and prepares a five to ten minutes presentation for the other teams. In this presentation the team can use theatre, music, art to explain the jigsaw puzzle. This session must be filmed, words on a paper alone is not capture able of the richness of these presentations. The movie is sent to all contenders and is used as input to the next round.

Lessons learned:
This is a powerful way to give the team a common set of communicative symbols to build a common platform of knowledge about the phenomenon. The teams design their own common abstractions of the phenomena. It is very interesting to see how easy it gets for the individuals to communicate rich and delicate ideas and thoughts just by pointing and moving simple symbolic objects. Its like LEGO, they start building and constructing a common platform of knowledge that easily can be communicated to others outside the team. Especially in multidisciplinary teams it is important to leave the mono disciplinary-specific terminology and generate a common generic terminology that the whole team can use. The puzzle is the building processes of this common terminology.

This is a way of building the "real world" in front of the team so they can start to act strategically with it in the planning process. The idea is to build a common model of the phenomena. Some times a written rapport or paper and drawings are good, other times you need a computer generated 3D model, a theatre play or maybe a movie.

Team members can argue for hours and years with their abstract disciplinary-specific terminologies without having any progress in their overall work. This method increases productivity in many processes where things are unclear and multi-disciplinary.

Tips for the facilitator:
Use enough time and let the team discuss all sides and relations between diverging ideas and common ideas. Use tape which is easy to move and run between the teams and motivate them to investigate different aspects of their models. Return to Brain-Sharing to suck out everything possible living inside the brains and the ideas of the teams before moving on.

Activity generation (2 Analyze & Concretize)
Here the team-members make one A4 sheet for each activity they mean will be helpful for bringing the process to the next level. This method looks like the jig sawing method but ends different. When the teams have had their presentations of activities all team presentation sheets are put together in one big activity map. They organize the activities under categories: Can be done at once, will take some time, but no problem, and will take some serious action. The teams can then do a new round to organize the activities even more. It is important to start focusing on the logic of the activities rather than the logic of the method. Do what needs to be

done to get on with the work.. Organize a Think & Share (see the last method in this chapter) with the question: *What do wee need to do to get further?*

When all the activities are organized all participants take some red and yellow note-its and write their name and contact in formation on the notes. Red note-its are places on activities they want to champion, and yellow note-its are used for the activities they want to be a resource in. The note-it owners in the same "district" make an appointment for their first workshop to put their task into life. Shared workplaces on the net like BSCW are made and first work meetings arranged. When coming together in project meetings it can be effective to use Bob Dicks FIDO method (see under).

Lessons learned:
This is a way of handling the important phase of getting talk and big words into hard action. It is very important to get people to come up with activities that are realistic without letting go of the main goals. Some times the most important activity is planning how to develop good activities. One cannot underestimate the importance of following up the activities generated. Some times the activities generated are so complex that they will need a goal and strategy clarification process before they can begin with the production of concrete results. That means that the activity it self is complex enough to enter a new Life-Space Workshop.

Tips for the facilitator:
Make sure all activities are collected and put own in writing, inspire the participants to go far in searching for good ways of getting further. Of course if this phase is very critical the facilitator can run the theme *activities* trough the design-process.

Bob Dicks FIDO model for arranging an effective meeting (Combinaton)

Bob Dick has written a handbook called: "Helping groups to be effective; skills, processes & concepts for group facilitation". Together with other useful methods, you find the FIDO method for effective team meetings. It organizes **F**eelings, **I**nformation, **D**ecisions & **O**utcomes in that priority in a robust meeting structure.

> **Conflict:**
> **F**eelings are the basic process of any human activity. *Until feelings have been dealt with, rationality cannot be assumed.* Feelings are dealt with by Listening, Acknowledging, checking and carefully Enquiring at the end. When dealing with feelings the owner of them is never wrong. They are always a product of a dynamic interaction of many factors where many are unknown. To ask these simple questions it is possible to track a growing conflict back to peace.
>
> - Action: *Did A say or do something you reacted on*?

- Outcomes: *Does what A said mean that you have to do something you want to or you'll not be able to do something you want to*?
- Beliefs: *Do you think A has special motives for saying this*?
- Actions: *What do you want to do with A now*?

Feelings must be dealt with at once! They easily grow into hardened deep conflicts and destroy efficiency and quality of the work process.

Meeting structure:

<u>Agenda setting:</u>
   Outcomes: Define outcomes
   Decisions: Define decisions to achieve outcomes
   Information: Define information required for decisions

<u>Major activity:</u>
   Information: Exchange, generate and analyse information (When doing the information generation choose from the pool of methods to find an appropriate method for the task in hand).
   Decisions: Make decisions on basis of information
   Outcomes: After the meeting, implement decisions to achieve outcomes

Bob Dick: *This simple approach assumes, however, that the process will be followed without difficulty –not a reasonable assumption. Used as a set of priorities, FIDO is a guide for dealing with those problems which interfere with progress. If a roadblock occurs for any reason other than the emergence of negative feelings, revert to the item one higher in priority. If negative feelings become apparent at any time, deal with them.*

This is an effective way of helping the team to have the same focus inside the different workshops. It also makes sure the team goes trough the most important issues for a project meeting.

Lessons learned:
Skilled project workers have this way of thinking under their skin and therefore does not need the FIDO model in front of them while they work. But in many teams the basic steps of the FIDO model is not practices and the work of the team stagnates. One important lesson learned is to handle feelings before they start to get in the way of rationality. A trick used in the university course "Experts in Teams" at the University of Trondheim Norway is to divide the role of project leader from the team facilitator. The team-facilitators role is to look after the group dynamics (emotions and

relations) while the project leader is in charge of pushing for decisions and getting the team to focus at the product.

Tips for the facilitator:
Here it is important to teach the team members to master this way of thinking and collaboration. One way of doing this is to stage a meting and have one person to point at the F, I, D or O according to what the team is discussing. The use of video to analyse the teams own work can also be a strategy.

Think and share (Combination)

This method is short and simple but it works pretty well when teams lack direction. It can be a good beginner method for the facilitator, and also gets concrete results after just 30 minutes. This can be used instead or in combination with the other methods described over.

The teams are asked to discuss for ten minutes what they are doing at the moment. They are then told that they afterwards will get 5 minutes to make a presentation (for the other teams) about what they have talked about. The facilitator uses a watch and starts the teams. After 5 minutes the facilitator shouts half time, and after 7 minutes shouts three minute left.

Then the teams get five minutes to make a 2-5 minutes presentation, they get "extra points" if they don't just hold an ordinary lecture but use role-play or other means to communicate their point. But all teams also make an A3 presentation of their main points and hang them up on the wall. Then all the teams do the presentation for each other.

After the presentations the facilitator says: What are you going to do now? Then the whole procedure is done again but then with the new question in mind. The next round could then be to handle the question: What should the nest question be? Chose the most interesting question, discus it and share you're thoughts.

5 Designing the teams and staging for the teamwork

Working successfully trough the work structure described in this paper craves some serious attention to team-design and facilitation. Teams of 4-5 people do the work described in this paper, which seems to be an optimal number for collaborative thinking. In this chapter some of the most essential lessons learned is presented.

Why do we use a team?
Since there seldom is one person who knows everything about a matter, a team can gather several people who together know the different aspects of the task at hand. When designing the teams and picking out the contenders for the first workshops, it is extremely important to gather the "whole real world" in the room. Don't forget the users or customers, don't forget the doers and just gather the planners. Like Marvin Weisbord says about his Future Search Conference: *Gather the whole system in the room*.

The combination of the team member's knowledge, personalities, positions and knowledge should in an ideal world be an exact replication of the phenomena they are working with.

When seeking new knowledge it can be helpful to focus on a phenomenon seen in real life. Then one does don't have to engage in a theoretical discussion about models and systems not real at all. Arne Næss' *gestalt-ontology*; the spontaneous experience of a phenomena is the closest one can come to reality (Flux nr 2 1993). Collaborating trough this instant experience means that people cooperate directly with the phenomenon instead of working trough different mono-disciplinary abstractions. A collective experience of a phenomenon is the best strategy for searching for an integrated multidisciplinary understanding of a phenomenon. The phenomenon as a case is therefore an effective way of knowledge development. When using teams it is easy to generate richness in the description of the phenomenon, which then acts as a pool of information to do the knowledge development from. Bringing together all known knowledge about a phenomena hidden inside 50 brains and generate an integrated collective understanding is the essence of teamwork.

It is essential for the team to be able to make a representation of the phenomena they are handling. A theory is an abstraction designed inside a specific discipline-sphere to make a mental image of the real life phenomena. When using multidisciplinary teams the members cannot use abstractions to discuss abstractions on abstractions, one must focus on the phenomena in real life. So be creative in bringing the phenomena to the team instead of a chaotic set of different abstractions. The phenomenon it self usually does not care much about the discipline-specific theoretical abstractions.

Specialized or diverse teams?
Putting the engineers one team, the artists on one and the sociologist together with the philosophers on another can give a deep dive into different perspectives and disciplinary abstraction. Making mixed teams is essential for coming up with integrated synergy knowledge from all the perspectives. Altering between deep mono disciplinary dives and big multidisciplinary sessions to gain momentum towards the goal of the process is one of the facilitators many responsibilities.

Intuition, inspiration and dedication

For this kind of creative and paradigm transcending collaborative work we talk about here, intuition, inspiration, exploration and dedication is essential. Creativity needs to be guided by intuition, which again is dependent of an inspired mind, which needs dedication to fly. That means that the whole body and soul needs to be focused on the task at hand. This creates an atmosphere of emotional intensity that must be treated with openness and freedom with a focus on the overall intension of the work. Everybody attending the process is invited because of his or her importance in the overall intention; this is not an arena for brute force and ignorance. The persons who invite to these workshops must not have an answer ready and use this as an arena to force it "democratic" and manipulative onto their people. The contenders will see it as the manipulative work it is, and use their intuition, inspiration and dedication against it. Never forget that a team is much more intelligent than a person. Difficult questions should most often be returned to the teams in a Think & Share Session (see over).

Personality goes a long way

Some people thrive when they can focus on quality control and deconstruct big ideas into peaces for then to se if it is possible to do them. Others thrive when they can be free from everyday problems and work with the big visionary ideas. Some people love the hands-on job of fixing, mending and making things work as long as they have some drawings. Then there is the person who loves to think, plan and organize everything and maybe can't stand the hands-on work. Some bring their emotions into everything they do and others only cold facts. But the most of us slide between different extremes according to mood, how the team as a whole is thinking according to the task at hand. Therefore team members should look at them selves as dynamic team players able to play on a total register of roles or sets of mind.

Edward De Bono gives out six hats that act as points of views and stimulates the user to shift hats to match the task at hand (se under chapter 8).

The ideal is to train people into mastering all these ways of thinking, but at the same time styling the team so that the collective way of thinking is appropriate for the phase the work is in. Diversity is essential for creativity and synergy, monotony is good for going far in one direction, so its all up to the facilitator or the self-led team. The best teams shift their mental perspectives in a close dynamic and collaborative formation.

Changing people for workshop specialization

The team is the brain. Moving trough the workshops the focus goes from abstract creativity (workshop1) to concrete problem solving (workshop 4). Trained individuals in good teams can do this mental transition, but it is very difficult. And the needed disciplinarity in the team configurations shifts form general in the first workshop to specialized in the last ones. A way of solving this issue is to style the persons and teams to the actual phase in the knowledge development process. This means that you have a

ground base of people, which are versatile and important enough for the outcomes that work trough the whole process. The others are invited especially for working trough the specific workshop. By using video recordings, shared virtual workspaces, memos and the collective memory of the base people, the project can draw on the specialist of hundreds to the cost of a tenth. Those who are going to enter the project and those who have left can all contribute to the ongoing project trough shared virtual workplaces and other tools for communication.

Changing the physical environment for workshop specialization
Disney's 4 rooms for creativity and the Idea Astronauts (in Norway) use colors and texture to stage physical for the different stages in the design process. The first workshop should be bright, yellow and green with soft dynamic textures with a fantastic sunny view. In workshop four some people prefer to have a room with gray concrete walls and heavy stones to symbolize realities hard facts. The point is to have a strategic relation to the physical environment. Renting a big tent on the mountains for workshop 1, a coffeehouse for workshop two, a big open room at the organization for workshop 3, and several smaller office rooms in combination with bigger gathering rooms in workshop 4 can be a good design. But since each workshop has its three stages then the rooms should be altered during a workshop.

Changing the psychological environment for workshop specialization
Many things can be done to stage psychologically. Warm up exercises like storytelling, music, role-playing, ice-beakers, theatre or a good introduction/description of the topic can work very well. Music, design and choice of physical environment and different symbolic acts are also used for this purpose. The idea here is to make a rich description of the mental atmosphere needed to master the specific workshop. Are we children curiously exploring uncharted territory (workshop 1) or stone cold streetwise criminals designing a cunning master plan? (workshop 4).

6 The difference between hard work and good ideas

Genius factor:
Find the bright idea from "nowhere", move beyond the well-known, and coming up with bright innovations. Her there usually is no linearity between time spent and the value created by the idea. The ideas often occur when showering, sleeping and driving. This makes a lot of trouble when creative people get paid by the hour. Intuition and improvisation make new rules for the game and maybe new games to be played.

Effort faktor:
Work where both the goal and strategy are known lets the production begin. Here there usually is a strict linearity between time spent and the value created. We know what to do and how to do it.

The artists' way:
Trough interviews with several artists what seems to be a common way for them to come up with good ideas is described; They work hard to make many primitive ideas and let the great one evolve trough all the lessons learned attempts. One could call this a form of prototyping or waterfall method also used in computer program development. It would be interesting to find out why they chose this method and if it is the most effective.

Einstein said that geniusy is 1% inspiration and 99% perspiration, just like the artists said. But is it possible to move it around and train for 99% inspiration and 1% perspiration? Is it our traditional perspective on work and value creation that forces us to use the effort strategy so often instead of the genius strategy? Einstein was also supposed to have answered this to the question: what he would do if he had 1 hour to save the world from a nuclear bomb: *I would have used the first 55 minutes to think about it and the last 5 minutes to execute the plan*. In this answer he this turns around the 99 % perspiration and 1% inspiration back to front. Why is this?

It is important to make a distinction between when one can make big things happen by taking the right telephone and when its right to put in a lot of hours and run around crazy for months. The scientific management tradition is still alive and kicking, in knowledge development industry, collaborative brain-cells are the conveyer belt. And then intuition will probably be the main source of value-creating energy.

So if we combine effort factor with genius factor you get an hour-value factor. We don't care how many hours you put in, but how much value you generate per hour. An analogy can be to move a stone. Person A carries it on his back in knee-deep snow downhill for hours and person B rides it down the hill on a sled. Person A did a bigger personal effort than person B, but person B did it so fast that he also collected wood to his tribe, so he had a bigger value creation. The intention of the work-structure described is to take time to come up with the genius solutions that give a high value to hour factor. To do this people have to think together and fight the demand for quick action. The old kind of managers love pictures of workers sweating with incredible tasks but "hate" the laidback thinkers who only walk around and talk to people and come up with other ideas.

7 Facilitating and designing the knowledge-development-process.

This is an important job, which in many ways dictates the possible outcomes of the project. Mastering the art of designing development processes is a never-ending journey. Ironically the main processes presented in this paper are developed using a development process. This means the knowledge about team-based knowledge development will be growing as long as people share their experience in the area.

The meta-process for knowledge development in this article uses a main structure or process where the goal is to have one specialized focus for each of the four workshops. The methods inside the different workshops are the same, but the details needed to do a good job will be different from project to project.

When working with the teams these three perspectives can be good as different points of view when observing, planning/doing interventions and organizing processes:

1. **The Product**
   How is the quality of their outcomes, are the teams testing it, is the result seen as a good one by the organization. Are they sure it'll work, will it be useful. The facilitator does usually not intervene here and if intervention is done the integrity of the facilitator is easily jeopardized. Remember that the teams are the experts when it comes to disciplinary issues.

2. **The structure, methods and tools used**
   What methods do they use, what structures do they work by, do they dialog or discuss, have a strong leader or a dynamic approach, do they sit far apart or close. When and how is decisions taken. Who is leader? The facilitation of these issues is the home turf of the facilitator.

   All interaction has a structure; some are harder to see than others. Some are byrocratic, other flat and dynamic. The structures predict the outcomes and inter/intra personal processes as much as the same people dictate the structures and outcomes. Mastering and altering the structures to fit both the psychological processes and the product is essential.

3. **The inter- and intra personal processes in and between the teams**
   Who talks/looks/laughs to with who, where do conflicts occur and what triggers them, can you trace the result back to one individual,

who forces decision, fights them, brings progression to the table, anchoring points, sabotaging point. How is the atmosphere, what drives big shifts in the atmosphere? This is the home turf of the psychologist and the emotional circle under FIDO is a good intervention, but is careful here. The facilitator should never do the diagnosis and hunt for solutions, that is the teams job. The facilitator only raises the questions for the team to work with never the answers.

8 The pool of methods

When the teams gets stuck it can be good to take a short break an dive down in the pool of tools to find an intervention that can bring the process back on track.

Edward De Bonos 6 Thinking Hats:
Good for training individuals and teams to think trough different perspectives. Instead of saying that people are stuck with their hat their whole life like many psychologically based tests say, De Bono says it is only a point of view that can be trained towards diversity. Really good team players shift so dynamically and situation-oriented that it is difficult to see. Beginners can train by getting to know the hats and use them together with the team.

- White Hat: Objective information, facts
- Red Hat: Emotions, feelings, intuition, hunch, gut feeling
- Black Hat: Devils advocate, analytical, quality control, Murphy's lawyer
- Yellow Hat: Naïve optimistic, everything goes
- Green Hat: Problem solving, creative, innovative, inventor
- Blue Hat: Overview, organizing, structuring, progress, decisions

Collective notebook:
This is an analogue or digital book for gathering everyday observations and thought about a phenomenon. The books are either gathered and put together in one pool or used as a personal resource pool under a team meeting. Good for getting people to pick up ideas and observations from everyday life and sharing them afterwards.

Sequins-attribute analyses
This is a method from product design. The team has a list of attributes and for each part of the object they ask a list of questions, can it be made: smaller, bigger, softer, harder, crispier, cheaper, expensive, taller, lower, cooler, stiffer, easier, complicated….

SWOT-analysis

The teams search for **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats internally and externally. But nearly all phenomena have SWOT aspects in them. So to get a diverse and balanced perspective it can be good to do a SWOT-analyses. It can be done in many ways, write the name of the phenomena use the Think & Share method and get started.

Look some years into the future- Visioning
 A much used method for developing a common desired future is to make a workshop about where want to be in x years. Use the line of standard methods described for the workshops when working with visioning.

Metaphoring
Good for using a "absurd" well known phenomena as a channel into a rich understanding of it, and using this as a parallel to understand the tasc/phenonomen in hand.

Storytelling
Telling stories is one of human's oldest traditions. It is a good way of passing on knowledge of complexity trough rich descriptions of true or fictional happenings. Teams can gather or make stories that illustrate the points or the knowledge they are trying to communicate. This is a way of utilising symbolic interaction to the extreme. Well known figures like Santa Claws represent such a richness in the feelings they awake in us that they are very well suited for getting a point a cross multidisciplinary borders. Combining this with improvisation can bring out ideas and thought fruitful for the ongoing work.

Paintings & drawings
This is another of human's oldest ways of communication. Paintings and drawings can bring out richness, are dynamic and have a great potential for association in them that can be very fruitful for the artist as well as the audience. There are endless ways of using this method off building and communicating knowledge. One is to give individuals the task of painting/drawing the situation they are in/want to be in/hate/love/dream about. Then they hang it up an present it for their team. Teams can work together on paintings and make big abstract and/or figurative pieces of art.

Role-playing & Dancing
This is a very good way of getting into a situation and feel it trough body and soul. It is a powerful way of communicating the richness of a situation and ways of handling it. It is good for training improvised interventions in a team and on special situations like the difficult customer, the perfect teamwork and so on. Describe the situation and divide roles between the participants and start playing. When handling conflicts it is can be good to play the conflict with opposite roles or by another team. Then others can try to facilitate the peace process.

Scenarioplanning

A good way of generating knowledge about the unknown made by Shell to make big dynamic plans on basis of fluctuating oil prices. When the knowledge generated by the team indicates several different contradictory theories or basins of attraction. The teams are either not sharing knowledge well enough, or the phenomena studied will burst out into different scenarios as a result of the interaction between factors to chaotic to predict. If the last is the case, then do a study of the mechanics of these factors and generate a description of the different basins of attraction the phenomena is balancing between. Then the team can build a plan for each of the scenarios. They can also by knowing the mechanics of the factors build inn early warning signals so they know which plan they are moving against.

9 FLOW Teams:

"We have all experienced times when, instead of being buffeted by anonymous forces, we do feel in control of our actions, masters of our own fate. On the rare occasions that it happens, we feel a sense of exhilaration, a deep sense of enjoyment that is long cherished and that becomes a landmark in memory for what life should be like. This is what we mean by optimal experience."

Mihaly Csikszentmihalyi

This is a book about designing the atmosphere for transcending into a state of FLOW . The research of Mihaly Csikszentmihalyi focuses on individual FLOW, this paper builds on this knowledge and focuses on how to reach a state of team-based FLOW.

The steps and elements under should be followed when designing the knowledge development process. When done properly great things happen, mastering the art of collective Flowing is maybe the most difficult but at the same time the most rewarding discipline humans can master.

Everyting under is excerpts and info from Flow: The Psychology of Optimal Experience By Mihaly Csikszentmihalyi (http://exploreit.net/improvethought/flow1.htm)

Elements that make flow experiences Enjoyable:

1.A challenge requiring skills
2.A chance of completion
3.The opportunity to concentrate, merging action and awareness
4.Clear goals
5.Immediate feedback
6.Deep involvement transcending distractions and the awareness of time
7.A sense of control over actions
8.Absorption of self

The Path to Flow

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1. **Make it a game**

Look at your task as a game. Establish rules, objectives, challenges to be overcome, and rewards.

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2. **Powerful Goal**

As you play the game, remind yourself frequently of the overriding spiritual, social, or intellectual purpose that drive your efforts.

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3. **Focus**

Release your mind from all distractions, from within or without. Focus your entire attention on the game.

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4. **Surrender to the Process**

Let go. Don't strive or strain to achieve your objective. Just enjoy the process of work.

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5. **Ecstasy**

This is the natural result of the preceding four steps. It will hit you suddenly, by surprise. But there will be no mistaking it.

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6. **Peak Productivity**

Your ecstatic state opens vast reservoirs of resourcefulness, creativity, and energy. Your productivity and quality of work shoot through the roof.

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10 Important contributors:

SINTEF Industrial Management
Researchers Ivar Blikø and Bjørn Emil Madsen have played an essential part in the development of this concept for knowledge development. The team of the three of us have worked together under a research-program on high-effective teams funded by Organisational Development Alliance as and the Norwegian research Council. Finding a way of staging for high-effective team collaboration has been a central issue in this research.

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The course Experts in Teams (www.eit.ntnu.no) with 37 professors, over 900 students in
200 multi-disciplinary teams has been a valuable arena for studying the phenomena in
real life and having interesting dialogs with the people involved.

The Oasis Idea-laboratory at the university of Trondheim
The wide range of methods and valuable knowledge of the process-facilitators here, have
been an important input in searching for the knowledge-creating knowledge.

11 Litterature:

From the Web:
http://www.well.com/user/bbear/articles.html
http://www.tryoung.com/chaos/chaosindex.html
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