

BrainSpace® – Facilitating collaborative knowledge construction

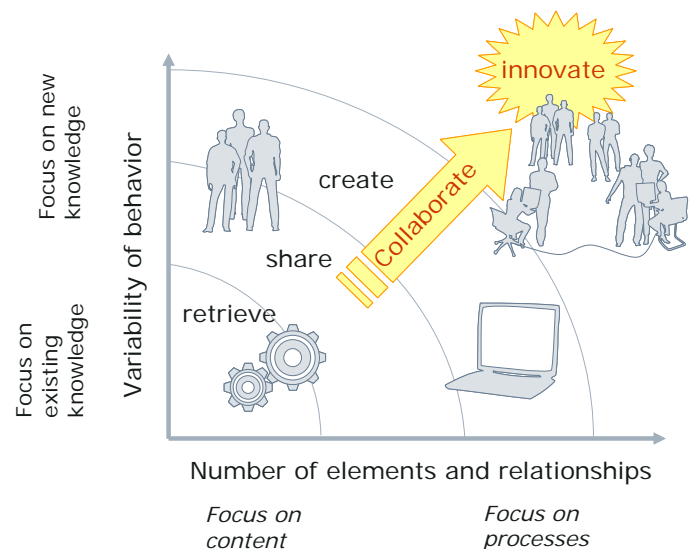
Prof. Dr. Andreas Ninck, Berne University of Applied Sciences

The *BrainSpace* method aims at assisting virtual teams and organizations to create effective and coherent learning networks, where new knowledge is the outcome of an active and collaborative problem solving process. The virtual sessions happen in an environment which offers ideal prerequisites for innovation since

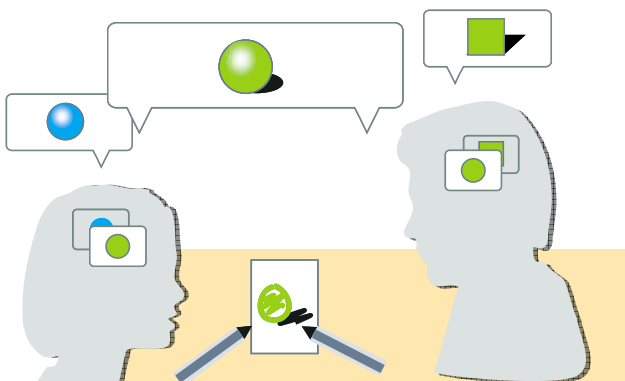
- ▶ there is a fast, purposeful collaboration within a distributed setting
- ▶ the heterogeneous groups integrate individual strengths and different points of view
- ▶ the process breaks former behaviour patterns and supports the construction of new mental models
- ▶ the available information is efficiently distributed and documented
- ▶ different roles provide self-reflection and social skills
- ▶ the individual's active participation fosters personal commitment, group cohesion, and a sense of responsibility

Solving Problems for the Future

The problems we face increasingly gain of complexity. Innovation takes place more and more beyond the boundaries of the enterprise. Therefore new methods and tools are necessary to foster multiple stakeholder relationships and manage distributed knowledge creation. The ability to learn quicker than the competitors is a crucial and in particular long-lasting advantage. The challenge is to organize a creative learning process which keeps the team on “the edge of chaos”. This means to lead the team on a path where maximum creativity exists and learning best occurs, where a team or organization is optimally responsive to the complexity of the environment but still structured sufficiently to succeed. *BrainSpace* addresses some of the key considerations for collaboration and innovation, and combines different web-based tools and methods to a distributed cognitive system.



Collaborating in a Shared Space

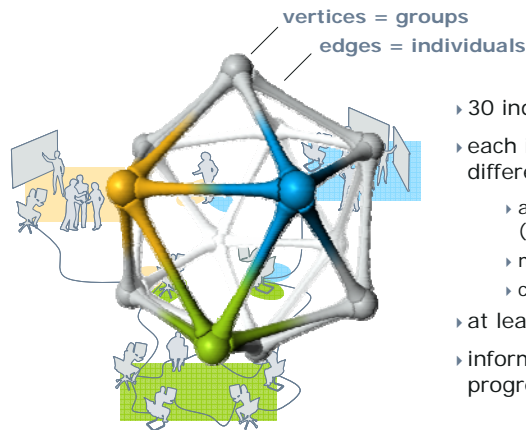


In our understanding communication is more than just the exchange of information. It is closer to the Latin verb ‘communicare’, which means ‘to share’. To develop a common understanding we have to share our mental models. The concept of collaboration goes one step further and means that we are in a mutual social process of designing *new* mental models. Schrage (1995) brings up this point when he defines collaboration as “two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own”. He assumes that in a collaborative context it is mandatory that symbols, pictures,

models or concepts are processed within a shared space. “The images, maps, and perceptions bouncing around in people’s brains must be given a form that other people’s images, maps, and perceptions can shape, alter, or otherwise add value to”. The inclusion of different stakeholders with multiple perspectives is crucial in order to break deep-rooted patterns of thinking. We need organizational structures which allow autonomy, redundancy, variety and even chaos, while also needing a method to bring concerned persons together to create confidence and bind agreements under time restrictions. Therefore, collaborative groups should be organized free of hierarchy.

Distributed Cognitive System

The method we propose is called *BrainSpace*, which is based on the Syntegrity model invented by Stafford Beer (1994). The architecture of the model can be illustrated by using the structure of an icosahedron. Each member of the large group is represented by one connecting edge. Each vertex corresponds to a topic. Five edges lead to each vertex; therefore five persons constitute a team, studying one topic. Each member is an active player on two different teams, as represented by the edge connecting two vertices. In addition, the members take a role as critical observers and facilitators within two other groups. Attending different teams, a member contributes what he or she has learned in an adjacent team, and the available information is progressively distributed over the entire network. Different models are appropriate for different group sizes. *BrainSpace* allows the involvement of a number of 12 to 60 individuals.



- ▶ 30 individuals in 12 groups
- ▶ each individual can have different roles:
 - ▶ active participation in 2 groups (mandatory)
 - ▶ moderation in 1 group
 - ▶ critical observation
- ▶ at least 3 meetings per group
- ▶ information is shared progressively over time

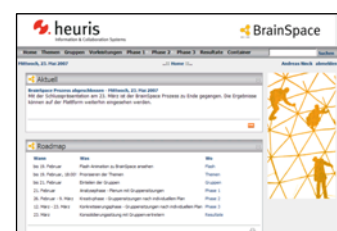
BrainSpace Process

The original Syntegrity model consists of rigid protocols. For example, the length of a Syntegration must take place between three and five days, and during this time all members must be present. The virtual mode of *BrainSpace* gives us lot more flexibility. Here is a general structure of the process:

Task		Description
Opening (asynchronous communication is given priority, if members don't know each other, kick-off should be local or synchronous)	Kick-off	Model explanation. Stakeholder introduction. Goal presentation. Installation and verification of the used tools.
	Problem-description	Problem analyzing and topic wording by stakeholders. The contributions are explicated by a superordinated opening question.
	Topic-auction	Topic reduction (number depends on the type of polyhedron), and assignment of topics to stakeholders according to individual preferences (by use of an optimization algorithm).
	Agenda-setting	The individual teams determine the dates for the meeting within a time window. Observer and moderator roles are assigned. Moderators and observers become familiar with their roles.
1 st Virtual Session (above all synchronous communication, asynchronous tools for documentation and planning subsequent actions)		The teams explore their respective topic. A moderator facilitates the discussion. Results and agenda are written up and put in a forum, visible to everyone. Members from non-active teams observe the discussions and give feedback. The duration of a meeting is about 90 minutes.
2 nd Virtual Session		Same setting like 1 st virtual session.
...		According to the situation further virtual sessions may be added.
Finalization (synchronous communication is given priority)		Presentation of conclusions. Planning for subsequent action. Assessment.

BrainSpace Tools

Tools to create a shared space and to support the tasks in *BrainSpace* provide multiple asynchronous and synchronous communications among the distributed participants. Important features such as file sharing, messaging and calendar functions are covered by common products like Microsoft SharePoint, DotNetNuke or Wiki pages. For the synchronous collaboration we use web conferencing tools like Saba Centra or Adobe Connect which provide a shared whiteboard for interaction and also allow application sharing.



BrainSpace Costs

	On-site (3 day presence, 30 participants)	BrainSpace (virtual, 30 participants)
Moderation	80'000 CHF	25'000 CHF
Hotel	30 x 2 x 300 = 18'000 CHF	0
Travelling:		
10 P CH	10x100 = 1'000 CHF	0
10 P Europe	10x500 = 5'000 CHF	0
5 P APAC	5x5000 = 25'000 CHF	0
5 P Americas	5x3000 = 15'000 CHF	0
Wages	3 D x 30 P x 2'000 = 180'000 CHF	1.5 D x 30 P x 2'000 = 90'000 CHF
TOTAL	324'000 CHF (213'000 EUR)	115'000 CHF (75'000 EUR)

The costs of the on-site scenario are based on the offer of a consulting company. The wages can be reduced in an open innovation setting, where external persons contribute to the problem solving process.

Eureka Project

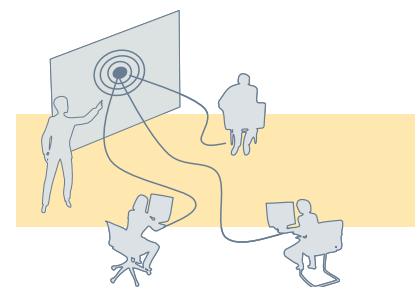
For the further development of *BrainSpace* we are actually setting up a consortium of academic and business partners for a Eureka project (www.eureka.be). Eureka has accepted our application. The partners have now to apply for support at their local funding organizations. For Switzerland this is the Commission for Technology and Innovation (CTI). According to the rules of CTI the business partners are paying about 5% of the total budget in cash to the academic institution. This means that you have to pay about CHF 5'000 for the participation in the *BrainSpace* project as a business partner.

Partners will

- ▶ participate in the further development of the *BrainSpace* methodology
- ▶ have access to modern communication and collaboration technologies
- ▶ design collaborative learning processes for their organization
- ▶ get support for the implementation and moderation of these processes
- ▶ learn from an ongoing evaluation within an action research process
- ▶ exchange knowledge among partners

Target partners are enterprises and organizations with a geographic distributed setting who are open-minded to set up and test new forms of collaborative work. Possible fields of application are:

- ▶ Innovation
 - ▶ Solve complex problems
 - ▶ Create breakthrough for new ideas
- ▶ Project Management
 - ▶ Organize project start or completion
 - ▶ Project integration and coordination
- ▶ Knowledge Management
 - ▶ Transfer knowledge
 - ▶ Cooperate within communities of practice
- ▶ Integration
 - ▶ Integrate parts of the organization
 - ▶ Integrate stakeholders outside the organization



About our Organization

The Centre for Management (<http://unternehmensfuehrung-en.bfh.ch>) at the Berne University of Applied Sciences is developing fields of excellence in collaboration and innovation. A main challenge is to develop the “second generation of knowledge management”. This will be less about data and more about the social nature of knowledge, less about capture and retrieval and more about innovating and sharing. We are convinced that the construction of new knowledge is the ultimate key for innovation. With *BrainSpace* we propose a methodology that makes a crucial step towards the involvement of stakeholders and the moderation of the innovation process.

For further information look at www.brainspace.ch or contact Andreas Ninck by phone (+41 79 543 79 56) or e-mail ([andreas.ninck\[at\]bfh.ch](mailto:andreas.ninck[at]bfh.ch)).