

# **TECHNOLOGY AUDIT**

*Report produced for the EC funded project*

***INNOREGIO: dissemination of innovation and knowledge management techniques***

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J A N U A R Y 2 0 0 0

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# 1 DESCRIPTION

## 1.1 What is the technique

A technology audit is a method of investigation aiming at the evaluation of the (a) technological capacity, (b) procedures, and (c) needs of an SME or an Organization. Furthermore, it is a method of identifying the strong and weak points through the characterization and general assessment of the firm's basic know how (marketing, management, finance, human resources, etc.). It is a process of analysis, which leads to concrete proposals (**the action plan**).

The technology audit is carried out by external consultants in close collaboration with the management and personnel of the company. It is based on the structure: **data collection - analysis - synthesis - report**.

After successful completion it will result in an action plan leading to technological improvement, acquisition of needed technologies and / or expertise. It is a good starting point for further company development provided it is carried out by experienced consultants and taken seriously by the management of the company.

It should be stressed that the technology audit **itself** cannot solve fundamental problems, provide immediate benefit, rectify faults and be a substitute for organizational difficulties.

## 1.2 Objectives of the technique

The general aim of the technology audit is to evaluate the capacity of firms and organizations to integrate new technologies, work with technological partners and better define what they need to successfully integrate these technologies into the company.

More specifically, a technology audit must make it possible to characterize the needs of an SME related to innovation from different points of view:

- The positioning of products / markets ensuring that the company experiences competitive and sustainable growth
- Technological areas that need attention: automation, information technologies, biotechnology, chemicals, packaging, etc.
- Functions / problems of general nature requiring innovative solutions: productivity, quality, energy, environment, flexibility, etc.
- Means for transferring technology, such as: training, partnerships for technological development (national & European), technical aid, intellectual property rights, financing, etc.
- Sources and channels of innovation that can be tapped and relations that can be developed: customers, suppliers, technical centers, Universities, research laboratories, etc.

## 1.3 Description / Structure of methodology / Alternative solutions

There are no 'universal' standards for carrying out a technology audit. However, a general structure consists of:

A. Preparatory work

- Collection of basic information on the firm, the sector, linkages with other firms and technology suppliers
- B. General short diagnosis
  - First company interview / company visit to collect general data on the basis of either a predetermined questionnaire structure or open interview (normally with the company General Manager)
  - Analysis of data / first diagnosis
  - Short presentation of first diagnosis to SME manager(s), reaction, discussion, decision on subjects for more in depth analysis
- C. Further information collection with additional interviews, depending on the subject chosen, covering
  - Management / administration (organization - strategy - investments)
  - Production operations (productivity - material flow / flow diagram - flexibility - automation - maintenance - safety)
  - R&D department (subjects of interest - type of R&D activities - internal / external R&D)
  - Quality department (organization - standards - quality control procedures)
  - Human resources management (capabilities - availability - continuous education / training)
  - Marketing / Sales (marketing plan - marketing strategy - market share - competitors - distribution points - use of information technologies for sales)
- D. Summary report on the analysis of data and on the synthesis leading to an action plan for resolving specific technological problems as surfaced from the technology audit.
- E. Presentation of the report to the firms' management board, validation of conclusions, finalization of the action plan.
- F. Follow up visits (of the consultants) and discussions with management on the implementation of the action plan by the SME.

#### ALTERNATIVE SOLUTIONS

Alternative solutions to the technology audit could be:

1. Self-evaluation audit, technique to be implemented by the firm itself without the help of an outside expert. This technique would normally lead to the decision for the firm to follow up and continue with a normal technology audit.
2. Benchmarking, where an analysis of the company strengths and weaknesses is performed, a technology profile is established and it is then compared with leading companies in the sector and / or an average (a norm) of companies in the sector. This technique requires that the experts carrying it out have in their possession available data needed in order to perform the comparison.
3. Innovation Management Audit, methodology for auditing and providing action plans concerning company management issues (strategic planning, human resources development, marketing, etc.)

## 1.4 Expected results / benefits

The expected results from a carefully conducted technology audit mainly concern:

- Complete and comprehensive analysis and evaluation of the requirements of the firm for its sustainable growth
- Thorough impartial SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, by an experienced expert
- Opportunity spotting for new products / new services / new technologies / new markets

- Networking with technology suppliers, technological sources, other companies
- Possible assessment of technology portfolio, intellectual property rights
- Investigation and identification of potential funding mechanisms
- Sign-posting to innovation and technology transfer networks for technological development through cooperation in European and national R&D programs
- Introduction to new sources of funding

## 1.5 Characteristics of firms / organizations / service providers

### FIRMS

In general, all firms can have a technology audit carried out. However for best results and optimum ratio cost / benefit the firm where a technology audit is to be carried out should have the following characteristics:

- ◆ real desire and motivation to innovate
- ◆ existence of at least a minimum capacity (in terms of size - employees and turnover) and a solid enough internal organization to enable the SME to carry out an innovative project (i.e. implement the action plan)
- ◆ willingness to participate to the audit campaign with a financial commitment which will depend on whether a scheme (national or european) is available for co-financing the audit.

### SERVICE PROVIDERS

A technology audit may require the use of two types of external advisors:

- a) **Generalists**, qualified senior consultants capable of performing diagnosis, having previous experiences in the field and extensive knowledge related to innovation problems in SMEs. They should possess the following characteristics:
  - ✓ Knowledge of the technique
    - They may have developed their own technique, but the basics are the same
  - ✓ Knowledge of the environment
    - SME needs / markets / trends
    - Support infrastructure
  - ✓ Financial, technical, intermediary organizations, policies, R&D programs
    - Technology suppliers, local & European, University and research laboratories, etc.
  - ✓ Careful listeners
  - ✓ Should be taking positive approach to situation
  - ✓ Should make careful commitment to key issues and should be fulfilling promises
- b) **Specialists** in specific technology / sector with extensive experience, capable of specific problem identification and able to point out possible routes for problem solution, with the characteristics:
  - ✓ Recognized experts in the field
  - ✓ Should have local / European / global perspective
  - ✓ Technically, R&D and business oriented
  - ✓ Should work with management to facilitate action and change

The specialists may be called in during the implementation of the technology audit and aid the generalist in the final report and on drafting the action plan.

It should be noted that a consultant's participation in an audit assignment may not be commercially attractive in its own right. However, it is a good opportunity for

introducing his services to the company.

It should be stressed that throughout the technology audit period and beyond, confidentiality on the part of the experts must be assured since many sensitive areas of the firm's operations would be covered. It is highly recommended that a confidentiality agreement is signed between the SME and the consultant(s) prior to starting the audit process.

## **2 APPLICATION**

### **2.1 Firms / Organizations where technique has been applied**

Technology audit is a rather new technique applied to SMEs in the European environment (1990+) and within the context described in section 1. The European Commission has funded several initiatives aiming at developing and implementing the technique. We could mention the MINT program (Managing the Integration of New Technology), the IMT program (Innovation Management Techniques).

Furthermore, support to Regional initiatives such as Regional Technology Plans (RTP), Regional Innovation Strategies (RIS), Regional Innovation and Technology Transfer Strategies (RITTS) has allowed many intermediary organizations as well as SMEs to deal and work with technology audits, since a major requirement for developing Regional Innovation Strategies is the understanding of the technological needs of SMEs, partly provided through technology audits.

In addition, Innovation Relay Centres (53 in European Union and 10 in Former Eastern European Countries) have developed tools and techniques for technology audits, in order to identify the technological needs and capabilities of local firms and successfully carry out their mission (trans-national technology transfer).

Hence, implementation of the technique in its various forms can be encountered in most of European regions that have carried out RTP / RIS / RITTS projects or have an Innovation Relay Centre, with 50+ firms per region participating in the audit campaign. Most common types of firms are manufacturing firms with 5+ employees but there are cases where audits have been performed to service companies as well.

### **2.2 Types of firms / organizations concerned**

The technology audit is equally applicable to manufacturing and service firms. The size of companies concerned may vary between 10 - 250 employees. For larger companies it is recommended that a business area / unit is singled out and perform the technology audit to that particular unit.

The firms should be wishing to create new products, incorporate new processes, diversify their activities and be with growth potential. They should have capacity to survive and innovate and an aptitude for international cooperation. They may be established businesses (most of technology audits are performed to this type of businesses) but there have been reported techniques for new / start up businesses as well.

### **2.3 Implementation cost**

The implementation cost covers mainly the fee of the expert(s). To this actual cost we should also include the man-days spent by company personnel, as this is contribution of the SME in kind and should be included in the total cost.

The cost can be estimated based on the number of days required to implement the technique. Following is an estimate of a range of man-days per step of implementation (the steps are described in 3.1), for the days spent by the expert(s) and by company personnel. It should be noted that these are only estimates and depend primarily on the size of the company, organization, number of persons to be interviewed and to the extent for in depth investigation required.

#### ESTIMATE OF EFFORT REQUIRED FOR TECHNOLOGY AUDIT

#	STEP DESCRIPTION	MANDAYS	
		Experts	SME
1	Desire / wish of firm to carry out technology audit	--	0.25
2	Selection of intermediary organization / expert to carry out the technology audit	--	0.25
3	First contact / visit of expert to firm	0.5	0.5
4	Preparatory work by expert on collecting basic information	1 - 2	--
5	General short diagnosis	0.5 - 1	0.5 - 1
6	Data analysis by expert - report	1 - 3	--
7	Presentation of report to General Manager and company management	0.5	1.0
8	Additional visits / interviews to department heads	2 - 5	2 - 5
9	Final report of the technology audit	2 - 3.5	--
10	Presentation of report to company management	0.5	2.0
	<b>TOTAL</b>	<b>8.0 - 16.0</b>	<b>6.5 - 10.0</b>

From the above, the amount of man-days estimated for the implementation of technology audits for the expert(s) is between 8 - 16 man-days. Of these, 6 - 15 man-days can be spent by the Generalist and 1 - 6 man-days by the Specialist.

Assuming a consultant fee of 250 - 500 Euro per day for the generalist and 500 - 1000 Euro per day for the specialist we estimate an actual total cost to the firm of:

1500 - 7500 Euro for the generalist

500 - 6000 Euro for the specialist

----- for a total of

2000 - 13500 Euro per implementation.

This is in addition to the 6.5 - 10.0 man-days spent by the SME personnel.

### 2.3.1 Time frame for implementation

At this point we should also give an estimate of the total time frame for the implementation of the technology audit. For the steps indicated we list here below the time frame for the implementation of the step(s).

#### ESTIMATE OF TIME FRAME FOR TECHNOLOGY AUDIT

Step #	Weeks
1 - 2 - 3	1
4	1
5 - 6 - 7	2
8	2

9	1
10	1
<b>TOTAL</b>	<b>8</b>

In all, it is estimated that about two months may be required from the initiation to completion of the technology audit. We have allowed for time lapsed to arrange for interviews / meetings.

## 2.4 Conditions for implementation

There are no special conditions for the implementation of the methodology. We should stress however, that

- ✓ on the part of the company
  - there should be firm decision to go through the technology audit
  - should be open and collaborative with the expert (of course the trust should be gained by the expert)
  - should be committed for the implementation of the action plan
- ✓ on the part of the expert(s)
  - should be able to win the trust of the company management
  - they may have their own methodology, but the basic steps to follow are the ones described in 3.1.

## 2.5 European Organizations supporting the implementation

There are many intermediary organizations and consultancy firms that have developed their own methodology and have implemented technology audits. A thorough review of organizations together with a brief description of methodology used, covering the period until 1994, is provided in the MINT Guidebook compiled by NODAL Consultants under the SPRINT initiative.

In all, 38 tools have been reviewed covering

Overall diagnostics:

- ◆ well established                      11
- ◆ recent                                      5

and Thematic diagnostics:              22

From the following countries:

Country	# tools	Country	# tools	Country	# tools		
<b>D</b>	5	<b>IRL</b>	2	<b>N</b>	1	<b>L</b>	1
<b>E</b>	6	<b>NL</b>	4	<b>S</b>	1	<b>I</b>	1
<b>F</b>	8	<b>UK</b>	7	<b>DK</b>	2		

The review of selected methodologies of Innovation Management Tools by Warwick Research Institute, commissioned by DG XIII (1997) performs a critical review of 19 methodologies by similar number of organizations in 17 European countries (DK - 1, FI - 2, F - 2, D - 1, GR - 1, IC - 1, IL - 1, I - 1, NL - 1, N - 1, P - 1, E - 2, S - 1, UK - 2).

We list here below the organizations in the countries of the partners of Innoregio:

Espagne:

VALUE ANALYSIS, by Instituto Andaluz de Tecnologia, Seville

DT-PYMES diagnosis, by IMPI - Madrid

ATS - All at once Technological Services, by ROBOTIKER, Zamudio



Design Audit Methodology, by DDI, Madrid  
Diagnostico Tecnico, by CETEMA, Madrid  
Industrial Diagnosis System, by CETENASA, Noain - Navarra  
Slace, by LABEIN, Bilbao

Portugal:  
VISA0 Methodology, by IAPME, Lisbon

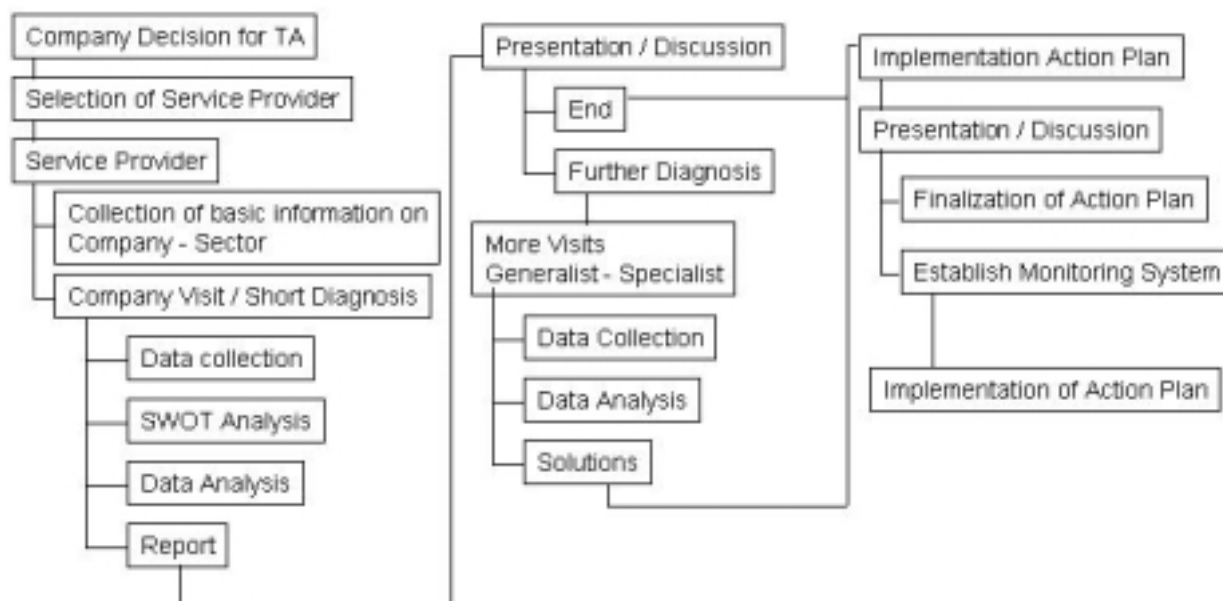
United Kingdom:  
Pera Profile diagnosis, by Pera International, Leicestershire  
PROBE Methodology, by Confederation of British Industry, London

Greece:  
EOMMEX diagnosis, by EOMMEX, Athens  
Tomography, Innovation Management Techniques, Thessaloniki Technology Park

### 3 IMPLEMENTATION PROCEDURE

#### 3.1 Steps / Phases

A schematic of the steps that are normally followed while carrying out a technology audit is shown and described below:



#### STEPS FOLLOWED FOR TECHNOLOGY AUDITS

1	Desire / wish of firm to carry out technology audit ◆ Firm may be enticed through promotional campaign from projects such as Innoregio or RIS type programs
2	Selection of intermediary organization / expert to carry out the technology audit
3	First contact / visit of expert to firm ◆ Discussion on procedure / benefits of technology audit ◆ Presentation of steps
4	Preparatory work by expert on collecting basic information on ◆ The firm ◆ The sector
5	General short diagnosis Company interview with questionnaire (example questionnaire with contents in the annex), normally with the General Manager aiming at ◆ Collecting general company data

	<ul style="list-style-type: none"> <li>◆ Shaping company technology profile</li> <li>◆ Performing a SWOT analysis</li> <li>◆ Identifying technological areas for further analysis</li> </ul>
6	Data analysis by expert - report on first diagnosis (example report with the contents in the annex)
7	<p>Presentation of first diagnosis report to General Manager and company management</p> <ul style="list-style-type: none"> <li>◆ Discussion, verification of findings <ul style="list-style-type: none"> <li>◆ Finalization on the subjects for further analysis with / without additional experts (specialists). Further analysis may cover issues, such as: Production operations, R&amp;D, Quality, Product Development, Human Resources Management, etc.</li> </ul> </li> </ul>
8	<p>Additional visits / interviews to department heads, as chosen in step 7. These visits may be done either by the generalist, the specialist or jointly</p> <ul style="list-style-type: none"> <li>◆ The advisors may have their own methodology, but typical areas that should be covered in the above mentioned departments are described in 3.2</li> </ul>
9	<p>Final report of the technology audit, compiled by the experts, which should cover:</p> <ul style="list-style-type: none"> <li>◆ Subjects analysed</li> <li>◆ Methodology used</li> <li>◆ Problem areas identified</li> <li>◆ Solutions proposed by the expert(s)</li> <li>◆ Steps to be taken for implementing the solutions (<b>action plan</b>)</li> </ul>
10	<p>Presentation of report by expert(s) to company management aiming at:</p> <ul style="list-style-type: none"> <li>◆ Discussing issues identified</li> <li>◆ Discussing solutions proposed / identifying alternative solutions</li> <li>◆ Discussing / finalizing action plan</li> <li>◆ Setting up a monitoring system for plan implementation with / without the aid of the experts</li> </ul>

### 3.2 Partial techniques and tools per step

For the steps described in 3.1 we here indicate the tools used per step for the proper implementation of the technique. Of course many of the service providers have their own tools, but these do not differ significantly from the listed below:

#### STEP 1

Desire / wish of firm to carry out technology audit

If the company initiates the audit, no particular tool is used. However, if the company is approached by the service provider this could be done via targeted mailing by the promoters of the audit campaign, by letter / fax / telephone contact. It should explain:

- Scope of initiative, brief description of technique, potential benefits to SME, main characteristics of the consultant / service provider

#### STEP 2

N/A

#### STEP 3

First contact / visit of expert to firm / preparation of audit plan

The expert should have

- a brochure / flow diagram on the steps to follow
- list of benefits
- list of other companies that carried out a TA
- formal presentation should help, either with transparencies or a PC/laptop

The audit plan is devised together with top management. It establishes issues to investigate, how to collect data and from whom, in what time span and at what cost, what is needed from management to successfully carry out the audit.

#### **STEP 4**

Preparatory work by expert on collecting basic information on the firm & the sector

For the firm: collection of data from published information, brochures of company, economic data, employees, products, exports etc.

For the sector: published data on employment, turnover, trends, markets, on company's products, introduction / use of new technologies.

A short report on the above findings would be handy and would be another step into building a trusting relationship with the firm.

#### **STEP 5**

General short diagnosis

Use is made of a questionnaire, either in hard copy or electronic (PC) which should cover:

##### **ORGANIZATION**

- ◆ Company Information
- ◆ Strategy
- ◆ Development planning

##### **HUMAN RESOURCES**

- ◆ Capabilities / needs / strengths / weaknesses
- ◆ Training / performance / rewards

##### **TECHNOLOGICAL CAPABILITY**

- ◆ Technological resources / know how
- ◆ Assessment of technological level
- ◆ Implementation of information technologies / new technologies

##### **TECHNOLOGICAL INNOVATION**

- ◆ Product development / procedures
- ◆ New products - number - time frame
- ◆ Research and Development
  - ◆ In house, external
  - ◆ Resources allocated
  - ◆ Areas of interest
  - ◆ Sources of acquiring technology

##### **INNOVATION CAPABILITY**

- ◆ Innovations introduced

- ◆ Barriers to innovation
- ◆ Technology watch / searching / technology diffusion
- ◆ Involvement in R&D joint projects

#### PRODUCTS

- ◆ Products / markets
- ◆ Production organization and management
- ◆ Production equipment, walk through shop floor

#### COOPERATION - NETWORKING

- ◆ With other companies / local - abroad
- ◆ With technology providers / sources
- ◆ Participation in R&D programs

#### TECHNOLOGICAL NEEDS

- ◆ Demands for services / equipment / quality improvement
- ◆ New technologies
- ◆ Access to information / technology diffusion

#### QUALITY

- ◆ Quality control, products - raw materials
- ◆ Standards
- ◆ Relations with customers / suppliers

#### MARKETING

- ◆ Markets, local / abroad
- ◆ Marketing plan / strategy

#### ENVIRONMENT

- ◆ Awareness / problems / needs

#### **STEP 6**

Data analysis by expert - report on first diagnosis

The report should be concise and should contain:

- ◆ Executive summary
- ◆ Overview of company / activities (good for signposting to networks, etc.)
- ◆ Overview of sectors / markets
- ◆ Synthesis on
  - ◆ Strengths / weaknesses / opportunities / threats identified
- ◆ Potential suggestions (specially if the audit stops at this point) for resolving problems and exploiting strengths & opportunities, mainly by indicating routes for solutions with an action plan (more in step 9)
- ◆ Isolation of specific areas / departments for further diagnosis, proposal with justification

#### **STEP 7**

Presentation of first diagnosis report to General Manager and company management

The presentation is done with the handing out some time earlier of a hard copy of the report. The presentation should be done with slides / transparencies and should cover the

main findings on the report. The finalization on whether to continue for further diagnosis and the agreement on the subject(s) to analyse is also performed here.

### **STEP 8**

Additional visits / interviews to department heads

Typical areas and themes that could be covered with either specific subject tools or in a less structured way (if done by a specialist) could be:

#### A. Quality

- Policy - goals - personnel involvement - training
- Process quality - monitoring & control systems - handling - storage - packaging
- Keeping of records / use of results
- Product quality - raw materials QC - product QC
- ISO issues - presentation - benefits

#### B. Human Resources

- Organigram - skills - availability
- Satisfaction - rewards
- Meetings - awareness on company activities / products
- Team working / project management
- Continuing education / training
- Promotion - evolution - enumeration

#### C. R&D - Product Development

- R&D strategy / partners
- Product mix / product life cycle analysis
- Analysis of procedures for new product development
- Analysis of R&D activities
- Participation in R&D projects
- Focus on specific R&D area - identification of potential technology suppliers

#### D. Production Operation

- Walk through production facilities - bottlenecks - problem areas
- Material flow - flow diagram
- Overview of system automation / needs - opportunities
- Floor and product safety
- Maintenance - procedures - planning – problems
- Analysis of productivity

#### E. Marketing / Sales

- Existence / analysis of marketing plan
- Strategy - market share / local - exports
- Competitors analysis / sector analysis / opportunities - threats
- Distribution networks - problems
- Use of information technologies for sales / e-commerce - Internet

### **STEP 9**

Final report of the technology audit, compiled by the experts

The final report should contain the following:

- Executive summary

- Summary of results from first diagnostic
- Subject(s) analyzed in second part
- Methodology used for analysis
- Problems identified
- Solutions proposed
- Actions to be taken (action plan)

The action plan should be:

- a) Specific to the subject
- b) With a time frame
- c) With determined milestones
- d) With an estimated budget
- e) With the listing of expected results
- f) With identification of potential problem solvers (technology or service providers)
- g) With indications about provisional funding for implementing the solutions (e.g. national and / or European R&D programs)
- h) An implementation monitoring schedule, possibly to be done by the service provider (for a fee)

#### **STEP 10**

Presentation of report by expert(s) to company management

Here same tools should be used as in step 7.

### **3.3 Related software**

Some service providers utilize 'home' made software mostly for collecting company data and creating a database either for their own use or for developing trends. Some of the methodologies developed for the MINT or for the IMT projects have their own set of tools.

They could provide also charts about company's data. What is not very widespread is the availability of software for:

- a) self assessment for the companies
- b) benchmarking, i.e. ability to see how one firm scores with respect to other companies in the same sector or with same technology.

Technology and innovation audits have become more familiar tools compared to five years ago, and the development and availability of such software is a matter of short time.

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## Annexes

### Annex 1: Technology Audit Example

Following is a description of a technology audit, performed by a service provider in Greece with a Greek SME (15 employees):

- A. A contact between the company (Managing Director & owner of the company) and the service provider was initiated in a technical workshop
- B. The service provider promoted the idea of technology audit (which was supported by a European project). The company showed interest for performing a technology audit
- C. A generalist from the service provider visited the company in their premises, discussed the procedures and options for performing the technology audit.
- D. With a fixed questionnaire, the generalist gathered company data and identified technological interests of company
- E. The Generalist and Company identified an area for development, jointly. It involved a new product, not in European market, which would extend company's product range
- F. It was decided by the company not to go on for further analysis, and an action plan was to be devised
- G. The service provider prepared an action plan containing
  - a. Identification of a European / national program for funding such a project
  - b. Identification of partners for forming a Consortium with the company to tackle the project
- H. The action plan was discussed with company and the service provider got the go ahead with the implementation of the action plan
- I. The service provider implemented the action plan with the following results:
  - a. A suitable European program was identified for potential funding of the project
  - b. The procedures and requirements of the program were presented and discussed with the company
  - c. A technology provider was identified and finally selected for supporting the company in the project, from a local Research Institute
  - d. Another company, from the supplier list of the interested company, was identified, selected and was invited to join the Consortium
  - e. A joint proposal of the three partners was submitted and was accepted for funding by the European Commission and the project was initiated and completed.

It should be noted that steps A – H are included in the technology audit, while step I is the actual implementation. This step can normally be done with any service provider, depending on the particular project. Steps A – H took approximately 4 months to be completed. There was no monetary burden on the company by the service provider, other than the allocation of the company personnel own time. The reason for this was that the execution of the technology audit by the service provider was funded by a European program, of the many that existed during the fourth FP and also exist during the fifth FP.

## Annex 2: Example Questionnaire for General Diagnosis

### TECHNOLOGY AUDITING

#### Interview Guide

##### General Information

Company Name:	.....
Legal Status	: .....
Sector	: .....
Address	: .....
Tel.	: ..... fax : .....
e-mail	: .....
Responsible	: .....
Position	: .....
Date	: .....

### HUMAN RESOURCES

	y-2	y-1	Y
Total number of employees			

#### Analysis of human resources

DEPARTMENT	Total Number	Scientific staff	
		University	Technical Schools
Permanent staff			
Production			
Scientific staff			
Technicians			
Workers			
Quality			
Research - Development - Planning			
Sales - Marketing			
Administration			
Others .....			
Seasonal personnel			
.....			
.....			
.....			

Are continuous training programs offered to the personnel

Yes

No

Please Specify

If YES (frequency, number and categories of the employees participating in internal or external training programs, etc. )

If NO explain the reasons (high expenses, insignificant needs for additional training, etc.)

.....

.....

.....

.....

Company Structure (ORGANIGRAM)

## PRODUCTIVITY AND ECONOMIC DATA

Annual turnover	y-2	y-1	y (estimation)
Turnover			

Investments	y-2	y-1	y (estimation)
Amount			

### General categories of investments realized the last 3 years

Category	% of total investment cost
Buildings	.....
Equipment	.....
Others (*)	.....

(\*) Specify .....

.....

### Existing installations

Owned

		Yes	No
Field Area (m <sup>2</sup> )	.....	<input type="checkbox"/>	<input type="checkbox"/>
Buildings Area (m <sup>2</sup> )	.....	<input type="checkbox"/>	<input type="checkbox"/>
Installed Power (HP)	.....		

### Raw Materials

α/α	CATEGORY	QUANTITY	SOURCE
1.			
2.			
3.			

### Products

α/α	Main Products	Quantity	% of turnover	Destination
1.				
2.				
3.				

**PROCESS DESCRIPTION**

STAGE	Applied Technology	Equipment

**Flow sheet**

## QUALITY CONTROL

	YES	<input type="checkbox"/>
Existence of Quality Control Department		
	NO	<input type="checkbox"/>
The applied quality control techniques satisfy		
• totally the product specifications		<input type="checkbox"/>
• the so called basic specifications		<input type="checkbox"/>
• partially the product specifications		<input type="checkbox"/>
	YES	<input type="checkbox"/>
Is quality control of the products		
carried out by external organizations ?	NO	<input type="checkbox"/>
	OFTEN	<input type="checkbox"/>
Are products returned because of quality control problems ?	RARELY	<input type="checkbox"/>
	NEVER	<input type="checkbox"/>

### QUALIFICATION

Qualification Certificates related to the enterprise, e.g. ISO 9000

YES

Type of Certificate	Date	Qualification Organization

Qualification process in progress

Type of Certificate	Estimated date of certificate	Qualification Organization

NO

### STANDARDS

Specify the type of standards you follow for your products

	Exist	Followed	Not Followed
Legislation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
International	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remarks : .....

.....

.....

.....

.....



## RESEARCH AND TECHNOLOGICAL DEVELOPMENT

	YES	<input type="checkbox"/>
Existence of an R&D Department	NO	<input type="checkbox"/>
Personnel involved only with R&D activities		.....
Personnel involved only with Quality Control activities		.....
Personnel involved with R&D and Quality Control activities as well		.....

### Areas of the R&D interest

	Degree of Interest		
	Large	Medium	Negligible
Informatics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microelectronics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Automation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Robotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Optoelectronics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biotechnology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Participation in R&D financed projects

a/a	Project type	Project objectives	Budget

### Specify the reasons, why your company has not participated yet in related projects

- There is no interest
- Lack of information concerning R&D programs, i.e. , call of proposals, etc.
- Insufficient technical assistance for the proposals
- Weakness in finding capable partners to organize a viable cooperation
- Other .....

## PROBLEMS

**Describe the main problems, which hinder the competitiveness of your enterprise**

**High product cost**   
 related to raw materials cost   
labor cost   
patents and royalties cost   
utilities, maintenance, operating supplies, etc.   
 other.....

**Product quality**   
 related to weakness in standardization   
lack of quality control   
the quality of raw materials   
the applied technology   
 other.....

**Limited market share**   
 related to insufficient marketing   
the weakness of the distribution network of the products   
insufficient knowledge of the market   
established brand names and market shares   
 other .....

**Limitation of business activities**   
 related to the obscurity or the complication of the legislation   
ineffectiveness of the investments laws   
insufficiency of banking organizations   
instability of financial environment   
high money cost   
 other .....

## TECHNOLOGICAL NEEDS AND DEMAND OF RELATED SERVICES

Technological targets of the company

		REMARKS
<b>Improvement of the interior structure/ Administration</b>	<input type="checkbox"/>	
Novel administration systems	<input type="checkbox"/>	
Systems based on informatics	<input type="checkbox"/>	
quality assurance systems	<input type="checkbox"/>	
Production programming processes	<input type="checkbox"/>	
other	<input type="checkbox"/>	
education/ training/ specialization	<input type="checkbox"/>	
Existing Problems/ Proposed solutions (financial resources) .....		
.....		
.....		
<b>Improvement of the processes of quality control</b>	<input type="checkbox"/>	
New Equipment	<input type="checkbox"/>	
Specialized personnel	<input type="checkbox"/>	
Processes	<input type="checkbox"/>	
Qualification	<input type="checkbox"/>	
Other	<input type="checkbox"/>	
education/ training	<input type="checkbox"/>	
Existing Problems/ Proposed solutions (financial resources) .....		
.....		
.....		
<b>Improvement of the products</b>	<input type="checkbox"/>	
<b>Increase of the productivity</b>	<input type="checkbox"/>	
New equipment	<input type="checkbox"/>	
Novel technology	<input type="checkbox"/>	
Raw Materials	<input type="checkbox"/>	
Novel production Processes		
automation	<input type="checkbox"/>	
informatics	<input type="checkbox"/>	
other	<input type="checkbox"/>	
education/ training/ specialization	<input type="checkbox"/>	
Existing Problems/ Proposed solutions (financial resources) .....		
.....		
.....		

<b>New Products</b>	<input type="checkbox"/>
Market research	<input type="checkbox"/>
New technology	<input type="checkbox"/>
other	<input type="checkbox"/>
education/ training/ specialization	<input type="checkbox"/>
Existing Problems/ Proposed solutions (financial resources) .....	
.....	
.....	
.....	
<b>Improvement of the Marketing Techniques</b>	<input type="checkbox"/>
Novel Marketing Techniques	<input type="checkbox"/>
exploitation of electronic	
information networks	<input type="checkbox"/>
other	<input type="checkbox"/>
New types of commercial collaborations	<input type="checkbox"/>
education/ training/ specialization	<input type="checkbox"/>
Existing Problems/ Proposed solutions (financial resources) .....	
.....	
.....	
.....	

**Specify the sources of the applied technology**

	YES	NO	EXPLANATION
Internal R&D	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
Training / Hiring of specialized personnel	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
R&D in collaboration with other Institutions	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
R&D contracted to external Organizations	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
R&D developed by the parent company	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
Purchase of know-how	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
New equipment purchase	<input type="checkbox"/>	<input type="checkbox"/>	..... .....
other .....	<input type="checkbox"/>	<input type="checkbox"/>	..... .....

**Remarks**

.....  
 .....  
 .....  
 .....

**Barriers for the development of innovative solutions**

		EXPLANATION
Information	<input type="checkbox"/>	.....
Lack of training or specialized personnel	<input type="checkbox"/>	.....
Financing		.....
self financing	<input type="checkbox"/>	.....
collaborations	<input type="checkbox"/>	.....
Subsidies	<input type="checkbox"/>	.....
Technology	<input type="checkbox"/>	.....
other .....	<input type="checkbox"/>	.....

**Specify the information sources you use**

Clients	<input type="checkbox"/>	Suppliers	<input type="checkbox"/>
Exhibitions	<input type="checkbox"/>	Printed matter - Magazines	<input type="checkbox"/>
Commercial branches or Chambers	<input type="checkbox"/>	Research - Technological Centers	<input type="checkbox"/>
Universities (here or abroad)	<input type="checkbox"/>	Other enterprises	<input type="checkbox"/>
External experts	<input type="checkbox"/>		
Industrial or business networks (clubs)	<input type="checkbox"/>		
Other .....			

**Please evaluate the available information in the following areas and declare if it is necessary to have additional information related to these areas.**

AREAS	Satisfactory	Medium	Not Satisfactory	Necessity	
				YES	NO
Scientific / Technological Development					
Products study / Market Research					
Statistical data related to the commercial branch and the relative activities					
National or EU legislation					
EU programs					
National Programs					
Investment or Financing Possibilities					
Competencies and activities of Organizations, Consultants etc.					

**Innovative products which your company has promoted to the market the last 3 years**

Number.....Description .....

.....

.....

.....

Product course in the Market- Yield.....

.....

.....

.....

Degree of innovation of the product

	<b>1</b>	<b>2</b>	<b>3</b>	<b>...</b>
• New product in a new local market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• New product in the international market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Improvement / modification of existing product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• New product related to existing products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• New product not related to existing products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• New product with additional technical services / support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Sources of innovative ideas**

Internal

- R&D Department
- Production
- Administration
- marketing, sales
- other .....

External

- clients
- competitors
- suppliers
- universities
- consultants
- other .....

## COLLABORATION WITH OTHER COMPANIES AND COMPETITIVE POSITION

YES    

Declare your participation (if any) in collaboration  
programs

NO    

Targets

.....

.....

.....

Benefits

.....

.....

.....

Problems

.....

.....

**Characterize the type of the competition**

	Large	regular	limited
• at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• abroad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## FUTURE TRENDS

List the most important enterprises of your sector, according to your opinion

1. ....
2. ....
3. ....

Recent substantial changes in the sector

(Concerns substantial and important changes and facts carried out during the last three years, in all departments or activities of the enterprise, i.e.: Proprietary status, Organization structure, applied technology, production, products, penetrating in new markets, Legislation etc. )

.....

.....

.....

.....

.....

.....

Check the areas you believe that significant technological changes will occur in your sector

		REMARKS
<b>Process</b>		.....
• automation	<input type="checkbox"/>	.....
• production control	<input type="checkbox"/>	.....
• technology	<input type="checkbox"/>	.....
<b>Quality of the products</b>		.....
• quality control processes	<input type="checkbox"/>	.....
• Raw materials	<input type="checkbox"/>	.....
• processes	<input type="checkbox"/>	.....
<b>Management</b>		.....
• management information systems	<input type="checkbox"/>	.....
• development of new products	<input type="checkbox"/>	.....
		.....

### FORECASTS FOR THE FOLLOWING AREAS

	+	=	-	EXPLANATION
Competition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Evolution of the company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Technological modernization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Annual turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Added value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Products distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....
Relations with the suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	.....