

# Modernization Projects Survey Evaluation

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## Based on 2007 and 2008 Surveys

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# 1 Introduction

We performed two surveys regarding modernization projects. The first was done in September 2007 and the second about one year later in October 2008.

The goal was to get a feeling of the needs of the modernization market and its situation in respect of standards, tools and methodologies. With the second survey we additionally wanted to see if there might be a change or trend one could encounter.

Both surveys were designed as an online form. For each survey we invited about 50.000 persons by email based on the contacts database of SIGS-DATACOM. The contacts of this database are from the ICT area mainly in Europe.

Of those invited, 193 persons participated the survey in 2007 and in 2008 we had 87 participants.

For the second survey we did some minor improvements within the questions and their structure. However, in order to be able to compare the results, we tried to keep the surveys as equal as possible. Both surveys consisted out of 13 questions including some sub questions. The questions were:

0. How many modernization projects did you realize? (the answers of the following questions should be related to the last realized project)
  1. Duration of the Project
  2. Industry
  3. What did you change?
  4. Modernization Goal
  5. Persons involved (on average during the duration time)
  6. Outcome
  7. Your role within the project

8. How was the critical impact of the project on your enterprise?  
(8a. A failure of the system you modernized would cause: ...- only in 2008)
9. Used standards, methodologies and techniques
  - a. Which standard, methodologies and technique would you use again?  
(not asked in 2008)
  - b. Which software program did you use for the modernization project?
  - c. Would you use this software program again?
  - d. Which steps of modernization should better be supported by software programs?
10. What worked well?/What would you repeat next time?
11. What did not work well?/What would you change next time?
12. Additional

Screenshots of the survey form of 2008 can be found in the annex.

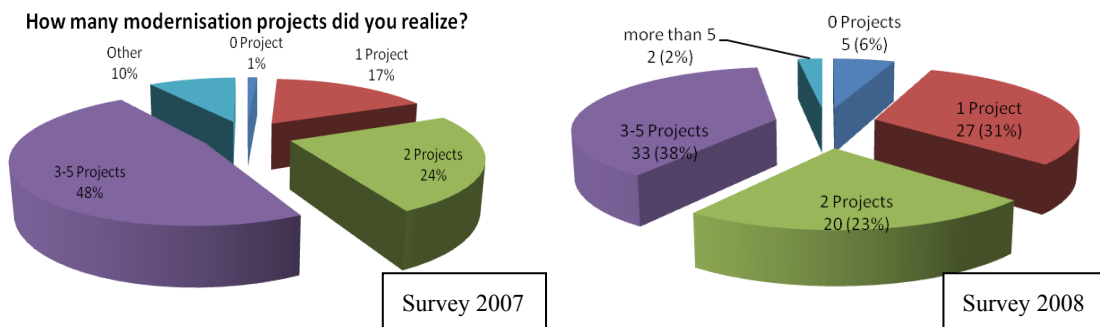
## 2 Evaluation

The evaluation of the surveys is done in two parts. The first part concentrates on numbers based on the answers to the questions 0-9. After some overall numbers to understand who participated, we provide different perspectives how to interpret them and what findings we could extract out of these numbers. The second part of the evaluation concentrates on the evaluation of the text field questions 10-12. Here each provided feedback needed to be analyzed manually. In the evaluation we try to highlight often repeated comments about what went well and what could be improved. This second part might be less fact oriented; however, it also gives a more detailed and more inside view including feelings and concerns of the people. Sometimes this is more important and expressive than simple numbers.

### 2.1 Part 1 – Number based Evaluation

Let us first of all have a look at the numbers of the very first questions in order to understand who participated to the surveys. This will indicate how representative the numbers are and how much you think the numbers are relevant for your situation or not.

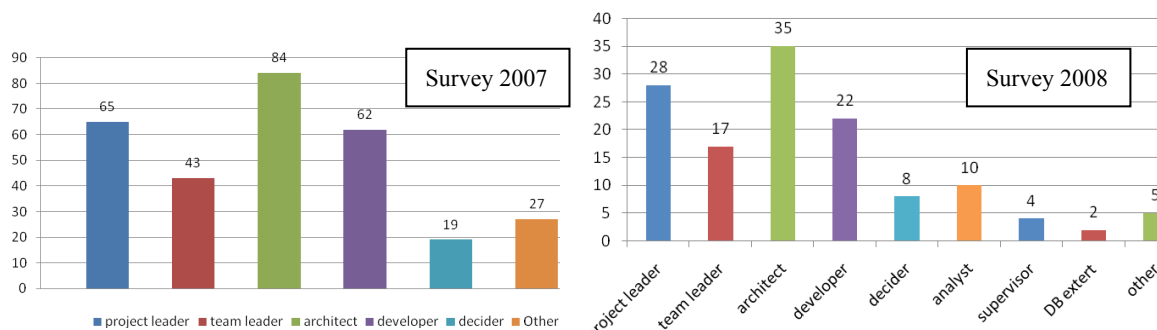
The very first question was intended to understand how experienced the participants are in the field of modernization. As you can see in the figure below, most of the participants already went thru some modernization projects. In the survey of 2008 the percentage of newcomers (with only one modernization project) increased.



**Figure 2.1** – Trying to understand the level of experience of the survey participants.

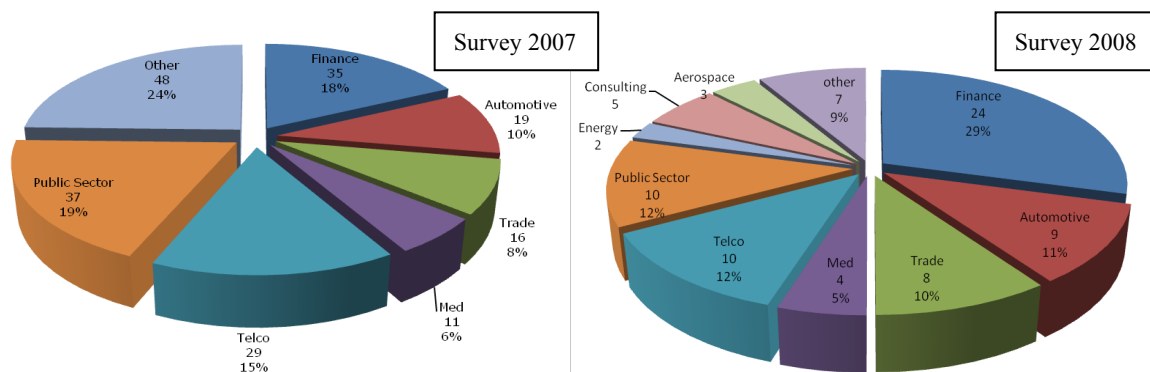
Note: All following questions were intended to refer to the last modernization project participant is involved in.

The question 7 on the role within the last modernization project also indicates on which hierarchical level the participants of the surveys are. It is worth to note that participants could enter different roles to describe their function more precise. Under others often functions like supervisor, analyst and DB advisor were mentioned in 2007. Therefore, we added these answer possibilities in the survey of 2008.



**Figure 2.2** – Trying to understand the management level/role of the survey participants.

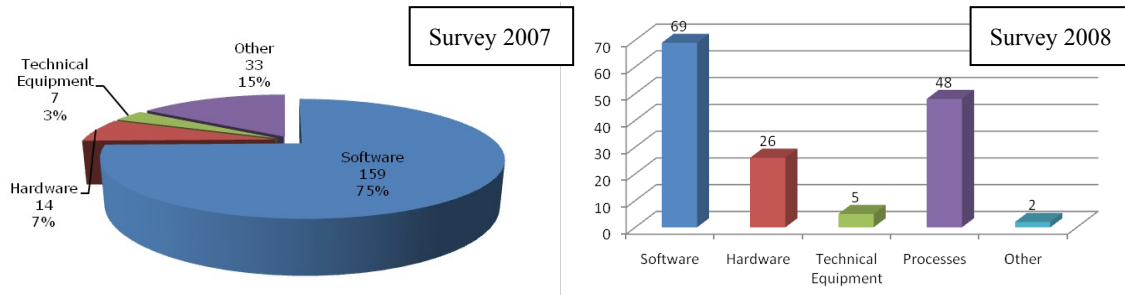
As you can see in the figure below all main industry branches are covered. Under “others” we received in 2007 answers like: aerospace, hospital IT, oil and gas, nuclear power plant, consulting, ICT and others. Some of those we included as possible answers in the survey 2008.



**Figure 2.3** – Overview of the businesses domain the participants are related to.

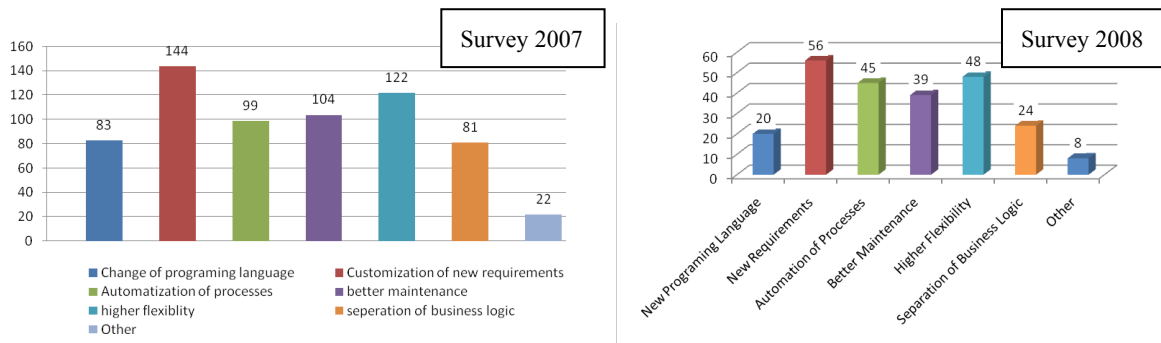
Our interpretation: **Most participants of both surveys have great experience in the area of modernization and hold a leading position within their last project. The projects reported are spread over the different and most important branches.**

When we look what are main areas for modernization we found that three-quarter where on Software in 2007. However, in 2007 the set of predefined answers (Software, Hardware, Technical Equipment and Other) where not optimal and we received many answers under “Other”. In the survey of 2008 we therefore included the “Processes” as possible answer and switched from single choices (radio buttons) to multiple answer possibilities (checkboxes). The results of 2008 are therefore more representative, even if the number of participants is smaller. Still, “Software” is involved in most cases.



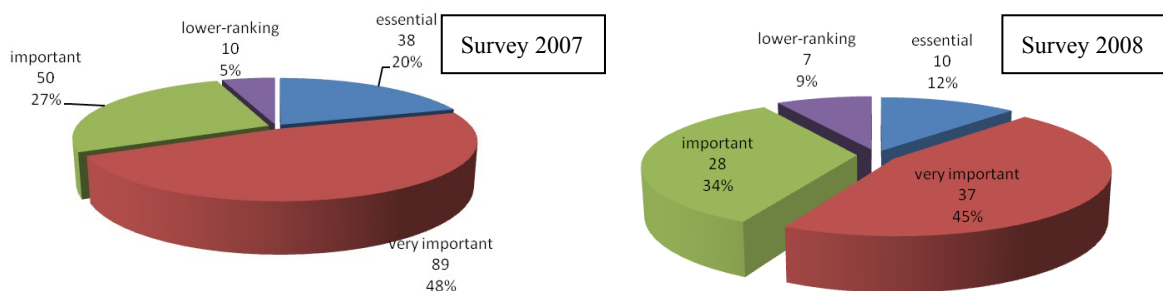
**Figure 2.4** – Area of modernization.

The answers to question 3 of what has been changed should also be read together with question 4 on the project goals. Obviously a change of programming language is a software issue. All others might depend on software changes but can also affect other areas. “Customization of new requirements” is in fact very generic; however it was selected by nearly each of the participants.



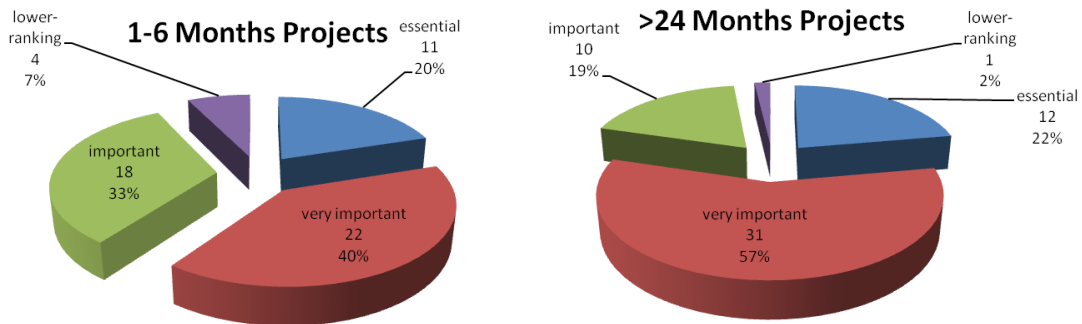
**Figure 2.5** – Objective for the modernization.

Important is also to understand how important the modernization projects and their goals are seen by the involved persons. As you can see the figure below three-quarter indicated the modernization project as essential or very important for the company.



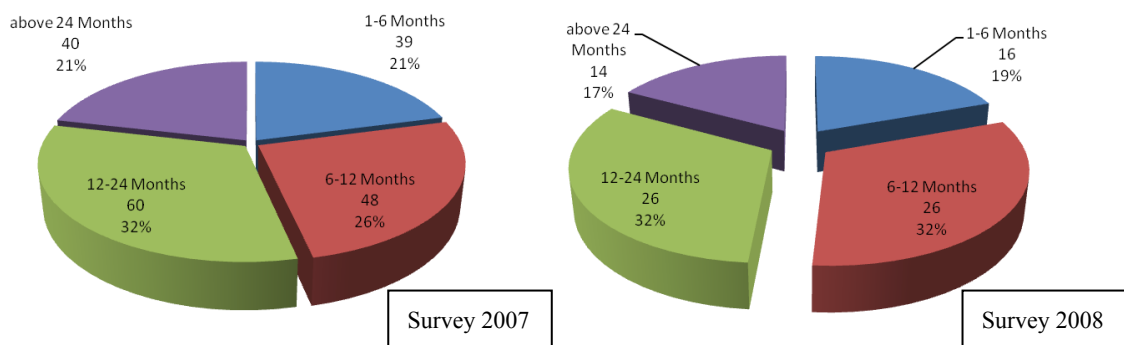
**Figure 2.6** – Relevance of the modernization project for the enterprise.

When we see the importance of a project in relationship to its duration, we can find – as expected – that: **Long running projects (over two years) mainly belong to the essential and very important projects.** However, short projects can also be essential.



**Figure 2.7** – Importance of the projects in relationship to their duration (based on merged numbers of 2007 and 2008 surveys).

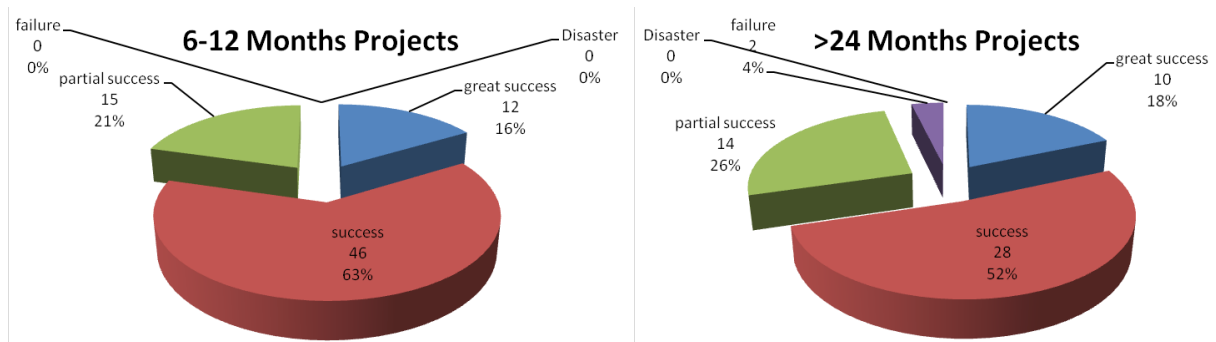
Overall the distribution regarding time was in both surveys very similar and equally spreaded over the four possible answers, as shown in the figure below.



**Figure 2.8** – Duration of the projects.

We then compared the duration of the project with its outcome; we could see that:

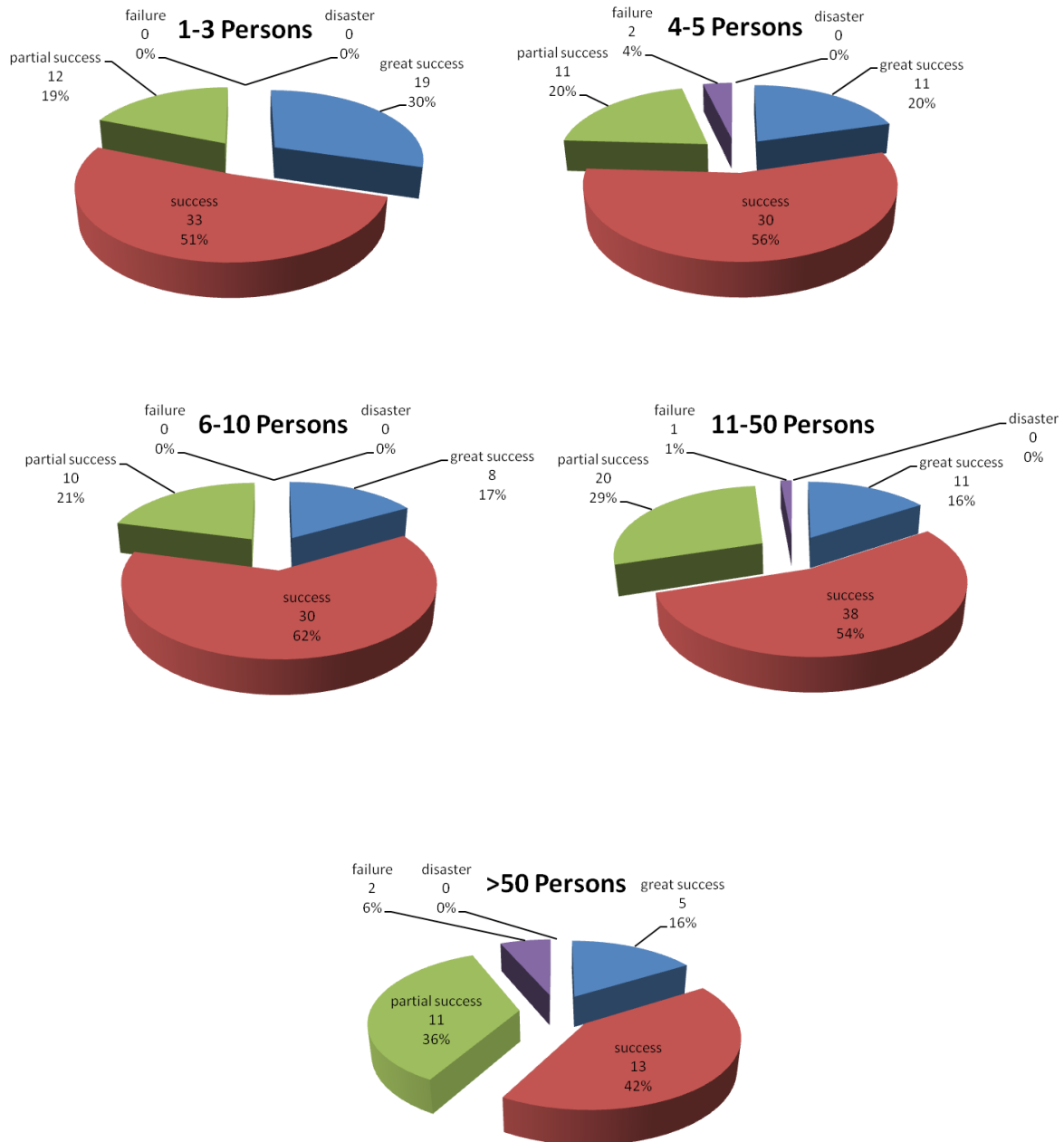
**Projects with duration of 6-12 months have the highest chance to succeed, while long running projects over 24 months received the worsted results. However, even 70% of these long running projects are rated as successful or even as a great success.**



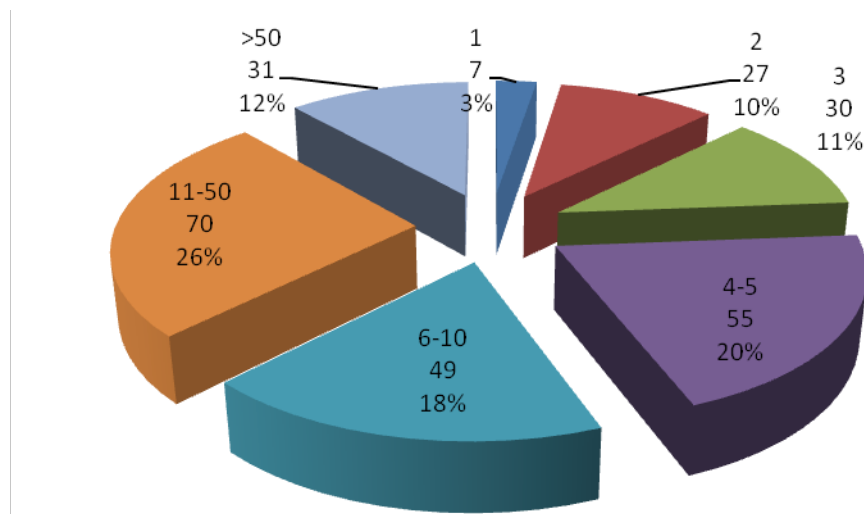
**Figure 2.9** – Success and failure of projects relative to the project length (based on merged numbers of 2007 and 2008 surveys).

The project outcome compared to the number of involved persons shows that: **Projects with many persons involved (especially over 50) are more likely to have only a partial success.**

This could be blamed on the rising communication overhead and again that “bigger” projects are potentially more complex. Interesting is also to see that for projects under 10 persons involved we only find “failures” in the 4-5 persons segment. This could be just coincidence; however, additional research might be useful in order to clarify it.

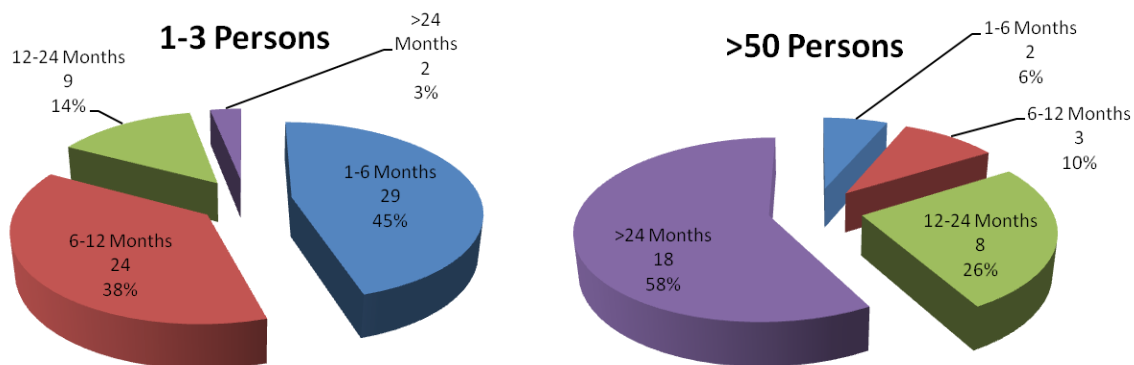


**Figure 2.10** – Diagrams splitting the project outcome according the number of persons involved into the project (based on merged numbers of 2007 and 2008 surveys).



**Figure 2.11** – Overall answers regarding the number of persons involved into the project (based on merged numbers of 2007 and 2008 surveys).

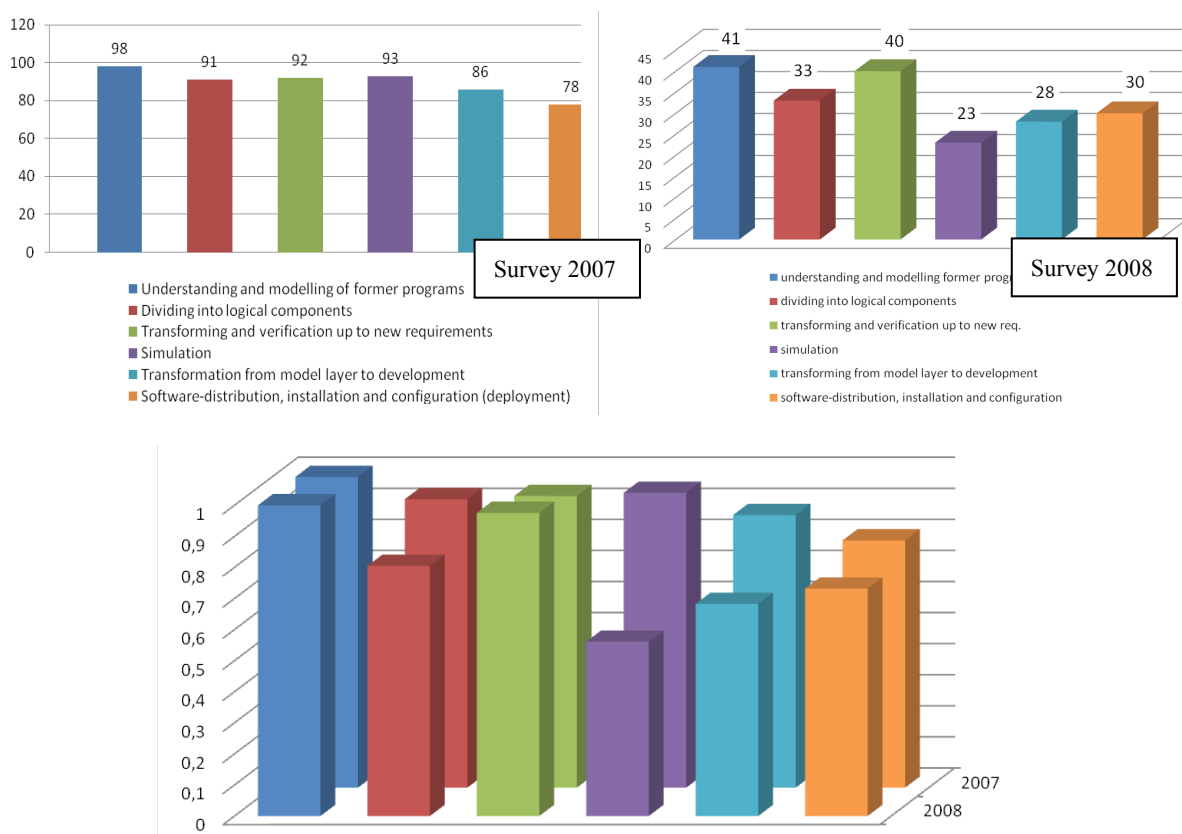
Having a look how the numbers of persons is related to the duration of the project, we also receive an expected result: **Long running projects tend to have more persons involved.**



**Figure 2.12** – Duration of projects clustered by numbers of persons involved (based on merged numbers of 2007 and 2008 surveys).

For MOMOCS one important question was to understand which steps during modernization should be better supported by tools. Looking at the feedback we received for the according question, one can point out that nearly all areas are requested. However, as we see in the diagram below, **most of them search for a tool or improvements for supporting the understanding (sometimes also called:**

**relearning) of the existing systems and to model them.** This was the case in both surveys. While in 2007 we had three areas neck-and-neck, we see for 2008 that the areas for “dividing into logical components” and especially “simulation” got less votes. Only the area for “transforming and verification up to new requirements” remained stable. The area for “software-distribution, installation and configuration (deployment)” remained stable while “transformation from model layer to development” was reduced.



**Figure 2.13** – Requested modernization steps to be better supported by software tools. For both surveys separate in the upper diagrams. A normalized version comparing the two results in the lower part.

In question 9b and 9b we asked what tools had been used and if they would use these tools again. Here we did not provide predefined answers. This has different reasons.

1. We did not want to imply our interpretation of tool market leaders.
2. We wanted to receive answers including also unknown tools, in order to have a look at them (it is much easier for participants just to check a box, even if it is not the truth, rather to fill a text field).
3. We did not want to make any advertisement.

As a result we have a very broad list of tools mentioned as an answer, starting from very generic answers, like: C, J2EE, many, Java, .Net, Eclipse, Maven, Ant and others. These programming languages or integrated programming platforms we did not consider. They are too generic and well known.

However, below we list the more specific tools that have been mentioned by the participants. We used an alphabetic order of these tools; there is no other meaning behind or intended. Note: Some of the tools we do not know and in some cases we are not even sure if it is a modernization tool at all or if there is a miss spelling.

List of tools (based on survey of 2007) mentioned by the participants (incomplete – see above):

ADFFaces (JSF)	ClearCase	IBM WPS
Agilepoint	ClearQuest	i-logix Rhahsody
Amdocs ClarifyCRM	Cognos	Innovator
AndroMDA	Component Builder	Intrexx
ArcStyler IO Software	Confluence	iQ Gen
Argouml	Coral8	JAZZ
ARIS	Cppunit	Jetty
ARTiSAN RTS	CruiseControl	Jira
BEA ALBPM	Crystal Reports	Kenan Arbor/BP
BEA Tuxedo	Curam	Ladder logic
BEx-Service (Web)	Customized Telelogic	MagicDraw
Biztalk	products	Mainframe express
BlazeAdvisor BRM	DMS Software Reengineer-	Mercury Quality Center
Borland Caliber (require-	ing Toolkit	(testing)
ments)	Doxygen	MS/Project
Borland Together (Model-	DUnit	Namat
ling)	Enterprise Architect	Ncover
CalibeRM	FXCop	NDepend
CASE / RUP Tools	GCore platform	Nexaweb
Cast	Gentleware	NUnit
Clarity	Hibernate	oAW

OCLE	Rational SW Modeler	StreamBase
OCS-ng	Rational XDE	Sybase
OmniORB	RelaxNG	Systar
Open Workbench	ReSharper	TAO
OrbX	RMSuite	Tibco
Perfoce	SAP BSP	TopLink
Poseidon	SAP BW	TREND
Progress	SDS Tridion	Trinity iDefine
Qt	SIMPOL Developer Kit	VEDA JUMP
Quartus (Altera)	Software AG tools	Witness
Rapsody	Sparx EA	Workpoint BPM
Rational Rose	Spring	Wren

The list of mentioned tools in the survey of 2008:

.getmore (own product)	Innovator	Rational Rose
ADFFaces 11g	Java/RUP Toolset	Rational Software Architect
Alcatel-Lucent Genesys	Jboss	RSA
APEX	Loadrunner	SAP
Axway messaging products	Mercury Testcenter	Serena Dimensions
BEA WebLogic	Microsoft tech stack	Smalltalk
Cincom Smalltalk	Microsoft Visual Studio Team	sotoplatform
Cognos	System	STI C++
Compuware File-Aid	MS Project	Target Process
Cruisecontrol	MSVC	tibco
DMS Software Reengineering Toolkit	News 2000	Together
Enterprise Architect	oAW(MDA)	Topcase
Hypernate	OpenEdge10 ABL	Trac, EPF
IBM WebSphere	Oracle BPEL	Unicorn Vocabulary Management System
IBM/Telelogic System Architect	Oracle DB 10g	Visual Studio
IdM Suite von Oracle	OWA	WID
	Papyrus	
	PL/SQL	

90% of the participants mentioned in 2007 that they intend to use the software again. This could be interpreted as they liked the tools. However, the participants also mentioned various areas where the tools should be improved. Without knowing further reasons and more details no clear answers can be made. In the survey of 2008 this was even increased and only 7% wanted to change to another program. It is also worth to mention, that we did not find any specific tool mentioned with a

significant frequently within those participants that do not want to use the program again. Result:

Our interpretation: **Programs/tools used within one project are likely to be used again in the next one.**

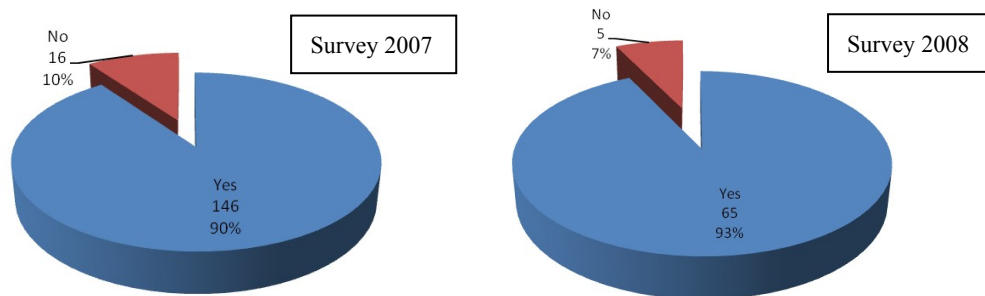


Figure 2.14 – Most programs should be used again.

## 2.2 Part 2 – Text field Evaluation

Thank you! - To all participants providing so many and valuable comments to the text field questions (in 2007 and in 2008 about 60% of the participants provided answers to the questions 10-12). This on its own already demonstrates that the participants are highly interested in the modernization topic.

Below we want to give some impressions and summaries out of the given feedback and comments to the questions 10 - 12, divided into the following topics:

1. Standards - which standards are mentioned explicitly and what was the experience of the users.
2. Methodologies - Here we sum up what has been mentioned regarding methodologies or parts of it.
3. Requirements - Often mentioned and illustrates also the problem of human-to-human communication. It is also related with the next topic.

4. Time concerns – The duration of a project and finishing in time is often mentioned. We here list the most interesting comments to it.
5. Others – A collection of additional interesting comments that do not belong to one of the areas mentioned above.

To these five topics we first provide the results and interpretations of the 2007 survey followed then by those of 2008.

## 2.2.1 Standards

### Survey 2007

The **Unified Modeling Language (UML)** and the **Model Driven Architecture (MDA)** were mentioned frequently. Also here the most comments were positive, e.g.:

*Focusing upon casting requirements into the technology agnostic models of the OMG's MDA (PIMs). This allowed us to verify the completeness and internal consistency of the requirements without the clutter of various implementation choices.*

However, there were also the following critical comments found:

#### UML

*Long term maintenance of UML models against code difficult to sustain - architecture models become out of date and proved too much resource effort to keep updated as code evolved.*

*It is not true that UML models are easy to read and help the communication with the users of the program.*

#### MDA

*Converting PIMs into PSMs was a tedious effort. This effort is essentially a mapping of the PIM into the technical architecture. Since we did not have a formal architectural model, this conversion had to be manual.*

Currently **Service Oriented Architecture (SOA)** is mentioned in many places. We expected also in the area of modernization, where it would fit, to have it

mentioned quite often. However, in the answers of our 193 participants only two of them referred to SOA within the text fields, one mentioned it together with a used tool. This could have been different in case we would have asked directly for SOA. As we have seen in questions 9 and 9a at least the usage of Web Services was relatively common.

### Survey 2008

Again UML was mentioned frequently. However, this time most of the participants criticized the usefulness of UML.

*Round trip engineering (UML – code – UML) did not work.*

Another participant blames it on the existing tools rather than on UML itself.

*UML supporting tools in large still lie about what you can achieve since most of them do not support all UML 2.x standards.*

However, it also can be related with how UML diagrams are used. Another participant praised UML for the definition of use cases.

There were two note-worthy comments regarding MDA in 2008:

*We want to take a model-driven (MDA) approach next time to lessen the documentation burden downstream.*

*MDA approach of the former project was difficult to realize or to adapt.*

The later comment was in context of changing the development environment and redesigning the legacy application.

## 2.2.2 Methodologies

### Survey 2007

During reading the comments the **Test Driven Development (TDD)** was one technique that received many and good remarks. Below one example:

*Original comment: Der agile Ansatz des TDD hat sich außerordentlich gut bewährt. Es produziert sehr schnell zuverlässige Ergebnisse. Kontinuierliche Integration ist mittlerweile Bestandteil aller Projekte.*

*Translation: The agile approach of TDD was very successful. It produced very quick reliable results. Continues integration is in the meantime part of each our projects.*

There was only one critical comment regarding TDD:

*It is difficult to justify TDD regarding the planning of the project.*

Even thou it is critical; it does not say that TDD itself is not good!

In the survey we avoided to ask directly on specific methodologies since the common understanding of them might be different and there is no time to explain this in detail within a survey. For some already the usage of Pair Programming is equal to XP, while others would infer much more. However, question 9 targeted this area and has been analyzed above.

However, in the free text fields there were some comments especially to agile approaches (see also TDD above). Most of them are positive regarding the methodology itself. However, there are also some problems and peculiarities reported how to apply them. E.g. the agile approach has impact on other areas:

*Initial buy-in and agile understanding of senior management Traditional governance - doesn't work with Agile projects - Agile methods need appropriate Agile Governance processes*

... and it is not always easy to handle this impact:

*"Agile" Softwareentwicklung in verkrusteten Firmenhierarchien sehr schwierig umzusetzen.  
Translation: "Agile" software development in companies with crusted hierarchies is difficult to realize.*

Beside the company hierarchies it also depends on the people doing the job and they should be trained accordingly:

*Pair Programming einzuführen hat sich als außerordentlich schwierig erwiesen. Die Mentalität der Entwickler war zu unterschiedlich. Es sollten zukünftig Entwickler eines höheren Ausbildungsstandes eingesetzt werden.*

*Translation: To introduce Pair Programming became very difficult. The mentality of the developers where very different. In future developers with higher skills should be employed.*

A pragmatic methodology provided by one of the participants:

*Keine Teams größer 8 Leute. Abteilungs- oder Projektziele vorgeben und immer wieder die Prioritäten darauf ausrichten, ein Ausscheren einzelner Personen oder Teams konsequent abstellen. "Ausbremser" mit in agile Teams packen.*

*Translation: No teams with more than 8 persons. Department and project objectives should be given and priorities should be mapped to them. Stepping put of this line by single persons or teams should be stopped. Those doing it should be placed into agile teams.*

### Survey 2008

Again in 2008 we find positive feedback for TDD, even if the comments were not as effusive as in 2007. Remarkable is the fact that in two times Model Driven Development (MDD) was mentioned and in both times it was combined with TDD. Hereby one participant remarked it positively and the other mentioned his will to use MDD for his next project. In 2007 MDD was not mentioned at all.

In 2008 different agile procedures are positively mentioned, e.g.:

*Agile approach: Step by step realization and permanent iterations, many consultations of the customers during development was useful and errors could be discovered early.*

One participant restricted pair programming to critical parts and made positive experience:

*Short pair programming sessions at system critical parts was very efficient → recommendation: pair programming should be used selective.*

Additionally SCRUM was mentioned positively two times in 2008.

## 2.2.3 Requirements

### Survey 2007

There were some notes on how to handle requirements and how they should influence the project. Some of them also contradict each other, e.g.:

*I would try to better collect requirements in advance not to reengineer the software many times.*

and

*Kürzere Analysephase dafür früheres Prototyping. Die lange Analysephase hat dazu geführt, dass Anforderungen aus der Analyse später ungültig geworden sind.*

*Translation: Shorter analyze phases and earlier prototyping. The long analyze phases resulted into requirements that become invalid later.*

We assume that there is no golden rule how to handle requirements. All we can say is that they are very important as they define the goals that should be reached by the project. Below some further interesting comments regarding requirements, showing what the participants want to change next time:

*Requirement Analysis: due to the lack of a common standard. A lot of time was wasted and the project took longer than expected. Next time, we'll have to have a Requirement Management process defined and approved for all SW development/improvement projects.*

*Better mapping of requirements to Design decisions. - process view of the SW.*

*More detailed investigation on customers' requirements.*

Especially in modernization projects, where also the businesses processes are touched and users are involved. There is additionally the problem that these users need to be integrated into the project and a vision should be given. This vision in the best case could come directly from the users. However, for them it is sometimes not easy to change their habits, as one of the participants stated:

*It turned out that users that complained on the system for years could not easily provide information to make a better system. Time and time again they used the old system as an example of how to handle things.*

### **Survey 2008**

In 2008 the topic requirements was less commented. However, each of the three times it was mentioned, the participants plan to change here something. Nobody mentioned the requirement gathering under the section "to repeat next time". Two of them specified more detailed which kind of requirements they want to improve:

---

and  
*Detailed functional requirements*

*Documentation of the module/code requirements.*

## 2.2.4 Time

### Survey 2007

Time is always critical and it is always difficult to see in advance how much time is needed for certain tasks. As one of the participants wrote:

*Allow more time (but this is always difficult to obtain).*

Some of the time problems are referred directly to the section requirements we discussed above, like:

*The users had not written an accurate description of their needs. So it took more time than expected to write accurate requirements and give them to the integrator.*

Other comments are very specific for modernization projects:

*Altprojekt war nahezu undokumentiert und absolut unleserlich programmiert -> hoher manueller Einarbeitungsaufwand. Enormer Zeitaufwand auch für manuelle Umstellungen bzw. zunächst überhaupt das Extrahieren der bestehenden Businesslogik.*

*Translation: There existed no documentation of the legacy system and the programming style was not readable --> high amount of manual effort and according time was needed for manual changes and also to extract the existing businesses logic.*

However, even for those time consuming projects we can see positive results.

The same participant stated:

*Der Aufwand hat sich insgesamt gelohnt, da die Wartbarkeit deutlich erhöht wurde. Es wurde viel alter und überflüssiger Code entfernt.*

*Translation: The effort paid back due to the increased maintainability of the system. There were many old and useless lines of code removed.*

Finally one can state that it is also worth to trust experienced project leaders in their time estimations. As one comment demonstrates:

*Few people believed we would finish in time.*

### Survey 2008

Also in 2008 the time issues are often mentioned as an area for improvements. The prediction of time needed for certain tasks seems to be a serious problem. Of course one need to point out that management always will try to shorten the development time and that more time always would be beneficial. However, saving time especially in the beginning might cause more overhead in the end as saved upfront, as illustrated by one participant:

*Scalability- and performance-tests were done too late. This resulted in an enormous overhead at the end.*

## 2.2.5 Others

### Survey 2007

Below a list of remarks we believe are worth to be mentioned and could help for your own modernization project. Some of them are also critical and demonstrate that there is no rule that fits all situations. It is rather advisable to see your project within the context of the given situation.

*Some legacy platforms should never be replaced without assessing that new COTS are really complete and innovative.*

*Re-designing the system rather than transforming the old project through new tools and methodologies.*

*The project amounted to a re-write, partly because of limited tools to model and transform existing systems (Access database and Excel). Even if better tools had existed for transformation it is unlikely that an automated or semi-automated transfer would be beneficial.*

### Survey 2008

Some quotes we found interesting:

*Some individuals were not able to change their approach to business. I should have removed them early in the transformation process, rather than trying again, and again, to change their attitudes.*

This of course is a central issue. When changing processes and people are involved, this can cause problems. The perfect world would be to include these people into the decision making for and during the modernization project. People might also be afraid of losing their job if processes are shortened. Therefore and as we see by the given comment, this is no easy task.

*Stronger decoupling of current code if there's already many hacks in place, even when a quick hack on top of the current ones gives results faster. (Better extensibility and maintainability, high number of "hacks" indicate it's likely to change again).*

*The separation of concerns like functional and non-functional requirements implementation approaches should be applied in order to concentrate on the specific aspect of a problem domain without (or with minimally) affecting the other aspects of the system.*

Two votes for proper modernization and modernization methodologies rather than "hacking" into existing code. We can only agree upon.

*Reengineering is a complex task. Management wants to only hear simple stories. Consequently, descriptions about tasks and effort got oversimplified as it went up further into the management change, and consequently oversimplified expectations were no reached.*

This is a nice final quote! On one hand side it recalls the complexity and on the other hand the goals for reengineering need to be simplified in order to be understood and bought by managers. Both sides need to step up to each other. This also includes understanding that IT people and managers in most cases have different ways to think and argue. It is always good to have somebody that feels at home in both camps and can build a bridge.

### 3 Evaluation Summary

Based on the feedback we received, we can state that the participants of both surveys are high professionals in the modernization area. We also could see that modernization of course is relevant in all different domains and that most of the modernization projects are ranked as essential or very important for the company.

There are some results we expected to see. However, it is anyway nice to have it underlined by the surveys:

- Long running projects (over two years) mainly belong to the essential and very important projects.
- Short running projects (1-6 Months) have a higher chance to succeed than long running projects (more than two years).
- The more persons are involved into a project, the higher is the risk that the project fails.
- Long running projects tend to have more persons involved.

Following the results of the surveys, projects with duration of 6-12 months and 6-10 persons involved have the highest chance to succeed. Of course there is much more influencing the success of a project than just the duration and the number of persons involved. However, a rather small group can work with less communication overhead compared to project teams of over 50 and within a medium duration in which the goals probably will not change as much as projects lasting more than two years (due to changes in the business domain or changes in technology).

We can also point out the following findings:

- In future standards, methodologies and techniques will play a more important role.
- Programs/tools used within one project are likely to be used again in the next one.

We think both are logical steps to handle the complexity that grew within the legacy systems and by connecting existing systems with each other. Without standards and defined methodologies this complexity cannot be repressed. However, this should not mean that everything should be predefined in strict rules. One needs to understand that project teams are build out of persons with different habits, potentials and preferences. This should be addressed in the daily work. Nevertheless, the project teams need to understand that they are just a part of a bigger system and that the next modernization project team will start its activities based on their work.

The text field evaluation is very difficult to sum up. One should better read the long version. However, here are some remarkable notes:


- Test Driven Development (TDD) is very well accepted.
- Agile methodologies are more and more used, however, developers and management need to accept and support it.
- Understanding and handling requirements is difficult, especially because requirements are not always stable over time. It is also a communication issue between client and contractor. -- Might be that the TDD helps in this respect.
- The human factor should always be taken into account, especially when business processes are changed.
- The effort prediction and calculation especially regarding the needed time remains a complicated task and needs experience and sensitivity.
- There is no golden path that fits every project!

### **Trends and cross survey analysis**

Knowing that trend-analysis on just two surveys might be a bit weak, we can try to interpret some trends. These are:


1. "Understanding and modeling former programs" as well as "Transforming and verification up to new requirements" remain the main areas the people seeking for support (see also Figure 2.13).
2. There is still no tool dominating the modernization market.
3. Tools being used in the previous project have even a higher chance to be used again for the next one. This also infers that for new tools it is getting even more difficult to penetrate the market.

## Annex - Evaluation Form



**MOMOCS**  
methodology and related tools for fast  
reengineering of complex systems

**ViewZone.org**



Information Society

### Modernization Project - Final Evaluation 2008

**An wie vielen Modernisierungsprojekten haben Sie mitgearbeitet? / How many modernisation projects did you realize?**

0  
 1  
 2  
 3-5

mehr / more

**Bitte beantworten Sie die folgenden Fragen in bezugnahme auf Ihr letztes Modernisierungsprojekt.**

**Please answer the following questions regarding your last modernisation project.**

**1. Dauer des Projekts / Duration of the Project**

1 - 6 Monate / months  
 6 - 12 Monate / months  
 12 - 24 Monate / months  
 über 24 Monate / months

**2. Branche / Industry**

Finance, Banking, Insurance  
 Automotive  
 Trade, Logistic  
 MedTech, Pharma, Chemical  
 Telco  
 Public Sector  
 Energy  
 Consulting  
 Aerospace

sonstiges / other

**3. Was wurde geändert? / What did you change?**

Software  
 Hardware (Computer etc.)  
 technische Anlagen/Maschinen / technical equipment/machinery  
 Prozesse / Processes

sonstiges / other

**4. Projektziel / Modernization Goal**

- Wechsel der Programmiersprache / Change of programming language
- Anpassung an neue Anforderungen / Customization of new requirements
- Automatisierung von Prozessen / Automatization of processes
- Modularisierung der Software zur: / Modularisation of software to:
  - besseren Wartbarkeit / better maintenance
  - höhere Flexibilität / higher flexibility
  - Separierung von Geschäftslogik / seperation of business logic
- sonstiges / other

**5. Beteiligte Mitarbeiter / Persons involved (on average during the duration time)**

- 1
- 2
- 3
- 4-5
- 6-10
- 11-50
- > 51

**6. Ergebnis / Outcome**

- großer Erfolg / great success
- Erfolg / success
- Teilerfolg / partial success
- Misserfolg / failure
- Disaster

**7. Ihre Funktion im Projekt / Your role within the project**

- Projektleiter / project leader
- Teamleiter / team leader
- Architekt / architect
- Entwickler / developer
- Entscheider / decider
- Analyst
- Supervisor
- Datenbank Experte / DB expert/advisor
- sonstiges / other

**8. Wie unternehmenskritisch war das Projekt? / How was the critical impact of the project on your enterprise?**

- überlebenswichtig / essential
- sehr wichtig / very important
- wichtig / important
- wichtig, aber nachrangig / important but lower-ranking

**8a. Ein Scheitern der Modernisierung würde bedeuten: / A failure of the system you modernized would cause:**

- Das Unternehmen könnte nicht weiterarbeiten / The enterprise would not be function any more.
- Das Geschäftsmodell kann fortgesetzt werden, allerdings mit Einschränkungen. / Business could be continued with some restrictions.
- Keine Auswirkungen auf das Geschäftsmodell, jedoch auf interne Prozesse. / Would not affect the business but internal processes.

**9. Angewendete Standards, Methoden und Techniken / Used standards, methodologies and techniques**

- Programmieren zu zweit / Pair Programming
- Testbasierte Entwicklung / Test Driven Development
- Regelmäßige Treffen des ganzen Projektteams / regular Project meeting
- UML (Universal Modelling Language)
- WebServices
- MDA (Model Driven Architecture)
- sonstiges / other

**9b. Welche Software haben Sie für das Modernisierungsprojekt eingesetzt? / Which software tools did you use for the modernization project?**

**9c. Würden Sie die Software wieder einsetzen? / Would you use this software tools again?**

- Ja / Yes
- Nein / No

**9d. Welche Schritte der Modernisierung sollten besser durch Softwareprodukte unterstützt werden? / Which steps of modernization should better be supported by software tools?**

- Verstehen und Modellierung der Altanwendung / Understanding and modelling of former programs
- Auftrennung in sinnvolle Komponenten / Dividing into logical components
- Transformation und Verifikation entsprechend der neuen Anforderungen / Transforming and verification up to new requirements
- Simulation / Simulation
- Umsetzung von Model-Ebene in Code (Development) / Transformation from model layer to development
- Software-Verteilung, Installation und Konfiguration (Deployment) / Software-distribution, installation and configuration (deployment)

**10. Was ist gut gelaufen?/Was würden Sie wiederholen? / What worked well?/What would you repeat next time?**

**11. Was ist nicht so gut gelaufen?/Was würden Sie verändern? / What did not work well?/What would you change next time?**