

Changing of Project Culture through Support Centers

Summary:

The paper describes how the project culture in a large software developing organization was changed through implementation of Support Centers. The problems of changing a culture where a project team felt responsible for the project and was proud when it could solve all problems emerging in the project by itself to more industry like culture with division of labor and deployment of specialist are discussed. The role Support Centers play in productivity and quality improvement as well as in technology management is depicted. Experiences collected during the build up and operation of the Support Centers will be treated.

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Introduction

Program and System Engineering (PSE) is a software house of Siemens AG Austria with more than 3300 engineers located in Austria and more than 1000 engineers working in affiliated regional units in four neighboring countries. PSE produces software mainly as a service for other Siemens departments worldwide in a many domains such as telecommunication, medical services, banking & insurance, industrial applications as well as software for government authorities and the European Space Agency.

The old culture – a success factor

A “we can do it” attitude combined with strong motivation was and is still fundamental for the success of the PSE. Traditionally a project team felt responsible for the project and was proud when it could solve all problems emerging in the project by itself. Project infrastructure such as configuration management was built up by each project team whenever a new project started. There was also enough time for team members to scan the market for new technologies or tools. As PSE develops a great variety software on different platforms for different application domains introduction of PSE wide

standards was not possible. Developers were responsible to find the best way to solve tasks themselves. When other development organizations threw the towel because their developers were not trained or prepared for new challenges in application domains or new software technologies PSE could accept such projects and the teams very often succeeded and were proud of their achievements.

This culture was burnt into the minds as a success factor of PSE. Only very few bear in mind that in this way activities that are performed only over a short period of time in a project are learnt again and again and each time executed only once. Nobody had the chance collect enough experience to reach excellence in such activities. This is not the way things are done fast and efficient. Additionally the traditional way of individual occupation with new technologies proved insufficient as technology change fastened. With increasing pressure on schedules we had to reconsider project culture. More and more we had to compete with organizations that specialized and therefor became more efficient.

At the same time CMM assessments in 1993 suggested the build up of support for projects to overcome the weaknesses that were detected during the assessments.

Change a winning team?

Even as the problems mentioned above became apparent for those who observed the organization critically the majority of the projects were still very successful. Never change a winning team may sound good but when the rules change you have to adjust. You must not wait until you have lost.

How can you bring such teams to change their opinion and to call in help from outside experts for tasks they traditionally mastered themselves? Even when outside only means outside the team. The “not invented here syndrome” within our teams is as strong as with any good developers.

In a culture where management trusts the project teams and the teams feel responsible for THEIR project you can not simply give orders. Every intervention that is considered as dangerous for the success is rejected by the project teams. In the worst case orders kill motivation and the team follows your instructions without any commitment. Then it is not THEIR project any more. “O.K. We do it as you want but you will see what you will get”. You have destroyed the assets of your organization.

As management had been promoted from the teams the very culture was also deeply rooted there. Many managers had no intention to intervene in a project as long as the customer was content. We had to convince middle management that it is management responsibility to detect problems and act before the customer complains and therefore had to implement project controlling. This was even harder at a time when the culture of trust and of delegating responsibility to lower levels became a trendy modern management philosophy. So we could not build on support from middle management for the change of

the way projects are done but had also to convince our managers that it was good for their project not to do everything by themselves but to call in experts.

How we started

There was some kind of outside help for projects even before. Good developers communicated with others about their job and when they got stuck they discussed their problems with peer experts they knew. Success depended on personnel connections and the willingness of the peer to help. The willingness depended on personnel relationship and the workload at that moment. The problems are first to find the expert and second to bring him to help you. But as most of the developers are more introverted than sociable both tasks are unpleasant for many of them.

As this kind of specialization worked rudimentary we wanted to build on it. It showed us a way to promote specialization. The projects must call in help themselves. Outside help must not be forced upon them. Ideally whenever such a problem arises the developer should remember that there is someone he can call in. The expert must have time to help a project at the time it needs him. There must be no bureaucratic hurdles when help is called in.

Guided by this preconditions we defined the concept for our Support Centers. The goal for a Support Center is to first evaluate and then promote a certain technology in the organization and to help the projects to apply it (today we call this technology management). A Support Center has to be on the forefront of its technology. It has to have connections with the players in their field inside and outside of Siemens, e.g. at universities. It has to rise the awareness inside the PSE for new trends through activities like, personnel contacts, articles in in-house publications, presentations in the Software Engineering Forum, web sites and news groups. It has to build a network of experts in its field within PSE. The head of the Support Center must be well known throughout the organization. We did not want to build large organizations that would stand idle if there is no demand for its services but a specialist or small group as contact point and a network of experts who still are working in projects and don't lose touch to everyday life in projects.

The Quality Management organization did everything it could to make the Support Centers and the idea behind them known throughout PSE. It pushed the message that any project could use the help of the Support Centers. To make it as simple and inviting as possible consulting below a threshold of three hours was not accounted to the project but financed by Quality Management. We wanted to avoid any bureaucratic and psychological threshold the could hinder the introduction of new behavior.

The build up of the Support Centers and their networks

To try it out we started small with four topics where we thought help was wanted: Project Management, Configuration Management, Object Technology and Test. After approval of the concept by top management we had to find the specialists who would lead the Support Centers. We contacted recognized experts in their fields within PSE and it was not hard to convince them to accept the challenge to build something new and exiting. They saw the chance to devote themselves to their preferred subject and give it the attention it deserved. Like a kind of missionary they could promote what they always considered important. They left the traditional career path to head a Support Center. Not anyone who was interested could leave the project he was working on immediately and we had to be patient in some cases. It was more difficult to convince their superiors to let them go, after all they lost an expert they have nurtured before.

The Support Center leaders had to get in contact with other experts of their respective fields within PSE to form expert nets. Several ways seemed appropriate. Quality Management advertised that a certain Support Center (SC) was put into operation and invited all interested experts to join in. A very successful way for the SC-leader was to stay in contact with developers who came to presentations he organized. Also some customers of the SC turned out to be experts. This was one of the surprises of the introduction phase. We had expected that the really needy who had no idea at all would consult the SC but very often the customers were experts themselves. An old proverb proofed correct: The more you know, the more you know what you don't know.

Participating in a network

Active participation in an expert net was and is still the most difficult aspect of the SC concept. Managers of departments are judged for the profit of their department. Interdepartmental cooperation is accounted for on a cost basis without internal profits. Consequently a manager prefers to sell his experts within external projects and earn profit instead of helping an other department on cost basis. Although we got written agreements from their superiors that experts should cooperate a certain percentage of their time in the expert net they could not always consume that allowance. Certainly there are situations in projects where it is impossible to do additional work but mostly it is a matter of planning and priorities (or lets say good will). As there are several good reasons not to change accounting practices we had to go the hard way of persuasion. We had to explain at length that it is a matter of give and take.

Naturally everybody had understood that it is good to get help from SC. Statistics that showed how many services every department consumed and how much it contributed were helpful. Top management communicated that cooperative behavior is part of the overall judgment. But there is a more immediate advantage for the "giving" department. The head of the SC coaches the expert net. He distributes information and arranges meetings to exchange experience. Through this activities and through consulting for others the expert of a department gets connections and insights he would never get if he

only worked within the “walls” of his department. To underline it again: it is not a problem that experts don't want to do additional work besides their own projects. They like to do it because they experience the advantage themselves. But it had to be communicated to their superiors.

The spreading of the idea of SC and the build up of the capacity to deliver went hand in hand. When we saw that the first SC were accepted and fully utilized we founded the additional Support Centers Data Base SC and a Windows SC in the same year. 1996 followed the Effort Estimation and Metrics SC and a SC for Project Experience. The most recent SC are Components and Internet Technology and a SC for Usability.

Operating rules

The goals, rules and working procedures for SC are described in a internal manual. A SC has to promote its subject within PSE by different means. Important is hands on help or consulting not the production of papers. Every SC builds an Intranet site where it offers its services and leads to important web sites of its subject. To make it easy for developers to use SC help short consulting up to three hours is not passed to the project account. So it is not necessary to get a permit to use a Support Center for small support. Extensive work must be accounted for. The service has to be so good that it is worth the money. I think this is one of the success factors of our Support Centers. As soon as such an institution knows that there is an obligation for others to call them in all bad sides of a monopoly show up. Our rules avoided this trap.

The Support Centers were not organized in an own department but stayed in the original organization to keep in touch with the technical surrounding. So SC have two bosses and strong communication between the SC responsible of QM and the hierarchy turned out to be important and neglect led to unnecessary complications. The same is true for the relation between SC leaders and the superiors of the experts in the expert nets.

Services

The names of the Support Centers indicate a wide area of different service offers and activities. Object Technology SC coaches the introduction of oo-methods in projects. It starts with training activities and continues with hands-on help within the projects. Configuration Management SC helps to select the appropriate tool and to implement appropriate procedures. It leaves when a project team member can keep it running. Data Base concentrates on data structures as well as on configuring and tuning of data base systems. Totally different is the role of Effort Estimation and Metrics SC. Its main activity up to now is to build a network of acknowledged Function Point counters who support effort estimation. Project Experience SC started with the introduction of “Project Experience Workshops” a kind of post

mortems where a project team systematically collects experience at the end of the project. The workshop follows elaborated procedures and is moderated by an expert from a network of moderators trained by the SC. In a second step the SC now offers additional “Project Kick Off Workshops”. The moderators have a good background to transfer some experience themselves.

The success of the SC comes mainly from the quality of the service they deliver. Quality Management concentrated on selecting the subjects and the specialists and coordinating the offer of the SC. Quality Management is funding up to a third of the cost of the SC to finance presentations and other technology management activities. Quality Management promotes SC as service points that help projects to become more successful and uses every opportunity to spread success stories. Mai 1999 we organized a fair where each SC had a stand to offer its services and customers reported their experience in the plenum presentations.

To give the customers of the SC additional assurance about the expertise the SC look for international certification e.g. “Certified Function Point Specialist” Certificate from IFPUG or “Microsoft Certified Professional” or “Certified Catalysis(tm) Practitioner”.

SC were often called by projects to demonstrate knowledge and competence of PSE to our customers during acquisition process. Sometimes in addition to the project the SC also got orders to deliver their serve to the customers organization too. This was not the original intention and we had to look not to loose capacity needed in our own projects. But the recognition from outside helped internal marketing.

Conclusion

SC were founded as a means for internal improvement. Its main object was to change from a craftsman culture to a more industry like culture of specialists where make or buy decisions and the division of labor are ways to reach higher productivity and quality. The process of introducing the SC and the convincing service of the SC brought a new thinking. The closed project culture was broken up in many places. I also consider it as a success that there is a tendency to implement SC like institutions within the departments which work with local knowledge primarily for the own department and keep in touch with their fellow experts through the Support Center network.

Recently a newly established technology management department within PSE extended the idea of networking and defined additional platforms for handling new technologies. It starts with Interest Nets, networks that can be initiated by a call for network by any developer and work like special interest groups. Expert Nets bear more responsibility and have to deliver certain support also for developers and

projects outside the net. Both kinds of networks are coordinated and supported by the technology management department. Within a short time 32 calls for network resulted in Interest Nets and five Expert Nets were constituted. The Expert Net for Usability will become a Support Center soon. The quick response to the new network concepts by a large number of our developers indicate that some extent of culture change has been achieved.