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BESTREGIT

Process Improvement Guide-line and

How to design and implement role and communications models in teamworking


*ISCN Ltd.
Re-Edited by TEAMWORK*

Learn How to Improve

LEARN HOW TO TEAMWORK

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1 Introduction

1.1 Methodology Introduction

The methodology has been adapted from a set of methodologies from the information technology industry and has been field tested in innovation transfer organisations in Austria, Ireland, and Spain. **This methodology as well has been used for design and implement teamwork scenarios and communication models in Research, Public and Software engineering domain Organisations from Ireland, Hungary, Slovenia, Spain, Austria, United Kingdom and Germany.**

The methodology works in the following major phases (see Figure 1):

1. Installation of a Process Improvement Manager
2. Analysis of Current Situation
 - 2.1. Goal Analysis
 - 2.2. Team-work Analysis
3. Experimentation and Measurement
 - 3.1. Selection of Experiment
 - 3.2. Initiation of Experiment
 - 3.3. Experiment Performance
4. Multiplication of Lessons Learned

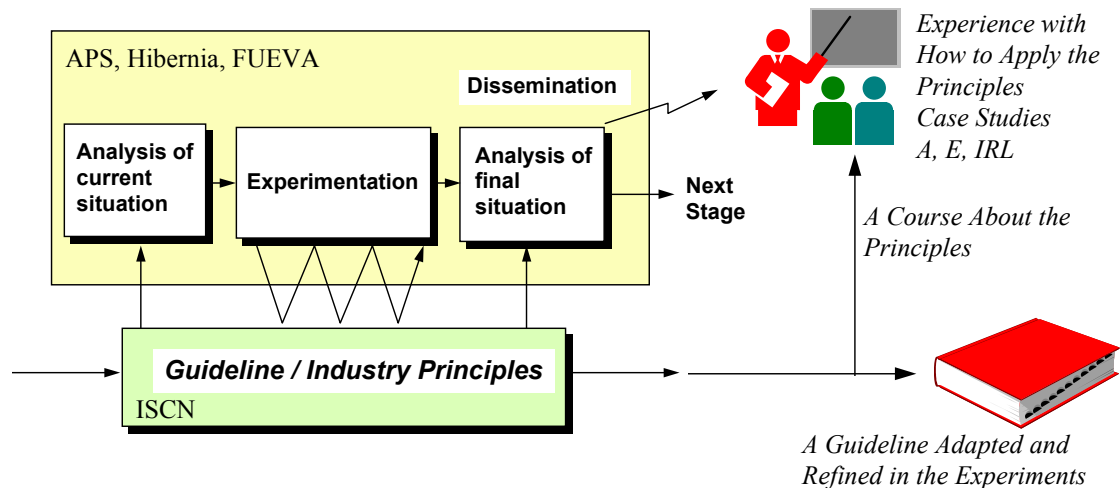



Figure 1 : Analysis (Modelling) - Experiment (Implementation) - Dissemination

The specific set of methodologies used from the information technology industry are largely taken from a survey work done in a previous Leonardo project PICO in which 30 experts across Europe have shared their experiences and methodologies. A list of the references used for Bestregit are described in the section "references".

1.2 Purpose of the Guide-line

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The purpose is to provide a step by step guide about how to establish a learning organisation focussing on the continuous improvement of human resources and organisational processes.

The presented methodology adapted SPI (Software Process Improvement) principles for general service organisations.

The methodology itself helps

- To structure your business or **your teamwork organisation**
- To set your goals right
- To improve team-work and infrastructure
- To build a quantitative feedback loop to learn and change for the future in an objective way.

1.3 Scope of the Guide-line

The methodologies presented in the guide-line have been used in information technology since the eighties. Companies such as Siemens, Ericsson, Nokia, Bosch, and many other large organisations have tried it and have implemented the methodologies as part of their quality systems. The European Systems and Software Initiative (ESSI) under the ESPRIT program has funded hundreds of experiments in smaller companies throughout Europe.

The methodologies therefore are well tested and most of them have resulted in international norms to be followed by information technology industry.

Bestregit did not

- Evaluate and further develop existing methodologies


But

- Adapt and integrate existing methodologies to become applicable for a technology and innovation transfer environment, as well as for general service organisations.

1.4 Target Group

The guideline's (and the Bestregit training material's) target audience are


- managers or directors of innovation transfer and service organisations who would like to structure their goals, and apply defined steps to achieve an optimisation of the work processes and service delivery
- **Managers who would like to structure a teamwork organisation in virtual basis**
- innovation groups/experts of larger companies who on behalf of their organisation plan to optimise innovation and service processes in departments of their organisation or **to enlarge the teamwork**
- directors of small companies who would like to put the goals straight, plan to improve services, and establish an optimised work environment or **teamwork with another partners, suppliers, etc**
- any consulting/service group that works for clients to help in improving the organisation or **to analyse communications models and teamwork models.**

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Therefore we assume that the target audience has already been in a management position before coming to a Bestregit training, and therefore terms like mission, goal, process, and quality are not completely new to the attendee.

1.5 Abbreviations Used in the Guide-line

Term	Explanation
BPM	Best Practice Model
ESPRIT	European Strategic Program for Research in Information Technology
ESSI	European Systems and Software Initiative
EU	European Union
FAQ	Frequently Asked Questions
GQM	Goal-Question-Metrics Methodology
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Standardisation Organisation
IT	Information Technology
NASA	National Space Agency, USA
PI	Process Improvement
PICO	Process Improvement Combined apprOach
ROI	Return On Investment
SPI	Software Process Improvement
WWW	World Wide Web

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2 Definitions

The below terms are used throughout the document.

1.1 Definitions Concerning Goal Analysis

Different levels of goals can be differentiated.

Mission. A mission is a strategic goal of the organisation. It is usually defined by the director and the board of owners, has a long term view, and is defined in a way that it clearly represents the organisation and allows that all current business fields fit into it. Especially in innovation transfer it is usually aligned with some technology transfer political visions.

You can see that a mission is right if (in spite of the rapidly changing requirements) it had to be changed only every 4-5 years. **Talking about communication models, we will define as that which we try to achieve with the implementation of this new communication model or teamwork structure.**

Business Field Goals. This is a goal that is important to be achieved to satisfy the mission. To reach such a business field goal it is required to create a work force whose task it is to perform projects which contribute to the achievement of that business goal. Such goals usually are defined in cooperation between the director and the department heads (managers) of the organisation or **which the different organisations leaders which tries to cooperate together.**

A goal for a certain business field is right if (in spite of the rapidly changing requirements) it had to be changed only every 2-3 years.

Work Specific Goals. This is the most concrete level of a goal. Work specific goals contribute to the achievement of business field goals. Here concrete work performance indicators can be measured and conclusions are made if the project was successful or not.


Such goals usually are defined in cooperation between the department heads (managers) and project leaders of the organisation or **from the different organisations trying to cooperate together.**

A goal for a certain project is right if it clearly contributes to the business field goal and if it is short term (maximum 1.5 years) and can be measured to have an objective basis to decide about success, failure, and required adaptations.

Goal Tree. A goal tree defines an architecture in which the mission, the business field goals, and the work specific goals are represented. A goal tree (in its ideal structure) should provide forward and backward trace-ability. Forward trace-ability means that it is clear which business fields belong to the mission, and which work specific goals contribute to which business field goal. Backward trace-ability means that quantitative performance indicators are used for measuring the achievement of the work specific goals, and that these indicators help to evaluate a business field indicator, which in turn can be used to measure the mission's success. Backward trace-ability builds the feedback loop into the goal structure, and usually it requires data collection and evaluation.

1.2 Definitions Concerning Process and Team-work Analysis

Work Scenario. Each organisation or **teamwork organisations (consortium)** consists of a set of work scenarios. E.g. Customer handling, service delivery, workshop organisation, etc. A

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work scenario is therefore a description of the best way to conduct a certain business case in the organisation.

Work scenarios in Bestregit are described with two complementary views:

Role Models. Role centred models base on roles which are played by individuals. One person can play many roles as well as many persons could play just one role. Roles exchange information and work results. This information flow between the roles forms the role model. **If you are analysing a teamwork structure in which co-operate different organisations Role models are used for staffing the team.**

Work Flow Models. **If you are analysing a single organisation** Work flow models consist of a network of work steps. **. If you are analysing a teamwork structure Workflows are used for control the performance.** Work steps produce results that can be used by other work steps. Each work step requires resources (e.g. a certain effort, tools to be used, etc.).

But if you are analysing a teamwork structure Work models

Bestregit uses an integration of both these views:

- First role models are analysed and designed.
- Secondly the role models are transformed into work-flow views.
- Thirdly, both models are integrated so that a work scenario according to Bestregit can be defined as follows:

A Work Scenario According to Bestregit. People **or Organisations** are assigned to roles, roles are assigned to activities, activities are part of a network of work-steps, activities produce results, and roles use resources to perform the activities. These relationships are then defined for a certain business case of the organisation to have a description of the best way to perform the business case.

Note:


While process models in the 80's based on work-flow driven charts, in the 90's process models became role centred. This is due to the fact that

- people identify themselves with roles and thus feel to be part of the system leading to "role ownership thinking" and higher acceptance
- role models design roles and information flows between them. This information flow based architecture is needed for later implementation in an Intranet work environment.
- Work-Flow based structures can easily be derived from role models, following a defined set of rules. (work flow is just a complementary view)

A peculiarity for teamwork: The team assignment also then defines access rights. In many cases when it came to non-software-engineering but rather general service and political domains the users mixed different types of teams (students and university staff, government and researchers etc.) into just one scenario which would have caused privacy problems

1.3 Definitions Concerning Measurement and Experimentation

Quality. The degree to which a system, component, process, or service meets customer or user needs or expectations. [IEEE-Software Engineering Standards]

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Customer's Quality Perception. A customer would not look into how the processes were used to develop a service or product, he would just evaluate the quality of the delivery. (how his/her expectations are met).

Manager's Quality Perception. A manager who coordinates work and delivers products or services to a customer evaluates the quality of his work on how well structured his work processes are to ensure that he can deliver quality to customers.


Bestregit's Perception of Quality. Quality of an end product / service (on which the customer perception bases) is the sum of the quality of the intermediate results of the work steps in the work flow (what the manager can review and control).

Metric. A quantitative measure of the degree to which a system, component, process, or service possesses a given attribute. [IEEE-Software Engineering Standards]

Measurement. The activity of assigning numbers using a *defined counting or evaluation process* (a metric) on the characteristics of a product or activities.

Experiment. An experiment is a practical try-out of the previously established models and results. It must be based on a feedback mechanism that allows to measure the impact of the experiment at the start and after performance of it. Both measures are then used to make conclusions about success/failure of the experiment and required refinements.

An experiment is the first step to create a learning/feedback loop around ideal models established by the managers' quality perceptions (see 3.2.2.3).

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3 The Methodology

3.1 A Learning Organisation Model for Innovation Management

3.1.1 Introduction to the Service Sector

The service sector for companies is rapidly growing because companies have to deal with more and more complex problems. In 1999 services based enterprises represented already over 65% of European companies.

A regional study in Bestregit showed that in the last decade governments tended to outsource general (public/social) services to external non-profit based service units. In Austria, for instance, in 1999 there were already about 85000 such associations and non-profit organisations, the same trend happening in other countries of Europe as well.

There are, however, hardly any training possibilities for these service intermediaries. This is the same for intermediaries that are responsible for the technology and innovation transfer between larger and smaller companies and between universities and companies. This is due to the fact that knowledge about technology transfer is uncodified, tacit knowledge that cannot be simply taught and learnt.


The jobs for the technology and innovation transfer intermediaries are undergoing two changes: new jobs are created, the old jobs are changing parallel to the rapid changes in the technologies used.

Paradoxically innovation management institutions themselves have difficulties in adapting to the industrial change and the globalisation of the markets and often work with obsolete methods and tools, especially in the field of organisational development and information transfer.

3.1.2 How Innovative Organisations Operate

During 1997 and 1998 Dr. Sean McCarthy of Hyperion (*a contributor to the Bestregit white paper*) was asked by the European Commission and the Finnish Ministry of Trade and Industry to evaluate their programmes on Innovation. In particular, he was asked to study how innovative enterprises and innovative regions operate. The work involved the evaluation of 50 innovative regions in the EU and an evaluation of over 200 innovative companies. In addition, every known study on the subject of innovation was analyzed. The following is a summary of the main findings. It considers two aspects - how the innovative organizations operate and how the individuals in the organizations respond to continuous change.

The main finding was that innovative organisations invest time and money into the understanding of the fundamentals of the forces of change i.e. they have a working knowledge of the different forces. They develop this through focussed training courses. They understand the different cultures through personal contacts. They do this through networking at a personal level. They study trends and they are always up-to-date. In fact they consider the study of trends as the most important source of new ideas. They concentrate their energy in areas where they excel or where no one else can operate. They outsource all other non-core activities. They are practical users of information technologies and they have information technology strategies in place. In their terminology they 'know the system'.

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The individuals in the innovative companies were also studied and the following were the results. The individuals were crystal clear on what they were expected to do and more importantly they were clear on what they were not expected to do. They had adequate time to learn new skills. In most companies each person had their own training plan. They had access to up to date information. Everyone knew what was happening all of the time. The individuals were competent users of information technology - this in fact was considered basic training. The individuals were enthusiastic about their work and their future as they considered their skills to be more important than any physical infrastructure or management hierarchy in the organisation. They saw themselves as the most important assets in the organizations.

3.1.3 Why do Managers Invest Into Process Improvement

Operating leverage is related to the cost structure, that is the re-partition between the fixed costs and variable costs. Process improvement means an increase in fixed costs (training, consulting fees, equipment, improvements in office conditions, etc...) to decrease the variable cost (average effort to do a certain service at a given quality).

If, due to process improvement, the firm is able to deliver the same quantity and better quality of service using less person months than earlier, then it will have the potential to take advantage of operating leverage.

Learning Leverage - It is an empirical fact that costs decline exponentially when experiences of staff are accumulated and the steady reuse of these experiences is well managed by the firm. This is called production leverage in the manufacturing industry, while learning leverage is a better expression in the service sector.

Marketing Leverage - Process improvement, maturity achievement, ISO 9000 certification have an important impact on the perceived capability of a company and on the perceived value of its products or services, which contributes to improved customer satisfaction.

Human Leverage - Employee motivation (empowerment) can be significantly influenced by immaterial means like management styles and organizational structures. This means that the same employees can perform more work and even in better quality than otherwise.

Financial leverage means borrowing funds and investing them with a return higher than the cost of the debt. If a company is able to exploit financial leverage, it can make money on funds it does not own.


Therefore the objective of managers is to reach a financial leverage through the achievement of operating, learning, marketing, and human leverage.

However, a financial leverage is by definition a type of leverage a non-profit service organization can never exploit. This issue is nonetheless very relevant in case of non profit organisations. An exact quantitative return is usually not identifiable in such cases, but a qualitative return statement confirmed by the profit oriented customers and possibly public representatives serves clearly the interests of the non-profit service organization.

3.1.4 The Bestregit Methodology Building Blocks

See also Figure 2.

In a first step a process improvement manager (or team) is established, which might be 25% of a person in very small organisations and up to 2-3 people in middle sized organisations.

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Concerning Goal Analysis the methodology gives guidance about how to structure a mission, business field goals, and work oriented goals, and how to make them traceable by measures. In most service organisations we found that there was no long term view and they lived just from project to project. A mission helped to create a larger perspective of the business and to increase the staff motivation because all could understand the direction into which the business was going.

As it has been stated by the study in section 3.1.2 it is an important success factor that people were crystal clear about the organisation's mission and how they could contribute to it. Thus the achievement of a clear goal structure largely increases the human leverage (see section 3.1.3).

In older days of "business re-engineering" experts tended to recommend to model all processes. However, this will never pay back, and thus Bestregit evaluates the priority of goals and does the team-work models for those goals which

- ◆ Highly contribute to the business success and mission
- ◆ Show a high motivation of staff
- ◆ Include team-work models that can be many times used in a business year to achieve a return on investment.

As it has been stated by the study in section 3.1.2 it is an important success factor that organisations focus on their core business and out-source all other non-relevant activities.

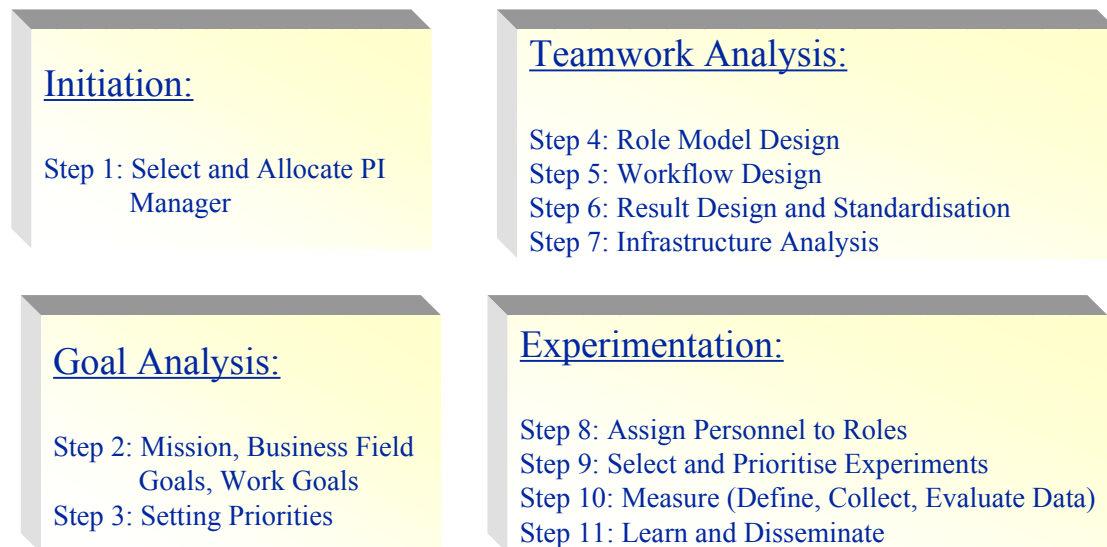



Figure 2 : The Building Blocks of the Bestregit Methodology

Concerning Team-work Analysis the methodology gives guidance about how to design role and communication models for those goals which have been selected in the Goal Analysis. While role models focus on roles and how they work together in a team, the work-flow models focus on work-steps, the sequence of work-steps and all results that have to be produced. Bestregit offers a simple to follow methodology to design role models and to translate them into work-flow models.

Both views (role and work-flow model) are used, role models for staffing a team, and work-flow models to control the performance.

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As it has been stated by the study in section 3.1.2 it is an important success factor that people were clear about what they do and what they should not do. A clear responsibility separation into roles which work in a team helps to manage that.

Once the role models, work-flow models, and results are clear, all ingredients are there to establish a common administration on an Intranet. And, as it has been stated by the study in section 3.1.2 it is an important success factor that organisations invest time into new trends, new technologies, and networking.

In most service organisations we found single individuals working for their client and no team-work to share effort and reach a critical mass of effort to be able to serve bigger projects. The achievement of a clear team-work structure largely increases the operating leverage (see section 3.1.3) and allows that by sharing effort in a team bigger projects can be managed, and more projects can be done with the same staff.

Concerning Experimentation the Bestregit methodology gives guidance about how to start, perform, and conclude experiments to test and refine the models to become practical and re-usable solutions for your business.

The Bestregit experiments showed that this phase contributed to the learning leverage so that good experience was multiplied and bad experiences were avoided, creating a learning effect in the organisation.

3.1.5 The Learning Stages

From a people point of view (as mentioned before people are the most important resource in service organisations) the following learning stages are run through:

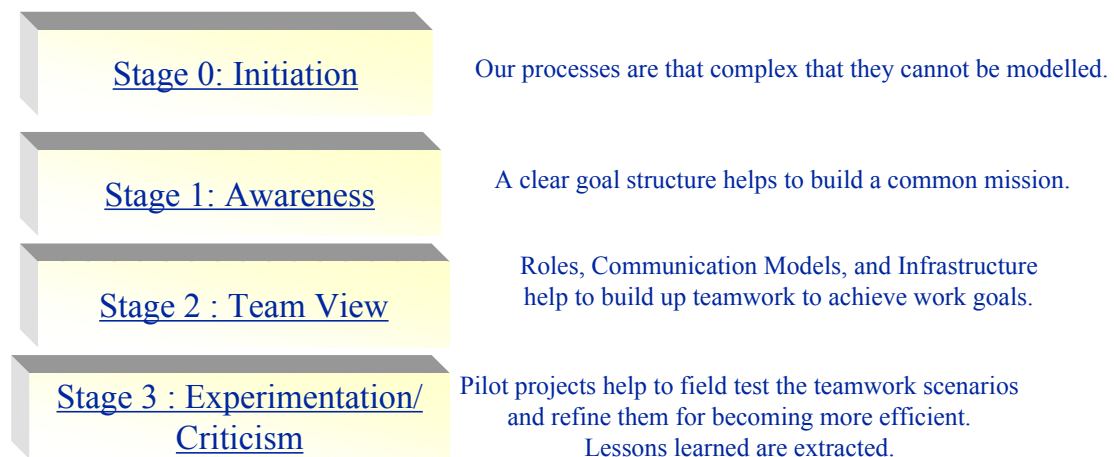



Figure 3 : The Individual Learning Stages of the Bestregit Methodology

Stage 0 : Initiation

At the start:

Our processes are so complex that we do not believe that they can be modelled and shared. It is just the skills of some heroes fighting for innovation transfer success.

Later: A continuous restart to work on further needs.

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Stage 1 : Awareness

A goal analysis helps to put a structure (with goals) in place for an organisation and makes a common understanding possible.

At this level the visions, goals, and structures can be shared and understood. It is the first time that the hero culture changes into a team with a shared vision. Please note that through a structure (documented and understandable for all) all can contribute and share the goals from that point onwards.

Stage 2 : A Team View

An information flow and process analysis helps to identify team roles, information flows, work results, and required resources for different work scenarios in the organisation.

At this level people who work in a team start to separate responsibilities, make information flows clear, and agree on work results. This leads to defined team-work structures for different business cases of the service enterprise.

From that point onwards people know their roles, know how to work in a team and how to exchange information to jointly reach a certain service goal.

This level usually ends with an enthusiastic feeling of the people involved. But

Stage 3 : The Level of Criticism/Feedback

No learning environment works without criticism and feedback loops to further build on the goals and the team-work scenarios.

An experiment and try-out shows if the models and goals are right or have to be adapted. This has to be based on measurement of data (objective evaluation). This usually leads first to a pessimistic phase (after the enthusiastic one) until people realise that the continuous industrial change will always require adaptation and further refinement of the models and goals.

Ultimate Goal : A Change Driven Learning Organisation

People understand that change is a natural requirement and that change can be managed as long as there is a structure in place which allows to share goals, work processes, and knowledge.


Change is not a single-person activity it is a change of the shared goal, vision and work force of the entire team following an adapted structure for the organization into the future.

3.1.6 The Learning Spiral

See Figure 4.

Process Improvement means to run through continuous learning cycles of -

Stage 0 "Initiation":

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Initialising the next improvement effort. By doing this again and again and showing to the outside world that continuously services are improved, trust at the customer side is built and a marketing leverage is achieved.

Stage 1 "Awareness":

Creating a mission so that all staff can follow a mission as a basis for a team-work motivation to achieve the human leverage.

Stage 2 "Team View":

Creating a team-work infrastructure with role based models to achieve work oriented goals to achieve the operating leverage.

Stage 3 "Experimentation/Criticism":

To run pilot projects testing the team-work models and refining them, as well as diffusing the lessons learned, with the aim to achieve a learning leverage.

with the objective of a financial leverage with higher sponsorship, more industry support, and higher assets.

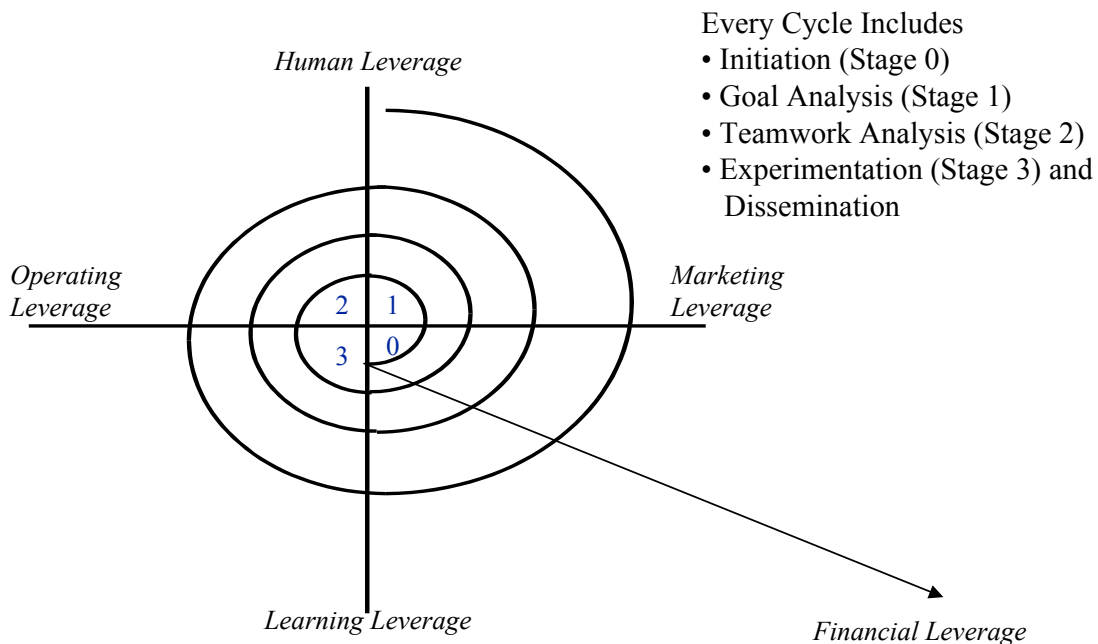



Figure 4 : The Learning Spiral – A Continuous Process of Learning

1.4 How to Start ?

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3.1.7 Investment of Resources

No improvement works without effort investment. In smaller organisations usually an improvement manager is appointed, in larger organisations a process improvement team is installed which co-ordinates process improvement projects.

A typical figure is that about 3% of the effort of the organisation goes into continuous process change and improvement management (note: the value of 3% was published by Hughes Aircraft in 1995 in IEEE software engineering, it can vary between 3 – 5 % depending on the organisation's size).

Examples:

- an organisation with 8 people would have one improvement manager who works 25% of his time solely on process improvement issues.
- an organisation with 100 people would have 2-3 people working full time on process improvement and change management issues.

3.1.7.1 Step 1 : Installation of a Process Improvement Manager (Team)

This improvement manager is responsible for

- performing the improvement steps outlined in this guide-line
- organising and performing the goal analysis workshop and preparation of a consistent goal tree
- organising and performing the workshops for team analysis and preparation of consistent team communication, role, and work-scenario models
- presenting and comparing the results with all other partners, units, departments and innovation transfer organisations
- organising and conducting experiments to try out the improved practices and measure the impact
- evaluating if the goals have been achieved and initiating further changes and refinements
- **convincing about the teamwork benefits. This teamwork can be inside the organisations or with outsiders.**

If the teamwork involved outsiders, it is recommendable to have another workshop involving both.

in his own organisation. Based on previous industry experience the performance of all steps in the guideline takes a duration of about 1,5 years.

In larger organisations the change management team structure is more complex (see Figure 5) :

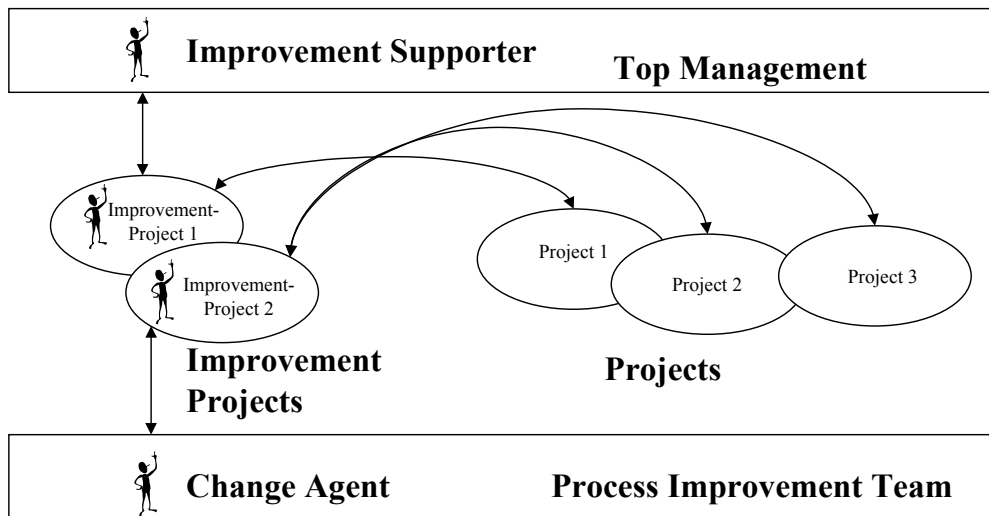


Figure 5 : Structure of a PI Team in Large Organisations

In larger organisations the process improvement team contains a number of improvement managers. Each of them is co-ordinating process improvement projects to which people from the development/service projects part-time contribute. This ensures that what they learn they multiply back into their projects.

Each improvement project usually then also has a member of the management board as a supporter who ensures that management support is given and appropriate resources are made available.


3.2 Analysis of the Current Situation

3.2.1 Goal Analysis


3.2.1.1 Step 2: Identification of the Mission, Business Field Goals, and Project Goals

The process improvement manager organises either two days of interviews or four smaller interviews with the following structure:

Step	Workshop Topic	Goal	Checklist / Result
2.1	Mission <i>Interview of top management</i>	an understanding of - the mission - the major business fields a draft high level goal tree	<ul style="list-style-type: none"> The size should not be more than ¼ A4 page maximum All business fields must fit into the statement It must have a long term perspective The organisation's business plan reflects the

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Step	Workshop Topic	Goal	Checklist / Result
			mission <ul style="list-style-type: none"> Are quantitative data used (and which) to check the success of the mission / business plan
2.2	Prepare Draft Goal Tree Version 0.1 Produced by the process improvement manager	A commonly understood mission architecture	A graphical representation of the high level goal tree with mission, business fields, and quantitative performance indicators
2.3	Business Field Goals <i>Interview of the business field managers</i>	an understanding of <ul style="list-style-type: none"> which business field goals can be established and used as indicators for mission's success how the business field goals relate to the mission how the projects in the certain business field contribute to the fulfilment of the business field goals 	<ul style="list-style-type: none"> The workshop starts with a presentation of the goal tree 0.1 There should be a clear differentiation between the business fields Each business field should have one clear goal into which all projects fit It must have a middle term perspective It must be clear how the projects contribute to the achievement of the business field goal
2.4	Prepare Draft Goal Tree Version 0.2 Produced by the process improvement manager	A commonly understood mission and business field architecture	A graphical representation of the goal tree with mission, business fields, business field goals, and links between mission and business field goals.
2.5	Project Goals <i>Interview of the staff / project managers</i>	an understanding of <ul style="list-style-type: none"> which projects can be established and used as indicators for mission's success how the business field goals relate to the mission how the projects in the certain business field contribute to the fulfilment of the business field goals 	<ul style="list-style-type: none"> The workshop starts with a presentation of the goal tree 0.2 Staff and project managers reflect and agree which work specific goals contribute to the business field goal If possible, quantitative data as success/failure indicators are agreed

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Step	Workshop Topic	Goal	Checklist / Result
2.6	Prepare Draft Goal Tree Version 1.0 Produced by the process improvement manager	A commonly understood mission and business field architecture, with work specific goals, and work performance quantitative indicators	A graphical representation of the goal tree with mission, business fields, business field goals, work specific goals, and links between mission, business field goals, and work specific goals.
2.7	Dissemination Produced by the process improvement manager	Making this new goal structure visible to all to initiate the first feedback (learning) cycle	<ul style="list-style-type: none"> • Present the goal tree 1.0 to all staff • Signpost the goal tree in the office • Collect feedback and be prepared for continuous refinement

Table 1 : Steps 2 and 3 - Goal Analysis Interviews

3.2.1.1.1 Tips and hints to make it right


- A goal tree with no backward trace-ability is a nice picture but cannot be verified in its operation. Be aware of that. Backward trace-ability means that quantitative performance indicators are used for measuring the achievement of the work specific goals, and that these indicators help to evaluate a business field indicator, which in turn can be used to measure the mission's success.
- Goal trees are a translation of perspectives of different staff levels in an organisation. In fact the process improvement manager helps to create a structure which translates the top manager's view to become understandable for the business field managers, and translates the business field manager's view to become understandable for the staff and project managers. Often it highlights that people work without specific goals that could be tracked. Be aware of this translator role and potential human communication conflicts.
- Use simple metrics and measures as quantitative indicators which can be easily collected and evaluated. Do not invent new types of data for which the organisation must make big efforts to collect and measure.

3.2.1.2 Step 3: Setting Priorities Before Further Effort Investment

While in Bestregit the three organisations got funding to model all work scenarios, in a real business case this approach would not be applicable. Business and service demands lead to

- Limited time
- Limited resources
- Priorities of the organisation.

So it is usual that organisations (once they defined the goals) set priorities for improvement. Comparable studies at large German industry show that from approx. 8 improvement

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proposals approximately 3 are selected. In smaller organisations the improvement initiative is usually reduced to one action line that seems most beneficial to follow.

It means significant effort to run at least one improvement, and to achieve return on investment you have to invest your improvement resources properly and carefully.

Therefore

- Select the business field which is most promising at the moment or **if you need to teamwork with outsiders, select the business field more open to co-operate**
- Select within that business field a typical work scenario which highly contributes to the success of the business field
- Give a quantitative rationale for the selection (why, which impact has it now and which is expected)

and apply the methodology for this selected case.

3.2.1.2.1 Tips and hints to make it right

- If you select a business field with a typical work scenario, do not forget the “re-use factor”. If you model a work scenario that is just used once, it is not worth the effort. Only a modeling of those scenarios is most fruitful which can be many times re-used (are used for a long time again and again), shared and multiplied amongst a group of people.
- If you want to select more than one business field and scenario, do not try more than 3 at the same time. Experience showed, that even in big organisations with larger resources more than 3 experiments in parallel got critical.
- If you have a clear organigram usually each department represents a business field. However, experience shows that goal analysis leads to refinements in the organigram.

3.2.2 Team-work Analysis


The Bestregit methodology

1. Identifies the roles and their responsibilities
2. Designs work scenarios (cooperation of roles to achieve a common work specific goal)
3. Restructures the role based models into work-flow based structures (if so wished)

The process improvement manager organises either 5 different workshops or a larger set of corresponding smaller interviews.

To track the workshop results (at a later stage) each workshop

- should have an agenda (a minimum set of questions to be discussed)
- aims to include all the personnel involved (as much as possible)
- results in graphical models
- results in minutes
- results in homework to be done by the process improvement manager

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Usually the workshops are held every two to three weeks, and in-between the workshops the process improvement manager does the homework.

Initiation	Activity	Result
Planning of workshops	<u>Based on the above set of rules:</u> <ul style="list-style-type: none"> planning the 5 workshops and allocating resources 	workshop dates fixed, the resources for the process improvement manager reserved, people are informed and invited to the workshops

Table 2 : Team-work Analysis Initiation

3.2.2.1 Step 4: Identify the Roles and Design a Role Model

Roles include

- role name
- role description
- responsibilities and activities per work scenario in which the specific role is integrated
- required skills
- information flows from and to other roles (represented in role diagrams, see Figure 6)

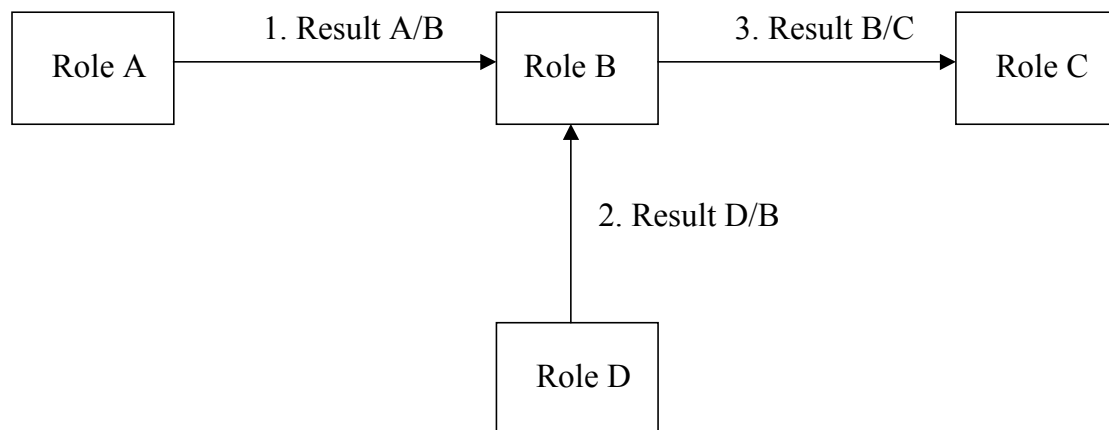



Figure 6 : Elements in a Role Model Structure

As Figure 1 outlines the three basic elements of a role model are roles (squares), information/result exchanges (arrows), and a defined sequence in which the information actually flows (numbers on the arrows). Please note that parallel flows get the same number on the arrows.

Step 4	Activities	Result
Workshop 1	<ul style="list-style-type: none"> Review of organisational goal architecture, different business fields, teams, and work scenarios identification of roles involved identification of communication flows 	<ul style="list-style-type: none"> meeting minutes clearly documenting the results from the discussions see also tips and hints to make it right below

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Step 4	Activities	Result
After Work 1	between roles and teams' architecture <ul style="list-style-type: none"> • using the “tips and hints to make it right” below to check if roles are missing • following the notations in Figure 6 • using the feedback documented in the workshop 1 minutes to describe the roles and role communication diagrams as outlined in 4 • using the feedback documented in the workshop 1 minutes to review the organisation’s architecture and goal tree and to refine the architecture established in steps 2 and 3 	<u>Teamwork Model Version 0.1 :</u> <ul style="list-style-type: none"> • an organigram showing the organisation and its teams based on different business fields • a role and communication flow model for the selected work scenarios • an organigram showing the organisation and its interfaces to co-operating partners • a description of the roles

Table 3 : Step 4 - Identification of Roles

3.2.2.1.1 Tips and hints to make it right

- One person can play many roles. One role can be played by many persons. There is no one to one relationship between people and roles !
- One role could be part of different work scenarios.
- Each team-work scenario should not have more than 5 – 7 roles as a maximum.
- Not all information flows between roles should be modelled, otherwise there would be hundreds of arrows. Only those arrows should be included which
 - Carry a result (e.g. document, report, etc.) to be exchanged
 - Relate to a control specific flow (review and / or test and / or acceptance inputs)
- Typical roles are director, manager (of a business field), team co-ordinator, designer, consultant, customer, partner, etc.
- Please check also the following roles: quality manager, management board, reviewer, improvement manager.


If you like you can give the roles other names, or assign their duties to existing roles, but still the below tasks make sense in any organisation

Quality Manager. A quality manager formally reviews if the staff is following the defined work scenarios. She/he documents deviations, and checks compliance with the agreed work procedures.

Do you have a role who is responsible for reviewing that the staff follows the defined work scenarios ? (once they are established)

Reviewer. A reviewer technically reviews results from the content point of view before they are given from one to a next role. At least a review id needed before material goes out to a partner or customer.

Do you have defined roles who review the technical content of results (as they are defined in the work flows and produced by the teams) ?

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Management Board. It is a review function of high level business goals, contracts, and plans.

Does the management board understand their duty of reviews of business plans, goals, and contracts ?

Improvement Manager. See Process Improvement Manager in Step 1.

3.2.2.2 Step 5: Identify the work-steps and create a work-flow

After performing step 4 the selected part of the organisation (step 3) is defined as a work scenario with defined roles and communications between the roles. However, a role diagram does not show a specific schedule, does not explicitly highlight the results that are produced, or does not show administrative storages of materials (e.g. a database of experts, a project archive, etc.).

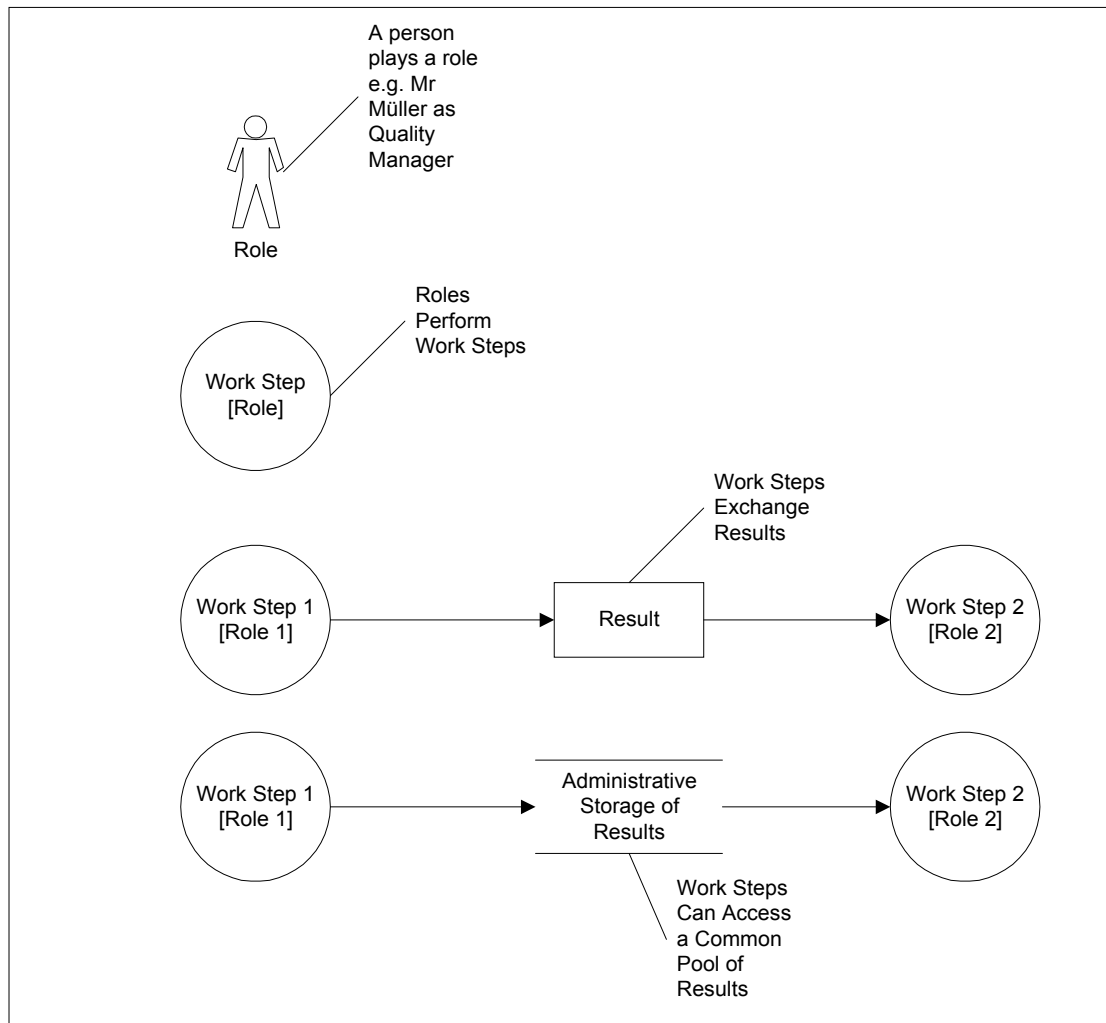



Figure 7 : Elements of a Workflow Architecture

In most cases the work-flow can be directly derived from the role model applying the following set of rules (compare with Figure 6)

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- If a role A sends information A/B to a role B, this implies a work step W(A) which produces a result for role B
- If a role D sends information D/B to a role B, this implies a work step W(D) which produces a result for role B
- If a role B sends information B/C to a role C, this implies a work step W(B) which produces a result for role C
- And so forth

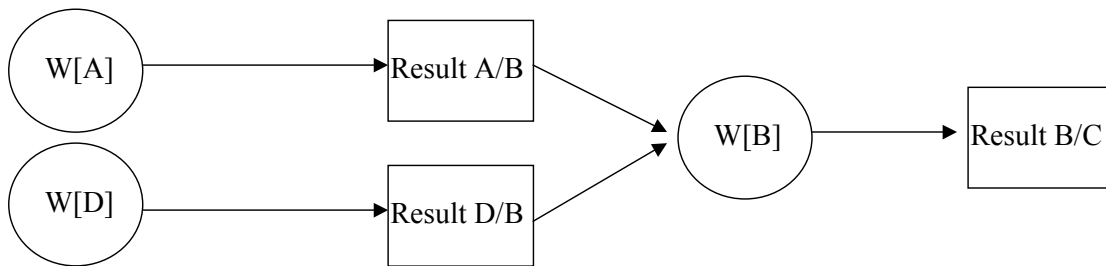


Figure 8 : Transformation of Role Models into Work-flow Views for Figure 6

Sometimes a result is more than a single document or report. It could be an updated database, for instance. In this case the sign of an administrative storage is used.

- If a role A sends information A/B to a role B, and this information is an administrative storage, this implies that a work step W(A) maintains an administrative storage A/B which is accessed by role B (Figure 9).

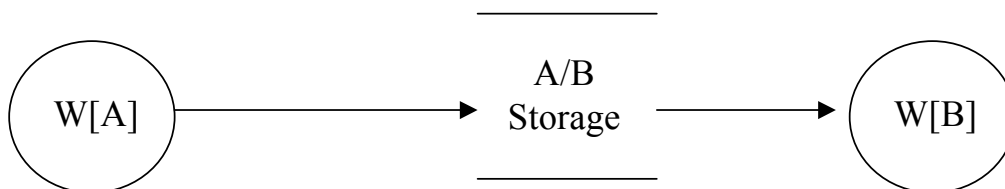



Figure 9 : An Administrative Storage of Results

In addition to the top level diagram each work step definition includes

- a unique work step name and identifier
- inputs and outputs (the incoming and outgoing) results
- a role performing the work step (in brackets [])
- an estimated duration in days for the work step, and an expected effort for the role to conduct the work step

Step 5	Activities	Result
Workshop 2	identification of work steps including <ul style="list-style-type: none"> • management practices • design practices • practices related to customer and 	<ul style="list-style-type: none"> • meeting minutes clearly documenting the results from the discussions • see also tips and hints to

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Step 5	Activities	Result
	information services <ul style="list-style-type: none"> • information and communication management practices • people motivation and management practices • practices related to work optimisation • practices related to innovation transfer 	make it right below
After Work 2 Step	<ul style="list-style-type: none"> • using the “tips and hints to make it right” below to check if practices are properly identified • to design work flows following the notations in Figure 8 and Figure 9 • using the feedback documented in the workshop 2 minutes to describe a set of required work steps for each role model • using the feedback documented in the workshop 2 minutes to describe a related work-flow for each role model • reviewing and comparing the feedback documented in the workshop 1 and workshop 2 minutes to ensure consistency of role models and workflows 	<u>Teamwork Model Version 0.2:</u> Version 0.1 plus <ul style="list-style-type: none"> • graphical representation of work scenarios <ul style="list-style-type: none"> • for each team • for a co-operation with other institutions • a consistent assignment of roles to worksteps in the work scenarios • scenarios that take into account professional industry practices as outlined in the M-Questionnaire

Table 4 : Step 5 - Design of Work Flows


3.2.2.2.1 Tips and hints to make it right

Workshop 2 can result in the identification of a number of inconsistencies, such as

- A work step to be carried out by a role, although the responsibilities/activities of that role (as a result of workshop 1) do not include this work step. → Refine the role description.
- A work step to be carried out by a role, which failed to be identified in workshop 1. → Include the new role in the role models, and describe it.
- A responsibility/activity defined for a role which should be a work step, but this work step failed to be identified in workshop 2 → Include the additional work step in the corresponding work flow.

In general this means that an important task of the after-work of workshop 2 is to work on the consistency between the role models and the work-flow views. To prevent too much after work, a good way to do the interviews in workshop 2 would be

1. Look into the role models and transform them into work-flow views (see Figure 8 and Figure 9) and start the workshop 2 with these models.
2. Only discuss if people agree or do not agree, and what work steps are missing. This will bring up the inconsistencies during workshop 2 instead of at a later stage in the after-work.

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3.2.2.3 Step 6: Identify the Results Produced by the Work-Steps

After performing the previous steps 1 – 5 the organisation is understood as a defined network of work steps, performed by roles, with a number of results to be produced in a team. However, so far the results are just a graphical element in a work-flow chart or the name of an arrow in a role model.

The question is “how can we evaluate if a work-flow model or a role model is right”? Here the Bestregit methodology takes into account different perspectives:

Quality. The degree to which a system, component, process, or service meets customer or user needs or expectations. [IEEE-Software Engineering Standards]

Customer’s Quality Perception. A customer would not look into how the processes were used to develop a service or product, he would just evaluate the quality of the delivery. (how his/her expectations are met).


Manager’s Quality Perception. A manager who coordinates work and delivers products or services to a customer evaluates the quality of his work on how well structured his work processes are to ensure that he can deliver quality to customers.

Bestregit’s Perception of Quality. Quality of an end product / service (on which the customer perception bases) is the sum of the quality of the intermediate results of the work steps in the work flow (what the manager can review and control).

Therefore the Bestregit methodology assumes that

1. Those results (documents, reports, administrative storages, leaflets, products, etc.) which contribute to the quality of the end product / service and have been identified in the role and work – flow models should be analysed and a “best-to-contain” structure proposed with a template.
2. A review mechanism (check if the reviewer, quality manager, and improvement manager roles are there !) is to be installed to ensure that the intermediate products are reviewed and compared with the “best-to-contain” structure (if and how they used the template).
3. Each template contains attributes, such as
 - a unique result type name (for identification reasons)
 - identifiers: author, date, version
 - purpose (how is it used in the project)
 - scope (who reads it, what does it cover and what not)
 - abbreviations and acronyms used in the document
 - references (if the proposed content is taken from standards, books, articles, and other referenced materials)
 - a proposed content (proposed contents list, check-lists for completeness, prepared 80% ready templates with guides to complete the remaining 20% etc.)
 - a list of FAQs (Frequently asked questions to this result to avoid overhead at a later stage of usage)
 - resource (physical address to find the template)

Step 6	Activities	Result
Workshop 3	discussion and presentation of	<ul style="list-style-type: none"> • meeting minutes clearly

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Step 6	Activities	Result
	<ul style="list-style-type: none"> • all role communication models • all work-flows • all identified roles and practices identification of <ul style="list-style-type: none"> • results produced by work steps in the work-flow scenarios • the content of the results based on previous successful experience 	documenting the results from the discussions <ul style="list-style-type: none"> • see also tips and hints to make it right below
After Work 3 Step	<ul style="list-style-type: none"> • using the “tips and hints to make it right” below to check if still roles, results, or work steps are missing • using the feedback documented in the workshop 3 minutes to refine the <ul style="list-style-type: none"> • work-flow scenarios • role communication models • using the feedback documented in the workshop 3 minutes to describe the wished structure/content of results 	<u>Team Work Version 0.3:</u> Version 0.2 plus <ul style="list-style-type: none"> • refined, clear, and agreed <ul style="list-style-type: none"> • roles and responsibilities • work-flow scenarios • a common understanding of the wished content of results <ul style="list-style-type: none"> • templates • master examples from successful projects

Table 5 : Step 6 - Identify the Results


3.2.2.3.1 Tips and hints to make it right

Workshop 3 (like workshop 2) can result in the identification of a number of inconsistencies, such as

- A result is to be produced by a work-step which is not included in the work flow scenarios. → Refine the work-flow description.
- A result is to be produced by a role which is not included in the role models. → Refine the role models.

In general this means that an important task of the after-work of workshop 3 is to work on the consistency between the role models, the work-flow views, and the results. To prevent too much after work, a good way to do the interviews in workshop 3 would be

1. Look into the role models and work-flow views. For the identified results look for examples from previous projects. Take these examples with you to the workshop.
2. Make a proposed structure out of the examples, and include improvement options (for the results). With that start the workshop. This will bring up the inconsistencies early during workshop 3 instead of at a later stage in the after-work.
3. Use master examples from successful projects, only in areas of not much experience invent new “best-to-contain” structures.

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3.3 Measurement and Experimentation

3.3.1 Selection of Experiment Type

Metric. A quantitative measure of the degree to which a system, component, process, or service possesses a given attribute. [IEEE-Software Engineering Standards]

Measurement. The activity of assigning numbers using a *defined counting or evaluation process* (a metric) on the characteristics of a product or activities.

Experiment. An experiment is a practical try-out of the previously established models and results. It must be based on a feedback mechanism that allows to measure the impact of the experiment at the start and after performance of it. Both measures are then used to make conclusions about success/failure of the experiment and required refinements.

An experiment is the first step to create a learning/feedback loop around ideal models established by the managers' quality perceptions (see 3.2.2.3).

Experiments base on the Bestregit models and can be of three types –

- Process Model Optimisation
- Process Definition and Teamwork Analysis
- Measurement and Experimentation

3.3.1.1 Process Model Optimisation

One selected work-flow is chosen for a try-out. The required duration times and efforts for the roles are set at the beginning either based on previous experience or assumptions (if no past data are there). People are assigned to the roles and the work-flow is initiated.

Deviations, problems, and improvement wishes are documented throughout the experiment controlled by the process improvement manager.


This includes

- Longer duration times than expected
- More or less effort than expected
- Work steps not required and additional required work steps
- Buffer times needed (when a work step is long in an wait-status due to inputs from outside)

The experiment results in a refined work model, with adapted duration and effort times. This is like running through a set of learning cycles, and the more cycles you run, the more realistic and professional the processes become.

3.3.1.2 Infrastructure and Work Process Optimisation

The Bestregit methodology analysed all required ingredients to build a computer supported work environment (Intranet) in the steps 4 to 6.

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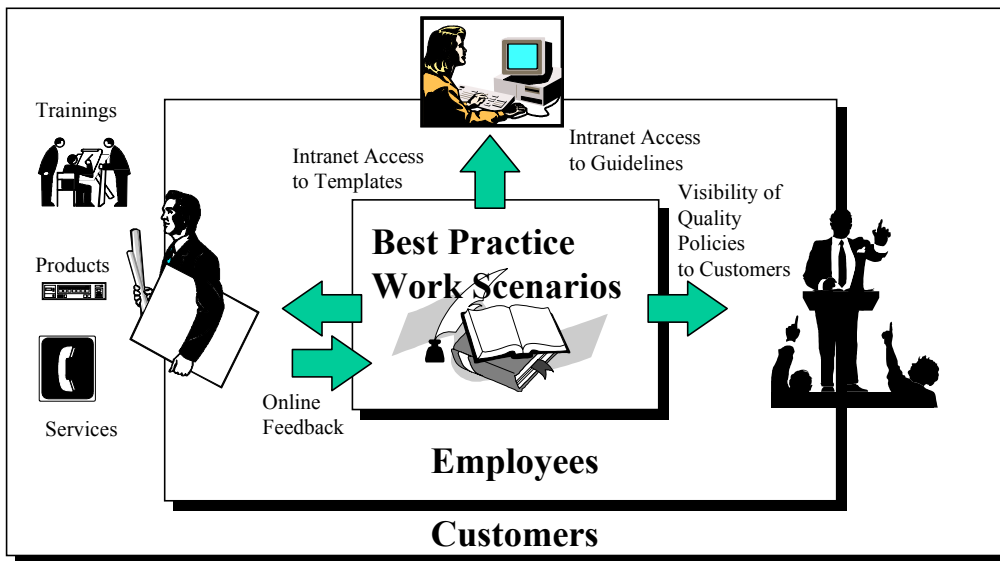


Figure 10 : Intranet Work Environment Using Bestregit Like Results

- Role and work flow models as “best practice work scenarios” can be made visible to all staff
- Result templates can be accessed and ensure a common quality in design and documentation throughout the projects. The “resource” attribute of the results helps to find the template within the Intranet.
- The goal architecture can be made accessible to customers increasing the customer trust in the organisation’s vision.
- For each project (following certain work scenarios) project archives are created producing and archiving results (based on the result templates)
- On-line feedback should be installed from the staff to the improvement manager to keep the feedback/learning cycle alive.


A typical measurement at the start would be different satisfaction evaluations:

- Evaluation of the staff satisfaction with the work environment and procedures.
- Evaluation of the customer satisfaction with the products/services delivered.

With the assumption that after implementation of the infrastructure, and the computer support of best practices, work can be better done, is more complete, traceable and will deliver as promised.

3.3.1.3 Human Resource Capability Optimisation

In the past skills were largely defined on a single-person level. However, the systems and services in industry become that complex, that sometimes one person would work for her/his life-time or more to complete the task. So team work is growing in its importance and in the new education and skills white paper of the European Union inter-personal and communication skills are emphasised. This is also the focus of the Bestregit methodology which creates frameworks (role models) that allow people to identify themselves with roles, know their interfaces to other team members, and through a feedback cycle can build on the team work structure.

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The assumption is that if you try out a Bestregit role model in staff training and integration that the time to be integrated and effective for organisations decreases. The staff integration time is reflected by the effort of the person which introduces the person to the environment. The less additional effort is needed to become a new effective employee, the smoother the integration works. This tutoring effort can be used as an indicator.

3.3.2 Initiate the Experimentation Phase

3.3.2.1 Step 7: Analyse the Infrastructure


See also 3.3.1.2.

Step 7	Activities	Result
Workshop 4	Again discussion and presentation of <ul style="list-style-type: none"> • all role communication models • all work-flows • all identified roles and practices • agreed structure of results based on templates and master examples from previous successful projects • identification of technology infrastructure supporting the team-work • and identification of technology infrastructure (see 3.3.1.2) 	<ul style="list-style-type: none"> • meeting minutes clearly documenting the results from the discussions • a draft architecture of a computer supported work place infra structure
After Work 4 Step 7	<ul style="list-style-type: none"> • using the feedback documented in the workshop 4 minutes to describe refined <ul style="list-style-type: none"> • work scenarios • role communication models • <i>electronic templates</i> and master examples for results • using the feedback documented in the workshop 4 minutes to describe the current and wished infrastructure for team support and communication 	<u>Team Work Model Version 1.0:</u> Version 0.3 including <ul style="list-style-type: none"> • standard templates and master examples for results to be produced in the teams • recommendations about how to use the existing infrastructure • a documented feedback mechanism about how to improve the infrastructure • a documentation of a first assignment of the personnel to the roles

Table 6 : Steps 7 and 8 – Analyse Infrastructure Support and Assign Roles

3.3.2.2 Step 8: Assign your Personnel to the Roles

See also 3.3.1.1

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Assign your personnel to the roles and enact your model. The process improvement manager becomes a moderator of a theatre play reviewing if all people play their roles well.

This typically results in a role table for the organisation, with roles and lists of people assigned to that roles.

Role assignment must be agreed in workshop 4 (see Table 6).

3.3.2.3 Step 9: Select and Prioritise Experiments

Be aware of two major people motivation problems.

- **Not Invented Here Syndrome**
 - People are generally reluctant to give up their investment in the current solution, especially if it is an ingenious use of existing resources which they discovered for themselves after much effort and for which they have been given recognition. This is known as the not-invented-here syndrome.
- **Black Box Syndrome**
 - Sometimes the new technology is a closed system - a black box - that the users do not fully understand, either because they have not had the opportunity or because it is beyond their technical ability. Given a choice between using this technology or something that may not work as well but which they understand, they will almost always choose the latter. This is the so called black-box-syndrome.

Figure 11: Typical People Management Problems

So it could happen that all assumptions and models are right but because of demotivation factors the improvement fails. If you have no people carrying out the roles, there will be no processes that are executed.

While the “not-invented-here-syndrome” is no danger for BestRegit, the “black-box-syndrome” is very probable. New technologies and environments usually cause the “black-box-syndrome” in the first place, especially if it happens to managers from non-IT sectors. Therefore it is needed to have a strategy in place to avoid that the Bestregit methodology is misinterpreted, and that sufficient support and motivation is in place.


This is the reason why the Bestregit methodology proposes a people driven priority definition of improvement actions.

Improvement experiments are prioritised by

- the impact on the organisation’s performance
- the motivation of staff to do this certain experiment
- the business motivation of the managers to support the execution of this certain experiment

Workshop 5 is therefore performed as follows.

1. The process improvement manager establishes a list of potential experiments (see 3.3.1).

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2. The process improvement manager asks all involved staff to propose further improvement experiments
3. The process improvement managers organises a moderated game to set priorities

A list of 4-7 experiments is proposed. All staff get three green stickers. All managers get three red stickers. All (confidential over lunch time) put one sticker to each of the favoured actions. Only one per action, three stickers altogether.

The result is a table of listed improvement experiments with management and staff motivation figures.

e.g.	staff	management
e1. improve workshop organisation	4	0
e2. computer support student placement co-ordination	9	2
e3. improve staff integration and measure	18	7

4. The process improvement manager adds logical sequence information. This mean that sometimes a certain improvement a must be done before an improvement b can be done. This leads to a list of logical sequence numbers.

e.g.	staff	mgmt.	logical
e1. improve workshop organisation	4	0	1
e2. computer support student placement co-ordination	9	2	1
e3. improve staff integration and measure	18	7	1
e4. improve EU project coordination	3	2	2 (e2)


This would mean that experiment e4 should come after experiment e2.

5. Finally the table is used to decide with which experiment to begin the learning cycles.

3.3.2.3.1 Tips and hints to make it right

Search for those experiments where

- Both the management and the staff agree (both gave high scores). This ensures that the management is willing to provide resources and the staff is motivated the execute the experiment.
- Due to the logical sequence no dependency is there, and the experiment can be started without input from another one.
- The actual resource situation in the organisation allows to perform this specific experiment.

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- The time frame is no longer than a maximum of 6 months between experiment start and completion. An old saying from Ovid from the old Roman Empire “«*Adde parvum parvo magnus acervus erit*», *Add Small to the Small, and the Amount will be Big!*

Workshop 5 can result in a number of people management problems, such as

- All experiments proposed show a dis-agreement between the staff and the management → try to get an agreement !
- A high dependency of the proposed experiments list allows to just start with one where either of the groups, management or staff, did not show a high motivation. → try to avoid these dependencies !

3.3.3 Experiment Performance and Dissemination

3.3.3.1 Step 10: Measure (Define, Collect, Evaluate Data)


This activity shall produce a small data collection plan describing

- which data to be collected
- for what purpose the data are to be collected
- who collects the data when and how
- how the data are stored
- and how the data are evaluated

There is no standard set of data, because they depend on what you want to measure.

Some examples per type of experiment (3.3.1) are –

- Process Model Optimisation
 - Duration times of work steps
 - Effort data for people executing the roles
 - Total cost data
 - Customer satisfaction data (questionnaires)
- Infrastructure and Work Process Optimisation
 - Usability data (how many are using the new environment)
 - Feedbacks collected
 - Customer inputs collected
 - Staff / customer satisfaction at the beginning and at the end
- Human Resource Optimisation
 - Tutoring effort to integrate new staff

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- Time (from employment start to integration and team acceptance) to be integrated in duration times

The goals are mostly related with

- Reduce time
- Reduce effort
- Increase satisfaction

3.3.3.2 Step 11: Learn and Disseminate

At the end of each learning cycle process improvement managers tend to run through three phases from hell to heaven (from a psychological point of view) –

1. Pessimism (Hell)

As it should be (and is usual) an experiment illustrates the difference between an ideal model and the real world. So, of course, the experiment will show deviations from the first planned ideal architecture.

The positive interpretation is, the first learning cycle leads to a big change, the more cycles I run the less big the changes are, until the model is equal to the reality. This is known as the convergence principle in mathematical theory.

The negative interpretation is that the model failed and all staff feels like a group of wolfs who start to bark and bite and say “we knew from the beginning that our improvement manager is just a nice painter of models”.

2. Understanding / Optimism

The process improvement manager realises that improvement runs in learning cycles and uses the deviations to improve the model and install it as a practice.


The wolfs (staff) have again a bone to fight for, the improvement manager has a means to guide the wolfs performance through an improved and more realistic model, and at the end all wolfs will realise (after some time) that they started to learn from the experiments too.

3. Realism

The process improvement manager starts to understand

- That change is a natural requirement, and it is not possible to achieve a stable environment in a world that has such a high technology innovation rate. However, what can be achieved is an environment that is able to deal with change in a manageable way.
- The most benefit comes from lessons learned concerning
 - Negative experience : what should be avoided in future ?
 - Positive experience : what should be re-used by the other projects in future.


These kinds of experiences are to be disseminated through the Intranet, workshops, and management.

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Business – Return on Investment. If an experiment finds out that a practice x saves time y, then this time saving can be multiplied within the organisation and partnerships by disseminating practice x to all partners and projects. If an experiment finds out that practice z causes unnecessary effort e, then effort savings can be multiplied by disseminating how practice z has to be performed to avoid overhead e.

This business multiplication defines the real value of process improvement in terms of cost and effort savings over the time.

Note: It is wrong to evaluate the process improvement effort on basis of the models, it is right to evaluate the process improvement effort on the number of experiences and their impact that could be multiplied.

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4 Cultural Factors

4.1 Key Factors Influencing the Success of a Team

This chapter is based on the experience from experts who participated in the TopTransfer project (a Leonardo exchange initiative to add human resources to the Bestregit initiative), the contributions from experts to the EuroSPI conferences, and the cultural factors that have been discussed in the previous PICO project and seem applicable for Bestregit. You can find a list of references in section 5.

4.1.1 The Societal Iceberg

(K. Siakas, EuroSPI 1999, [77])

The iceberg metaphor shown in Figure 12 can be used to depict the contrasting aspects of organisational life.

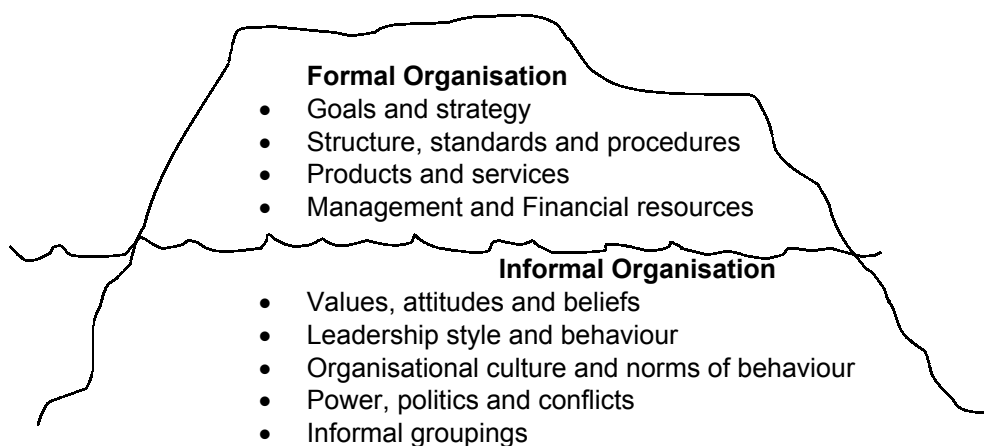



Figure 12 :The organisational iceberg [20]

The visible part of the iceberg, shows the formal aspects of an organisation while the informal aspects of an organisation hide under water. The informal part is the greater part of the organisational iceberg and will act to help or hinder an organisational process of change. It often leads to resistance to the change process.

The view of organisations existing as systems of interrelated elements operating in multi-dimensional environments is becoming widely accepted. Both publications [78] and [80] report about Political, Economic, Technological and Socio-cultural factors that influence organisations in their structures, strategies, management process and means of operating including technology and individuals.

The typical starting situation in a Bestregit project is that a strong informal organisation with internal rules and personal habits is in place, and goals are just in the heads of some people and the common sense of teamwork is not understood. There are some heroes fighting alone and believing that they are the best in their job. It takes a while (at the least the step of the

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goal analysis) that people start to realise common goals and interest, understand the management mission, and begin to think to achieve larger goals by forming a critical mass of teamwork.

This situation happened at all field test sites in Spain, Austria and Ireland at the beginning of the Bestregit project. This situation has also been observed and measured in a consulting project in IT industry at a major German firm. See below Figure 13 [1].

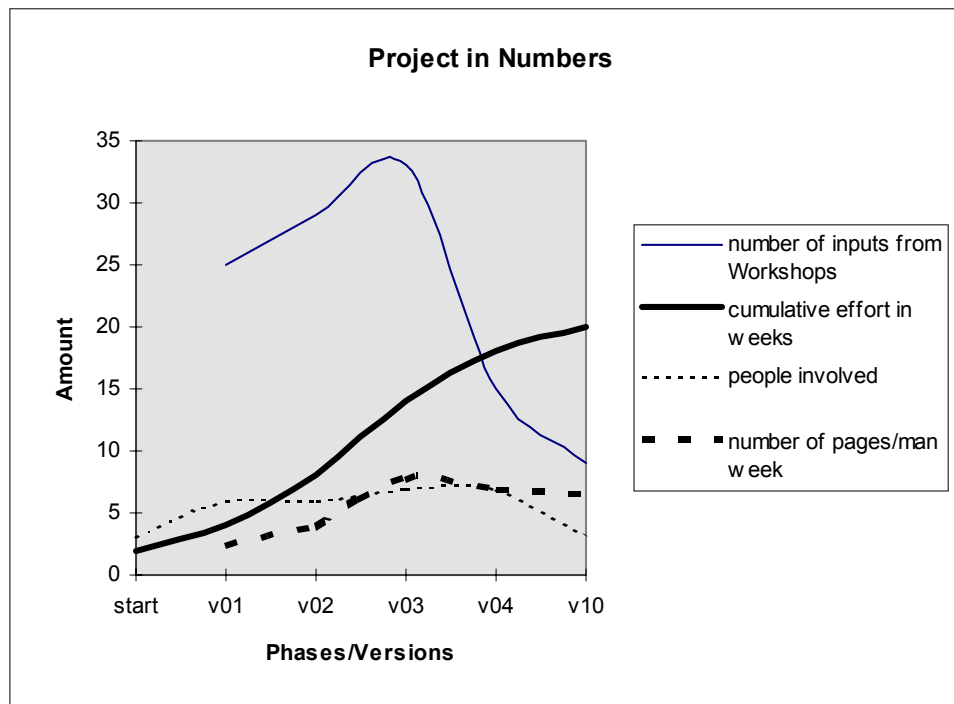


Figure 13: Modelling Project - Data Evaluation


In a modelling project (see Figure 13) over a period of a year data were collected to evaluate the performance and to see if lessons learned can be extracted. This resulted in two major people oriented findings :

- Number of Inputs from the Workshop

If key people (from the informal part of the organisation) are left out from the workshop discussions, problems will be detected very late, usually when the staff complains that they cannot work with the model. Therefore it is a good sign if the input-curve increases in the first phases of the project and decreases towards the end of the project. The sooner you realise the requirements and problems the sooner you will get on the right way. The right selection of people to involve in the modelling is decisive.

- Cumulative Effort in Weeks and Number of Pages per Man Week

In the beginning the consulting and the field test team had a lot of discussions and interviews because it really took time to understand the existing procedures and to deal with people 's wishes and suggestions. So the modelling in the first two months was very

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slow. Once the goals, procedures, and missing practices were well understood and a team spirit was established, the modelling speed doubled (compare versions v02 and v03 in Figure 13). If you are on the right track, there must be a jump in your effort and productivity curve, otherwise you have not reached the “point of no return” when suddenly all staff and the modelling team start to work towards a shared vision.

In Bestregit for the field test sites in Spain, Austria, and Ireland this point of no return was achieved even at a later stage than in the above described German project due to additional cultural factors influencing the project:

- The Language Problem
- Discrepancy in the Perceived Understanding
- The Cultural Diversity
- Reluctance to Change
- The Political Context

4.1.2 The Language Problem

People speak different languages beside their native language

- A language based on their professional background (computer scientist, sociologist, lawyers, etc. speak very different languages and use terms that are specific to their profession).
- A language based on their position (directors, managers, staff, and administrative personnel have different languages).

Position Language. It is a fact that directors, managers, and staff speak different languages and may have different viewpoints on the same situation. This has been observed in a field study in the US involving above 70 companies. An interview of business managers (directors) and project managers on the same topics illustrated -

- They only agreed on one third of the topics and in the rest they disagreed.
- They agreed on improvement potentials in areas such as unrealistic project planning, inability to detect problems early, insufficient number of checkpoints.
- They disagreed on improvement potentials in areas such as customer management, progress tracking, staffing problems, technical complexities, project scopes.


More details can be found in [1].

Professional Language. Bestregit was not only a multi-cultural project, it was also an inter-disciplinary one. The participating people had largely differing backgrounds including computer science, history, languages, business, sociology, and law. Thus, when we started with an improvement guideline version 1.0 written in a computer science jargon nearly most of the users failed to understand.

This situation was solved in two ways:

First a **common notation** was agreed to express models and goals in a simple way. The notation had to be simple enough to be understood by non-computer background people. This formal language was then used in all further meetings by all partners as a basis to discuss their results with the others.

Secondly the guideline had to be refined once again to make more definitions and explain the improvement steps in a non-computer-scientist specific jargon. Thus a success criteria was the use of an **inter-disciplinary language** that allows common understanding of principles

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and steps across professions such as computer science, history, languages, business, sociology, and law.

This misunderstanding caused by different professional languages at the beginning of the project can be illustrated by the following facts:

- In the first kick of meeting the general managers stopped the presentation of the computer science people after two slides (of 40) because things were completely misunderstood.
- The number of meetings were nearly 5-6 a year at the beginning re-discussing the same issues again and again, whereas after reaching the “point – of – no – return” this was reduced by half for the rest of the project.

Only after a common notation was used and the language had been refined to be understandable by all the “jump-in-the-effort-curve” was achieved. (see Figure 13).

4.1.3 Discrepancy in the Perceived Understanding

In [96] in a project “OSIRIS” a practical example of the Johari window is shown and how discrepancy in the perceived understanding was measured.

The Johari window is a tool originally designed for conceptually distinguishing between 4 different possible states with regard to knowledge of oneself, these states are shown in the diagram below:

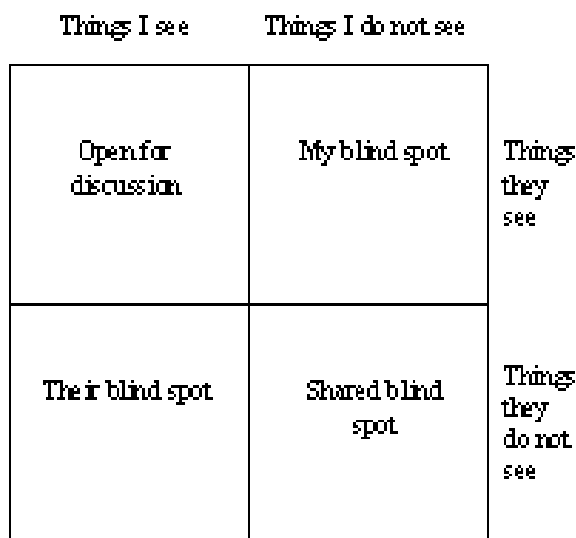



Figure 14: The Johari Window

The same principle can be applied to measure 4 different possible states with regard to knowledge of one’s culture, and the understanding of other cultures in the project team.

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Respondents to the OSIRIS survey were asked to rate, on a scale from 1 to 5, the discrepancy between the understanding cultures in the ISIS project have of themselves, and the understanding others have of them. The questions asked were based on the Johari Window.

The table below shows the perceived discrepancies between each culture’s understanding of itself and the understanding other cultures have of it. Note that the ratings for each culture are by the other two cultures not by own culture.

	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>
Discrepancy between German respondent's own understanding of themselves and that of respondent	4	3.7500	.5000
Discrepancy between Irish respondents' own understanding of themselves and that of respondent	12	2.3333	.7785
Discrepancy between Greece's respondents' own understanding of themselves and that of respondent	10	2.4000	.8433

Figure 15: Measured Discrepancies in the Perceived Understanding

The bigger the discrepancy the smaller the incidence of perceived shared understanding and, implicitly then, the fewer issues “open for discussion”. It is interesting that Germany was the only culture with an above-average mean score which may imply that other cultures more often than not find their own understanding of German culture to be at odds with that of the Germans’ own and that “blind spots” , which can hinder effective interaction, may be greater than the Germans themselves believe.

Nearly the same situation appeared in the Bestregit project. The project prime and the consulting partner who developed the improvement guideline were native Austrian. In technical science issues and due to the same native language Austrians are similar in this respect to the Germans.


It happened during the project that some results (e.g. the interactive training course) had to be re-agreed a number of times although the Austrian group felt that clear definitions have been agreed already.

4.1.4 The Cultural Diversity

Layers and dimensions of national, organizational, and other group cultures have been identified by thorough scientific research. Layers of culture from the most superficial to the deepest are briefly summarised here:

- *Symbols*: words, gestures, pictures, objects that carry a particular meaning which is only recognized by those who share the culture.
- *Heroes*: persons, alive or dead, real or imaginary, who possess characteristics which are highly prized in a culture, and who thus serve as models for behavior.
- *Rituals*: collective activities technically superfluous in reaching desired ends, however socially essential.
- *Values*: broad tendencies to prefer certain states of affairs over others.

The first 3 layers are visible to an outside observer; their cultural meaning, however is invisible. The 4th layer, that is values are acquired so early in our lives, that they remain

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unconscious. Therefore they cannot be discussed, nor can they be directly observed by outsiders.

Geert Hofstede did a survey of 116,000 IBM employees across 40 countries and identified four important dimensions of national value systems. Hofstede's four dimensions [79] are:

Power Distance :Power Distance Index (PDI) indicates the extent to which a society accepts the fact that power in institutions and organisations is distributed unequally among individuals. In small PDI countries subordinates and superiors consider each other as existentially equal and decentralisation is popular, while large PDI countries subscribe to authority of bosses and centralisation.

Collectivism / Individualism:Individualism indicates the extent to which a society is a loose social framework in which people are supposed to take care only of themselves and their immediate families. Collectivism is a tight social framework in which people distinguish between in-groups and out-groups and expect their in-group to look after them. In individualist countries people are supposed to take care of themselves and remain emotionally independent from the group. The dominant motivation is self-interest. In collective societies the concern is for the group. Individuals define their identity by relationships to others and group belonging.

Femininity / Masculinity: Masculinity indicates the extent to which the dominant values in a society tend toward assertiveness and the acquisition of things. In masculine cultures importance is placed on assertiveness, competitiveness and materialism in the form of earnings and advancement, promotions and big bonuses. Femininity indicates the concern for people and the quality of life. In feminine cultures the concern is for quality of relationships and the work of life, nurturing and social well being.

Uncertainty Avoidance: Uncertainty Avoidance indicates the extent to which a society feels threatened by ambiguous situations and tries to avoid them by providing rules, believing in absolute truths, and refusing to tolerate deviance. In weak uncertainty avoidance countries anxiety levels are relatively low. Aggression and emotions are not supposed to be shown and people seem to be quiet, easy-going, indolent, controlled and lazy while in high uncertainty countries people seems to be busy, fidgety, emotional, aggressive and active.

All the four dimensions are a continuum between two extremes and only very few national cultures, if any, are wholly at one or the other extreme.


According to Calori [89] four clusters emerge from Hofstede's European results.

- A Germanic Group (high masculinity and low power distance)
- A Scandinavian Group (high individualism, low masculinity, and low power distance)
- An Anglo-Saxon Group (high individualism and masculinity, and low power distance and uncertainty avoidance)
- A Latin Group (high uncertainty avoidance and high power distance)

It is interesting that each of the 3 field test partners belongs to a different cluster (Austria to the Germanic Group; Ireland to the Anglo-Saxon Group, Spain to the Latin group).

A subjective impression from the Bestregit project tells that in Europe we already exchange cultures at such an extent that people who did mobility projects before already are a mixture of cultural indicators.

e.g. The Irish expert organising the field test in Ireland was native Irish but had lived in Poland a long time.

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e.g. The Spanish expert organising the field test in Spain was native Spanish but had lived in England for more than one year.

And so forth.

Of course, we learn from other cultures, and especially good and wishful attitudes are likely to be copied.

Individualist or collectivist value systems fundamentally influence the perception and usefulness of group decision systems and teamwork infratstructures. Hofstede [70] referred to a management researcher from the U.S., Christopher Earley who performed an enlightening laboratory experiment on a group of 48 management trainees from southern China and 48 matched management trainees from the U.S. Half of the participants in either country were given group tasks, the other half individual tasks. Also, half of the participants in either country, both from the group task and from the individual task subsets were asked to mark each completed item with their names, the other half turned them in anonymously. “The Chinese collectivist participants performed best when operating with a group goal and anonymously. They performed worst when operating individually and with their name marked on the items produced. The American individualist participants performed best when operating individually and with their name marked, and abysmally low when operating as a group and anonymously.”

This means that also continents will have different requirements to the same methodology, and Bestregit would have to be promoted differently in China than in Europe or the US. However, the higher the acceptance of group decisions the more effective a Bestregit approach would become.

4.1.5 Reluctance to Change – Heroic Defense

The study from Hofstede was performed within IBM sites and thus mainly addressed people in the software and electronics sector within one and the same company. However, the basis for the Bestregit project and field tests was general (pubic) and non-profit service organisations who are working on behalf of their states and the European Commission. So the environment is not really comparable and the Hofstede results not directly applicable.


These service organisations are usually integrated into existing research, educational, industry, or state-service networks and have a quite hierarchical structure. Decisions must be agreed with a diector, presented and agreed on a board (with representatives from social partners, local industry, the government) and must be planned wth the major funders together.

Thus managers in these “innovation transfer organisations” are schizophrene (have to be) –

- They must show high individualism to find new innovaive methods and ways: *The Innovaton Agent’s View*.
- They on the other hand should be controlled by all the above mentioned parties and individualism is required to be low: *The Board View*.

Mostly the board consists of state officers and senior managers of local industry (with a high uncertainty avoidance), whereas the innovation agents are contracted consultants with high individualism and low uncertainty avoidance.

When Bestregit was presented the first time the board representatives (with a high unertainty avoidance) did not see an urgency for a change. Why changing the world, if everything has been stabilised so nicely?, a typical view of people with high uncertainty avoidance.

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This dispute is also discussed in Greek philosophy with the different opinions from Plato and Heraclitus. (and is therefore thousands of years old). In short, Plato believed in the ideal world and what we see are parts of it. So a fixed immutable ideal world of God exists. Heraclitus believed that all things flow, and that the world underlies a continuous evolution. And Heisenberg some decades ago stated that with each light on an object we already change the world. The radical constructivism then does not believe in the ideal immutable Plato world anymore (see also quantum physics) but also the ideal God world is continuously interactively changing. So the belief in an immutable stable situation is an illusion. Therefore the fight against required change and evolution is like heroic defense which cannot be won.

The experience in the Bestregit project shows that these people with a high uncertainty avoidance run through a set of self-experience stages:

- At the beginning they let Bestregit start as a sensible project but keep a sceptical mood.
- After the goal analysis they start to understand what is going on but still smile about the goals.
- After the teamwork analysis they see how the work force restructures and that the models create a better image to outside (as a quality organisation), attracting further funders. At this stage they get interested and ask questions and want to understand the details.
- In the experimentation phase it is the first time that they see measurable results and start to react positively, and allow that their immutable, secure world is changed.

From a cultural perspective (taking Hofstede results and these additional factors into account) the following impacts became visible in the Bestregit project.

- In Austria (by the board), in Ireland and in Spain (through changes of the managers) in the first 9 months of the project it was given from one manager to the other like a hot iron none can hold too long to not burn her/his fingers.
- Once a manager with high uncertainty avoidance was found who still supported the requirements of change
 - Austria overdid the modelling and produced more results than required.
 - Ireland caught up quickly with much individualism by entering many new requirements constantly.
 - Spain caught up quickly as well, but always applied a certain freedom in the implementation (e.g. combining notations to describe all materials in less pages).


So the impression is that what Hofstede published for IBM might show different results if it is applied for a different industry sector.

4.1.6 Integrative Aspects

The globalising trend in recent years has resulted in more cross-national studies. Being a member of a European network implies having a universal culture. For the past few decades there has been an important debate about convergence or divergence of work values. International organisations have tried to understand the diverse value system of their multinational structure. The objectives of the multinational organisations is to create a universal culture in the whole organisation and to integrate multi-domestic operations with individuals who hold opposed work related values.

The same applies for the service and innovation transfer sector where the free mobility within the European Union builds on a kind of universal European culture.

In recent times the convergence between information technology and communication technology has led to what many futurists and social forecasters have called the "information society" or the

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"information age". The most commonly put case for the existence of the information society begins from a technological basis: information and communication technologies now "speak the same (digital) language", making it possible to link or *network* computers, regardless of the distance (or cultural boundaries!) between them. More and more sophisticated computers, we know, are finding their way into homes and places of work across the world and, in turn, are becoming parts of a global network of all networked computers. The unprecedented growth of this network, it is argued, has led to socio-economic changes of such magnitude that they are leading to a cross-cultural movement towards a new form of society, a global homogenisation of the world's cultures through the ever-extending influence of the Internet and other related technologies.

In the previous project PICO, however, we noted that a similar integration process in the US took more than 200 years, and thus Europe might take a different road but still achieve a high level of integration. In [1] the authors state some European success criteria based on results from experience stories from Siemens, Alcatel, and many smaller companies across Europe:

Process Improvement Driven by Business

In the U.S. the use of assessment methods became inevitable in the mid 80's. A large part of the software systems funded by the DoD (Department of Defense) were actually never used because their quality was not sufficiently checked and error behaviour could not be predicted making it a hazard to use such systems in critical situations. In Europe (except of UK) defense was not the most important business. It was banking, insurance, manufacturers (cars), and so forth.

So it was much easier in the U.S. to motivate companies to use process improvement approaches because the larger funds ran through DoD and organisations were eager to search for this funding.

In Europe this was much more difficult. Defense is not the strongest driving force, it is rather market demands (to show ISO 9001 compliance for achieving customer confidence), supplier relationships (to satisfy the customer and get further contracts), and ambitions to achieve a competitive structure for the future organisation.

The major question in Europe is (and was), if there is no "must" through a defense force, what can motivate business managers to provide necessary funds and support for process improvement initiatives.


People as an Asset of the Company

While Europe was surrounded by two worlds, an extreme communist view in Eastern Europe and a strong capitalist view in the U.S., most European nations went through a political process that created a kind of social capitalism in the last century.

In Italy, for instance, the communist party is very strong and all other parties had to create an alliance to keep the communist parties out of power as long as there was the cold war. In France, for instance, it is a history over hundreds of years and revolutions in which the principles of "liberte", "fraternite", and "egalite" were kept alive and led to well defined social rights and labour laws which protect employees and their rights.

Also in Germany big electronics firms have founders who were social people and who created a synergy between their company and the social rights and social support of people. So employees have much more rights and protection than in the U.S. which created a much more people oriented approach, and motivation becomes a key asset

It is not enough in Europe to just define processes and assess them and if they are not properly executed to set staffing consequences or exchange people. This is the reason why many European organisations try to establish processes with a team-work culture that allow people to identify themselves with the process and to actively work with others in a highly motivating environment.

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Goals as a Translation of Different Viewpoints

As a consequence from the above descriptions, in a people centred environment a huge task is to reach a critical mass of people that follow the vision and are motivated to achieve the business manager's goals in process improvement.

A major problem relies in the fact that different languages are spoken, and it seems hard to find a consistent architecture of goals that links the objectives of the different groups in such a way that success and the achievement of goals becomes traceable.

A goal tree then becomes a translator of process improvement understanding across different groups within and outside an organisation.

All these aspects Bestregit took into account and build them into the methodology, through a continuous interaction between the improvement guideline developer and field test partners from different cultural environments.

4.2 Experiences in a Large Trial Across Europe

This describes the experiences with a large trial in which an e-working server system TEAMWORK <http://www.euteamwork.net> which can be configured with BESTREGIT based role models has been used and tested in different domains across Europe.


4.2.1 Summary

1. TEAMwork is so far „socially agnostic“: It defines a methodology and technology independently from the existing social structure of the organisations using TEAMwork. The TEAMwork/Bestregit methodology is extremely precise in describing the different roles to be taken/given during the conclusion of a project. It is, however, not within the scope of TEAMwork to relate these roles to the social structure of the organisations applying TEAMwork. TEAMwork's social agnosticism regards also the structure of virtual organisations or communities created during a TEAMwork project.

2. The TEAMwork trials led to the creation of complex social spaces which are characterised by a high degree of mutual awareness, of co-ordinated co-operation and of common planning and representation of work. Many studies show that these are characteristics of successful working communities. Mutual awareness, co-ordinated co-operation and common planning and representation of work can also be ascribed to the partly virtual organisations that were the result of the TEAMwork trials.

3. The social spaces that came to existence during the trials were created by the extension of existing social spaces. The roles defined by applying the Bestregit methodology redefined in many cases the social roles of the participants within their organisations. The project managers of the trials and of the TEAMwork project as a whole had a high degree of experience in both project management and conflict resolution. The TEAMwork methodology was perceived as highly efficient for the organisation of a complex work processes integrating participants of different organisations. The formalised TEAMwork methodology was supplemented by less formalised forms of communication and interaction for the setting up of the social space of the whole project, for the creation of social relations between the participants and for the resolution of minor conflicts.

4. The creation of a social space during the TEAMwork trials was partly achieved via the tacit application of rules for the creation of successful working communities. In some cases these rules were identical with organisational patterns that have been described by proponents of

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the design patterns movement in the software industry . Examples are "Community of Trust", "Size the organisation", "Scenarios define Problem", "Fire Walls", "Unity of Purpose", "Diverse Groups", "Holistic Diversity", "Domain expertise in roles", "Subsystem by skill" and "Face to face before working remotely". We will use these and other patterns in interpreting the interviews with participants of the TEAMwork trials in order to find a language for the description of the TEAMwork social space.

5. In order to secure the success of TEAMwork as a product existing independently from its creators and used under normal working circumstances and conditions, these patterns should be made explicit for future use. TEAMwork demands an explicit modelling of the social conditions and requirements of its use if it wants to achieve a sustainable success. Future customers should dispose of a "social toolbox" consisting of organisational patterns and patterns of interaction that can be used for the creation of the social space that will be extended by the TEAMwork/Bestregit methodology for the management of well defined projects. By modelling the social conditions of its use TEAMwork loses its "social agnosticism". This does by no means entail that TEAMwork can only be used by organisations of a fixed type. As in the trials TEAMwork will be an extension, not a replacement of existing social structures.

6. The TEAMwork methodology was perceived as efficient and useful by the participants of the trials, as they revealed in their interviews. The participants missed a representation of the TEAMwork social space in the NQA Software, especially in the user interface. For a large part of their social interaction the participants used or had to use other means than the NQA server. Future versions of the software should allow for a "social translucence" of the virtual space generated by the NQA server for the participants of a TEAMwork project. Important part of a socially translucent virtual working space should be the representation of the members of the virtual working community, especially their presence at a given moment, and channels for informal communication via e.g. chat or voicemail.

4.2.2 Relevant Organisational Design Patterns


It was not a goal of the TEAMwork trials to develop a TEAMwork Pattern language. Therefore we are using an existing pattern language that was developed and is still developed for organizations that are developing software. The most developed pattern language in this field is documented by Harrison and Coplien (<http://www.easycomp.org/cgi-bin/OrgPatterns?BookOutline>). It turns out to be relatively easy to use some of the pattern descriptions by these authors in order to describe the patterns that were implicitly applied during the TEAMwork trials. This pattern language is currently developed in connection with the project EASYCOMP (IST Project 1999-14191, homepage: <http://www.easycomp.org/>). In this paper we are referring to the organisational design patterns described by Harrison/Coplien by referring to their numbers and names (in capitals). We are reusing Harrison's and Coplien's subdivision of the patterns into "Organisational Design Patterns" in a strict sense, "Peacemeal Growth Patterns", "Organisational Style Patterns" and "People and Code Patterns". We do not use patterns, that are directly related to software architecture.

4.2.2.1 Core Organizational Design Patterns

COMMUNITY OF TRUST

„If you are building any human organization Then: you must have a foundation of trust and respect for effective communication at levels deep enough to sustain growth.“

Remark: The interviews and our experience show that a community of trust was established during the trials. The formation of a "community of trust" was the result of meetings creating

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positive relations between the participants, of a common interest in the success of the project, and an efficient and open management style. For applications of TEAMwork in the future it should be explicitly checked which factors in an organisation could endanger mutual trust. It is decisive to create and maintain human relationships between the participants around the formalised communication via the NQA server.

NAMED STABLE BASES

„If you want to balance stability with progress, Then: have a hierarchy of named stable bases that people can work against.“

Remark: In the case of the TEAMwork trials the existing institutional practices in the participating institutions constituted the named stable base. The role configuration could remodel these existing practices.

WORK FLOWS INWARD

„If you want information to flow to the producing roles in an organization Then: put the developer at the center and see that information flows toward the center, not from the center.“

Remark: This pattern was realised by the configuration of the roles of the participants. The result was, that none of the interviewed persons complained about missing information. In the future this pattern should be used explicitly when flows of information in a TEAMwork project are defined.

TEAM PER TASK

„If A big diversion hits your team, Then: Let a subteam handle the diversion, the main team keeps going.“

Remark: This pattern was a guiding principle of the organisation of the trials with different teams working in different domains and subteams of these teams responsible for individual tasks. During the trials there was no threat of a major diversion. In future applications of TEAMwork an „emergency team“ should be defined and nominated in order to be able to handle such cases.

4.2.2.2 Piecemeal Growth Patterns

SIZE THE ORGANIZATION


„If an organization is too large, communications break down, and if it is too small, it can't achieve its goals or easily overcome the difficulties of adding more people. Therefore: start projects with a critical mass of about 10 people.“

Remark: We can relate this pattern to the assessment of TEAMwork by people working in organisations of different sizes. TEAMwork is clearly perceived as a methodology for large and distributed organisations.

ENGAGE CUSTOMERS

„If you want to manage an incremental process that accommodates customer input, and if you want the customer to feel loved, Then: engage customers after Quality Assurance and project management are prepared to serve them.“

Remark: This pattern was realised by the role configuration when clients were at stake. It customer role in this sense is for example the “risk owner” role in the defense domain trial.

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SURROGATE CUSTOMER

„If you need answers from your customer, but no customer is available to answer your questions, Then: create a surrogate customer role in your organization to play advocate for the customer.“

SCENARIOS DEFINE PROBLEM

„If you want a good characterization of customer needs Then: use scenarios to define the problem.“

Remark: This pattern is explicitly realised by TEAMwork. The role definition is always done via scenarios. It is one of the TEAMwork core patterns that are implemented by every TEAMwork application.

FIRE WALLS

„If you want to keep your developers from being interrupted by extraneous influences and special interest groups, Then: impose a Fire Wall, such as a manager, who "keeps the pests away."“

Remark: This pattern was implicitly realised during the role configuration for the trials. TEAMwork implements this pattern nearly in a automatic way because TEAMwork defines the circulation of information explicitly. For the trials as a whole this pattern was implemented by the overall project management handling external communication, e.g. the communication with the EU-representatives.

UNITY OF PURPOSE

„If a team is beginning to work together, Then make sure all members agree on the purpose of the team.“

Remark: For the TEAMwork trials as a whole this pattern was realised during the preparation of the project and the meetings of all participants in the first phase of the project. For the single trials it was realised by the definition of scenarios and goals. This pattern is a core pattern that is implemented by Bestregit: the definition of roles is undertaken on the base of a common mission statement.

DIVERSE GROUPS

„If everyone has similar views, you have a good team, but too much normalization leaves important problem areas unaddressed. Therefore: Assemble a diverse team, based on different experiences, cultures, and genders.“


Remark: This pattern was implicitly realised by the different organisations participating in the trials. The differences of language, culture, gender, age experience and roles were not perceived as negative. TEAMwork seems to be a methodology for teams that are characterised by such differences.

PUBLIC CHARACTER

„If you need a catalyst to bring people together, Then: recognize some roles as PUBLIC CHARACTERS.“

Remark: The project manager and the technical director were “public characters” for the course of the trials. These roles were not explicitly defined. For future TEAMwork projects it is useful to define “public roles” explicitly in the first phase of a project.

HOLISTIC DIVERSITY

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„If Development of a subsystem needs many skills, but people specialize, Then: Create a single team from multiple specialties.“

Remark: This pattern was implicitly realised by the whole TEAMwork team and the communication of people with very different skills and professional background. Here again TEAMwork seems to be especially appropriate for heterogenous teams.

The role based approach of TEAMwork makes this pattern a useful supplement to the TEAMwork methodology. The roles themselves say nothing about individual skills of the TEAMmembers. The combination of people with different skills in a team is especially necessary if the team has to fulfill tasks that cannot be completely formalised and represented by the configuration of the NQA-Server.

DOMAIN EXPERTISE IN ROLES

„If you need to staff all roles, it's difficult to determine how to match people to roles to optimize communication. Therefore: Match people to roles based on domain expertise, and emphasize that people play those roles in the organization.“

Remark: This pattern was implemented during the configuration process, because role were defined by a remodelling of existing practices. It should be explicitly used for TEAMwork configurations . It should be explicitly used in cases where roles are defined for new scenarios.

ENGAGE QUALITY ASSURANCE

„If developers can't be counted on to test beyond what they already anticipate what might go wrong, Then: engage Quality Assurance as an important function.“

Remark: This pattern is explicitly implemented by TEAMwork and can be regarded as another core pattern for NQA and Bestregit.

GROUP VALIDATION

If you want to avoid being blindsided in quality assurance Then:
ENGAGE CUSTOMERS and DEVELOPING IN PAIRS and others to validate the system.

Remark: This pattern is implemented by the validation and review processes in the application of Bestregit and NQA. It can also be understood as a core pattern.

4.2.2.3 Organisational Style Patterns

FEW ROLES

„If your organization has high communication overhead and latency, Then: identify the roles in the organization, and keep the number of roles to sixteen or fewer.“


Remark: This pattern was implemented by reducing the number of possible roles in the configuration phases. It should explicitly be used for future TEAMwork implementations.

PRODUCERS IN THE MIDDLE

„If your developers are somewhat lost, Then: make sure the producer roles are at the center of all communication.“

Remark: This pattern was implicitly realised by the configuration of the roles for the TEAMwork trials and should be explicitly used for new TEAMwork implemetations.

STABLE ROLES

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„If you have to deal with project disruptions, Then: keep people in their primary roles, and deal with disruptions as temporary tasks.“

Remark: This is one of the patterns that are explicitly realised by TEAMwork with its role and scenario based method of project management and Project organisation. As well as “Engage Quality Assurance” and “Scenarios Define Problems” it can be regarded as a “core pattern” of TEAMwork.

DIVIDE AND CONQUER

„If an organization is getting too large for communications to be effective any more, Then: try partitioning it along lines of mutual interest and coupling, forming a separate organization and process.“

Remark: This Pattern was implicitly used for the definition of communication channels for TEAMwork and the assignment of people and subgroups to tasks. It belongs to a common context with „Size the Organisation“. For the modelling of a TEAMwork social space it means that autonomously acting subteams should be created for complex tasks.

CONWAY'S LAW

„If organization structuring concerns are torn between geography, expertise, politics, and other factors, Then: align the primary organizational structuring with the structure of the business domains, the structure that will be reflected in the product architecture.“

Remark: Conway's law states originally that the structure of a computer hardware or software product reflects the internal structure of the organisation at its origin. During the trisla TEAMwork was used by different organisations for a diversity of purposes and domains. For future uses of TEAMwork it can be decisive to use this pattern explicitly. Overcomplicated organisaion structures will e.g. result in overcomplicated products.

ORGANIZATION FOLLOWS LOCATION

„If you need to distribute work geographically, communications suffer, but you can limit the damage if work is partitionable. Therefore: organize work at locations so groups of people that work together are at the same location.“

Remark: This pattern can be used as a corrective. The social evaluation of TEAMwork shows that informal communication has to be kept alive beside the formalised ways of communication defined by TEAMwork. For informal communication common localities are normally of high importance. Their importance can only be reduced by technology allowing direct and spontaneous contact between the team members (instant messagig, voicemail) in future versions of the TEAMwork software.

FACE TO FACE BEFORE WORKING REMOTELY


„If a project is divided geographically, Then: begin the project with a meeting of everyone in a single place.“

Remark: This feature is normally implemented by the workshops at the beginning of the TEAMwork configuration process.

SHAPING CIRCULATION REALMS

„If you need mechanisms to facilitate the communication structures necessary for good group formation, Then: shape circulation realms.“

Remark: The interviews show the importance of the informal communication between the members of a TEAMwork team. Since informal communication takes place outside the

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communication via the NQA Server this pattern can be used as a “corrective” for future applications of TEAMwork.

RESPONSIBILITIES ENGAGE

„If central roles are overloaded but you don't want to take them out of the communication loop Then: intensify communication more among non-central roles to deload the central roles“

Remark: This is one of the patterns implemented by and via the usual role based TEAMwork configuration. The TEAMwork scenarios are not hierarchical and therefore distribute communication between the team members in a goal oriented way. This is one of the TEAMwork „core patterns“.

DE-COUPLE STAGES

„If stages are too interleaved for the good of some high-context development where phases can be separated to increase parallelism, Then: serialize process steps, with well-defined handoffs between steps.“

Remark: This is again a defining or core pattern for TEAMwork. It is a characteristic feature of TEAMwork that the phases of a work process are clearly separated.

UPSIDE DOWN MATRIX MANAGEMENT

„If the right skills and resources don't seem to be applied to a particular aspect of the work Then: go beyond corporate structures to leverage teams in other organizations (customer, partners, other internal organizations)

Remark: This pattern, also a core pattern, regards the very reason of the building of a virtual team with the TEAMwork technology. The virtual organisation is not simply a transposition of a non virtual organisation into the virtual or digital space; it can create new teams or organisations that integrate roles or persons who in the „analogous world“ are clearly separated. An example is the integration of a customer into a TEAM that was practiced during the trials in the defense domain. The chances of completely new types of organisations and businesses in the virtual space are described by the „Cluetrain manifesto“ (<http://www.cluetrain.com/>)

THREE TO SEVEN HELPERS PER ROLE


„If you want to even out communication Then: at least try to limit communication to THREE TO SEVEN HELPERS PER ROLE, and to pull up the outliers to the same level of engagement. „

Remark: This pattern describes a „best practice“ well known to organisation and management theory. It is the purpose of this and many other organisational design patterns to model organisations as sets of modules that can be managed easily and operate with high flexibility. The TEAMwork methodology achieves this mudlarity implicitly via its scenario-based approach, but it does not necessarily limit the number of roles and document exchanges in a team. Therefore it is useful to explicitly implement this pattern as a correctice.

COUPLING DECREASES LATENCY

„If you need a high throughput development process, Then: increase coupling between roles to decrease latency.“

Remark: The coupling of roles is a usual outcome of the TEAMwork configuration process. This pattern can be used as guideline for the design of roles with regard to efficiency.

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4.2.2.4 People and Code Patlets

ARCHITECT CONTROLS PRODUCT

„If a project has a long life, then you need someone to carry the vision forward. Therefore: The architect is an important role as long-term keeper of architectural style.“

Remark: This pattern is directly formulated for the requirements of the software industry. During the trials it was an important factor that with ISCN the architects of TEAMwork were also responsible for the implementation. For the design of social spaces around TEAMwork it will be essential that the designer or architects are also team members, capable to correct in the case of erroneous deviations from the original purposes and to transfer the original ideas to new situations.

ARCHITECTURE TEAM

„If You are building a system too large or complex to be thoroughly understood by a single individual Then Build a team that has both the responsibility and the power to create the architecture.“

Remark: This pattern is an application of the rule to create subteams for special tasks. The architecture is regarded as a task in itself. Since TEAMwork is a methodology for large and distributed organisations, the existence of an architecture team overseeing the organisational structure as a whole is in many cases required. This task is not identical with the overall management. The management should not be embarrassed by the definition and maintenance of the organisational architecture.

LOCK 'EM UP TOGETHER

„If your team is struggling to come up with an architecture, Then: Isolate them physically for several days where they can work uninterrupted.“

Remark: This pattern is implemented by the workshops at the beginning of a TEAMwork process. It is a core pattern that is necessarily realised by the use of TEAMwork.

SMOKE FILLED ROOM

If you need to make a decision quickly and there are reasons to exclude others, Then make the decision covertly so that the rationale remains private, though the decision will be publicized.


Remark: During the TEAMwork trials it was not necessary to use this pattern. But a relatively closed management structure was a reason for the success of the trials; most of the participants were not required to discuss questions of the organisational structure and political questions.

DEPLOY ALONG THE GRAIN

„If reuse is suffering from fragmentation of responsibilities for an artifact, Then give people dedicated, long term responsibility for a management piece of the system.“

Remark: This pattern can be an important corrective for TEAMwork. The TEAMwork does not necessarily create individual responsibilities for an artifact as a whole; the roles related to phases or stages in a process. This can create a high degree of complexity. Therefore the roles of the team members should be designed in order to give to the individuals a high responsibility for subproducts and subdeliverables as a whole.

ARCHITECT ALSO IMPLEMENTS

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„If an architect is on an ivory tower, they are out of touch; yet someone needs to take the big and long view and reconcile it with practice. Therefore: the architect is materially involved in day-to-day implementation.“

Remark: During the TEAMwork trials this pattern was successfully implemented, because the architects of TEAMwork were members of the team. The designers of future TEAMwork teams should work in the teams they created and „eat their own dogfood“, in order to be aware of the daily work requirements.

STANDARDS LINKING LOCATIONS (8.2.12):

If you have geographically separated development, Then: use standards to link together parts of the architecture that cross geographic boundaries.

Remark: This core pattern defines a major reason for the use of Bestregit an NQA in virtual environments.

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5 How to teamwork and automate an e-work system?

5.1 What should be bear in mind in order to organise a work team?

Information technologies don't only create new professional profiles, but they also affect existing ones.

They have the same effect on the way work teams which will allow us to work in these sectors, are formed and organised.

We should never forget certain principles about these technologies, which due to their proximity we usually forget with ease:

- Above all, it is a technology and therefore it is intrinsically difficult.
- Not everyone is qualified to use or utilise these technologies.
- The incorrect usage of any technology, including this one, always has proportionately more negative results. Lets look at an easy to understand example. The lack of safety in a Ferrari motor car will result in a worse accident than the lack of safety in a Ford Fiesta.
- The client does not have to be right, and least of all with regard to technological application which he/she doesn't master and he/she doesn't know what he/she wants.


On the other hand, with respect to the last point, to bring technologies closer to the user does not mean doing what the user wants. Another example would be to let a soccer team manager be in charge of technical management by undermining the reasoning of the technician who was hired for the job. The manager would rarely know what it is like to run on the field, and doesn't usually go down to the pitch to train his team.

The technician in charge has the obligation to understand his client and enable him/her to use this or any other technology, himself/herself. Thus we are creating a need in its use, so that it becomes useful in the development of his/her work. To this end, the application of information and communication technologies should comply with several requisites, such as:

- The technological solution should be developed to cover a need.
- The solution should never become an additional problem.
- The technological solution is that which best adapts itself to the client's usage needs. That is, technology should be above all usable, but always complying with the basic working rules of said technology.
- The good technological solution is the one which is easy to understand and used straight away.
- The basis for a good technological solution lies in improving the development of a process. If the automated process is complex, we will be complicating the problem.

A good analyst should be able to understand the work processes and relate them to the workers' opinion. A solution is developed to solve a process, not to automate the way a person works.

The development of a technological solution based on information and communication technology, does not belong exclusively to the "engineer's" domain. I would even go so far as to say, that this idea is becoming less and less recommended. Solutions based on information and communication technology imply a production line style of co-ordination, made up of specialists and management teams, all very well co-ordinated. We should never

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forget that we are talking about technological development, which signifies high costs and low profitability if not planned. An example of this would be: it is impossible to manufacture a car at a cheap cost if we do it outside a production line and on the other hand, it would be ridiculous to set up a production line to manufacture one car only.

Therefore we can acknowledge in relation to the development, various profiles which have to be co-ordinated and inter-related.

5.2 How to automate our working procedures?

If the key to a process or work is the information and communication thereof, it is evident that we need tools which will allow us to manage large quantities of different types of information, very quickly. And in the same way, it will allow us to have continuous communication between different sources of information or between different people involved in the process.

In this way, the analysis of a process and the development of its solution, should implicitly include the analysis and implementation of its automation. This will be, in many cases, the basis for defining a solution to the process for the technical demands, to start with.


When we think about assessing a course, sometimes we think about what questions we want to ask which will allow us to have an idea of how the course has gone. We forget who is going to answer the 500 questionnaires and how, which will permit us to assess, calculate, order and screen the results in order to take a decision.

5.2.1 Steps in the automation of processes:

- Have the process designed, assessed, agreed on and integrated.
- Choose the technological basis on which to work.
- Design the process' support application.
- Assess and analyse the application's design, always on paper until we are sure that it is the application which best manages the defined process.
- Define the structure of details which support the defined application.
- Integrate the structure of the process' details inside the entity's general structure of details (this structure should have been defined beforehand, if not it should be done now).
- Integrate the format, colours and usage standards inside those already defined by the entity (if these were not yet defined, this should be done now).
- Design the follow-up and assessment of the application system, as well as the permanent adaptation processes.
- Design the consulting and problem-solving process.

5.2.2 Who should develop the process?

- The computer and communication department in collaboration with the other departments involved.
- External suppliers who are very integrated or know the company's internal problem.
- In any case, the company should define who is responsible for the control, follow-up and testing of the application. Those concerned should definitely be internal staff members.

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5.2.3 Key points to be taken into account:

- Definition of an appropriate technological support for the company's resources, advantages and inconveniences. The latest technology is not the best.
- Define the process as well as all the steps, people and process contents well, before starting to program.
- Establish a realistic work schedule.
- Define a system for checking and follow-up of the different development phases.
- Have a chart for the integration of the application inside the rest of the information structures or entity's applications.
- Establish a mechanism of the standards of design that will be repeated in all the applications and which will make the implementation and use of the application easier.
- Establish a system for documentation and permanent training on the new application.

5.2.4 What should never be done:

- Leave the development of any application in the hands of the company's "Bright Spark".
- Forget that what we are doing should be integrated with other applications which might already exist.
- Program for the sake of programming without having carried out an analysis, designs and models of the process and application we want to do.

5.2.5 DOMAIN SOLUTIONS that help us to automate our work

- These solution are those that we can apply easily to an specific objective or a particular client. It can be easily modified and it creates multiple application. NQA is an example on it Totally flexible solution according to the needs of companies and teamwork utilities

5.3 *The Virtual Enterprises*

With the appearance of Internet and its low communication costs, we took a qualitative leap with respect to the possibilities of networking, whether it be via companies with multiple offices, or professionals who collaborate amongst themselves.


This qualitative leap is becoming more consolidated due to four sets of circumstances:

- Higher access speeds and better prices.
- More simplicity in the connection and the integration of information and communication technology in companies.
- Considerable increase in the number of Internet users, which makes the presence in the network an interesting venture for companies.
- Creation of specialised services and products for company communication and the professional use of Internet.

On the other hand, the network consolidation is slowly allowing for the creation or promotion of new types of business organisation, as well as new models for getting closer to the client, or new definitions of services and products. Although we should not forget that many of the companies which are now consolidating their services, are companies which exist in the traditional economy, that have adapted to this new medium, or else they are companies that have carried out their services via communication networks which were the predecessors of the present network system, like the telephone network.

The advantage that companies, which carry out their services via the network have, are:

- Greater interactivity with the client.

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- Greater access to current, up-to-date information for the client.
- Personalised treatment.
- Self-service at any time, of many services which before implied travelling or additional costs.
- Greater interrelation amongst the different parts of a company, making it easier to respond to the client's needs.

Virtual companies can fall into the following three categories, although other new ones could appear:

- Companies which function and exist, exclusively on Internet.
- Mixed companies, present both on Internet and the usual reality.
- Professional Associations, exclusively present on Internet and created for the development of a more or less specific product, project or service.

Regardless of the way the company presents itself in the market, it can offer different types of service such as:


- Services which exist exclusively on and for Internet. Without the existence of the network they would not be able to trade.
- Services and products marketed only for the network, having a compulsory physical support, similar to direct product sales.
- Services and sales of non-essential or subsidiary products, which could not be exploited via traditional trade, as the production costs would be higher than the possible earnings.
- The same services or products the company sells in the traditional economy. Internet, here is used as yet another medium to reach more possible clients.

On the other hand, virtual companies should base their existence on a set of characteristics such as:

- A good management system.
- A good analysis of the processes.
- A good co-ordination with a very clear distribution of tasks or work phases.
- An efficient charging and payment system.
- An efficient system for carrying out services or delivering products. That is, the virtual world creates susceptibilities so that we have to be able to comply with the dates and terms agreed on.

An evident competitive advantage in the service or the product with respect to the traditional market product.

Bestregit and NQA help to make it true to your organisation or to your team.

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7 Change History

Issue	Revision	Date	Affected Pages	Author	Cause and Summary of the Change
0.1	-	29.01.97	all	RM	Creation of the Document
1.0 Draft	-	1997-03-05		RM	all sections 2.3 to 2.5, 3, and 4 were added
2.0 Draft	-	1997-08-02	Cover Page	RM	the guideline was renamed to: BEST PRACTICE EXPERIMENT GUIDELINE
2.0 Draft	-	1997-08-02	Appendix A	RM	a questionnaire as supporting tool for goal analysis
2.0 Draft	-	1997-08-02	Appendix B	RM	a questionnaire as supporting tool for teamwork analysis
2.0 Draft	-	1997-08-02	Appendix C	RM	chapter 2 of a book which will be published in 1997 describing experiences and actual effort and cost figures for this type of work (RESTRICTED USE FOR ONLY WITHIN THE PROJECT, as long as the book is not published)
2.0 Draft	-	1997-08-02	chapter 1.1	RM	complete re-definition according to the updated project structure as agreed at the Technical Meeting in June 1997 in Dublin
2.0 Draft	-	1997-08-02	chapter 1.2	RM	complete re-definition according to the updated project structure as agreed at the Technical Meeting in June 1997 in Dublin
2.0 Draft	-	1997-08-02	chapter 1.3	RM	complete re-definition according to the updated project structure as agreed at the Technical Meeting in June 1997 in Dublin
2.0 Draft	-	1997-08-02	chapter 2.1	RM	major rewriting was required
2.0 Draft	-	1997-08-02	chapter 2.1.2.1	RM	concrete steps for doing goal analysis using the tool in Appendix A
2.0 Draft	-	1997-08-02	chapter 2.2	RM	minor rewriting was required, an explanatory figure was added
2.0 Draft	-	1997-08-02	chapter 2.2.2.1	RM	concrete steps for doing team-work analysis using the tool in Appendix B
2.0 Draft	-	1997-08-02	chapter 3	RM	"Index of Actions for Each Partner" substitutes the chapters 3 and 4 in the previous version
2.0 Draft	-	1997-08-02	chapter 4	RM	The Appendix was enhanced to include Appendix A,B,C as outlined above in this table
2.1	-	1999-05-12	all	RM	Re-work of guideline to take into account the review notes from APS, FUEVA, DEIS
3.0	-	1999-07-14	New section 2	RM	Definitions were extracted/added to allow understanding of terms + Consistent definition of work scenario which can be illustrated in two different views (role models, work flows)
3.0	-	1999-07-17	New section 1.4	RM	Definition of a Target Group
3.0	-	1999-07-17	New section 3.2.1	RM	Some refinement of text, and an additional sub-header so that step 1 gets the same layout as the other steps (see APS review 2).
3.0	-	1999-07-17	Figure 4	RM	Re-Design of figure 4 to provide better explanations
3.0	-	1999-07-17	New section 3.2.1	RM	Refinement of Figure 3 to exclude parallelism
3.0	-	1999-07-17	Step 3	RM	Rewriting of step 3
3.0	-	1999-07-17	Headers, Colours	RM	Some settings under "Formatvorlage" have been made to make the outlook more professional
3.0	-	1999-07-17	Appendix 5.1	RM	Inclusions from APS example
4.0	-	2000-03-17	Appendix B	RM	Adding the experiments
4.0	-	2000-03-17	Section 5	RM	Moving the change history back
4.0	-	2000-03-17	Section 3.1	RM	Completely rewriting this section based on the models developed in Toptransfer
5.0	-	2000-06-19	Section 4	RM	Section 4 for Cultural Factors Added


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5.0	-	2000-06-19	Sections 5.4 and 5.5	RM	Additional References Added
6.0	-	2003-03-14	Sections	GV, IS (FGUVA)	Sections 4.2, 5, 9 added, other sections had refinements

 <p>BESTREGIT</p>	<p>BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	<p>WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 70 / 144 Filename: teamwork_del_5.5_v2.doc</p>
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8 Appendix

The appendix provides examples from IT industry and the Bestregit project, in which the methodology has been tried out in institutions in Austria, Ireland, and Spain.

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1.10 Appendix A : A Modelling Experience (by APS from Austria)

Examples and Comments.


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Folie 1

Bestregit APS Tutorial

Tutorial


Presented by
APS
Schloegelgasse 9, 8010 Graz, Austria
<http://www.aps.tu-graz.ac.at/>
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Folie 2

Description of the Organisation



**EUROPEAN PROGRAMMES
FOR
TECHNOLOGIES AND TRAINING**

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The Birth of an Innovation Management Organisation - APS

In the beginning of the 90s a rather new type of a European Programme was launched, the programme was called COMETT. Its mission was to further the co-operation between universities and industry. This does not sound extremely exciting, but the programme installed an intelligent infrastructure, so called University-Enterprise Training Partnerships. APS was one of about 200 all over Europe. And the ingredients were concentrated in a way and of that sort we still can find in all European initiatives. A regional base bringing two sectors - universities and industries - together, staffed by young ambitious people, eager to learn and not only to make money from Yuppie consulting, a strong network of homogeneously working partnerships and lots of efficiently organised mobility projects between industry and university involving students and experts.

Gradually our organisation is turning in what we call an innovation management organisation because we do not only inform our members and clients about European programmes but are offering a whole package of funding possibilities after having analysed the organisation and the technological needs and have started a long term co-operation with the SMEs in our region.


Innovation transfer means helping companies with the acquisition of an appropriate technical and organisational knowledge whose use allows its owner to achieve an expected goal.

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Folie 3

APS Main Activities

- **Co-operation with regional, national and European actors in technology transfer**
- **EU Research Funding – Fifth Framework Programme**
- **INNOVATION Relay Centre Austria**
- **Training Programme - LEONARDO DA VINCI**



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In our function as regional office for RTD-support and active partner in the INNOVATION Relay Centre Austria as well as LEONARDO-Info-Centre for Styria and Carinthia we cooperate with regional, national and European actors in technology transfer.

In doing so we can offer tailor-made advice and information to our clients:

EU Research Funding – Fifth Framework Programme,


Program selection, partner-search, preparation of proposals, conclusion of cooperation contracts, knowledge transfer with Universities, database inquiries.

INNOVATION Relay Centre Austria

Main tasks of the service are promotion of transnational transfer of innovative technologies, dissemination of results and support for participation in Research Projects of the European Community in a network of 52 IRC-partners.

EC-Training Programme -LEONARDO DA VINCI

Organisation of industry placements, exchange of experts and short term mobility projects to and from companies and universities, seminars for job-oriented training and education as well as the running of pilot projects like BESTREGIT.

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Folie 4


APS and its BESTREGIT-partners

- **APS: contractor and Co-ordinator**

- **3 developing partners (APS, DEIS, FUEVA)**

- **ISCN as consultant**

- **Communication between the partners: FTP-Server**



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APS functions as contractor and co-ordinator of the bestregit-project and in this role is responsible for the content of the project, as well as for the organisational aspects like organising project meetings, reporting and financial issues. At the same time APS is one of the 3 developing partners who have implemented the optimising process, the 2 other partners being FUEVA from Spain and DEIS from Ireland.

A series of other partners with different roles are involved in this project:

A central issue in each international project is the **communication between the partners**. This was even more necessary with BESTREGIT as the analysis was done by many small steps and continuous exchange of experience was paramount for the success of the project.


For that an **ftp server** was installed which gave access to all relevant documents to the partners by using a pass word. Each partner was assigned a directory, a so called work package which he could use to store interim results and products. Thus ISCN as the consultant could access and review the material and hand it back to the partners through his directory. Apart from initial difficulties (because some of the partners used different software versions than others) the system worked, however strange it was that the directories had numbers instead of names.

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Folie 5

HOW to start the Process Analysis

- **3 steps:**
- **Analysis of Current Situation**
- **Running of an Experiment**
- **Analysis of Final Situation**
- **via BEST PRACTICE EXPERIMENT GUIDELINE and by**
- **IMPROVEMENT MANAGER**



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The development of the three regional models was planned in three steps:

1. Analysis of the current situation in the organisation, including a definition of improvement areas
2. Carrying out an experiment
3. Comparison of the situation before and after the experiment

The tool we used was the “**Best practice Experiment Guideline**”, a step by step manual with examples of the software industry to implement the task. One of the tasks in the analysis phase was to test the manual whether it was applicable to innovation transfer organisations and to adapt the manual while working with it. Thus not only was the method implemented but also checked and refined to the needs of the type of organisations we are in. The product at the end of the process was to be a “Best Practice Experiment Guideline adapted for innovation transfer organisations”.

According to the guideline the first step was the installation of an **improvement manager** in each of the three organisations. The method based on the principle that the person comes from the team and that he/she is responsible for the implementation of the individual steps.


- Interviews with individual staff members

Organisation of workshops

Transferring the results of the interviews and the workshops in the form given by the guideline
Check and documentation of the process changes within the organisation

Continuos communication and exchange of experience with the other BESTREGIT partners

It was planned that one third of the work time of 1 person (based on a 40 hours week) should work on the project and the analysis and to run several workshops, lasting 1 – 2 days, (the work supported by questionnaires for the interviews to be done)

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Folie 6

APS Mission 1999

- Promoting the transnational cooperation between industry and educational training center in order to achieve Southern Austria's technological, economic and scientific integration into Europe.

APS functions as autonomously working information and consulting organisation on European funding programmes.

It's tasks have to gradually turn away from general information activities and focus on concrete project assistance and participation



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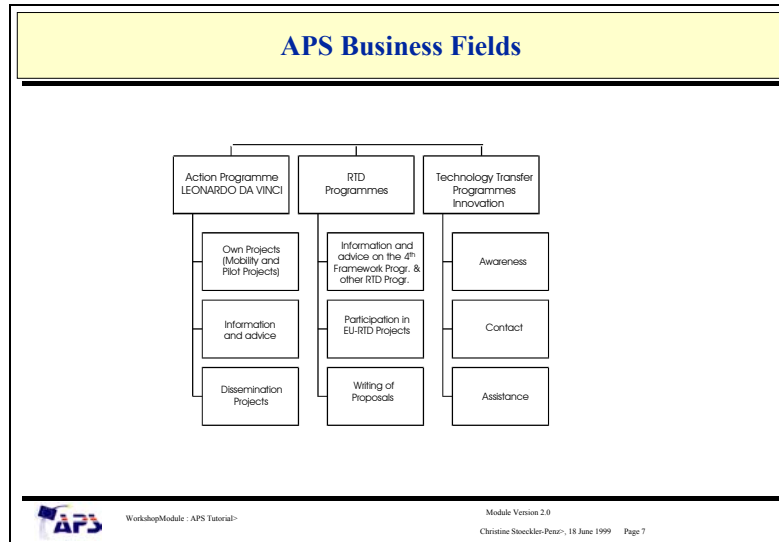
The first task was to speak about the mission of the organisation and resulting from that to achieve a rough definition of the business fields and their goals as well as to draw up an organigram.

The APS mission had been defined some years ago but needed some adaptation to circumstances that had changed:

The most important message of the mission is that APS should redirect its focus from general information to concrete support and project participation.

The discussion about the mission statement that for the first time was led within the whole team was very vivid and concentrated on the aspect of autonomy and its advantages and disadvantages: it was said that the focus on concrete project assistance would affect the form of the organisation. The new mission statement was then accepted with some modifications, but the team co-ordinators still maintained that a higher number of project participations would lead to a bigger demand on resources which might not be covered from the projects' income themselves.

Folie 7

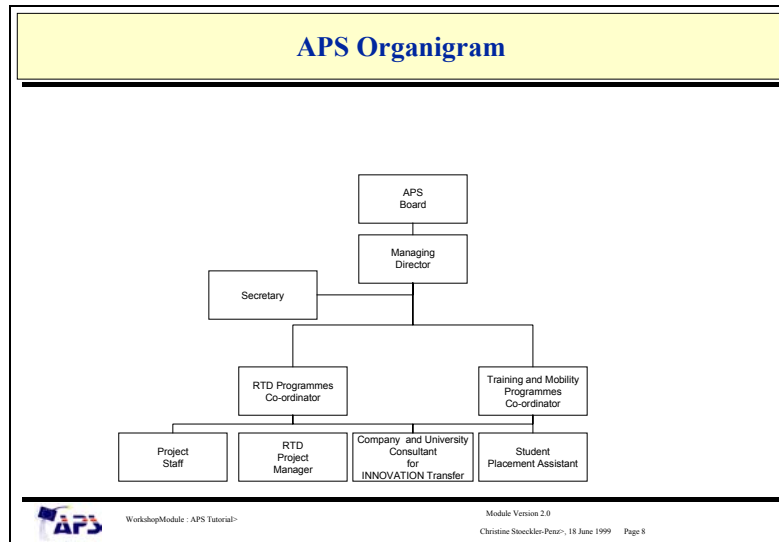


The next step seemed comparatively easy as we thought we could define our business fields simply in the structure of the European programmes we mainly dealt with; this being also the way APS had been organised so far.

See above: Business fields and matching work scenarios


Later it was found that simple things are not always as simple as they seem.

Folie 8



Up to that time no organigram had existed for the organisation APS. Of course there was a structure and responsibilities but these were not laid down in a written document. Generally we experienced that BESTREGIT made us consider many things in a more concrete way for the first time.

At that time APS was just in a phase of personal restructuring, the organigram I show here is the second, slightly modified version that has been valid for around a year and a half now. It shows that there is a clear hierarchy with a clear division of labour and that the functions described are identical with the persons apart from the APS Board and Project staff.

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Folie 9

Goal Analysis

– **Questions of medium and long term planning:**

- **business managers speak a financial language,**
- **middle managers speak an administrative planning language,**
- **practitioners speak a technical language**

- **Business (Fields) Goals**
- **Work specific Goals**
- **Actions**



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After the organigram it was time to tackle the goal analysis process. Drawing on the mission statement and the value system (?) we had to face questions of medium and long term planning and how this had been dealt with so far.

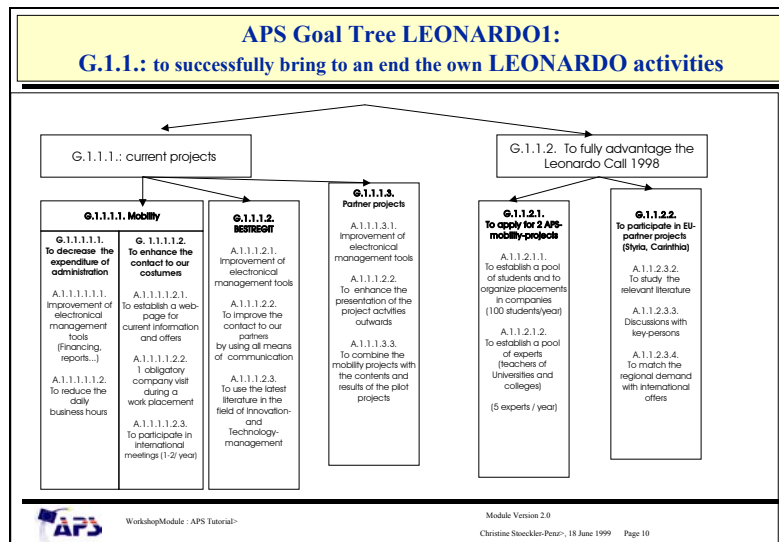
The guideline offered us an example of this from the IT industry, contrasting Business Managers, Middle and Project Managers, and Practitioners (see slide above).

This example was not 100% applicable to APS, true however we found that the General Manager and the middle management move at different levels and have different views of the same thing. Therefore only a well defined co-operation between these two levels will make an organisation successful.

The guideline explains how this challenge is met in industry with an approach known as **Goal Tree Analysis** which would provide a framework for improvement planning in the following way. Starting from business goals, one identifies the process goals whose achievement supports the business goals, breaks the process goals down into actions for the practitioners, and then defines a set of data to be collected to evaluate if the business goals have been achieved.

The guidelines instructed the modelling organisations in applying this approach to distinguish three kinds of goals or three levels of the goal tree. These 3 levels would be:(see above)

Folie 10



Occupying oneself with the goals of the APS business field seemed more straightforward at the beginning than it was in the end. Our first attempt turned out to be very short-lived referring only to the contracts we just had running either with the European Commission (eg. Mobility project) or with a national sponsor.

The first version of the goal tree (see above 1 example) shows that the structure of APS was too much aligned with the programmes and the projects had defined only short term goals which would be obsolete within half a year or a year. Another weak point was the lack of any kind of measurement- there were goals but no measurable data which would enable us to identify and check whether the goal had been achieved or not. We learned that the disadvantage of a goal tree with too many short term goals (6 to 8 months) would mean to correct them permanently. Therefore the focus should always be on medium and long term goals.

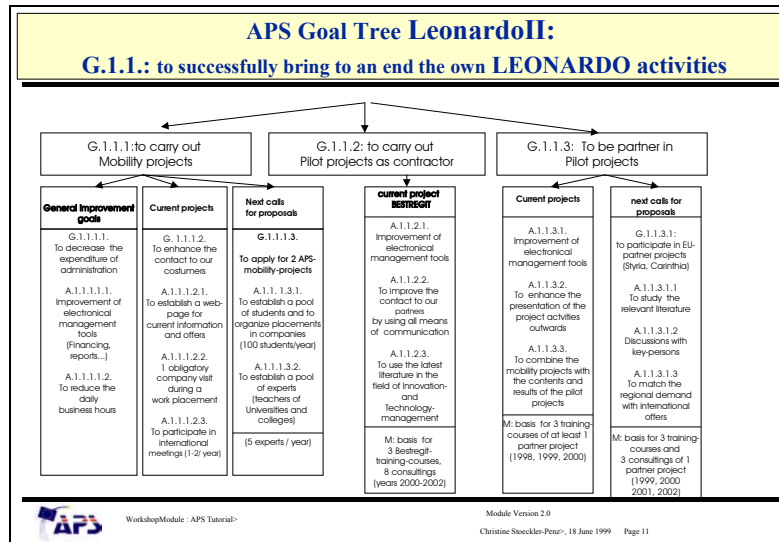
Let us say a few words on the aspect of measures and measurability. The guideline says: Who does not measure things will not be able to decide about success or failure.

For organisations like APS it is very difficult to decide what success or failure is. Our main task is to pass on information and consult clients on participating in EU programmes. For various reasons we have little influence on how they make use of our service, i.e. in fact apply for EU programmes which we could consider a success criteria.

Quality of work as we can define it for ourselves is found in the area of providing useful and filtered information or the right specification of target groups. This leads us in the middle of the discussion quality against quantity. Is our target to have as many projects as possible or is there more point in concentrating on a few and deal with those in the best way possible.

The more, the faster the better is a slogan that is very much attached to the work we do. Paradoxically, we had very little idea what to take as measurement numbers..... In fact, much of what we undifferentially describe in the terms of success depended on how motivated and keen APS staff works which usually can be shown by a very long list of various activities.

Folie 11



Our task therefore was:

1. to bring the structure of our organisation not into line with our programmes and projects but with the type of activity, meaning to replace


“current projects – mobility”

by

“Mobility – general goals – current projects- next calls”

2. The re-designed structure enabled us to define long-term goals (up to 3 years) – mobility is one of the core activities of APS and will most probably continue with its main goals in the future – as well as short term goals and activities which can be adapted to the current demands

3. The last step was to quantify each activity if at all possible

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Folie 12

APS Goal Analysis - Barriers and difficulties

- **1. General doubt about the application and worth of the project**

- **2. The time factor**

- **→ change the method**

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A process analysis will encounter a series of moments of prejudices, suspicion, and insecurity.

With APS there were especially two barriers to overcome: (see slide above)

1. A general doubt about the point of the project (How do we directly benefit from it)
2. The time factor: some staff argued that the project might eat up their time for their customers. This was particularly a problem with part-time staff


Regarding the first barrier a solution could be found by explaining that we are trying to develop a product which also can be sold if everybody within the team supports the project with his know-how.

The time factor was another issue, as in fact the analysis phase took up 8 months (with a few interruptions). It was therefore necessary to change the method proposed in order to avoid overdemanding the colleagues.

Already in this first phase we had to find out that we could not work on the basis of workshops lasting one day. The impression and the feeling to lose too much time needed for more important work was very strong.

The solution was to meet for shorter sessions, that were announced well ahead and in agreement with all staff and that lasted between 2 and 4 hours. In the intervals of the mini-workshops little tasks were assigned to the staff. These increased the efficiency and also integrated the staff members in the whole process more intensely.


This approach took away some pressure of the improvement manager (keep it exciting over a whole day). Additionally slicing up the process in bits and pieces had the advantage that errors never could become too grave.Nevertheless we have made a number of mistakes which is usually the case with bottom up approaches

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Folie 13

APS Goal Analysis - Benefits and lessons learnt

- **A snapshot of where the organisation is**
- **to work on long term goals**
- **to use measurement figures**
- **to get unexpected insights in the tasks of other colleagues**
- **staff have sense of belonging to a bigger picture**



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Primarily the goal tree offered a snapshot of where the organisation is and also a survey about all the various activities of APS. For everybody – apart from the General Manager - it was surprising to find out how vast the spectrum of the tasks was once seen in every detail. A real benefit was to make visible the current goals while the work on long-term goals was a real challenge


Using measurement figures as a tool to check against original target figures was the great novelty, even though this aspect has to be regarded with certain reservation: let us say a few words on the aspect of measures and measurability. The guideline says: Who does not measure things will not be able to decide about success or failure.

For organisations like APS it is very difficult to decide what success or failure is. Our main task is to pass on information and consult clients on participating in EU programmes. For various reasons we have little influence on how they make use of our service, i.e. in fact apply for EU programmes which we could consider a success criteria.

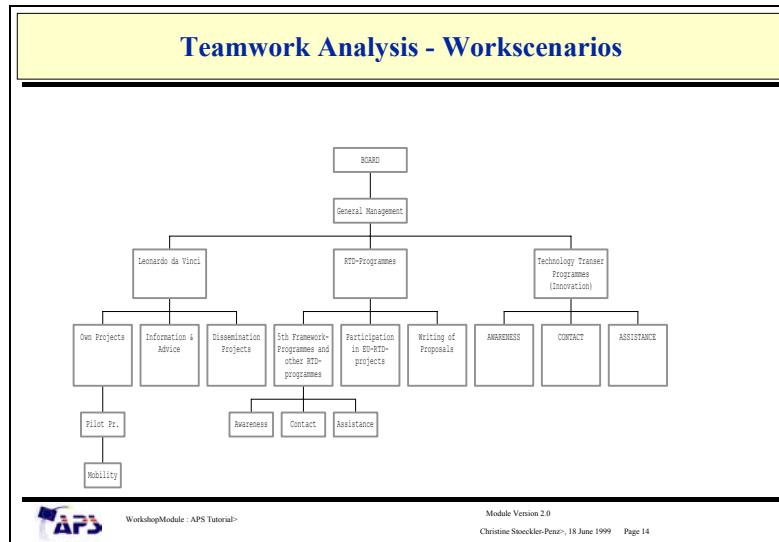
Quality of work as we can define it for ourselves is found in the area of providing useful and filtered information or the right specification of target groups. This leads us in the middle of the discussion quality against quantity. Is our target to have as many projects as possible or is there more point in concentrating on a few and deal with those in the best way possible.

The more, the faster the better is a slogan that is very much attached to the work we do. Paradoxically, we had very little idea what to take as measurement numbers..... In fact, much of what we undifferentially describe in the terms of success depended on how motivated and keen APS staff works which usually can be shown by a very long list of various activities.

* A very positive affect was to have a very close look on the mission statement and the goals of business areas different to one's own as it offered unexpected insights in the tasks of other colleagues. This is especially true for the secretariat which usually is not directly involved in content-related project and programme work

	<p style="text-align: center;">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	<p>WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 85 / 144 Filename: teamwork_del_5.5_v2.doc</p>
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Folie 14



The challenge within process analysis is to make the processes more

- understandable
- predictable and
- usable

so that it becomes visible in a quantitative and objective way which practice, techniques and tools bring which benefit or create which type of problem.

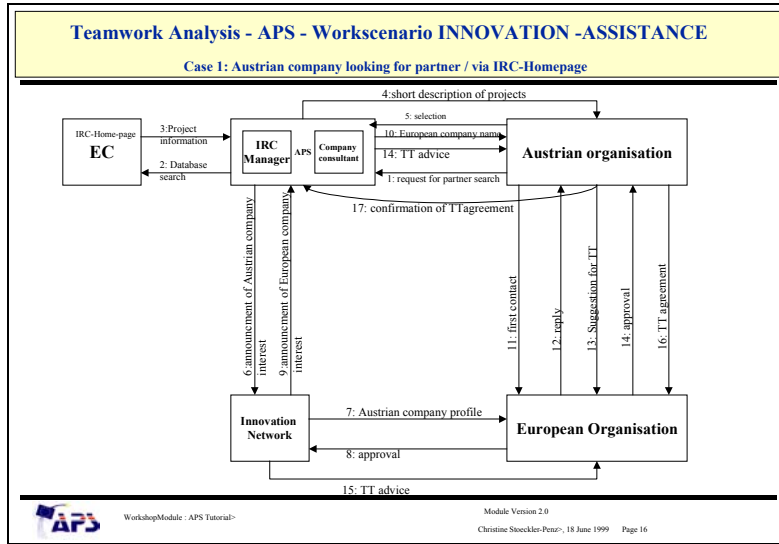
Taking the business fields as our basis we defined work scenarios according to our method (See slide above)

We were supposed to find the roles for each scenario and in a next step the interaction of these roles taking place among them. This actually meant “Who does what in each scenario (task/area of work)”.


For that purpose we formed groups/teams and roughly designed our scenarios on posters, the description of the roles attached to them was done individually as homework; finally the results were summarised by the PI.

Interestingly, the teams remained in the structure offered by the various programmes APS deals with and divided these in sub-programmes.

Folie 16



Thus we learned to describe only re-usable scenarios which are also applicable for other activities as well: see slide above

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Folie 17

Teamwork Analysis - Role description

Role Name: Innovation Team

Role description: Innovation Relay Centre Manager, Company Consultant for Innovation Transfer

responsibilities and activities:


- to identify (actively or receptively) Austrian (Styrian) companies with interest in TT
- co-operations with Europe
- to retrieve information of possible partners from the EC
- to transfer Austrian company profiles to the Innovation network (partner search)
- to name identified partners to their companies in Austria (Styria)
- to give their partners in Austria (Styria) advice for TT projects

required skills:

- good knowledge about the INNOVATION Programme
- communicative abilities
- technical and scientific know-how
- organisational skills

resources required to perform the role's activities:

- information on company profiles and contacts with companies
- databases on Austrian and European companies
- Communication infrastructure



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The focal point within the scenarios are the roles which like at stage in their intercommunication give life to the processes. Methodologically this means a description of each task and the demands for it connected to a role.

This task was somehow lengthy, however meaningful in the end. Let's give one example As has been discussed already the programme oriented organisation structure of APS results also in the fact that roles are assigned to the real or made up 'sub-programmes'. The slide shows that the person responsible for a scenario does practically everything, starting with obtaining relevant information, customer contacts, writing of EU proposals and the management of projects currently running.


There is a big advantage in this – APS thus can boast of experts having broad experience in different fields but also a big disadvantage. There is, e.g., no clearly defined role for marketing and PR issues, which of course means that there is no strategy either. This shows room for improvement, I will discuss this a little bit later.

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Folie 18

**Teamwork Analysis - Workscenarios
Barriers and difficulties**

- **selection of the most important work areas and run through the process exemplary**

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Christine Stoeckler-Penzl, 18 June 1999 Page 18


As it turned out APS as co-ordinator of the project has taken on too much by trying too illustrate the whole organisation in work scenarios and roles. It has proved that it is less exhausting and more effective to select only the most important work areas and run through the process only exemplary.

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Folie 19

Teamwork Analysis - Workscenarios
Benefits and lessons learnt

- **Identification of concrete tasks and work processes through scenario**
- **see at a glance what roles are required for a specific work process**
 - **helps with the planning of staff capacities**



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In my view this was one of the biggest benefits within the learning process of the analysis phase:

There was too much focus on the European programmes and projects when we tried to describe roles and activities, we tried to bring in line all these with the programmes, and thus could not identify our concrete tasks and work processes, as e.g. the writing of EU-proposals, the organisation of workshops, partner search activities, PR activities.

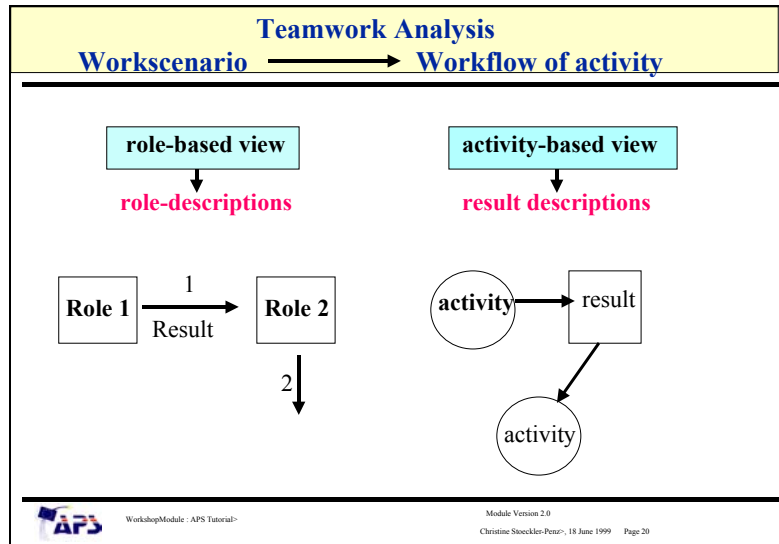
In fact, all these activities and work processes were hidden by terms like “LEONARDO pilot projects” or “5. Framework programme”.

Making these processes visible was the key in being able to identify areas of improvement and therefore a central factor in the analysis.

- The scenarios help to get very fast a general idea which roles are necessary to carry out a certain task within an organisation.

- A detailed list of the demands connected with one role helps very much with the planning of staff capacities.

Folie 20



Our consultant Dr Messnarz has very well compared the scenarios as a theatre play in which the different roles communicate with each other. The scenarios however do not depict the individual steps within the activity fields and the results, i.e. the products having come into existence after having finished with a process.

The next task therefore was to concentrate on the activities assigned to a role and to take these activities as a basis for drawing a **WORKFLOW OF ACTIVITY** for each scenario

This only provides us with a view of the same thing from a different angle.

The underlying question **WHO DOES WHAT? –**
meaning a role-centred view of things as in a scenario

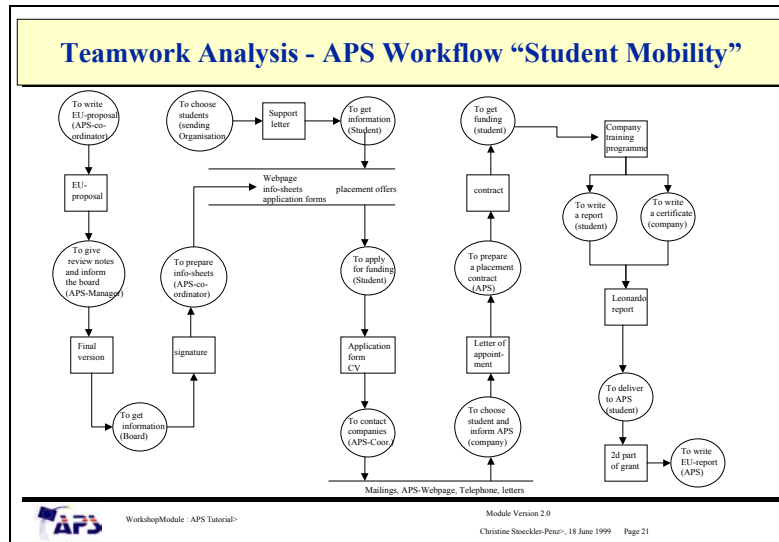
is replaced by

HOW IS IT DONE? –

meaning an activity centred view.


Drawing the work flows was combined with describing results in terms of interim results and products.

Folie 21




Having more experience in between we concentrated our efforts on selected scenarios which we processed into work flows. The processing was not easy, as the method was not really well explained in the guideline. Once the method is understood – and this apparently was one of our tasks – the task is relatively easy.

No enthusiasm was detected when the staff members were asked to describe the results and/or products of their work. We had to define first what a product was, as APS does not produce anything in the narrow sense)

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Folie 22

Teamwork Analysis - Result description: Student Mobility	
1. RESULT-NAME:	letter of appointment
2. PURPOSE:	a. to fix the traineeship b. to clarify the main conditions for the traineeship c. to get the necessary details in order to prepare the Leonardo-contract
3. SCOPE/TARGET GROUP:	Austrian and foreign companies that are willing to take a LEONARDO-trainee
4. PROPOSED CONTENT:	a. student's name, address and university b. company's name and type of organisation c. start and finish date, duration of the placement d. the student's responsibilities during the placement e. name of the supervisor f. salary and other benefits offered by the company g. must be signed by a representative of the company
5. ABBREVIATIONS, ACRONYMS:	NCU = National Co-ordination Unit for the Leonardo da Vinci Programme, EU = European Union, EC= European Commission, BAT/TAO = Bureau d'Assistance Technique Leonardo da Vinci in Brussels (Technical Assistance Office), UETP = University Enterprise Training Partnership
6. REFERENCES:	Leonardo da Vinci programme documents from EC, application forms, Call for Proposals, supporting documents <u>location:</u> J:\leonardo\mobility\standard\appoint2
7. RESOURCE:	Winword 6.0
8. IDENTIFIERS:	LeoAppoint_9.5.1997 (Leonardo Appointment)
9. FREQUENTLY ASKED QUESTIONS:	- Do I have to indicate the salary in ECU? Yes




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For the description of the results a colleague and I developed a template that also was used by the two other partner organisations (see above)


Using this template each staff member could fill in his description by himself..

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Folie 23


**Teamwork Analysis- Workflows
Barriers and difficulties**

- **What to define as a result / product**
- **description of results took a long time**
- **doubt about the use of the descriptions**

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There It was first of all rather difficult what to define as result or product.


It has to be noted that this part of the analysis was not well received by the staff as in their opinion it did not improve the understanding of what they normally do.

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Folie 24

Teamwork Analysis - Work flows
Benefits and lessons learnt

- **Work flows make key processes visible**
- **reflection on our main products**
- **excellent training implications for new staff members:**
 - **better understanding of the organisation, the own tasks and of the interaction of persons**
 - **faster in the position to work on one's own**



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Work flows together with work scenarios and role descriptions make key processes within an organisation visible


Discussing products brought about an intensive reflection on one the most important products by APS –information material. The reflection turned into a very successful project run by one the staff members who achieved in a joint effort with the other team members to give a corporate design to APS. We now have exact definitions what folders, leaflets and other information material should look like.

Thinking about results also was a kick-off to organise our PC system of directories and files. Much progress has been made since then, but such a system, having as a characteristic that it undergoes much change, we have not yet achieved the perfect state.

This part of the analysis made us aware of the many, many part-products within our organisation.

Looking back we can say that goal tree, scenarios and work flows provide also very useful material for training and integrating new staff. We as well as our partners have experienced that new staff

1. gets much faster a general idea about the complexity of our tasks and an understanding of our organisation
2. understands clearer and faster what his own task is
3. understands clearer and faster the interaction of persons and characteristic features
4. and therefore is faster in the position to work on one's own

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Folie 25

APS Experiment

- **1. Definition of Improvement potential**
- **2. People Motivation Workshop**
- **3. Definition of Experiment:**
 - **“BEST PRACTICE MODEL for WORKSHOP ORGANISATION“**

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Going through all these phases we had finished the analysis of the organisation-internal processes and now had enough material to decide on our needs for improvement.

I would like to stress once again the most important point to my feeling, that is that APS focused its analytical efforts on assigning and matching all roles and activities to European programmes and projects. This resulted in a structure which made existing work processes in fact invisible, hidden by terms like LEONARDO pilot project or 5. Framework programme.


A pilot project e.g. consists of the following scenarios

EU proposal, Project management, Product development, Finances, Reporting, PR etc

After having gone a long, sometimes very circumstantial way the analysis gave us the chance to identify those scenarios which had a wider range of applicability. These are in particular

- Partner search for customers
- Support in writing EU proposal
- Organisation and implementation of Workshops
- PR activities

Following the method we had to organise a people motivation workshop in which there should be a vote on the process in which the experiment should be conducted. This work shop took place in July 1998 and the staff members of APS decided to do a “Best Practice model for Workshop-Organisation”

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Folie 26

A standard APS-information workshop

- **Regional information workshop on EU-programmes**

- **Target groups: companies, schools, Universities, public institutions, social partners**

- **Duration: 3 hours**
- **number of participants: 10 - 50**
- **content: information on programmes and calls**
 - **presentation of project examples**



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Module Version 2.0

Christine Schocker-Penzl, 18. June 1999 Page 26

The organisation of workshops has become more and more important in the range of the APS activities. In 1998 APS organised 23 regional workshops of which 16 were in the business field of the LEONARDO programme (see slide above) and 7 in the field of the RTD.

This was certainly a noticeable change compared to the past few years. The situation then could be described in terms of organising more and more workshops with resources staying the same. This created a lot of stress among the staff members. As we expect an increasing work load in this particular field it seemed necessary to do an exact analysis on time and human resource capacities for it as well as of the organisational process.


Parallel to it we intended to do an evaluation on the satisfaction level of the course participants. Our goal for the future was to organise more workshops with the same staff and time capacities once we had analysed the process and improved it by making adaptations to it. At the beginning of the experiment there was no defined measurable data but the staff members were asked to give us their estimated figures.

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Folie 27

Performance of Experiment

- **Creation of scenario and workflow „organisation of workshops“**
- **simulation of a model**
- **organisation of a real workshop**
- **time sheets**
- **measurement of deviation**
- **definition of improvement potential**



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ACTIONS to perform the Experiment

Preparatory tasks:


1. creation of a scenario "organisation of workshops" with role descriptions
2. creation of a workflow (role model)
3. This workflow is the basis for a simulation of a model (tool: Microsoft project):
4. Definition of
 - the different phases of the workshop-planning
 - the roles
 - resources

Running of the Experiment:

1. Performing the organisation of a real workshop
2. Filling in time sheets by all persons (roles) being involved in the scenario
3. Measuring deviation (comparison of model with real effort)
4. Definition of improvement potential


Folie 28

Experiment - results			
	Model	Performance of Exp.	
• internal co-ordination:	9%		3%
• external co-ordination:	30%		38%
• preparation of Material:	31%		16%
• database search, copies			
• distribution activities	13%		9%
• buffer times	17%		34%
• estimated effort/man days	4 days	real effort	8 days
• (for the whole process)			


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Main topic of most of the APS-information workshops is to give "brand new" information on the current programme situation (calls). Therefore most of the activities within the scenario "workshop organisation" depend on information coming from "outside" (European Commission, National Co-ordination Unit).


The way how the staff ideally thinks that workshops are organised is different from reality: see slide above

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Folie 29

Experiment - conclusions

- **More buffer times**
- **planning of workshops in modules**
- **minimum duration of 2.5 months for the preparation**
- **high effort in man-days**




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- A realistic MS Project Plan template **should include more buffer times** (for things having useless waiting times) and should reflect actual situations.
- **External Co-ordination** is the most important module (the most important process):
- **The production of material** runs very shortly before the event and contains then a very high effort (very late contributions of materials -sometimes papers come just on the last day).
- **The planning of workshops** should be structured in modules in order to implement each model easily and quickly at the right moment: internal co-ordination, external co-ordination production of material (development of standard forms) production of copies, distribution activities, the workshop itself
- **a minimum duration of 2.5 months** for the preparation of a workshop is needed:
Due to the fact that an APS Leonardo-Workshop is organised in co-operation with at least 2 or 3 co-operation partners the effort for external organisation is higher than the same module compared to an APS R&D –workshop that is normally organised with only 1 co-operating partner.
Therefore the minimum duration of 2.5 months for the preparation of a workshop can be shorter (5 - 6 weeks) in case less partners are involved, all other modules are nearly the same.
- **effort / man days:** This effort was much higher than the staff thought before. It was due to the fact that the date foreseen to perform the workshop had to be shift back (Call for proposals later than expected): this caused a lot of re-work (all experts and speakers had to be informed and a new date had to be fixed with all persons and institutions involved)

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Folie 30

General Conclusions 1

- **organisation development :: client orientation**

- **life long learning**

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Christine Stoeckler-Penzl, 18 June 1999 Page 30

General Conclusions


- **Training and Process Improvement** can be linked up for mutual benefit of industry and their service providers

Not only software products can have monolithic structures, also organisations. The structure of APS is defined very much in terms of the European programmes we are working for and we have contracts for as regional information and consultancy office of EU Programmes. The processes of our work were not visible and if one programme changed and with it the activities that went with it we did not immediately see how that affected the work in our other programmes. So industry principles sharpened our view of things too and I can say at least to a certain extent:

- **Principles used in industry** can be successful even if used outside of its normal surroundings

From our point of view the challenge was and is to make the processes more understandable, predictable and usable so that they become visible in a quantitative and objective way which practices, techniques and tools bring which benefit or create which type of problem. This finally created and hopefully keeps creating a Learning Culture in which people understand their environment and continuously contribute to adapt and improve it. For myself and my team during BESTREGIT I have seen that

- **Life long learning** is not a hollow phrase: A continuous learning culture is at the heart of any successful development of people and business

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Folie 31

General conclusions 2

- **COFs and IMOFs**

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Christine Stockler-Petru, 18 June 1999 Page 31

The steps we fulfilled were only a first movement to start an improvement programme. From now on the processes are visible and understandable which forms the basis for discussions, criticism, and refinements. Out from our experience we can say that: **Process Improvement cannot only be used in software but also in other businesses that try to help organisations in their efforts to innovate.**

There is much talk about excellent companies of the 21st century, which are called Companies of the Future. The most important resources of a COF is knowledge and wisdom. A COF should have its own core competence both technological competence and managerial competence. To achieve the last one a close collaboration between top and middle managers is required.


Our ultimate goal must be to create IMOFs:- Innovation Management Organisations of the Future parallel with the appearance of COFs - Companies of the Future. As these kind of organisations will be working with their clients in virtual companies very soon and as the supply of knowledge increases continuously they only can apply and transfer know-how effectively if they organise themselves around strategic priorities, business opportunities and key competencies. Furthermore they will have to be able to access and use the most modern information technologies.

We are very optimistic that BESTREGIT will help us to become an IMOF by finding a well balanced interaction between work and learning processes. We would like to invite you to join this exciting process by becoming a client or a partner.

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1.11 Appendix B : Experiments Performed in APS (Austria), DEIS (Ireland), and Fueva (Spain)

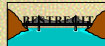




Examples and Comments.

	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	<p>WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 104 / 144 Filename: teamwork_del_5.5_v2.doc</p>
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Slide 1

Case Studies

- **APS** (Work Scenario Optimisation) 
- **DEIS** (Infrastructure Optimisation) 
- **FUEVA** (Human Resource Optimisation) 

 Training Package - 19/01/00, Page 4.1    

This section describes the Bestregit experiences of APS, DEIS and FUEVA, and how the experiments were planned, performed, and measured.

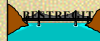
	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 105 / 144 Filename: teamwork_del_5.5_v2.doc
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Slide 2

APS Experiment


- **1. Definition of Improvement potential**
- **2. People Motivation Workshop**

- **3. Definition of Experiment:**
 - **“BEST PRACTICE MODEL for WORKSHOP ORGANISATION“**

 Training Package -
19/01/00, Page 4.2

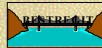
Going through the Bestregit steps APS identified those scenarios which had a wider range of applicability (multiplication and re-use factor). These are in particular
Partner search for customers
Support in writing EU proposal
Organisation and implementation of Workshops
PR activities
Following the guideline APS organised a people motivation workshop in which the four listed topics were rated by the employees. This work shop showed the highest interest in a “Best Practice model for Workshop-Organisation”

	<p style="text-align: center;">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 106 / 144 Filename: teamwork_del_5.5_v2.doc
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Slide 3

A standard APS-information workshop

- **Regional information workshop on EU-programmes**
- **Target groups: companies, schools, Universities, public institutions, social partners**
- **Duration: 3 hours**
- **number of participants: 10 - 50**
- **content: information on programmes and calls**
 - **presentation of project examples**




Training Package -
19/01/00, Page 4.3

The organisation of workshops has become more and more important in the range of the APS activities. In 1998 APS organised 23 regional workshops of which 16 were in the business field of the LEONARDO programme (see slide above) and 7 in the field of the RTD.

This was certainly a noticeable change compared to the past few years. The situation then could be described in terms of organising more and more workshops with resources staying the same. This created a lot of stress among the staff members. As APS management expected an increasing work load in this particular field it seemed necessary to do an exact analysis on time and human resource capacities for it as well as of the organisational process.


This, of course, included, the evaluation of the satisfaction of course participants. APS's goal was to organise more workshops with the same staff and time capacities once we had analysed the process and improved it by making adaptations to it. At the beginning of the experiment there was no defined measurable data but the staff members were asked to give their estimated figures (out of past experience).

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Slide 4

Performance of Experiment

- **Creation of scenario and workflow „organisation of workshops“**
- **simulation of a model**
- **organisation of a real workshop**
- **time sheets**
- **measurement of deviation**
- **definition of improvement potential**



Training Package -
19/01/00, Page 4.4


ACTIONS to perform the Experiment

Preparatory tasks:

1. creation of a scenario "organisation of workshops" with role descriptions
2. creation of a workflow (role model)
3. This workflow is the basis for a simulation of a model (tool: Microsoft project):
4. Definition of
 - the different phases of the workshop-planning
 - the roles
 - resources

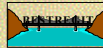
Running of the Experiment:

1. Performing the organisation of a real workshop
2. Filling in time sheets by all persons (roles) being involved in the scenario
3. Measuring deviation (comparison of model with real effort)
4. Definition of improvement potential

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Slide 5

Experiment - results			
	Model	Performance of Exp.	
• internal co-ordination:	9%		3%
• external co-ordination:	30%		38%
• preparation of Material:	31%		16%
• database search, copies			
• distribution activities	13%		9%
• buffer times	17%		34%
• estimated effort/man days	4 days	real effort	8 days
• (for the whole process)			


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Main topic of most of the APS-information workshops is to give "brand new" information on the current programme situation (calls). Therefore most of the activities within the scenario "workshop organisation" depend on information coming from "outside" (European Commission, National Co-ordination Unit).

The way how the staff ideally thinks that workshops are organised is different from reality: see slide above.

The lessons learned were -

- A realistic MS Project Plan template **should include more buffer times** (for things having useless waiting times) and should reflect actual situations.
- **External Co-ordination** is the most important module (the most important process):
- **The production of material** runs very shortly before the event and contains then a very high effort (very late contributions of materials -sometimes papers come just on the last day).
- **The planning of workshops** should be structured in modules in order to implement each model easily and quickly at the right moment: internal co-ordination, external co-ordination production of material (development of standard forms) production of copies, distribution activities, the workshop itself
- **a minimum duration of 2.5 months** for the preparation of a workshop is needed: Due to the fact that an APS Leonardo-Workshop is organised in co-operation with at least 2 or 3 co-operation partners the effort for external organisation is higher than the same module compared to an APS R&D –workshop that is normally organised with only 1 co-operating partner. Therefore the minimum duration of 2.5 months for the preparation of a workshop can be shorter (5 - 6 weeks) in case less partners are involved, all other modules are nearly the same.
- **effort / man days:** This effort was much higher than the staff thought before. It was due to the fact that the date foreseen to perform the workshop had to be shift back (Call for proposals later than expected): this caused a lot of re-work (all experts and speakers had to be informed and a new date had to be fixed with all persons and institutions involved)

Slide 6

DEIS Experiment

- Administer *satisfaction survey* to ascertain:
 - areas of discontent
 - appropriate priority areas for improvement

1. I think my job is a good one	1	2	3	4	5	6	7	8	0
2. I get as much, or more, out of my job as I put into it	1	2	3	4	5	6	7	8	0
3. I like my job	1	2	3	4	5	6	7	8	0
4. I find the work I do meaningful	1	2	3	4	5	6	7	8	0
5. The work I do is varied and interesting	1	2	3	4	5	6	7	8	0
6. The mission/purpose of DEIS makes me feel that my job is important	1	2	3	4	5	6	7	8	0
7. I am committed to doing quality work	1	2	3	4	5	6	7	8	0

Extract from survey

Where...

0 = Not applicable
 1 = Never true
 2 = Very rarely true
 3 = Rarely true
 4 = Occasionally true
 5 = Frequently true
 6 = Often true
 7 = Very often true
 8 = Always true

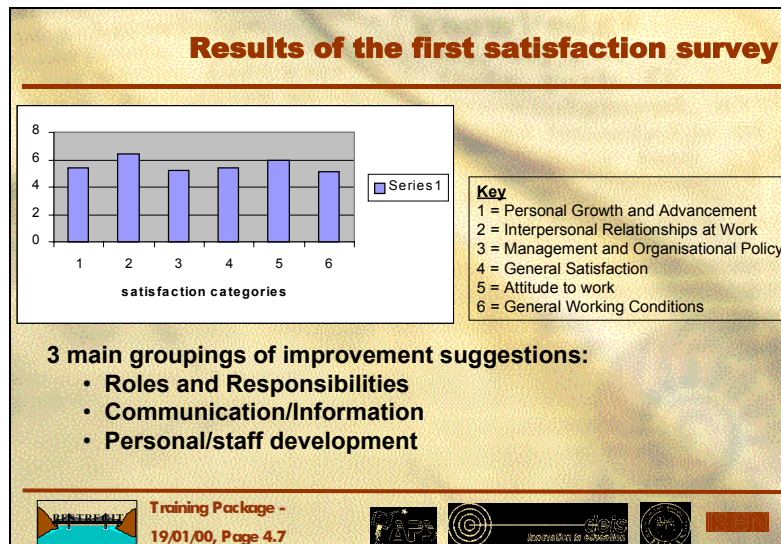
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The content of the questionnaire was based on a survey from the Gallup Organisation on building a stronger workplace, a survey itself distilled from thousands of large-scale Gallup employee surveys over the previous 30 years. This content was both validated and added to by readings from various sources in the area including Frederick Herzberg, a well-known early management guru, whose list of motivators and hygiene factors formed a kind of check list against which to measure the exhaustivity of the Gallup satisfaction indicators. Further sources of relevance were found in the work other experts in the field of Personnel Management such as Maslow, Porter & Lawler, Hackman & Oldman.


In form the questionnaire consisted of a series of satisfaction-related statements (e.g. "I find the work I do meaningful") which staff members were to be asked to rate (in terms of how true they felt them to be) on an eight point scale. In addition staff were asked to offer suggestions for an improvement experiment

Staff were asked to indicate how true they felt these satisfaction-related statements to be and then to offer suggestions for an improvement experiment. On the basis of this we decided what general areas to address in the experiment. A workshop was then held to disseminate results of the project to date and to work out the details of this experiment.

Slide 7



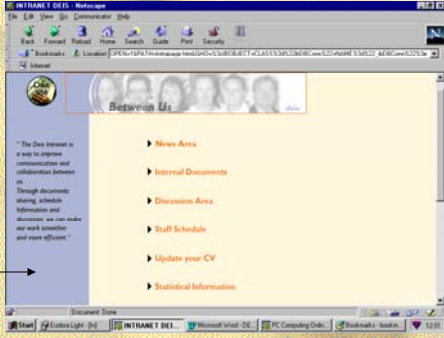
Results of the satisfaction survey can be seen in this slide. The mean satisfaction value was 5.56 with a stn. Deviation of .89. After analysing the results a workshop was organised for all staff to discuss these results and plan an improvement experiment.

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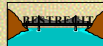
Slide 8

The experiment



Hypothesis: an extranet can improve staff satisfaction levels by addressing identified areas of staff dissatisfaction through improving communication and collaboration using document sharing, schedule information and online discussion.



Screen shot of the DEIS extranet →




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At the workshop it was decided to use an existing staff extranet as the basis of DEIS's improvement experiment. The hypothesis was that that extranet could improve staff satisfaction levels by addressing identified areas of staff dissatisfaction through improving communication and collaboration using document sharing, schedule information and online discussion.

The extranet was created by the department's Digital Media Unit using a combination of Backstage and Filemaker software. Each member of staff was given a unique logon name and secure password. Once logged in users access the extranet opening screen which offer them the chance to log onto 6 different areas:

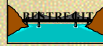
- News area.
- Internal documents.
- Discussion area.
- Staff Schedule.
- Update your CV.
- Statistical Information.

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Slide 9

Gauging the success of the experiment

- ◆ Results of the first satisfaction survey
- ◆ Results of the second satisfaction survey
- ◆ Analog analysis of the Extranet's logfiles



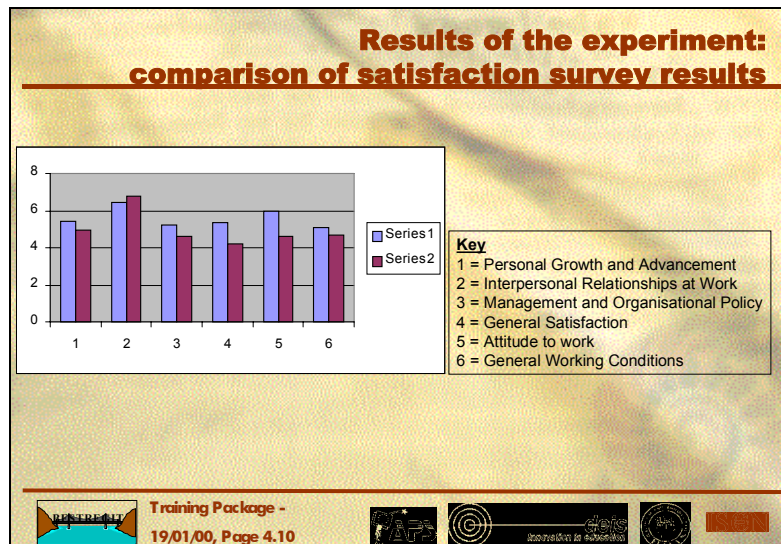
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4 different sets of data would be gathered to ascertain, if possible, the success of the experiment. These were as follows:

- Results of the first satisfaction survey
- Results of the second satisfaction survey
- Analog analysis of the Extranet's logfiles

Slide 10




The workshop took place on the 9th October and the experiment continued until the 27th of July 1999 when the satisfaction survey was again administered. In content the questionnaire form differed slightly from the previous version in that this time it asked respondents whether they felt the extranet had in any way improved their job satisfaction or addressed what they considered to be areas of dissatisfaction. The rating scale once again ran from 1 to 8. The two satisfaction surveys are compared in this slide.

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Slide 11

Conclusions

- Ultimately the survey sample was too small to conclusively prove or falsify the hypothesis of the experiment
- The drop in staff numbers (from 13 to 8) between the two surveys may partly account for not getting a significant difference between both measures.
- It might be that technology infrastructure has no impact on satisfaction of people, and only an impact on the work performance which was not measured in this case study.
- --> **Organisation (People) > Methodology > Technology**



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Ultimately the survey sample was too small to conclusively prove or falsify the hypothesis of the experiment. There were also changes in the sample population over the time of the experiment, rendering any kind of statistical test (e.g. The Paired-Samples T Test) invalid.

It is interesting to note that obviously the technology has less impact than the other experiments, so that we could conclude

- people resources and skills are more important than methodologies
- methodologies are more important than technology
- technology and infrastructure is least important

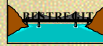



However, it is interesting to note that the infrastructure improvement itself had impact on a people factor “Interpersonal Relationships at Work”.

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Slide 12

Fueva Experiment

- ▶ **After the Goal tree, Role Model, Workflow and Activities Model, some potential improvements were highlighted by the Improvement manager.**
- ▶ **A pool of different Experiments in order to choose one improvement action in a democratic way.**
- ▶ **The choice: “To develop a design and to implement a homogeneous system in order to file all document projects in the same way”**


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After analysing the FUEVA organisation through the Goal tree, Role Model, Workflow and Activities Model, we knew exactly what FUEVA is, what goals it tries to achieve, what metrics can be used to judge FUEVA's failure or success and what processes are involved in the organisation.


The next step was to highlight and find some potential improvements areas by the improvement manager and all staff members.

All potential experiments were highlighted by the improvement manager and explained to the Innovation Department Staff. Improvement actions were chosen in a democratic way.

The selected improvement actions were the following: “To design and implement a homogeneous System in order to file all documents of projects in the same way.

Why was this experiment chosen by the FUEVA Staff?

Because, after analysing the organisation, it was discovered that not all staff members were filing in the same way, while it is a compulsory activity for most of them. There was no procedure in place.

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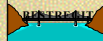




Slide 13

Experiment Goal


EXPERIMENT GOAL:

To design, develop and implement a common documentation system, allowing everybody to manage information/documentation of their colleagues in the same department without having problems to find any document.

To measure, in quantitative and qualitative way, all improvements made through the comparison between the current and future situation.


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The experiment tried to validate the Bestregit Methodology itself.

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Slide 14

Experiment Performance

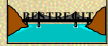



GENERAL STEPS FOR THE EXPERIMENT:

1.- Analysis of the Current Situation:

- a) Action 1: Development of a questionnaire
- b) Action 2: Analysis of the results of the completed questionnaire

2.- Development of a documentation/information system:

- a) Action 1: Centralisation of all project documentation
- b) Action 2: Creation of a database
- c) Action 3: Labelling documents


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ANALYSIS OF THE CURRENT SITUATION

A) Action 1: Development of a questionnaire: a questionnaire was developed which main aim it was to test the need to unify the documentation system in FUEVA, which was used by all staff.

B) Action 2: Statistical analysis of the questionnaire: As main conclusion it could be said that the department in bulk believed that it was absolutely needed to unify the documentation system at departmental level. The majority thinks however that there is no need to unify the documentation system between departments as yet


DEVELOPMENT OF A DOCUMENTATION /INFORMATION SYSTEM

Action 1: Centralisation of all projects documentation at physical and at computerised level, and to extract from them certain key information (parameters).

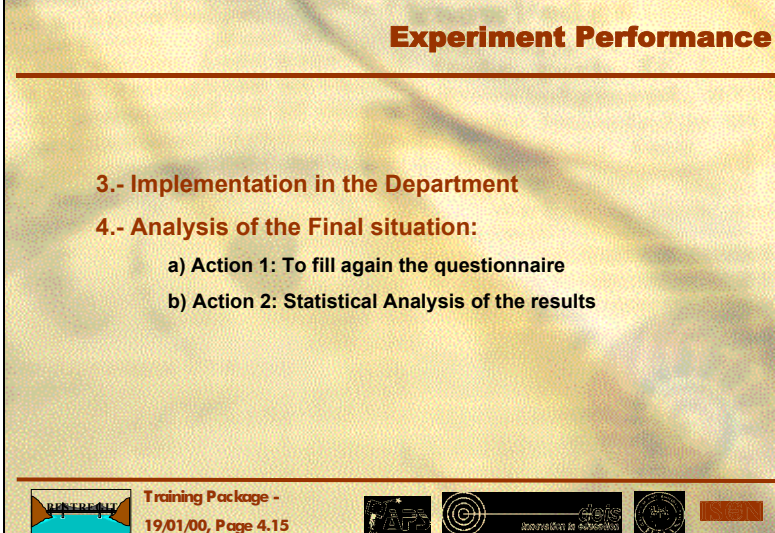
The parameters comprised: a.- Brief summary of the document b.- Date in which the document was sent, signed, etc, c.- Reference: A code by which users of the database and the physical folders can find quickly d.- concept: Explanation e.- Links to other documents

Action 2: Creation of a database (In Access Format) which contains all certain common parameters to all projects which allows to know where a certain document it is allocated.

Action 3: To label all document in accordance to references of the database

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Slide 15



Experiment Performance

3.- Implementation in the Department

4.- Analysis of the Final situation:

a) Action 1: To fill again the questionnaire

b) Action 2: Statistical Analysis of the results

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IMPLEMENTATION OF THE DOCUMENTATION SYSTEM


All members of the Innovation Department took part in a mini training course. All functions of the system were explained to the staff. The practical exercises consisted in searching documents from different persons of the department in the database software and in the physical and multimedia files.

ANALYSIS OF THE FINAL SITUATION

A) Action 1: All members of the Innovation Department had to complete the questionnaire again in regards to internal documentation.

B) Action 2: Statistical Analysis of the improvements where, after implementing this system, 100% of the Innovation department staff state that :


- They could find documents in the physical documentation from a colleague always and in his/her multimedia documentation. Before 75% stake that they could not or seldom find physical documentation from other colleagues. A 100% agreed that they would rarely find it in the multimedia files.
- They could find most of the time documentation without asking the person in charge of the project. Before, 75% could not find at all or only rarely.

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Slide 17

Conclusions and Benefits

- 1.- A reduction of time in the training programme was achieved.
- 2.- Each Staff member could access to the documentation of the rest of his/her colleagues while they are absent from the work.
- 3.- The reaction time to clients/customers will be shorter, achieving an improvement in the Quality of FUEVA services.
- 4.- An overall increase of staff satisfaction.
- 5.- Improve the goals described in the Goal Analysis.



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The experiment helped in the following aspects:


- 1.- A reduction of time for the integration of new staff was achieved, because the methodology provided teamwork models and roles with which people could identify themselves. (To train staff faster and better was defined as a goal in all business fields of the organisation).
- 2.- Each Staff member could access to the documentation of the rest of his/her colleagues while they are absent from the work.
- 3.- The reaction time to clients/customers became shorter, achieving an improvement in the Quality of FUEVA services.
- 4.- An overall increase of Staff Satisfaction was achieved.

There were also other experiments chosen by the staff and managers, but they could not be measured.

FUEVA implemented the experiment. The result was really good. FUEVA believes that it is currently helping hugely to the adaptation of the new staff to the organisation

8.1

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9 EXAMPLES FROM TEAMWORK PROJECT: DESIGN OF SCENARIOS AND IMPLEMENTATION THROUGH NQA

9.1 Actual Implemented Scenarios for EU Project Management

Three project types „Overall EU Project Management”, „Work Package Specific Management”, „Deliverable Production” have been configured, each containing working scenarios:

Overall EU Project Management contains

- Overall Project Planning Scenario
- Overall Effort Reporting Scenario

Work Package Specific Management contains

- Work Package Specific Planning Scenario
- Assessment Scenario

Deliverable Production contains

- Deliverable Production and Review scenario

9.2 Role Communication Models for Managing EU Projects

9.2.1 Overall Project Planning Scenario

Overall Project Planning Scenario

(Project Type: Teamwork - Overall Project Management)

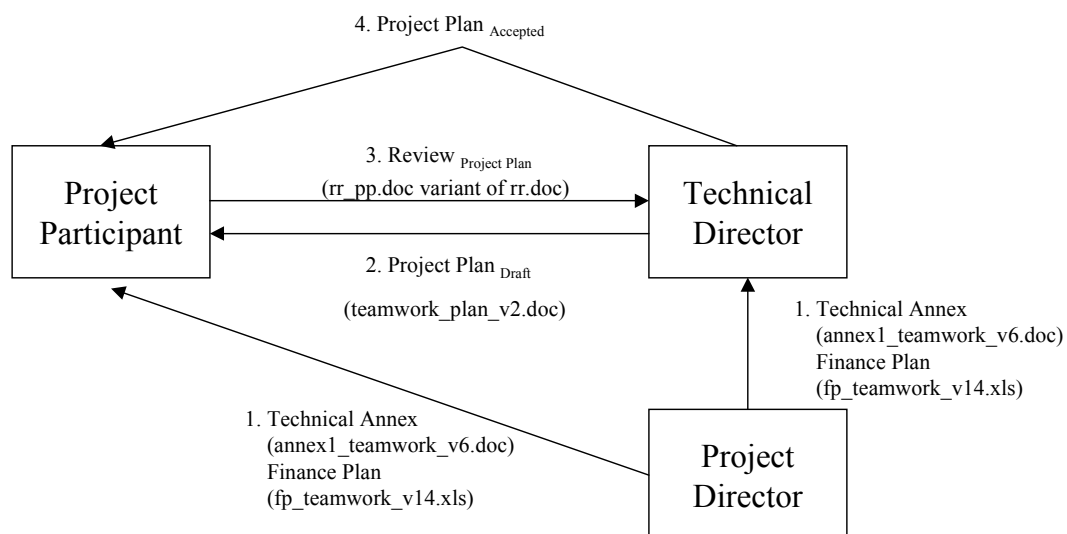



Figure 16: Overall Project Planning Scenario

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1. The Project Director submits the Technical Annex to the Technical Director and all Project Partners.
2. The Technical Director creates/updates a Project Plan and submits it to all Project participants.
3. The Project Participants provide the Technical Director with a Review of the Project Plan.
4. The Project Plan with status Accepted is submitted to all Project Participants.

9.2.2 Overall Effort Reporting Scenario

1. The Project Participants submit monthly Effort Reports to the Contractor. E.g. All partners (associate contractors) in the software engineering domain submit to the coordinator (contractor) of that user domain.
2. The Contractor reviews the monthly Effort Report and provides the Participant with a Review Report, if changes are required.
3. The Contractor summarises all monthly Effort Reports from all his associate contractors into an Effort Status Report and submits it to the Project Director.
4. The Project Director summarises all Effort Status Reports into one overall report and submits it to the Project Officer.

The NQA system has already been configured with these documents, roles, and submissions and used for effort reporting.

Overall Effort Reporting Scenario

(Project Type: Teamwork - Overall Project Management)

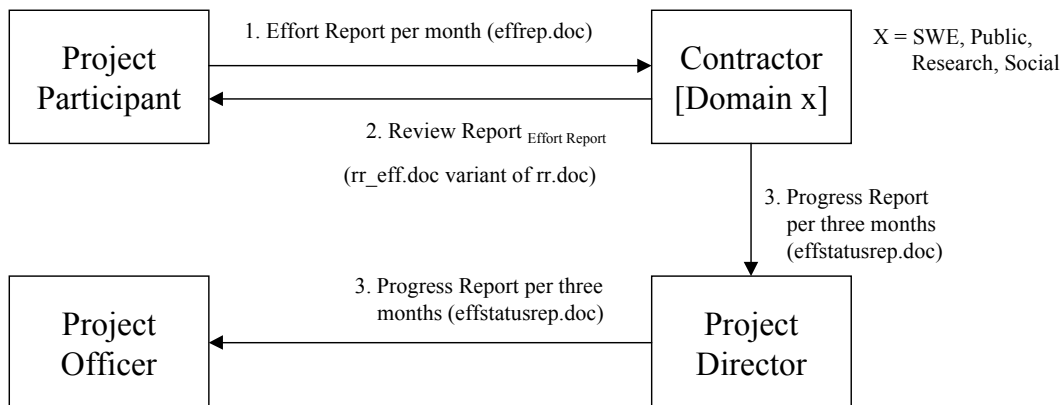



Figure 17: Effort Reporting Scenario Work Package Specific Planning Scenario

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9.2.3 Work Package Specific Planning Scenario

Work Package Specific Planning Scenario

(Project Type: Teamwork - WP Specific Management)

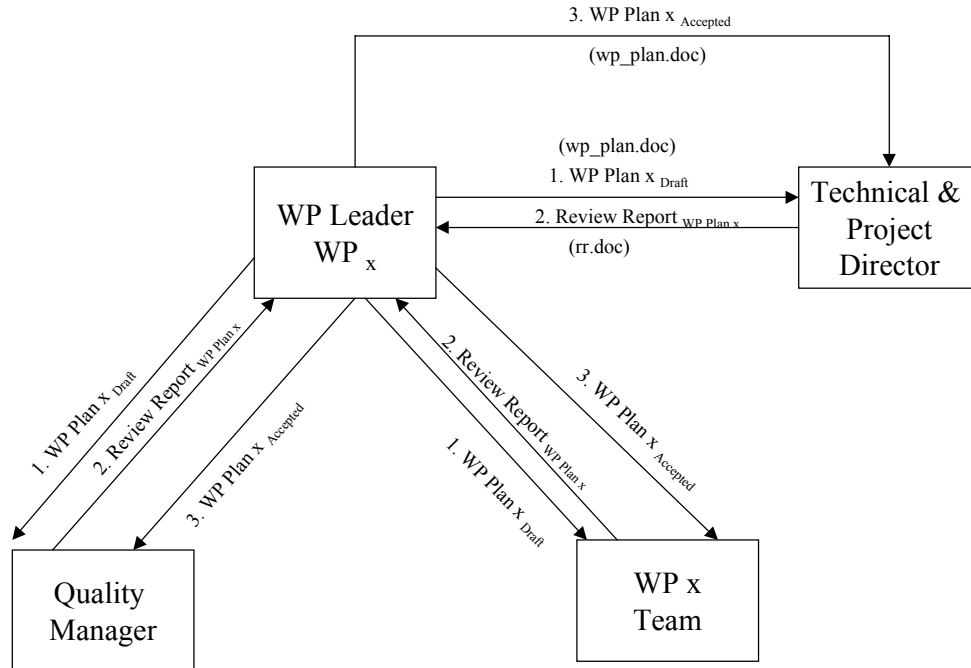



Figure 18: Work Package Specific Planning Scenario

1. The Work Package Leader submits a Work Package Plan to the Quality Manager, the Work Package Team, and the Technical and Project Director.
2. The Quality Manager, the Work Package Team, and the Technical and Project Director can provide feedback and submit a Review Report back to the Work Package Leader.
3. The Work Package Leader includes the Review Reports in the Work Package Plan and submits it with a status Accepted back to the Quality Manager, the Work Package Team, and the Technical and Project Director.

9.2.4 Assessment Scenario

	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 124 / 144 Filename: teamwork_del_5.5_v2.doc
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Assessment Scenario

(Project Type: Teamwork - WP Specific Management)

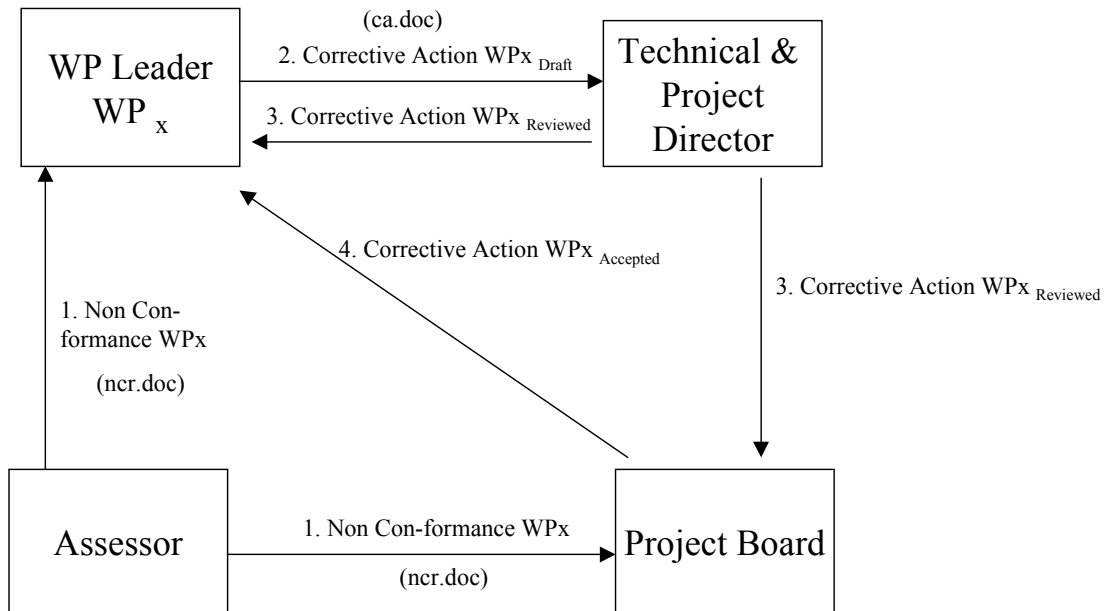



Figure 19: Assessment Scenario

1. Assessors review the project materials (available on the NQA server) for the different work packages and submit Non-Conformance Reports (Deviations from the Original Plan) to the corresponding Work Package Leader and the Project Board.
2. The Work Package Leader defines a Corrective Action (to solve the Non-Conformance) and submits it to the Technical and the Project Director.
3. The Project Director reviews and refines the Corrective Action and submits it with a status Reviewed to the Work Package Leader and the Project Board.
4. The Project Board checks the reviewed Corrective Action and give it a status Approved and submit it back to the responsible Work Package Leader who will implement it.

9.2.5 Deliverable Production and Review Scenario

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Deliverable Production and Review Scenario

(Project Type: Teamwork - Deliverable Production)

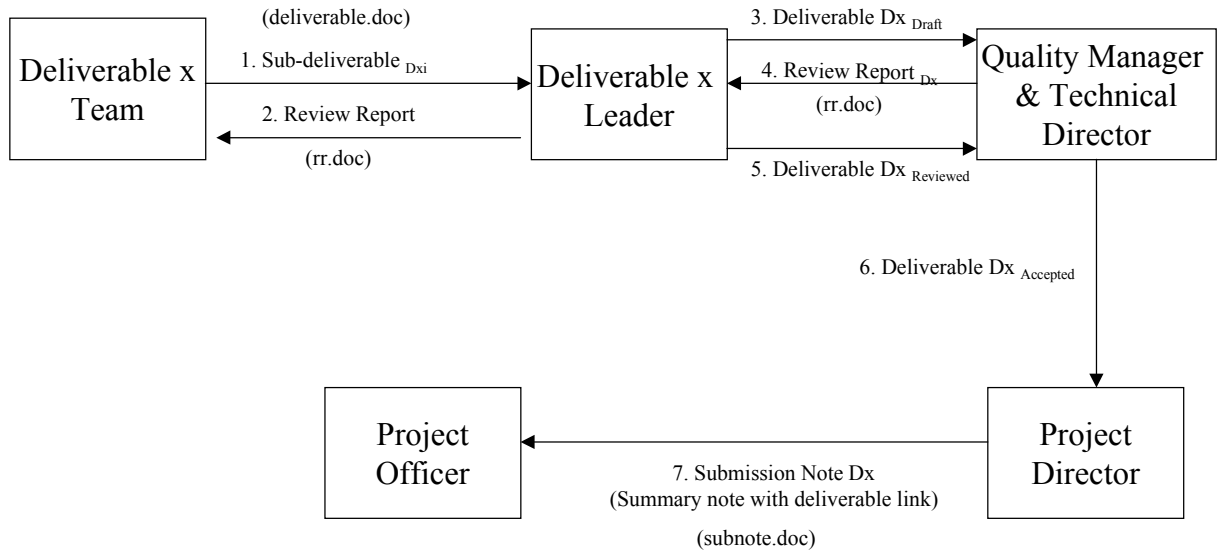



Figure 20: Deliverable Production and Review Scenario

1. Deliverable Team members create Sub-Deliverables and submit them to the Deliverable Leader.
2. The Deliverable Leader reviews the Sub-Deliverable and submits Review Reports back to the Deliverable Team members.
3. The Deliverable Leader integrates all Sub-Deliverables into a Deliverable and submits it to the Quality Manager and the Technical Director.
4. The Technical Director reviews the Deliverable and submits Review Reports back to the Deliverable Leader.
5. The Deliverable Leader integrates the review comments and submits a Deliverable with status Reviewed to the Quality Manager and the Technical Director.
6. The Technical Director approves the Deliverable and sends it with a status Accepted to the Project Director.
7. The Project Director creates a Submission Note (linked to the Deliverable) and submits it to the Project Officer.

The NQA system has already been configured with these documents, roles, and submissions and used for deliverable production and review of this deliverable.

9.3 Actual Implemented Scenarios for Risk Management / Defence

Figure 21 and Figure 22: illustrate the scenarios which were finally implemented.

	<p style="text-align: center;">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 126 / 144 Filename: teamwork_del_5.5_v2.doc
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Risk Planning Scenario

(Project Type: Risk Management)

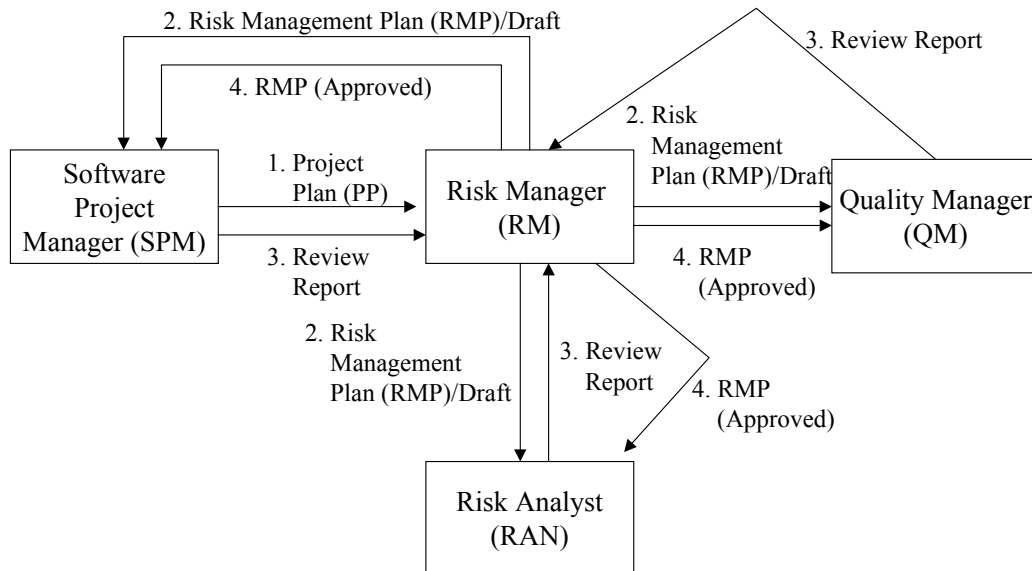



Figure 21: Risk Planning Scenario

1. The Software Project Manager (SPM) creates and submits a Project Plan (PP) to the Risk Manager (RM).
2. The Risk Manager (RM) creates a draft Risk Management Plan which is submitted for review to the Quality Manager (QM), Risk Analyst (RAN), and the Software Project Manager (SPM).
3. The Quality Manager (QM), Risk Analyst (RAN), and the Software Project Manager (SPM) review the draft Risk Management Plan (RMP) and submit Review Reports back to the Risk Manager.
4. The Risk Manager refines the Risk Management Plan based on the received Review Reports and submits an approved Risk Management Plan to the Quality Manager (QM), Risk Analyst (RAN), and the Software Project Manager (SPM).

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Risk Management Scenario

(Project Type: Risk Management)

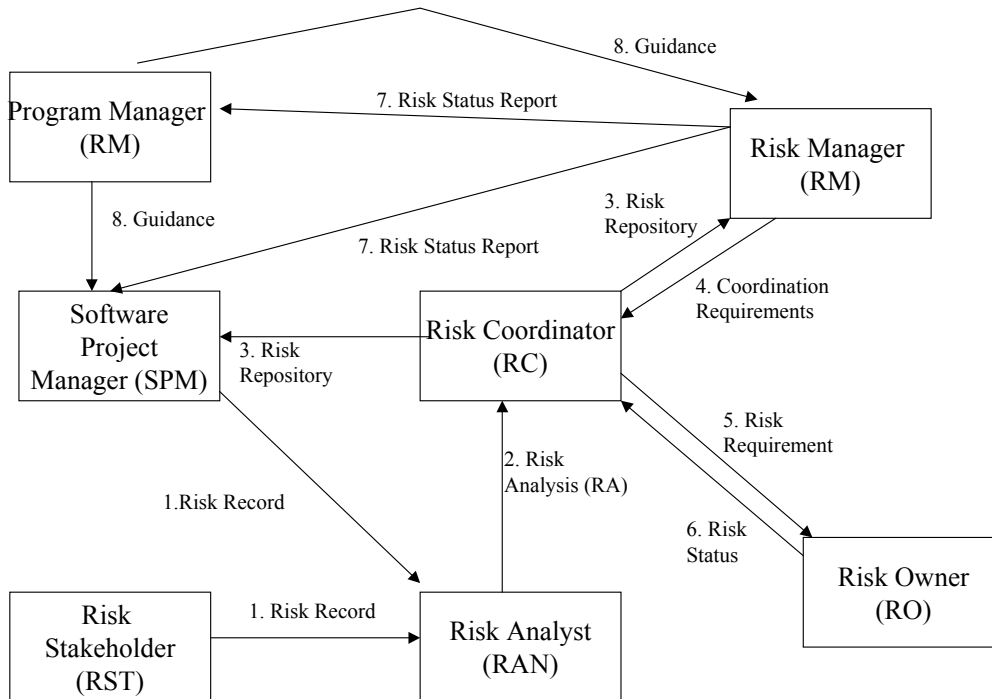



Figure 22: Risk Management Scenario

1. Risk Stakeholders (RST), the Software Project Manager (SPM) submit Risk Records to the Risk Analyst (RAN).
2. The Risk Analyst (RAN) analyses, prioritises the received Risk Records and submits a Risk Analysis (RA) to the Risk Co-ordinator (RC). Usually a Risk Analysis is linked to a set of Risk Records.
3. The Risk Co-ordinator takes the Risk Analysis into account and refines the Risk Repository. The Risk Repository is submitted to the Software Project Management (SPM) and the Risk Manager (RM).
4. The Risk Manager submits further Co-ordination Requirements to the Risk Co-ordinator (RC).
5. The Risk Co-ordinator submits Risk Requirements to Risk Owners (RO).
6. The Risk Owners periodically submit a Risk Status to the Risk Co-ordinator (RC).
7. The Risk Manager periodically submits a Risk Status Report to the Software Project Manager.
8. The Program Manager receives the Risk Status Report and can submit a Guidance (go,no-go,conditions) to the Software Project Manager and the Risk Manager.

9.4 Actual Implemented Scenarios for European Space Agency

A project type ESA (European Space Agency) ECSS Standards has been configured, containing six working scenarios:

- Project Management Scenario
- Configuration Management Scenario

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- Project Assurance Scenario
- Software Requirements Analysis Scenario
- Top level Architectural Design Scenario
- Software Design Scenario
- Software Testing Scenario

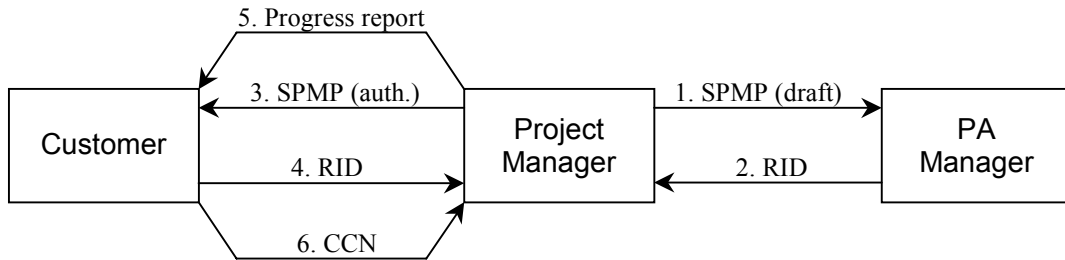


Figure 23: Role Model for the Project Management work scenario

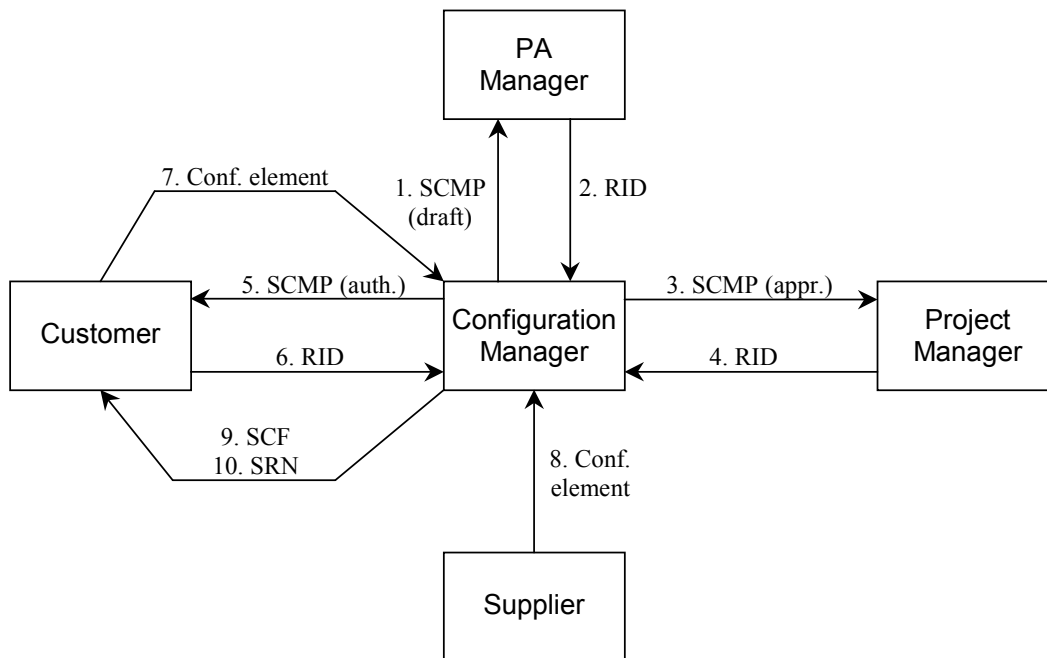



Figure 24: Role Model for the Configuration Management work scenario

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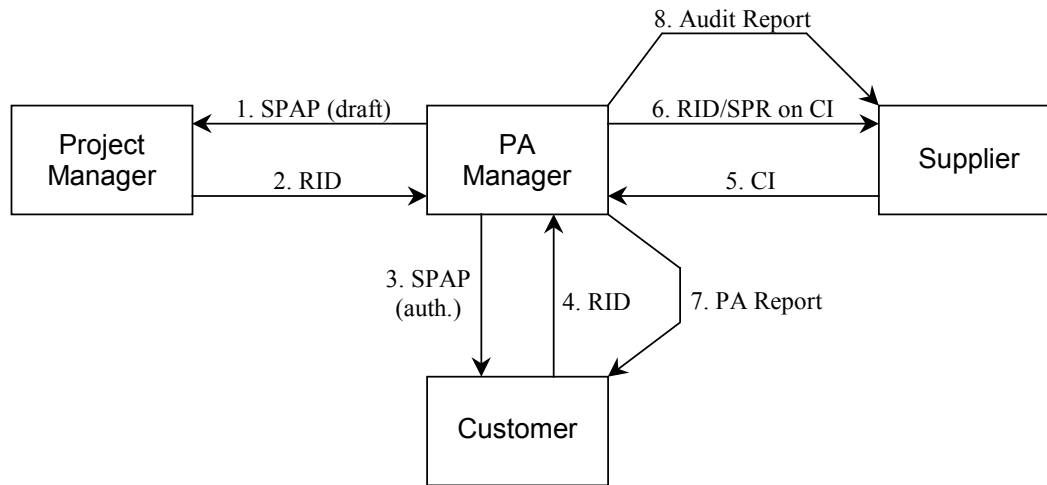


Figure 25: Role Model for the Product Assurance work scenario

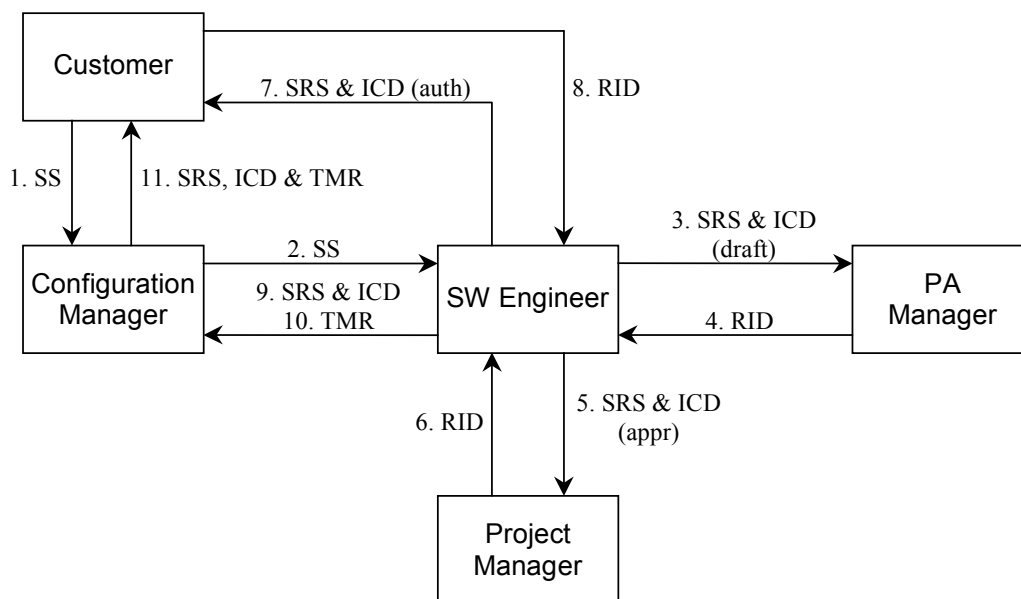



Figure 26: Role Model for the Software Requirement Engineering work scenario

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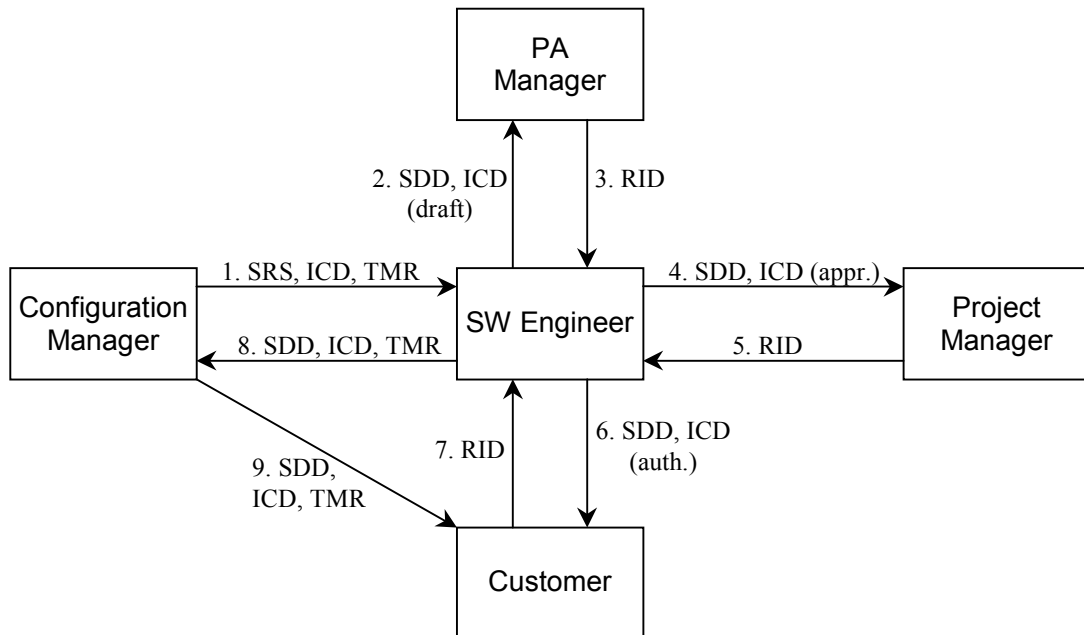


Figure 27: Role Model for the Top-level Architectural Design work scenario

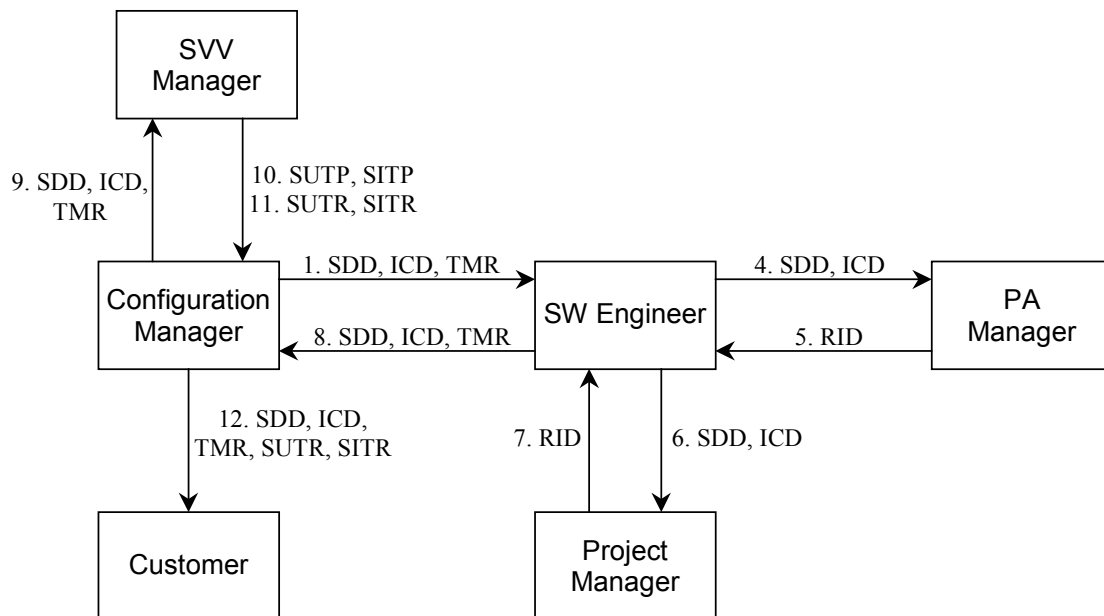



Figure 28: Role Model for the Software Design Engineering work scenario

	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 131 / 144 Filename: teamwork_del_5.5_v2.doc
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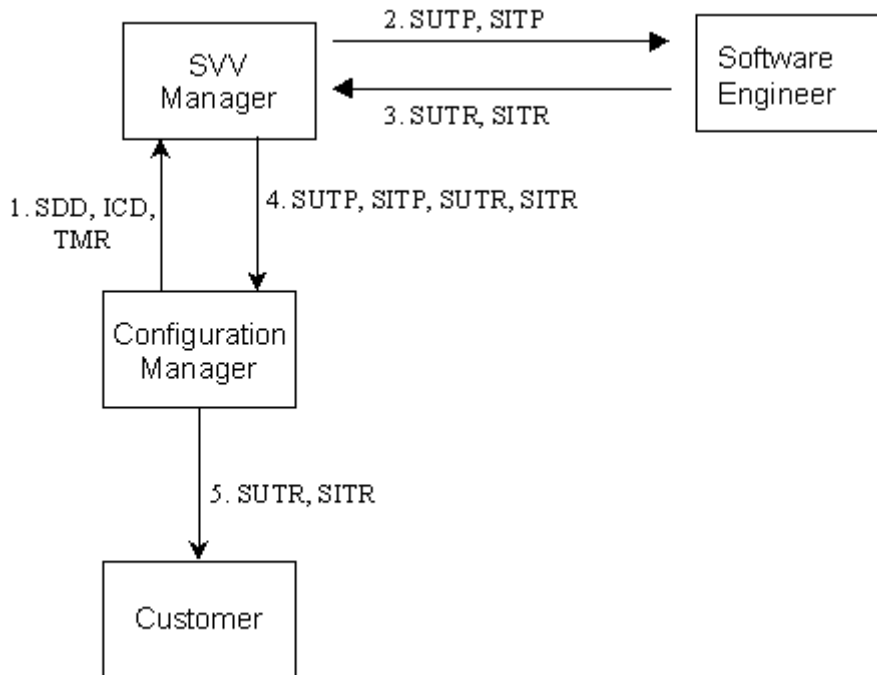


Figure 29: Software Testing Scenario


1. The Configuration Manager submits the Software Design Document (SDD), Interface Control Document (ICD), and Traceability Matrix (TMR) to the responsible Software Verification and Validation Manager designing test plans. These documents were created in the previous scenario of Software Design..
2. The Software Verification and Validation Manager create a Software Unit Test Plans (SUTP) and Software Integration Test Plans (SITP) which are submitted to the Software Engineers responsible for testing.
3. The Software Engineers perform the tests, document the results in Software Unit Test Reports (SUTR) and Software Integration Test Reports (SITR) which are submitted to the Software Verification and Validation Manager.
4. The Software Verification and Validation Manager receives all test reports and submits the SUTP,SITP,SUTRs,SITRs, to the Configuration Manager for version checkin (automatically managed by NQA).
5. The Configuration Manager ensures that always the most recent versions of the SUTP,SITP,SUTRs,SITRs are available for the Customer.

9.5 Actual Implemented Scenarios for Enterprise Ireland Innovation Programme (Decision Making)

Three project types „Partner Acquisition Project”, „Idea Creation Project”, „Proposal Writing Project” have been configured, each containing working scenarios:

Partner Acquisition contains

- Partner Acquisition Scenario

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Idea Creation contains

- Proposal Idea Creation Scenario

Proposal Writing contains

- Deliverable Production and Review Scenario

Roles

DOT	...	Development Office Team
TEX	...	Tecnet Dev. Executive
PEI	...	Program Manager Enterprise Ireland
IDC	...	Idea Creator
RES	...	Researcher
IPA	...	Industrial Partner
SEP	...	Selected Partner

Figure 30: Roles Configured for the Enterprise Ireland Innovation Programme Trials

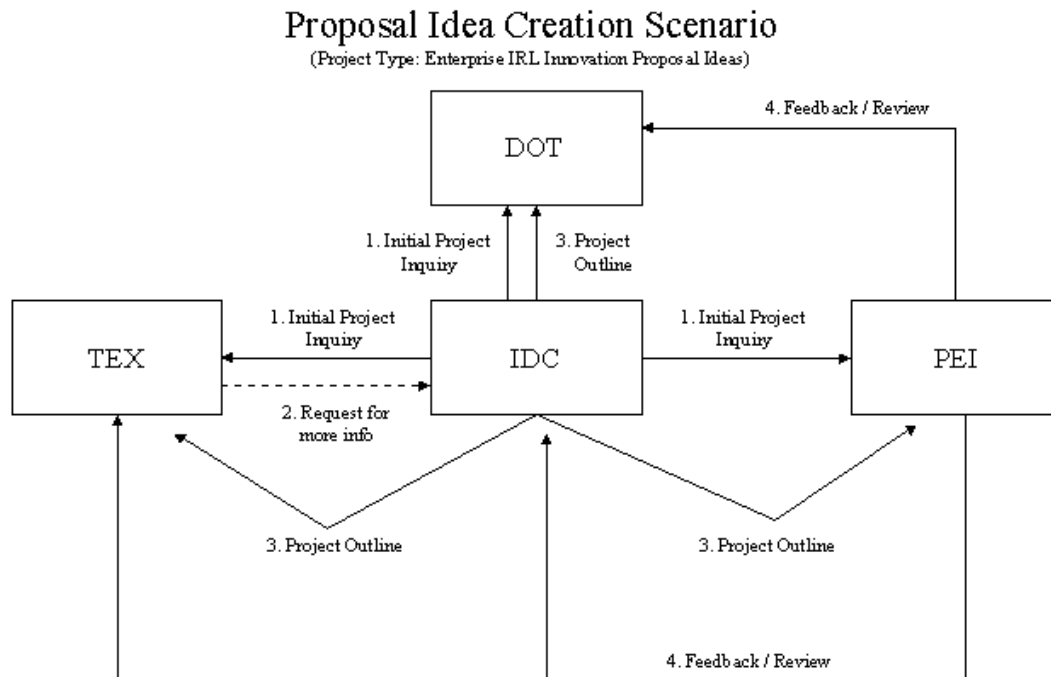



Figure 31: Proposal Idea Creation Scenario

1. The Idea Creator (IDC) submits a draft project inquiry and outline to the Development Office Team (DOT), the Tecnet Dev. Executive (TEX) and the Enterprise Ireland Program Manager (PEI).
2. The TEX requests more info if interested.
3. The IDC sends DOT, TEX and PEI an Outline Pre-Proposal.
4. The PEI sends a review of outline proposal to the DOT, IDC and TEX.

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In the other project “Partner Acquisition” Researchers can apply for becoming an IDC. Such an application leads to the creation of an account for this IDC with an assignment to the Proposal Idea Creation Project.

Either (depending on privacy policies) one or many IDCs then operate in this project and a pool of project inquiries and outlines will be maintained commonly across all institutes for a specific call.

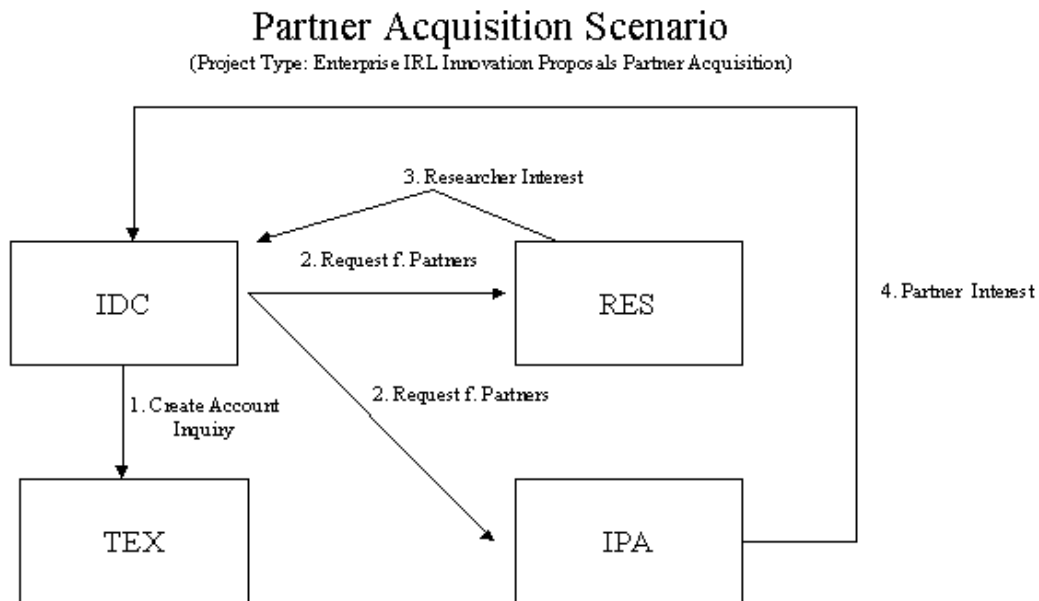


Figure 32: Partner Acquisition Scenario


1. The Idea Creator (IDC) submits a request for partners in research to the Researchers (RES), and submits a request for partners in industry to the Industrial Partners(IPA).
2. RES and IPA reply with expressions of interest to all the IDCs.
3. An IDC who found enough partners sends the TEX (Tecnnet Development Executive) a Request for an Account to access the pre-proposal writing area.

The project of type „Partner Acquisition” is accessible by all researchers and industrial partners through a predefined set of two accounts:

IPA account: name = IndPart, password = golfing777
 RES account: name = ResPart, password = golfing111

These userids and passwords are communicated to researchers and partners of technical colleges.

They access the project “e.g. Partner Acquisition Call xyz” and apply as an IDC (Idea Creator). Then Tecnnet will give them an account in the Proposal Idea Creation Project and a role as IDC. As Requests for Partners and Interest declarations should be accessible for all, also these steps are accessible as the predefined IPA and RES account member.

	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 134 / 144 Filename: teamwork_del_5.5_v2.doc
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A submission to a IPA here will go to an email forward list maintained on the Tecnet Linux server which explodes the submission to all Tecnet industrial contacts. A submission to a RES here will go to an email forward list maintained on the Tecnet Linux server which explodes the submission to all Tecnet researcher contacts.

Proposal Design Scenario

(Project Type: Enterprise IRL Innovation Proposals Design)

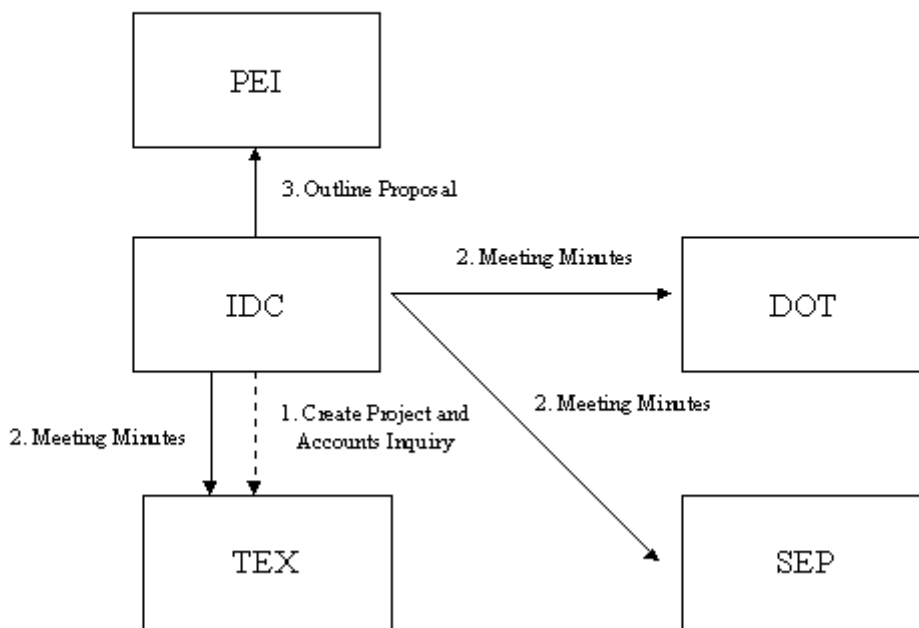



Figure 33: Proposal Writing Scenario

1. The Idea Creator (IDC) submits data about the team who plan to collaborate on the proposal to the Tecnet Executive (TEX). Tecnet creates a project and accounts for them so that the team can connect and start working in a Proposal Design project.
2. The IDC meets his SEPs (Selected Partners) and the meetings result in meeting minutes. The meeting minutes are submitted to the DOT (Development Office Team), TEX (Tecnet Executive), and the SEPs.
3. The IDC refines the proposal based on the meeting minutes and agreements and submits the proposal to the Enterprise Ireland Program Manager (PEI).

If (and that we assume) researchers do not want to share exact details of their proposals with the world we should set up a project of that type per proposal design agreed. “E.g. Proposal Design New Mobile Learning”.

To these specific area then only the selected researchers who belong to that project should have access.

Thus in a first step the IDC submits a request for creating such a project o Tecnet. Tecnet then creates a project of that type, creates the team, assigns the roles (e.g. selected researchers to the SEP role), and provides the service.

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9.6 Actual Implemented Scenarios for Leonardo Proposal Writing

Two project types „Leonardo Project Acquisition”, and „Leonardo Proposal Writing” have been configured, each containing working scenarios:

Leonardo Project Acquisition contains

- Partner Acquisition Scenario

Leonardo Proposal Writing contains

- Project Proposal Scenario

Potential coordinators can login with userid leonardo and password guest and submit a summary template to an NQA Administrator. The nqaadmin receives it and gives the coordinator an account so that submissions of partner interest can be submitted to this new potential coordinator.

Once a partnership has come together on a specific idea the NQA Administrator creates a project of type Leonardo Project Proposal and gives the chosen team an access to that created project.

Project Acquisition Scenario (NQA Project Available as leonardo/guest)

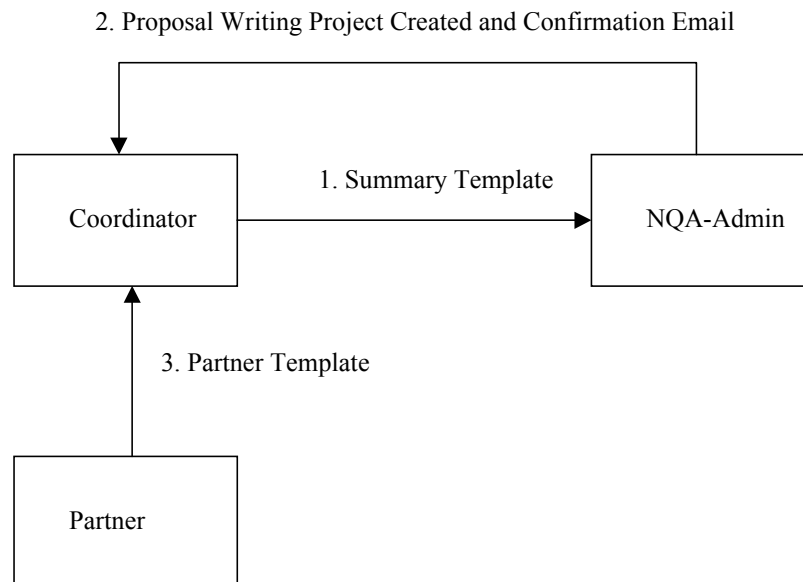



Figure 34: Partner Acquisition

1. The co-ordinator completes the Summary Template and submits to the NQA Admin.
2. The NQA Admin knows that a new proposal writing project is needed, creates it and gives the co-ordinator access to it.
3. Partners create Partner Templates and with SUBMIT they are sent automatically to the registered co-ordinators.

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Proposal Writing Scenario

(NQA Project Available for registered users - at least the coordinator)

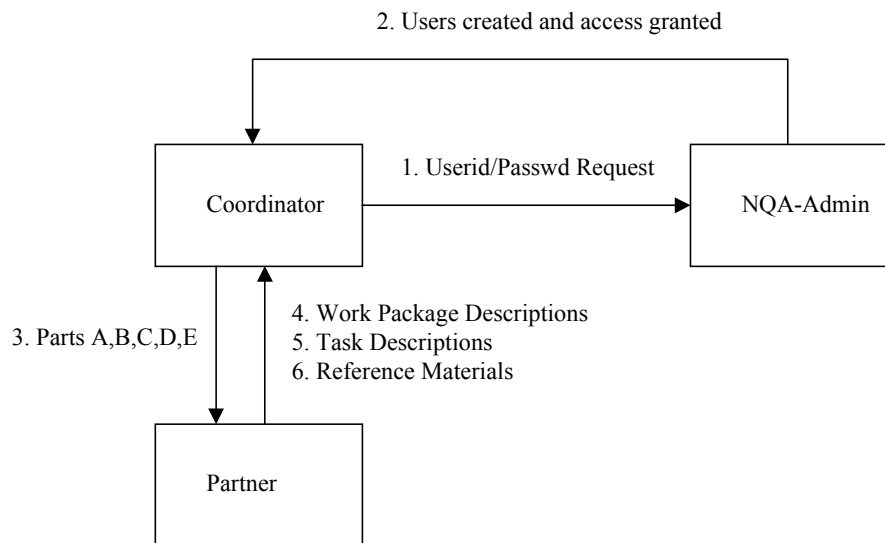


Figure 35: Project Proposal Scenario


1. The Co-ordinator completes a table with all Partners that should be involved. This table is submitted to the NQA Admin.
2. The NQA Admin creates accounts for the Partners and assigns them to the proposal writing project.
3. The Co-ordinator writes parts A,B,C,D,E of the proposal and submits them for feedback to the Partners. In Part E the co-ordinator assigns the Partners to Work Packages and Tasks.
4. Partners receive parts A-E and contribute Work Package Descriptions (which were assigned to them).
5. Partners receive parts A-E and contribute Task Descriptions (which were assigned to them).
6. Partners contribute Reference Materials.

9.7 Actual Implemented Scenarios for EU Socrates Network

Two project types „Students – Socrates Application Project”, and „Students – Incoming/Outgoing Management” have been configured, each containing working scenarios:

Students – Socrates Application Project contains

- Students Application Scenario
- Student Recognition and Reporting Scenario

	<p style="text-align: center;">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 137 / 144 Filename: teamwork_del_5.5_v2.doc
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Students – Incoming/Outgoing Management contains


- Bilateral Agreement Scenario
- Student Placement Decision Scenario

Additional changes compared to Deliverable 2 were -

- The role names had to be adapted to be according to international terminology. A registrar, for instance, is in UK, Ireland etc. the office of the director of the university. So we called this role AOF (Admin Office of the Faculty).
- Also, we have developed re-usable scenarios where the same scenarios for incoming and outgoing students are applied, only that in one case University of Maribor plays the role of a sending and in the other case of a receiving university.

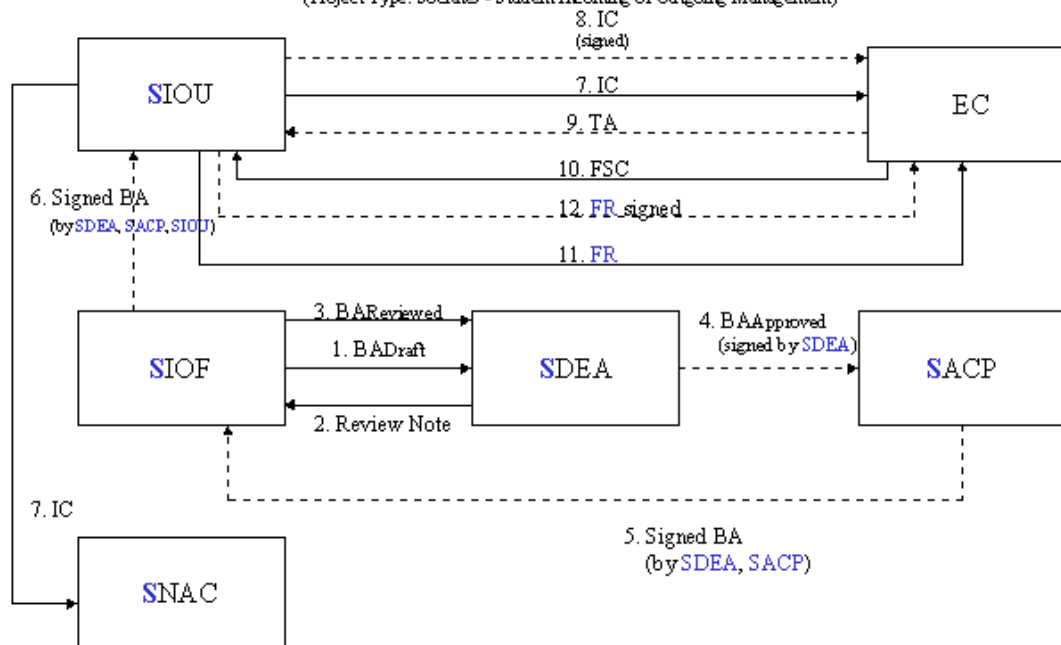
SIUO	...	Coordinator in the International Office of Sending University
RIUO	...	Coordinator in the International Office of Receiving University
SFAC	...	Faculty of Sending University
RFAC	...	Faculty of Receiving University
SDEA	...	Dean of Faculty of Sending University
RDEA	...	Dean of Faculty of Receiving University
SACP	...	Academic Personnel that belongs to Sending University
RACP	...	Academic Personnel that belongs to Receiving University
STU	...	Student who belongs to Sending or Receiving University
RSTU	...	Student who belongs to Receiving University
SSTU	...	Student who belongs to Sending University
SIOF	...	International Office of Faculty of Sending University
RIOF	...	International Office of Faculty of Receiving University
SAOF	...	Administrative Office of Faculty of Sending University
RAOF	...	Administrative Office of Faculty of Receiving University
SNAC	...	National Socrates Coordinator of Sending party
RNAC	...	National Socrates Coordinator of Receiving party
EC	...	European Commission

Figure 10: Roles in the EU Socrates Scenarios

	<p align="center">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 138 / 144 Filename: teamwork_del_5.5_v2.doc
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Bilateral Agreement Scenario


(Project Type: Socrates - Student Incoming or Outgoing Management)



Dotted lines mean a printed paper submission, other lines mean an NQA electronic submission. This project area is only accessible by the university staff of the receiving and sending university who play roles in the Socrates management, plus the EU contact persons.

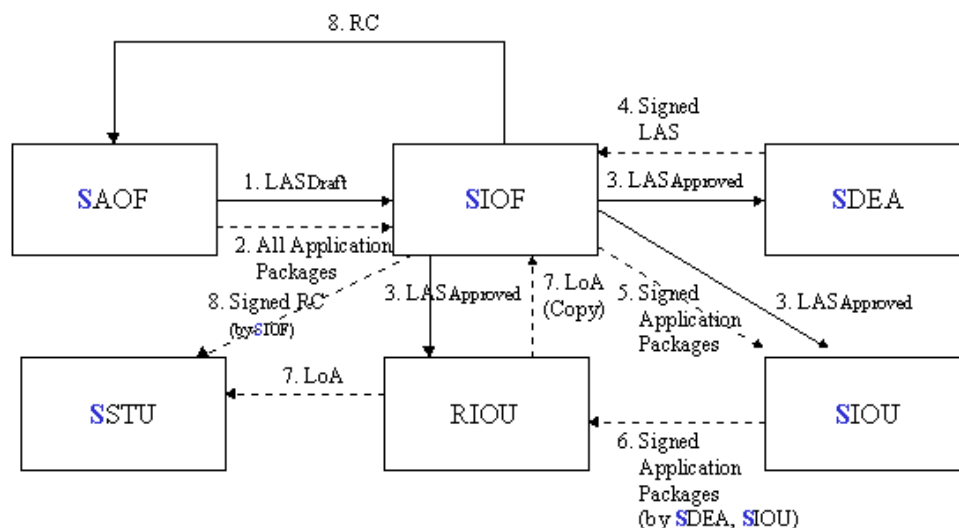
Figure 36: Bilateral Agreement Scenario

1. The SIOF (International Office of Faculty of Sending University) submits A Bilateral Agreement (BA) to the SDEA (Dean of Faculty of Sending University).
2. The SDEA submits a Review Report to the SIOF asking for any changes to be made to the BA.
3. A reviewed version of the BA is sent to the SDEA.
4. Once the BA is approved. The SDEA prints it out, signs it and posts it to the SACP (Academic Personnel that belongs to Sending University).
5. The SACP signs it also and posts it to the SIOF.
6. The SIOF signs the BA as well and posts the fully signed BA to the SIOU (Co-ordinator inn the International Office of Sending University.)
7. The SIOU submits an Institutional Contract to the SNAC (National Socrates Co-ordinator of Sending Party) and to the EC (European Commission).
8. The SIOU then prints out the IC, signs it, and posts it to the EC.
9. The EC prints out the Technical Acceptance form, fills it out and sends it to the SIOU.
10. The EC then sends a Financial Support Contract to the SIOU.
11. The SIOU submits the Final Report (parts 1-7).
12. It then prints out the final report, signs it and posts it to the EC

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Student Placement Decision Scenario

(Project Type: Socrates - Student Incoming or Outgoing Management)




Dotted lines mean a printed paper submission, other lines mean an NQA electronic submission. This project area is only accessible by the university staff of the receiving and sending university who play roles in the Socrates management.

Figure 37: Student Placement Decision Scenario

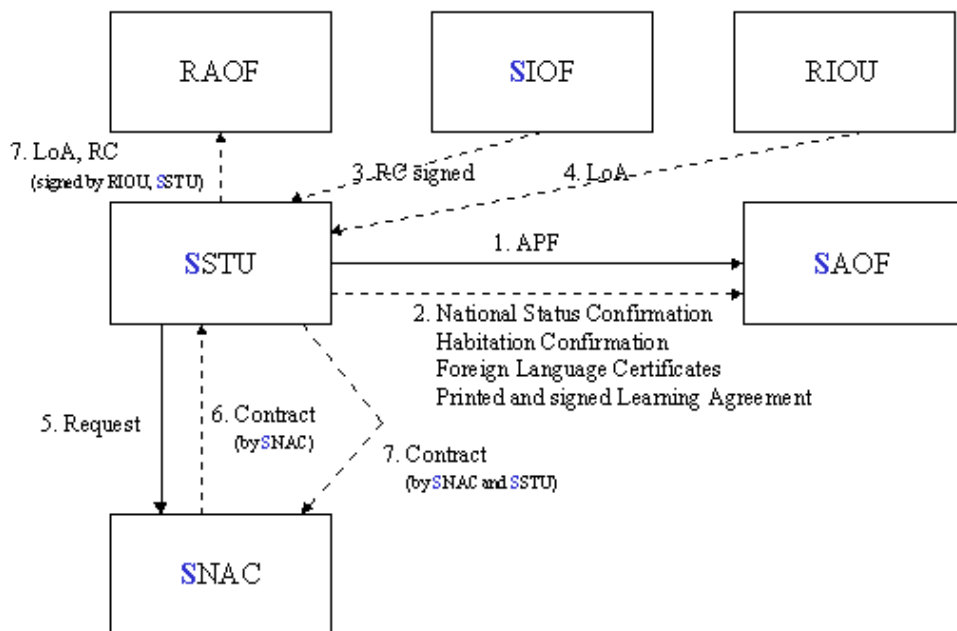
1. The SAOF (Administrative Office of Faculty of Sending University) submits list of accepted students to the SIOF (International Office of Faculty of Sending University).
2. The SAOF also posts all printed Application Packages to the SIOF by mail.
3. Once Approved the SIOF submits the list of accepted students to the SDEA (Dean of Faculty of Sending University), the SIOU (Co-ordinator in the International Office of Sending University) and the RIOU (Co-ordinator in the International Office of Receiving University).
4. The SDEA prints out the List of Accepted Students, signs it and posts it back to the SIOF.
5. The SIOF signs the Application Packages and posts them to the SIOU (Co-ordinator in the International Office of Sending University).
6. The SIOU signs them also and posts them to the RIOU.
7. The RIOU posts the Letter of Acceptance (LoA) to the SSTU (Student who Belongs to Sending University), and a copy of the LoA to the SIOF.
8. The SIOF prints the Study Recognition (rc), signs it, and sends it to the SSTU. The SIOF submits the Study Recognition to the SAOF.

Please note that “outgoing” and “incoming” is solved by this same project type, only once UniMar gets the role Sending University, and in the other case Receiving University.

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Student Application Scenario

(Project Type: Students - Socrates Application Project)




Dotted lines mean a printed paper submission, other lines mean an NQA electronic submission. This project area is accessible by the students who create, upload and submit their applications and requests.

Figure 38: Student Application Scenario

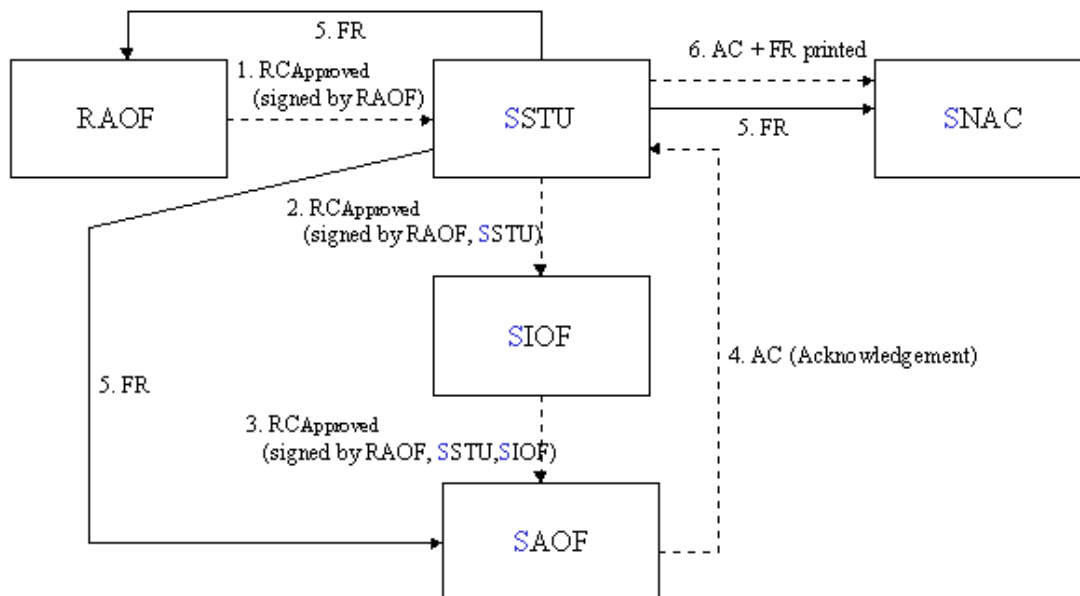
1. The SSTU (Student who Belongs to Sending University) submits Application Form, Application Form Transaction and Application Form Learning Agreement to the SAOF (Administrative Office of Faculty of Sending University).
2. The SSTU also prints out and posts National Status Confirmation, Habitation Confirmation, Foreign Language Certificates, and a signed copy of the Application Form Learning Agreement to the SAOF.
3. The SIOF prints and posts a signed Study Recognition (RC) to the SSTU (Student who Belongs to Sending University).
4. The RIOU (International Office of Receiving University) prints and posts a signed Letter Of Acceptance to the SSTU.
5. The SSTU submits a request to the SNAC (National Socrates Co-ordinator of Sending Party).
6. The SNAC prints and posts a signed contract to the SSTU.
7. The SSTU signs the contract and posts it back to the SNAC, and signs and posts the LoA and the RC to the RAOF (Administrative Office of Faculty of Receiving University).

This project type is accessible by all students who apply under a standard userid / password : student / socrates, and the university staff assigned in the Student Incoming or Outgoing Management project type. If students login the user interface automatically adapts and only allows the submission of form based information, editing of the forms, but no deletion or any other NQA function. This is necessary to keep students under control.

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Student Recognition and Reporting Scenario

(Project Type: Students - Socrates Application Project)



Dotted lines mean a printed paper submission, other lines mean an NQA electronic submission. This project area is accessible by the students who create, upload and submit their report.

Figure 39: Student Recognition and Reporting Scenario

1. The RAOF (Administrative Office of Faculty of Receiving University) posts the Approved and signed RC (Recognition of Study - See Student Application Scenario) to the SSTU (Student who Belongs to Sending University).
2. The SSTU signs the RC and posts it to the SIOF (International Office of Faculty of Sending University.)
3. The SIOF signs the RC also and posts it to the SAOF (Administrative Office of Faculty of Sending University).
4. The SAOF sends an AC (Acknowledgement) to the SSTU.
5. The SSTU submits a Final Report to the RAOF, the SAOF, and the SNAC (National Socrates Co-ordinator of Sending Party).
6. The SSTU also prints out and posts FR along with AC to the SNAC.]

9.8 Actual Implemented Scenarios for Research Networks


A project type „Research Networks” has been configured, containing working scenarios:

Research Networks contains

- Research Networks Scenario

This is basically a re-use of the Idea Creator project type with some modifications such as

- While the review in the Enterprise Ireland scenarios is done by the Enterprise Ireland Programme Manager it is here the EC (European Co-ordinator).
- While we used in the Enterprise Ireland scenarios a pre-proposal template specific for the Irish programmes we developed and inserted here a template useful for general project proposal outlines.

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DOT	...	Development Office Team
TEX	...	Tecnet Dev. Executive
EC	...	European Co-ordinator
IDC	...	Idea Creator
RES	...	Researcher
IPA	...	Industrial Partner
SEP	...	Selected Partner

Figure 15: Roles Involved in the Research Network Scenarios

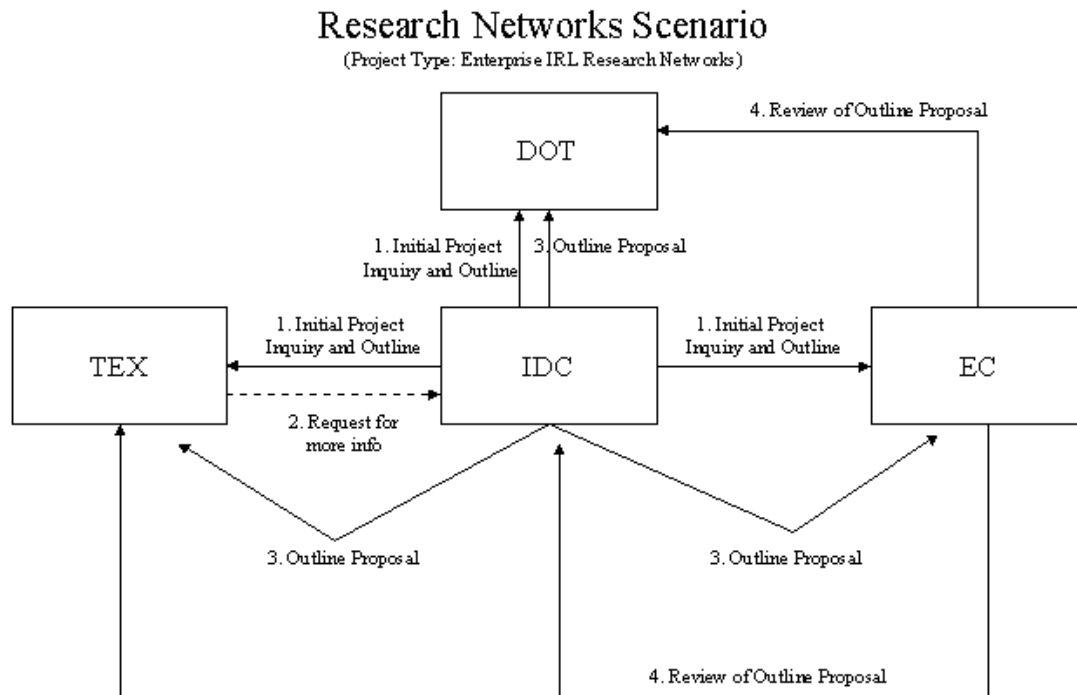



Figure 40: Research Network Scenario

1. The Idea Creator (IDC) submits a draft project inquiry and outline to the Development Office Team (DOT), the Tecnet Dev. Executive (TEX) and the European Co-ordinator (EC).
2. The TEX requests more info if interested.
3. The IDC sends DOT, TEX and EC an Outline Pre-Proposal.
4. The EC sends a Review of Outline Proposal to the DOT, IDC and TEX.

9.9 Actual Implemented Scenarios for Innovation Relay TT Contract Management

	<p style="text-align: center;">BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 143 / 144 Filename: teamwork_del_5.5_v2.doc
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A project type „IRC Technology Transfer Project” has been configured, containing working scenarios:

- IRC Technology Transfer Project
- Innovation Relay Technology Transfer Scenario

Innovation Relay Technology Transfer Scenario

(Project Type:IRC Technology Transfer Project)

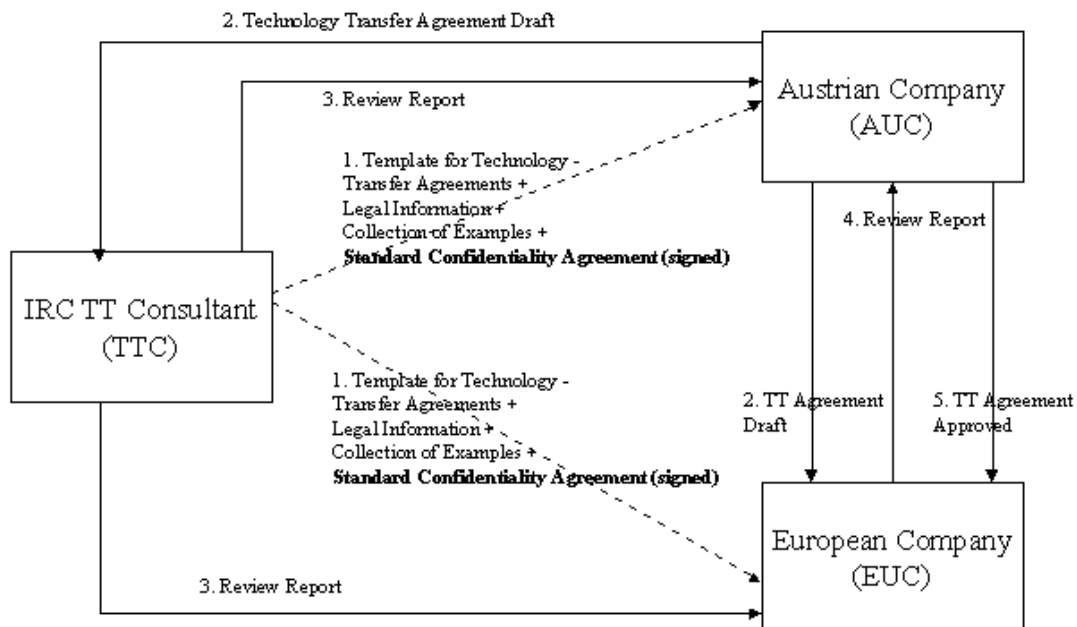



Figure 17: Innovation Relay Technology Transfer Scenario

1. The IRC TT Consultant (TTC) downloads the Template for Technology (Transfer Agreements, Legal Information, Collection of Examples, Standard Confidentiality Agreement), signs the confidentiality agreement and posts all documents to the European Company (EUC) and the Austrian Company (AUC).
2. The AUC sends a Technology Transfer Agreement Draft (IRC TTA) to the EUC and the TTC.
3. The TTC sends a Review Report (IRC RR) to the EUC and the AUC.
4. The EUC sends a Review Report to the AUC.
5. The AUC sends the TT Agreement Approved to the EUC.

 <p>BESTREGIT</p>	<p>BESTREGIT Best Regional Technology Transfer Process Improvement Guideline - ISCN Ltd. TEAMWORK – Deliverable 5.5</p>	<p>WP-ID: 21000 Version: 6.0 Author: R. Messnarz Date: 2003-03-17 Page: 144 / 144 Filename teamwork_del_5.5_v2.doc</p>
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