QUALITY CONTROL IN THE FOOD INDUSTRY CONFORMING TO ISO 9000. PROCESS MAP AND PROCESS DIAGRAMS

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Abstract: Controllable factors that either positively or negatively influence the finished product are referred to as the quality control. The use of good and sound raw material is of primary importance for the achievement of the required end product of consistent quality. Identification of die critical points is essential since the process control relates to die processing results of the raw material. Traditional quality control is completely unable to eliminate quality problems, thus a preventive strategy based on thorough analysis of prevailing conditions which ensures that objectives of the quality assurance programme are met is recommended for the food industry. The Hazard Analysis Critical Control Point (HACCP) and Total Quality Management (TQM) embody these requirements as certified under the International Standard Organisation (ISO) 9000 series.

Keywords: ISO 9000, quality control, process map, diagram map

INTRODUCTION

ISO is a network of the national standards institutes of 157 countries, on the basis of one member per country, with the Central Secretariat in Geneva, Switzerland, that coordinates the system (van Looveren, 2002).
ISO is a non-governmental organization. As is the case of the United Nations system, its members are not delegations of national governments (Benteley, 1993). Nevertheless, ISO occupies a special position between the public and private sectors. This is due to two raisons:

- Many of its member institutes are part of the governmental structure of their countries, or are mandated by their government.
- Other members have their uniquely roots in the private sector, having been set up by national partnerships of industry associations (Tricker, 1999).

Therefore, ISO is able to act as a bridging organization in which a consensus can be reached on solutions that meet both the requirements of business and the broader needs of society, such as the needs of stakeholder groups like consumers and users.

Over the years, ISO has developed many of the standards against which products are assessed for conformity, as well as the standardized test methods that allow the meaningful comparison of test results so necessary for international trade. ISO itself does not carry out conformity assessment (***, 2001).

This paper offers process map and process diagrams in conformity with ISO 9000 to the user. Their use contributes to the optimally implementation of this standards family in the food factories.

RESULTS AND DISCUSSIONS

The vast majority of ISO standards are highly specific to a particular product, material, or process. ISO 9000 family is among ISO's most widely known standard ever. ISO 9000 has become an international reference for quality requirements in business to business dealings.
The standards that have earned the ISO 9000 has a worldwide reputation as "generic management system standards". "Generic" means that the same standards can be applied to any organization, large or small, whatever its product - including whether its "product" is actually a service - in any sector of activity, and whether it is a business enterprise, a public administration, or a government department. "Management system" refers to what the organization does to manage its processes, or activities. "Generic" also signifies that no matter what the organization is or does, if it wants to establish a quality management system or an environmental management system, then such a system has a number of essential features which are spelled out in the relevant standards of ISO 9000 family.
At its simplest, "conformity assessment" means checking that products, materials, services, systems or people measure up to the specifications of a relevant standard. Today, many products require testing for conformance with specifications or compliance with safety, or other regulations before they can be put on many markets.
Even simpler products may require supporting technical documentation that includes test data. With so much trade taking place across borders, conformity assessment has become an important component of the world economy.
In figures 1 to 23 the process map and the process diagrams to be followed at the application of ISO 9000 in the factories are presented.

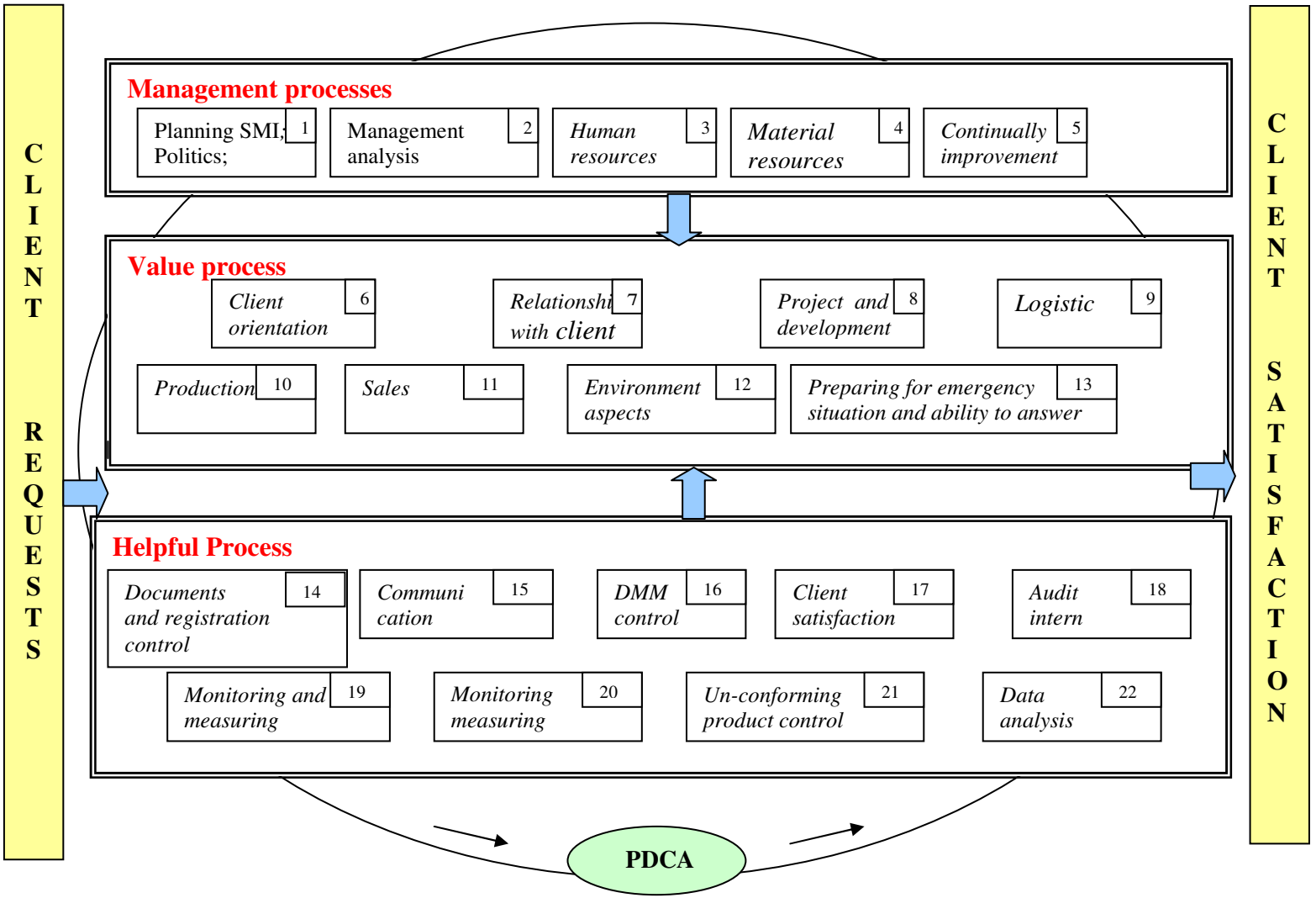


Figure 1. Process map

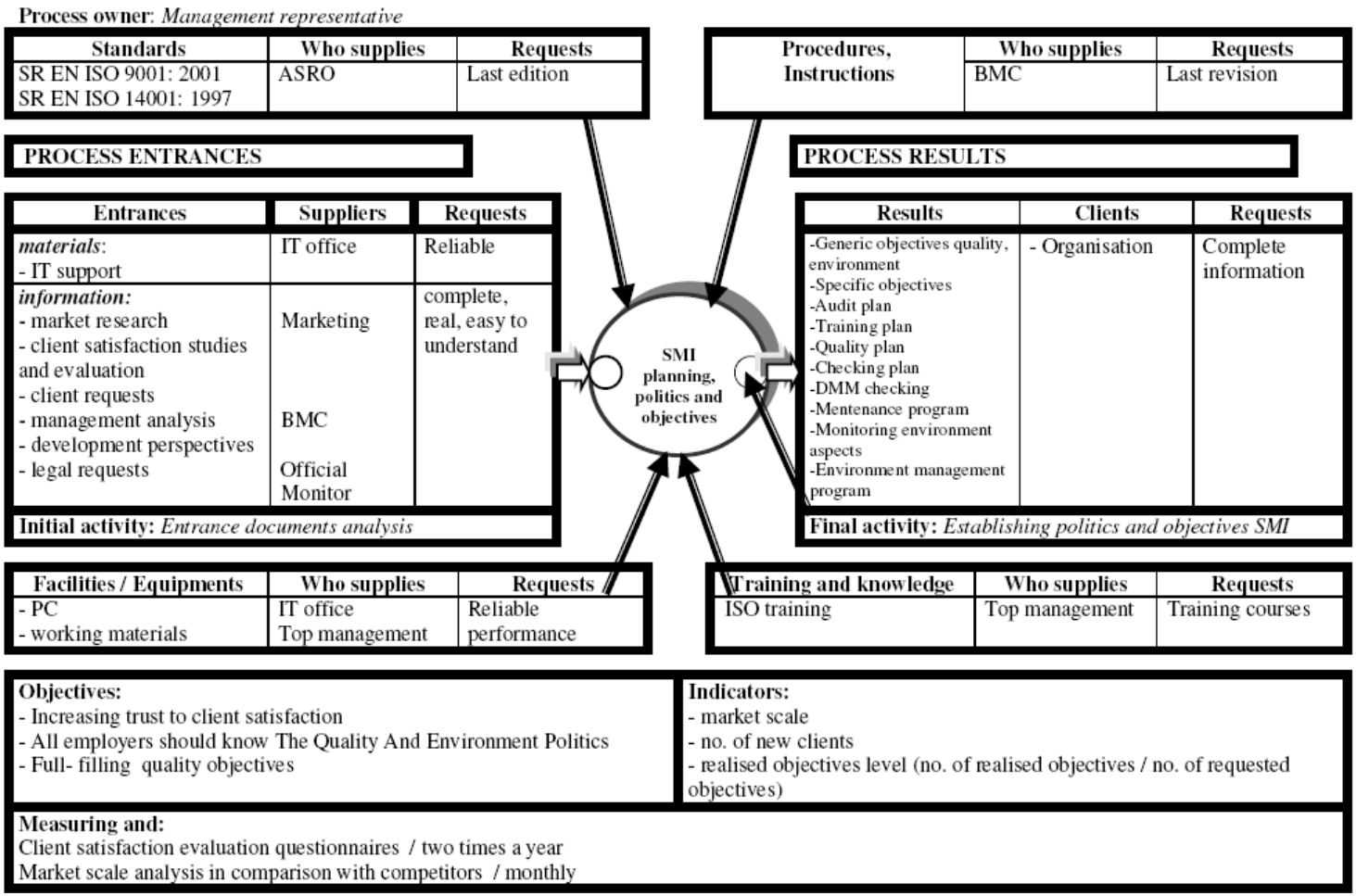


Figure 2. Planning SMI. Politics and objectives

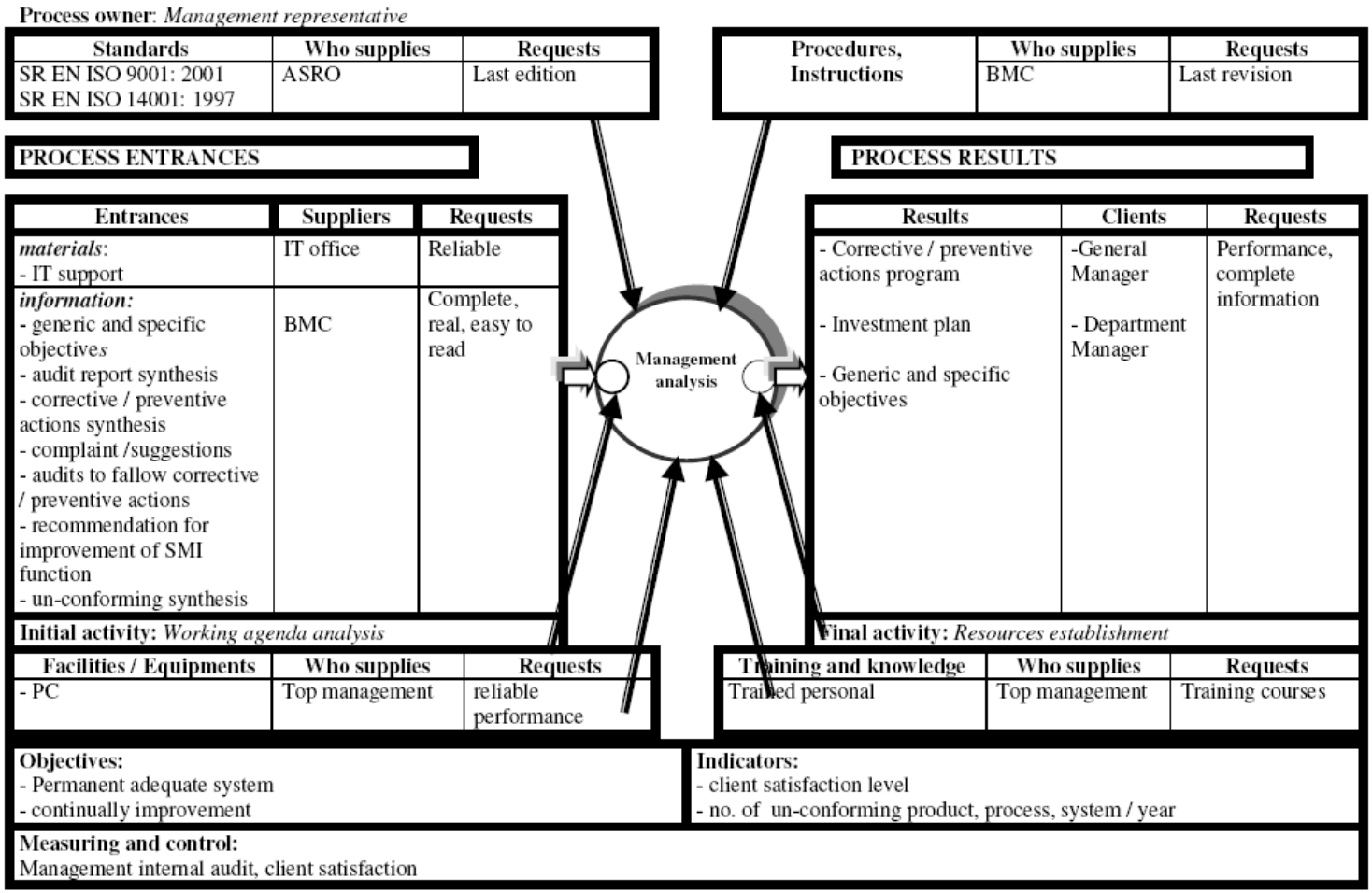


Figure 3. Management analysis

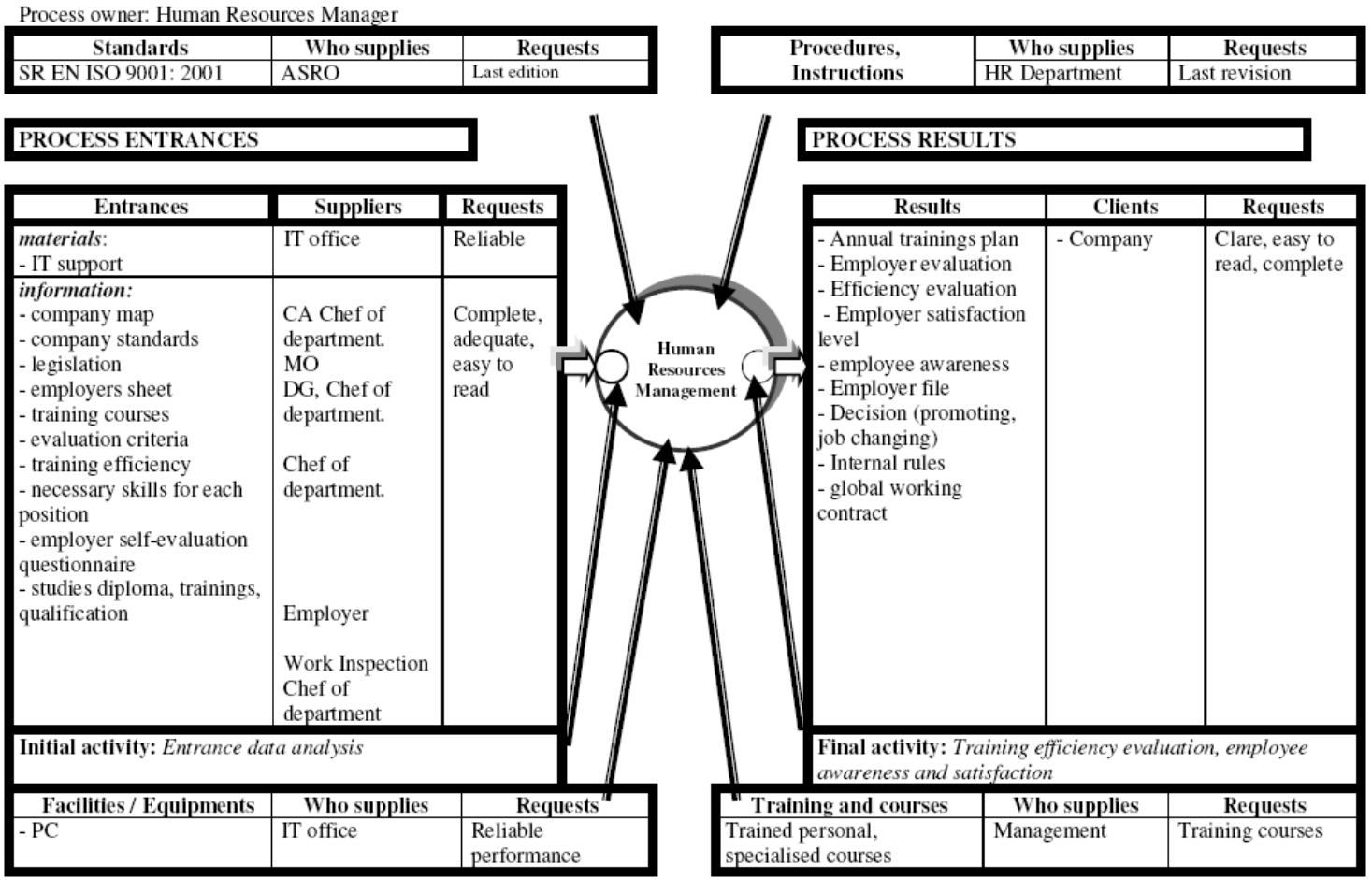


Figure 4. Material resources management

Objectives: - *Training efficiency, employee awareness*	**Indicators:** - no. of (mark well + very good) / no. total marks > 0,8 - costs / employee / total amount allocate - recrutement time of new employees (internal or external) - personal training costs/ allocate amount / year / department - employee fluctuations (max. 1,5%)
Measuring and control: Training efficiency analysis / annual; internal audit	

Figure 4 (continuation). Material resources management

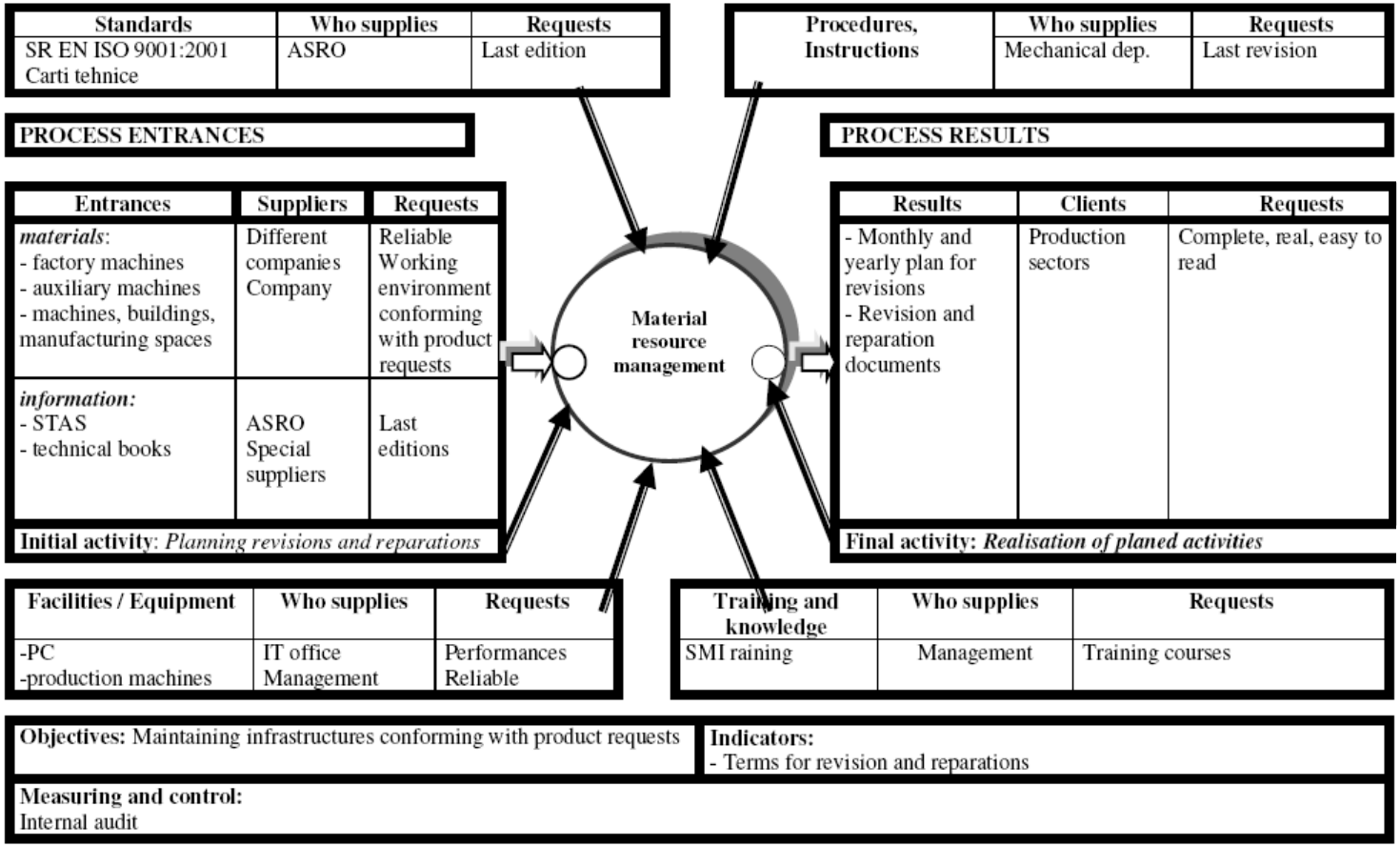


Figure 5. Material resources management (variant)

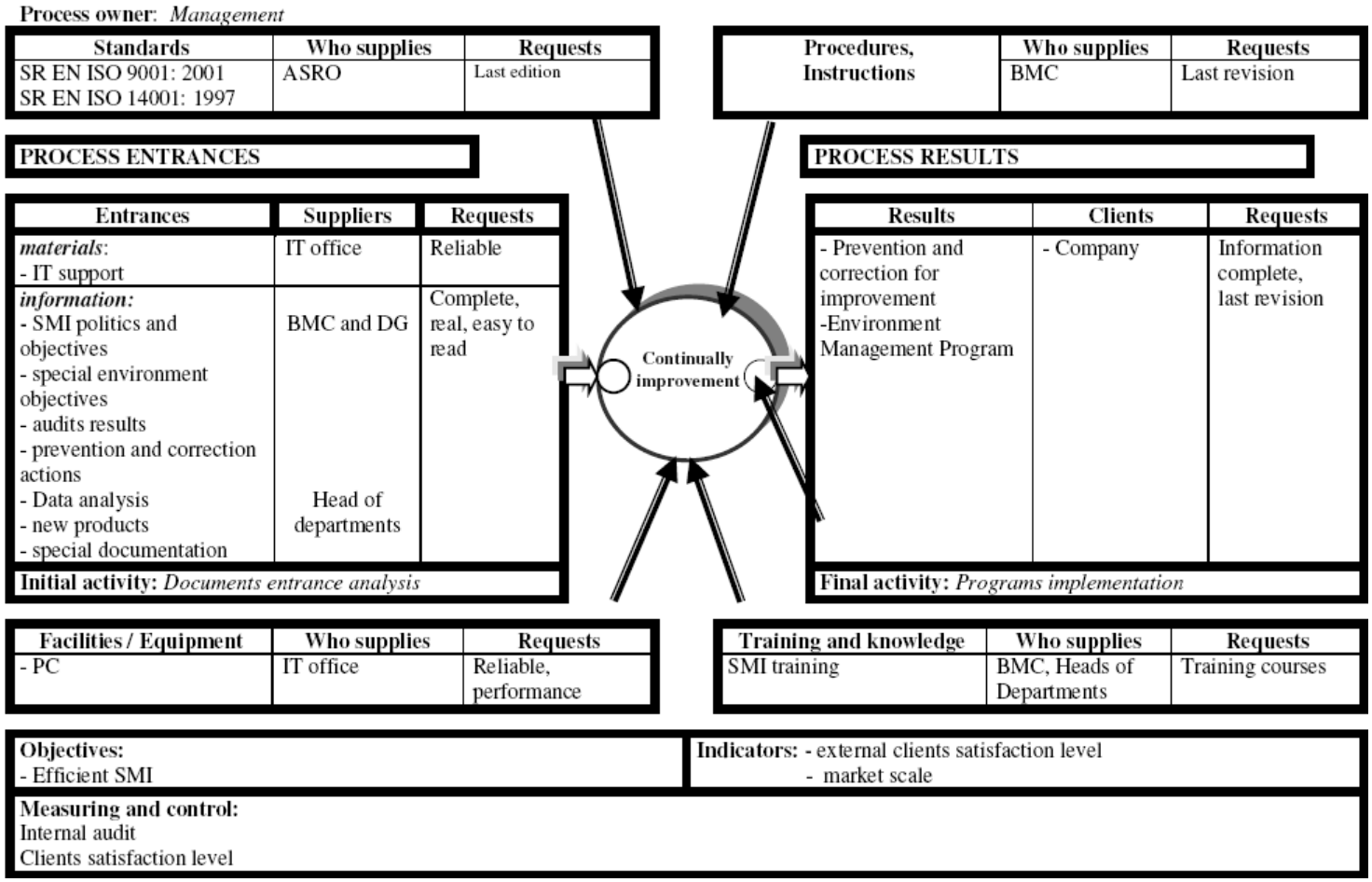


Figure 6. Continually improvement

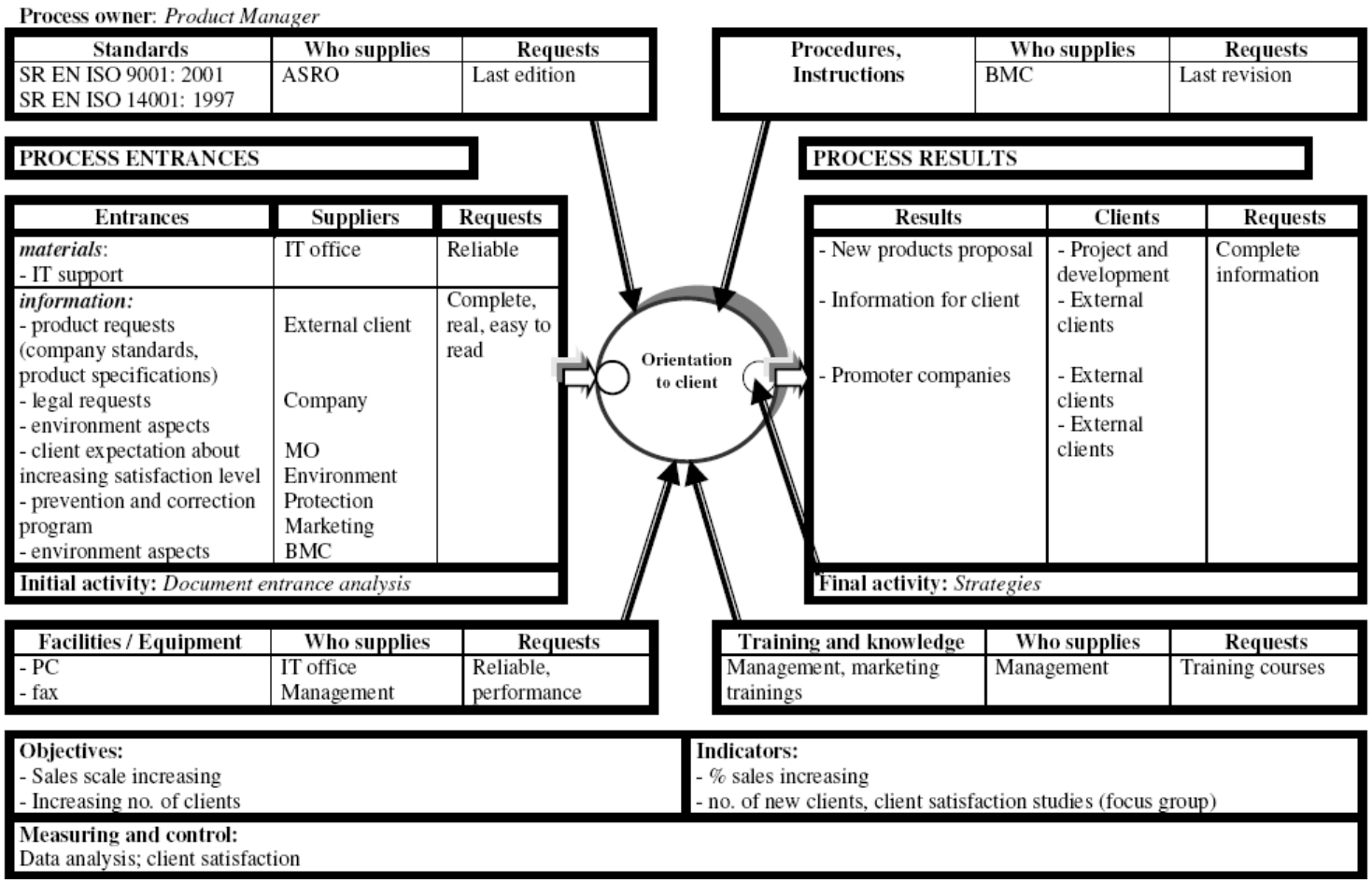


Figure 7. Orientation to the client

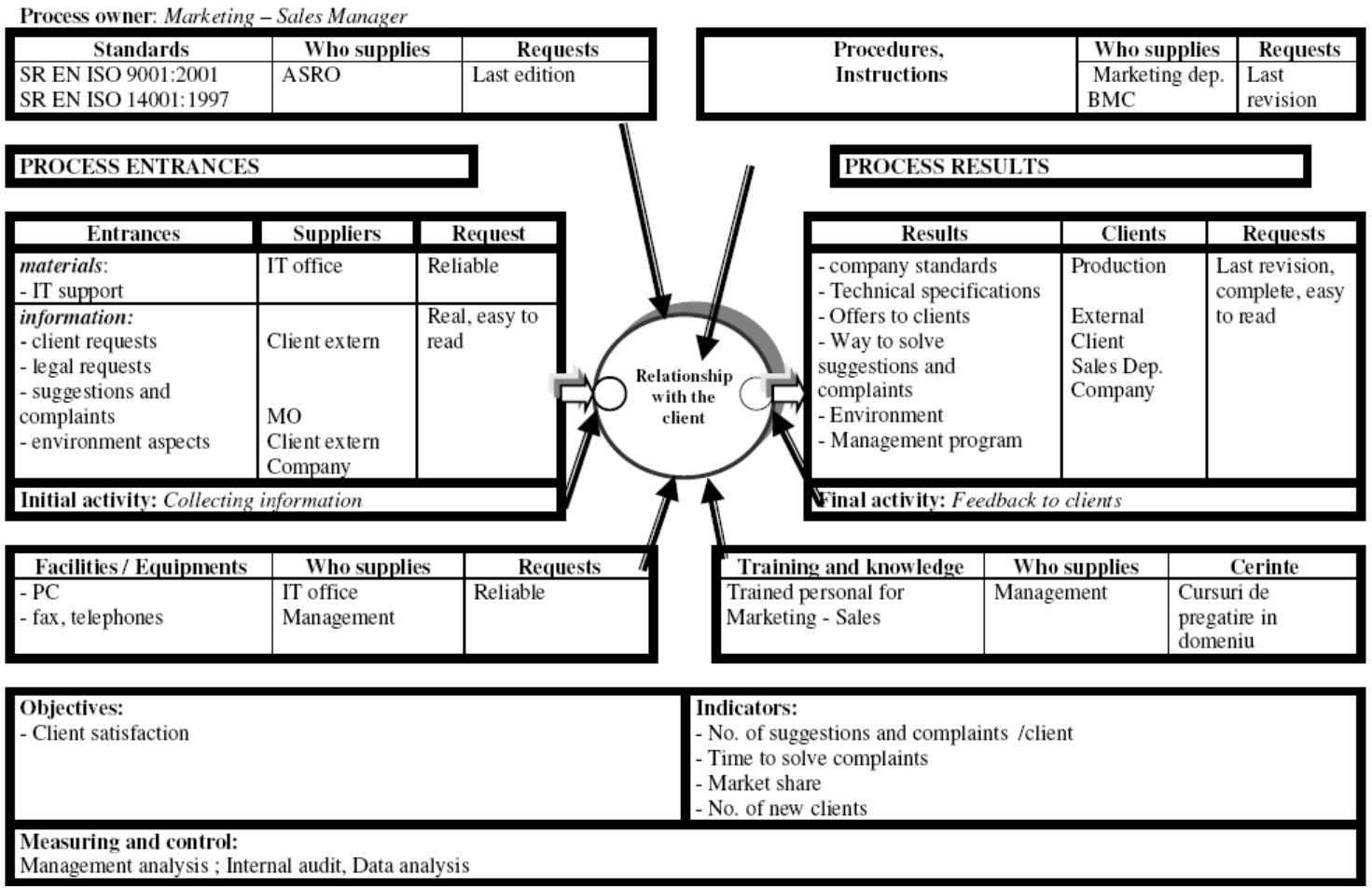


Figure 8. Relationship with the client

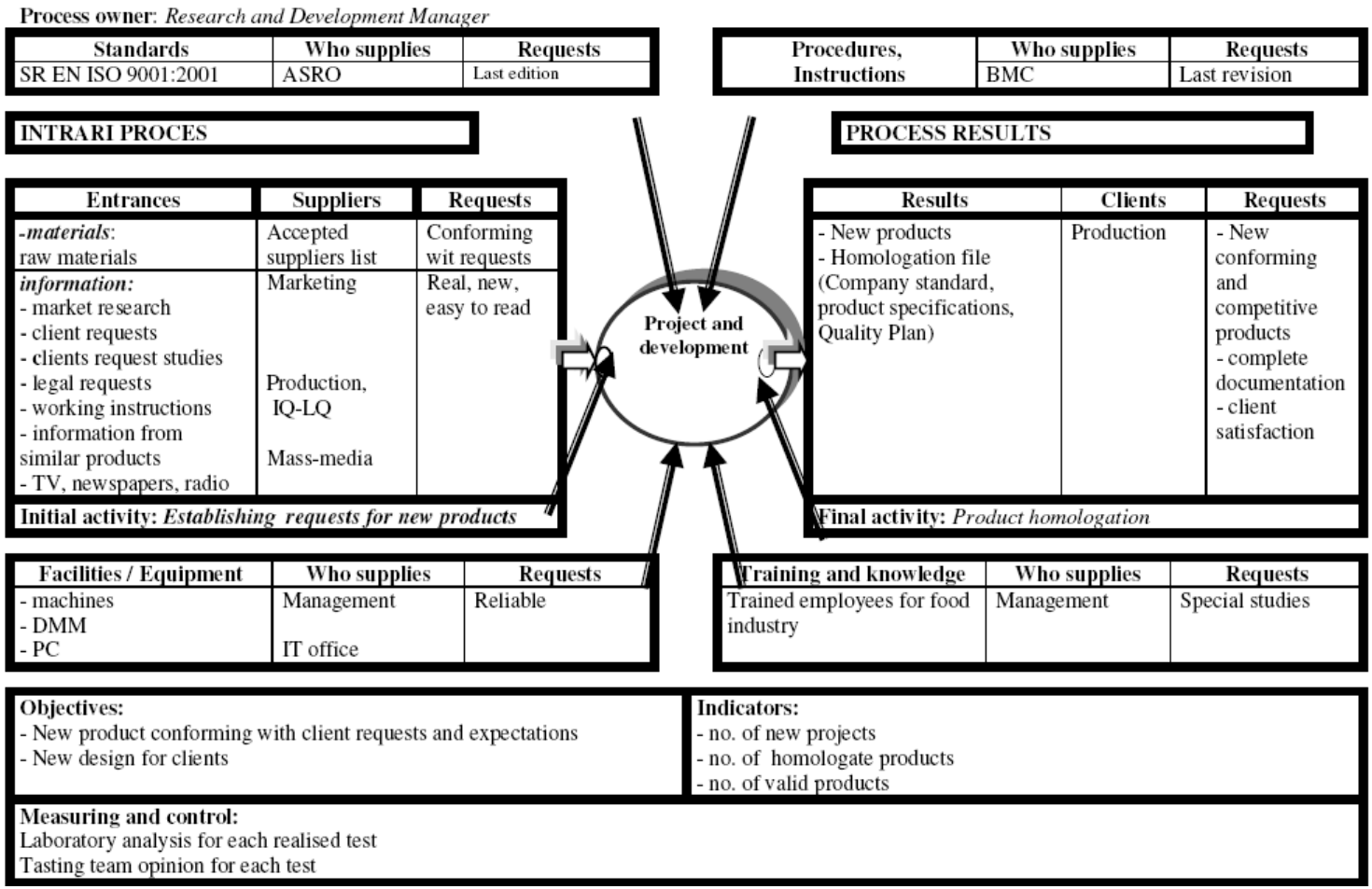


Figure 9. Project and development

Process owner: *Logistic Manager*

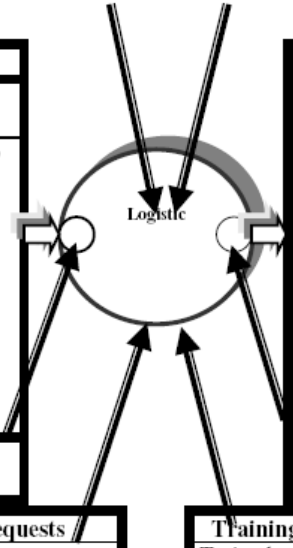
Standards	Who supplies	Requests
SR EN ISO 9001:2001 Technical specifications	ASRO Suppliers	Last edition

Procedures, Instructions	Who supplies	Requests
	Marketing dep.	Last revision

PROCESS ENTRANCES

Entrances	Suppliers	Requests
materials: - IT support	IT office	Reliable
information: - offers - specifications - supply sheet - accepted suppliers - suppliers category sheets - security sheet for dangerous substances - environment aspects generated by products	Suppliers Departments Logistic Manager	Real, easy to read

Initial activity: ***Evaluation and selection of suppliers*** *Analysis*



PROCESS RESULTS

Results	Clients	Requests
- Raw materials - NIR- no. of entrances	Departments Production	Conforming with technical specifications Complete

Final activity: *Raw materials supply conforming with specifications*

Facilities / Equipment	Who supplies	Requests
- PC - faxes, telephones	Management	Reliable

Training and knowledge	Who supplies	Requests
Trained personal in economics, commercial domains, SMI training	Management BMC	Special studies Internal courses

Objectives:
- Evaluated and selected suppliers
- Raw materials conforming with specifications
- Basic principle "first in- first out"

Indicators:
- suppliers percentage
- un-conforming product / total supplied products / supplier / year
- logistic realised term / planed term / supplier / year

Measuring and control:
Monitoring and measuring product, internal audit

Figure 10. Logistic

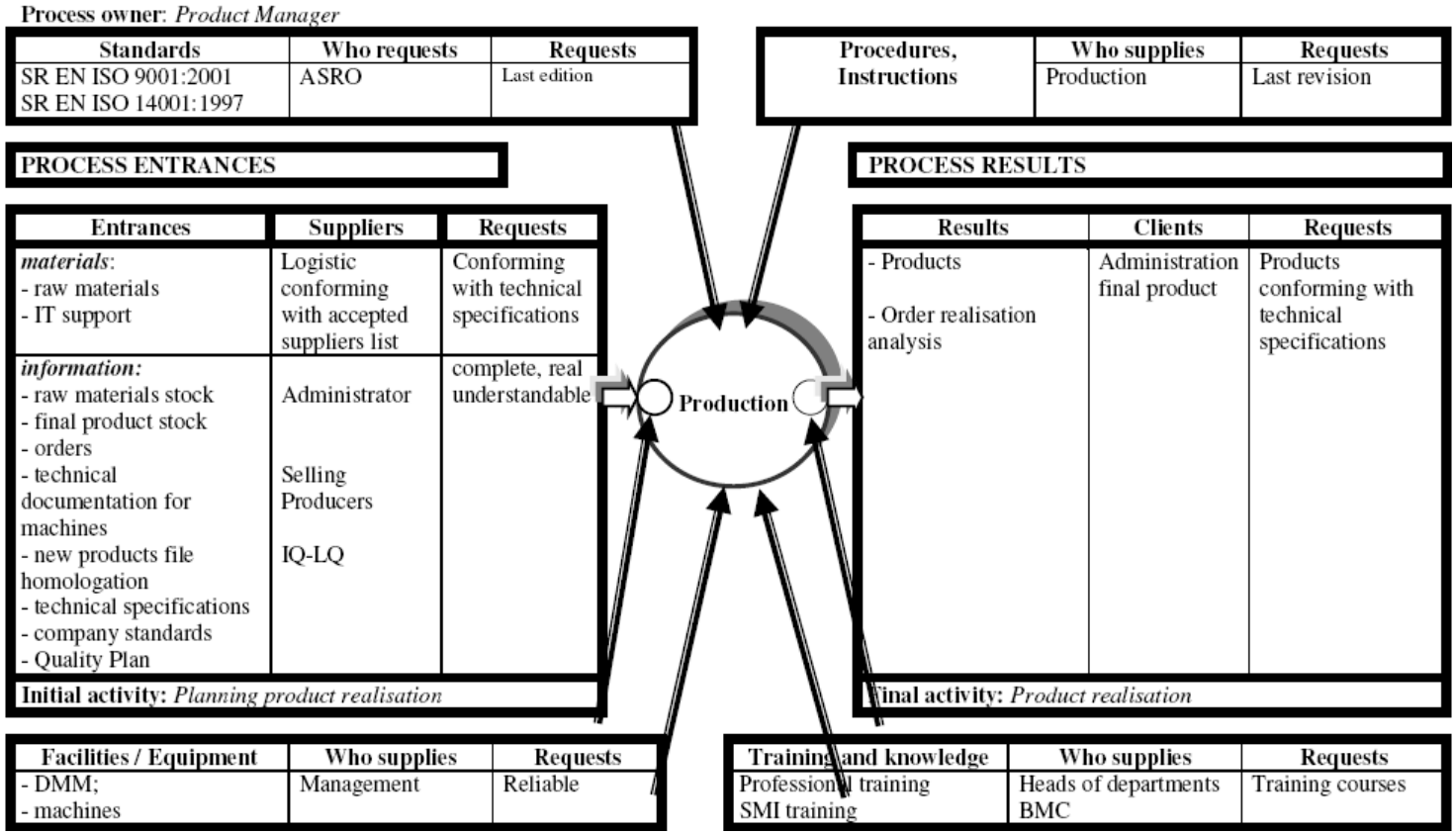


Figure 11. Production

Objectives:	**Indicators:**
- Reducing, even eliminating un-conforming products - Realisation of conforming products - Client satisfaction - Enough resources for production	- re-processed products quantity - no. of un-conforming products / month - no. reclamations / client / once at three months - type of problems and time to solve it / monthly - realised / planned production / day / month - productivity / monthly
Measuring and control: Internal audit, Laboratory Quality, Inspection Quality	

Figure 11. Production (continuation)

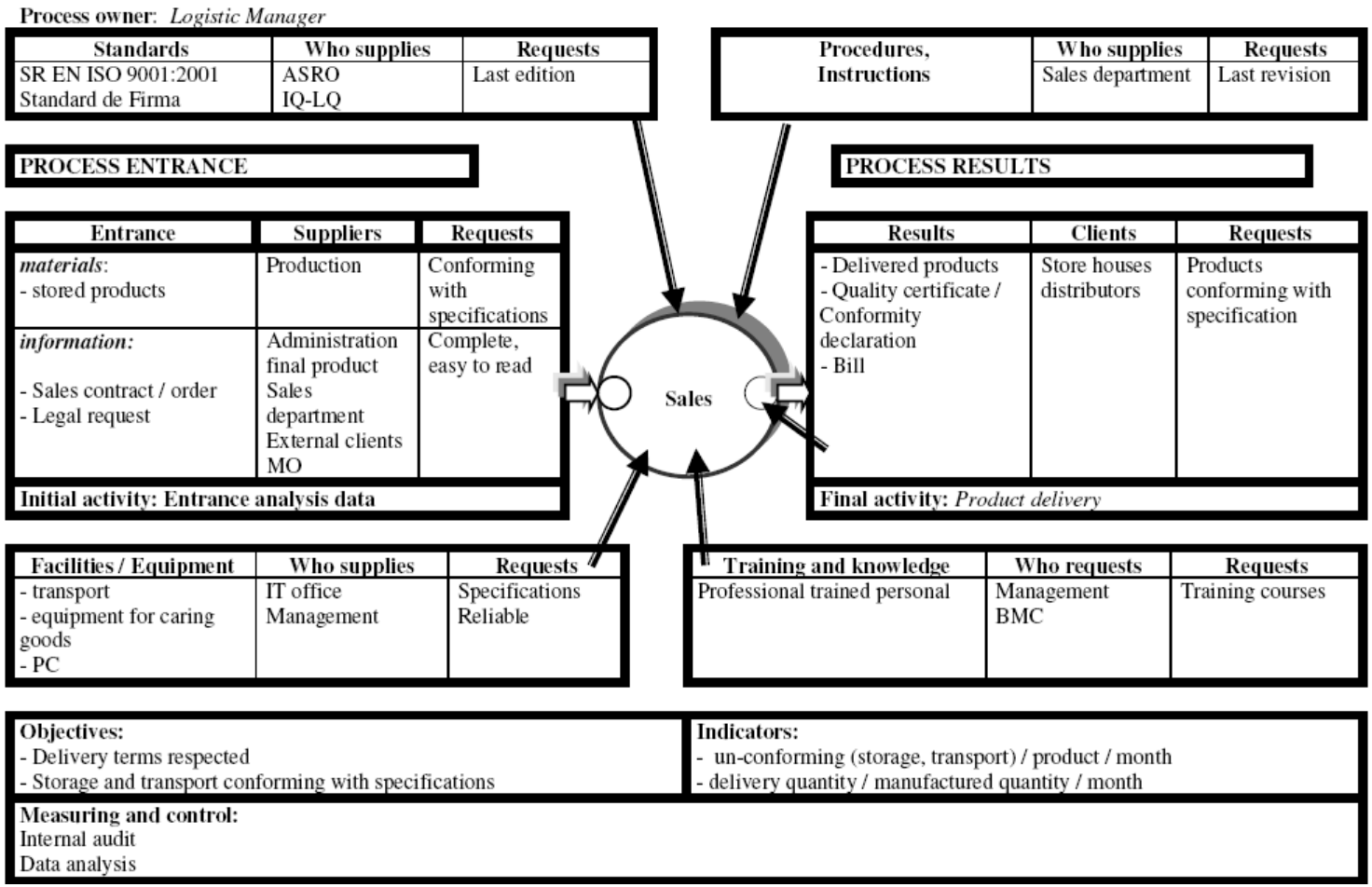


Figure 12. Sales

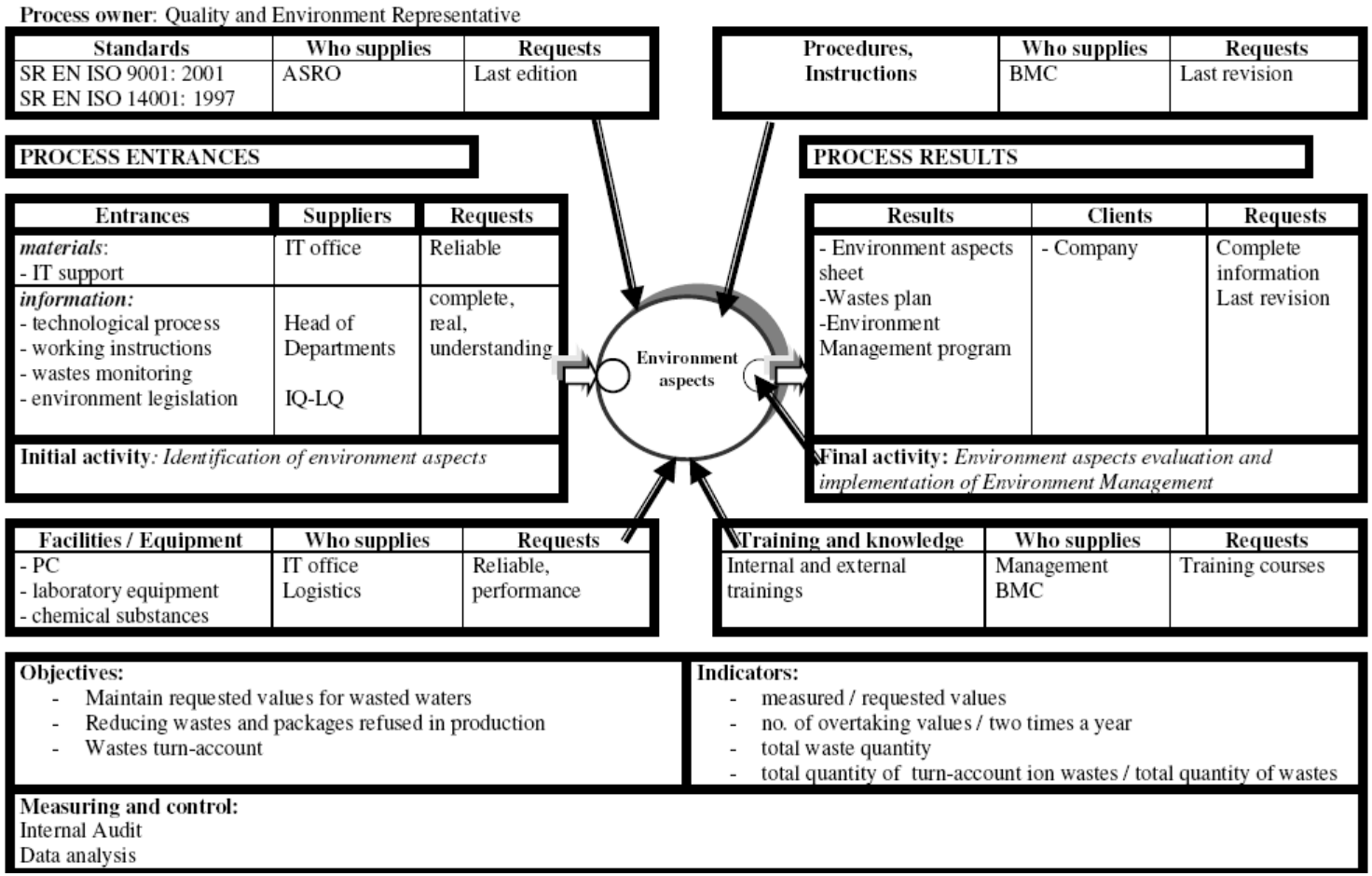


Figure 13. Environmental aspects

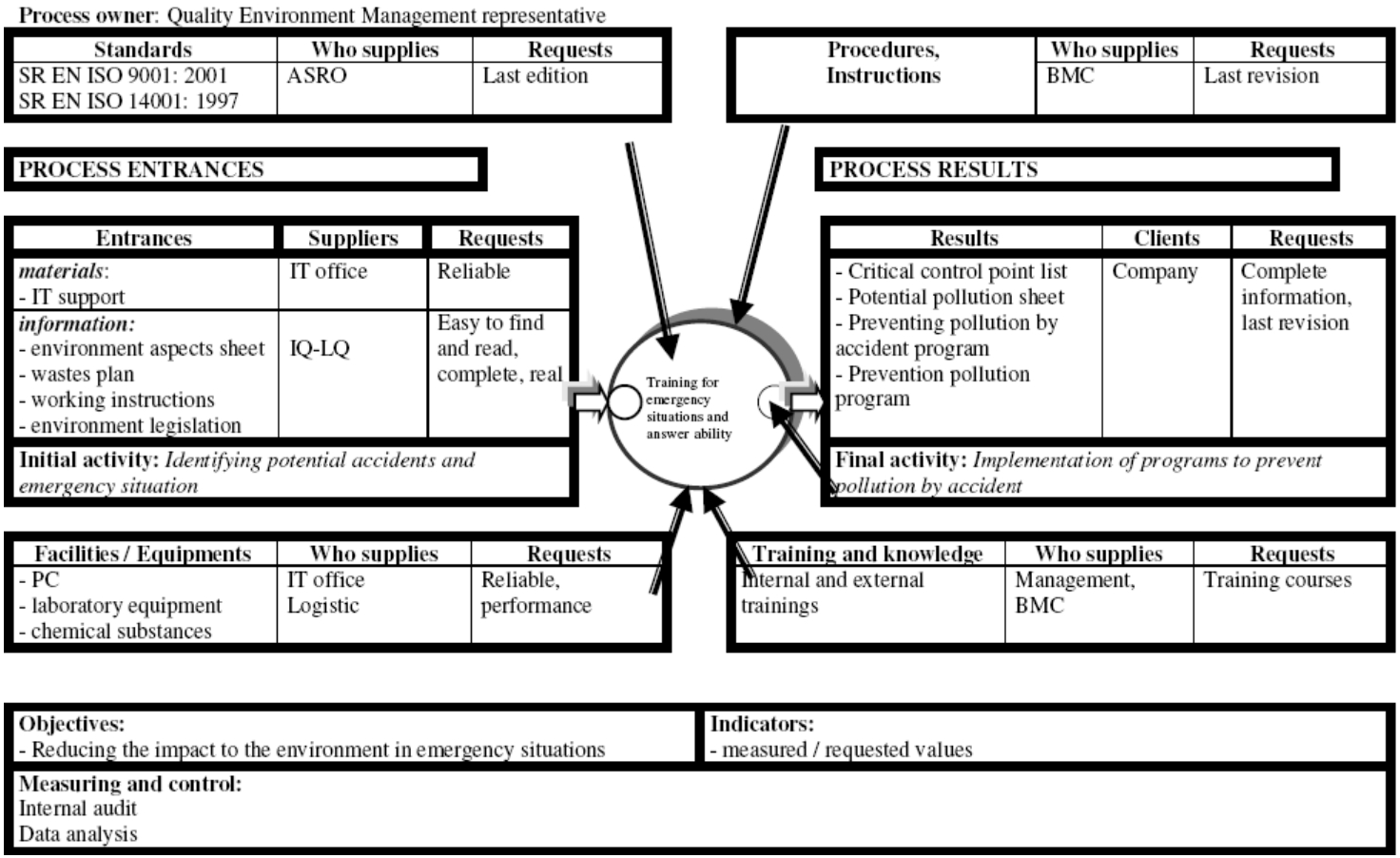


Figure 14. Training for emergency situations and answer ability

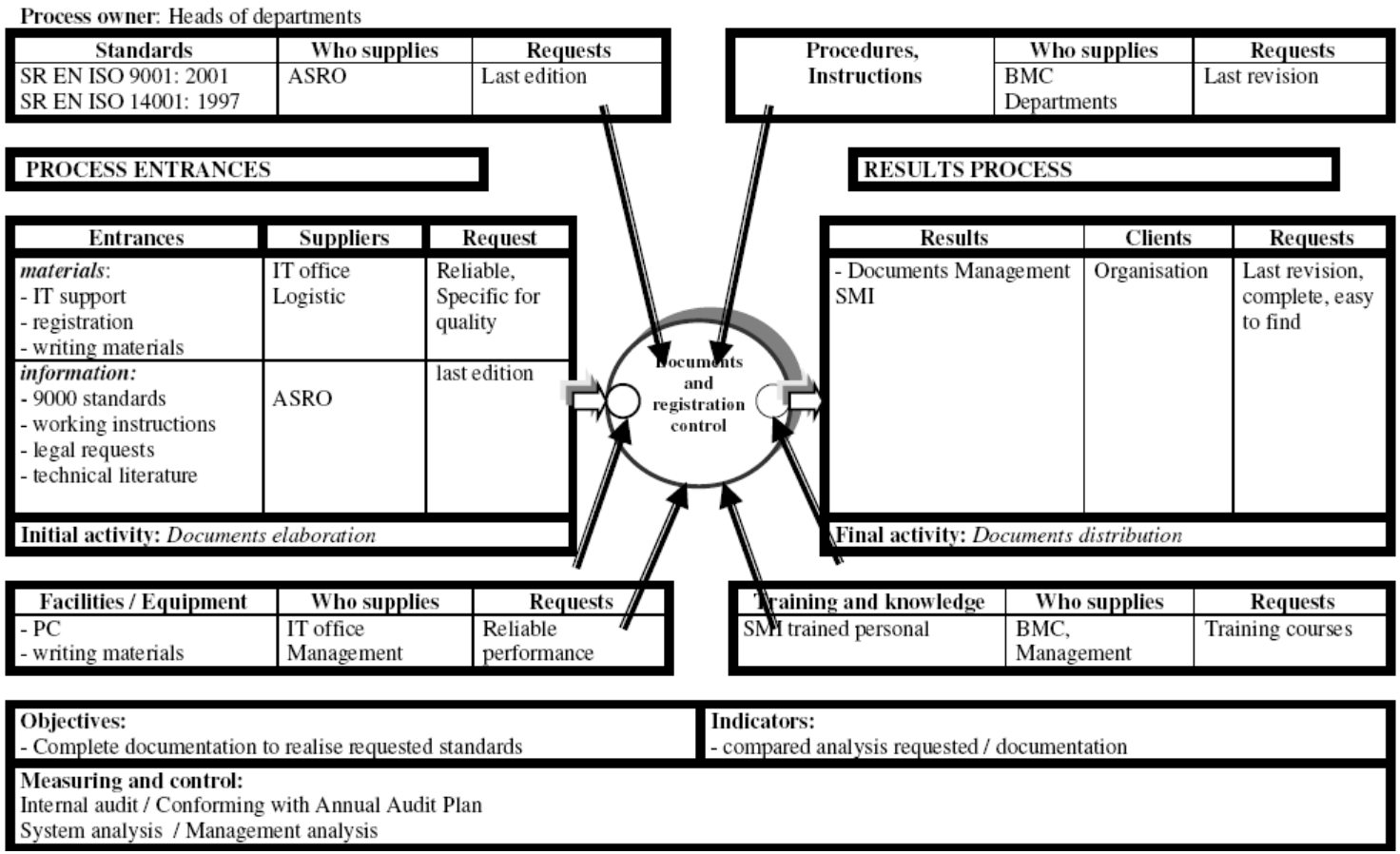


Figure 15. Documents and registration control

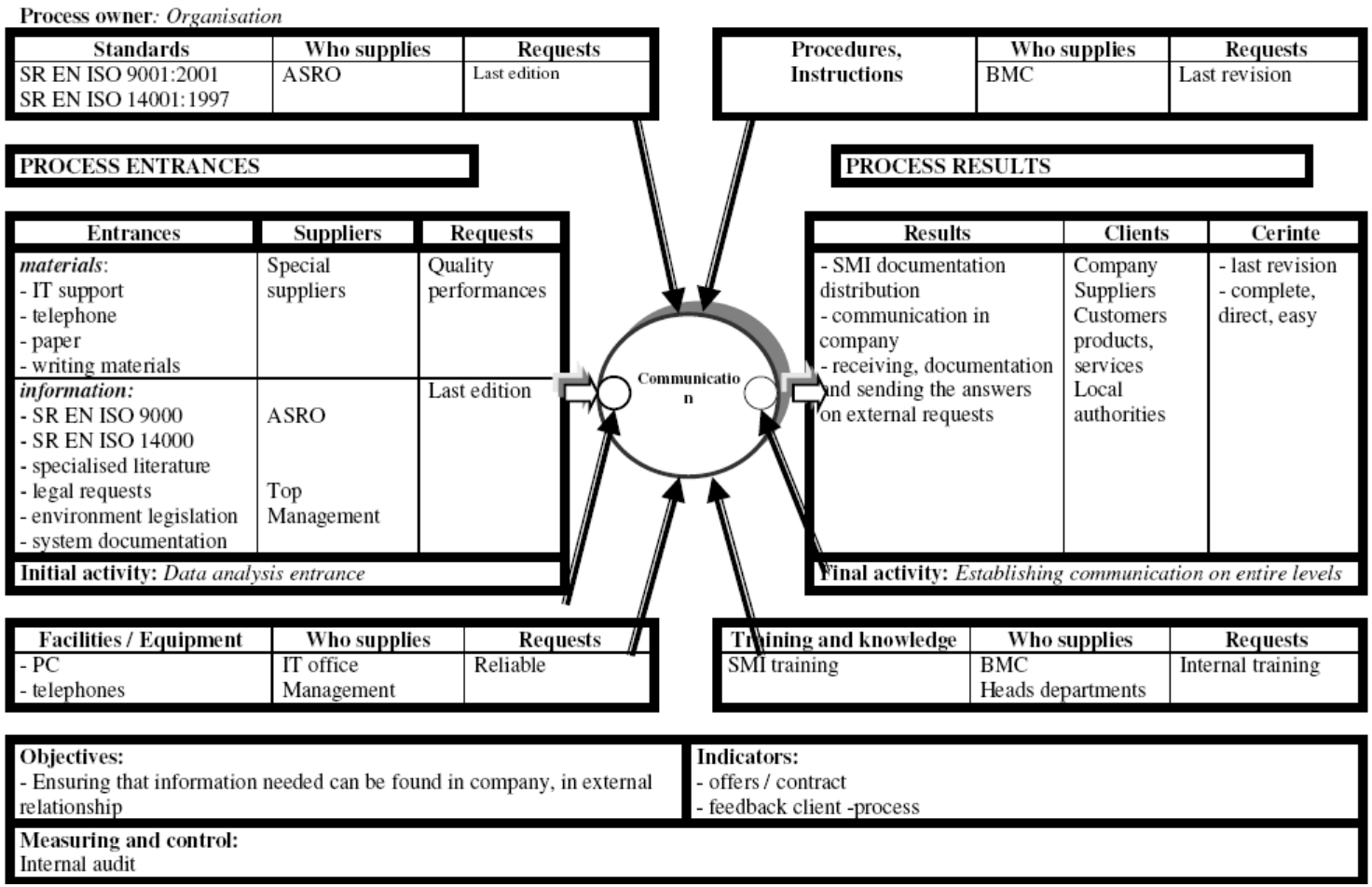


Figure 16. Communication

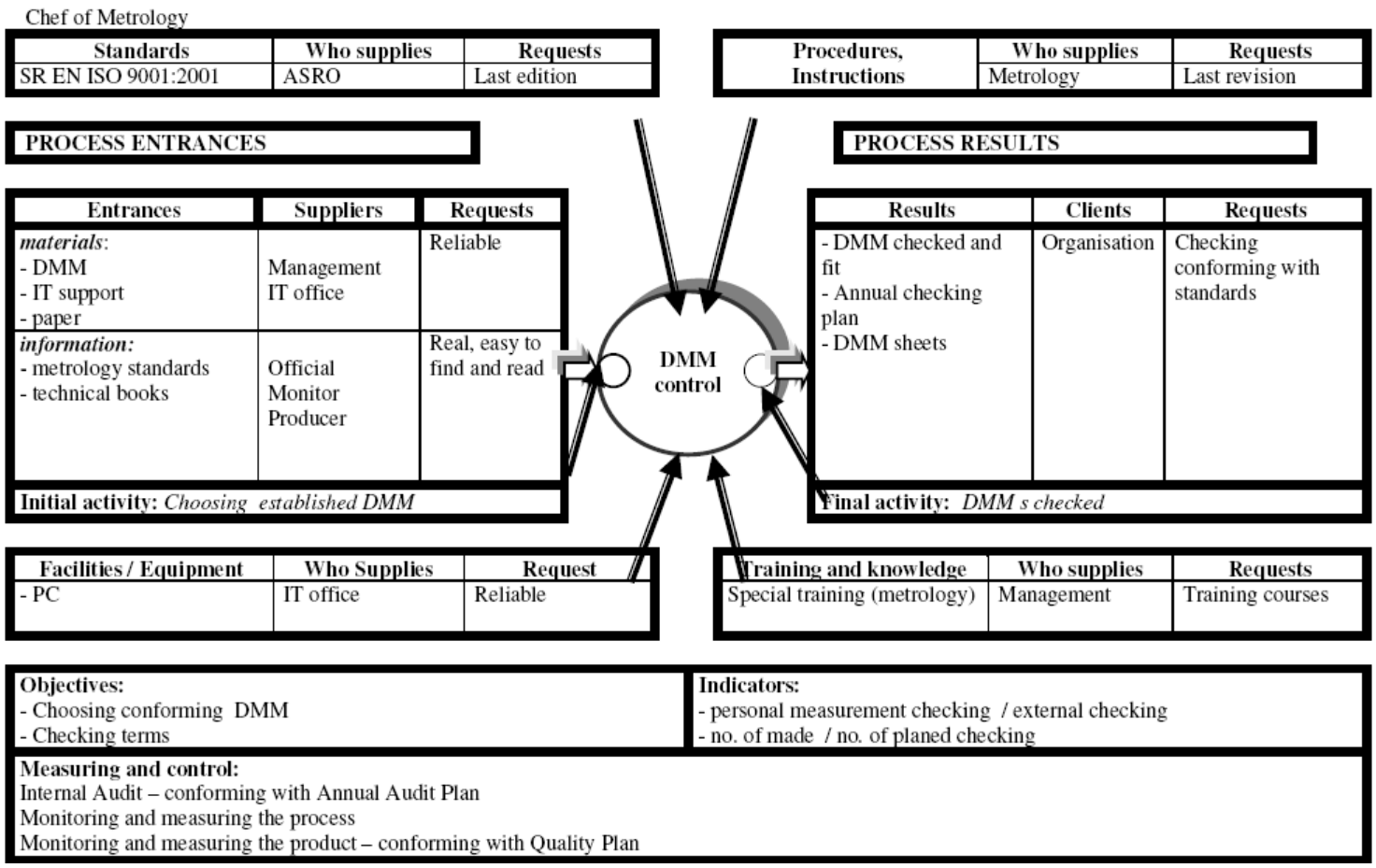


Figure 17. Monitoring and measuring control

Process owner: *Marketing Manager*

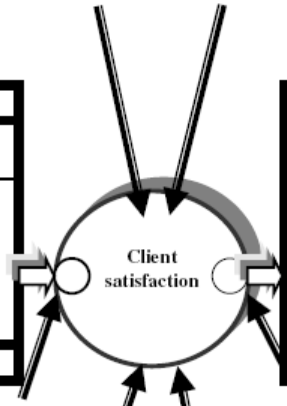
Standards	Who supplies	Requests
SR EN ISO 9001:2001	ASRO	Last edition

Procedures, Instructions	Who supplies	Requests
	Marketing dep.	Last revision

PROCESS ENTRANCES

Entrances	Suppliers	Requests
materials: - IT support	IT office	Reliable
information: - market research about client's requests and expecting Client satisfaction evaluation questionnaire	Marketing	Real, easy to read and find

Initial activity: *Entrance information analysis*



PROCESS RESULTS

Results	Clients	Requests
- Client satisfaction evaluation sheet	Product Manager Marketing Manager	Complete, real, easy to read

Final activity: *Establishing client satisfaction level*

Facilities / Equipments	Who supplies	Requests
- PC - faxes, writing materials	IT office Top Management	Reliable

Training and knowledge	Who supplies	Requests
Professional training, SMI	Top Management, BMC	Training courses

Objectives:
- Maximum percentage for all clients

Indicators:
- calculating satisfaction percentage
- number of new clients
- number of prolongate contracts
- number of lost contracts

Measuring and control:
Internal audit
Data analysis

Figure 18. Client satisfaction

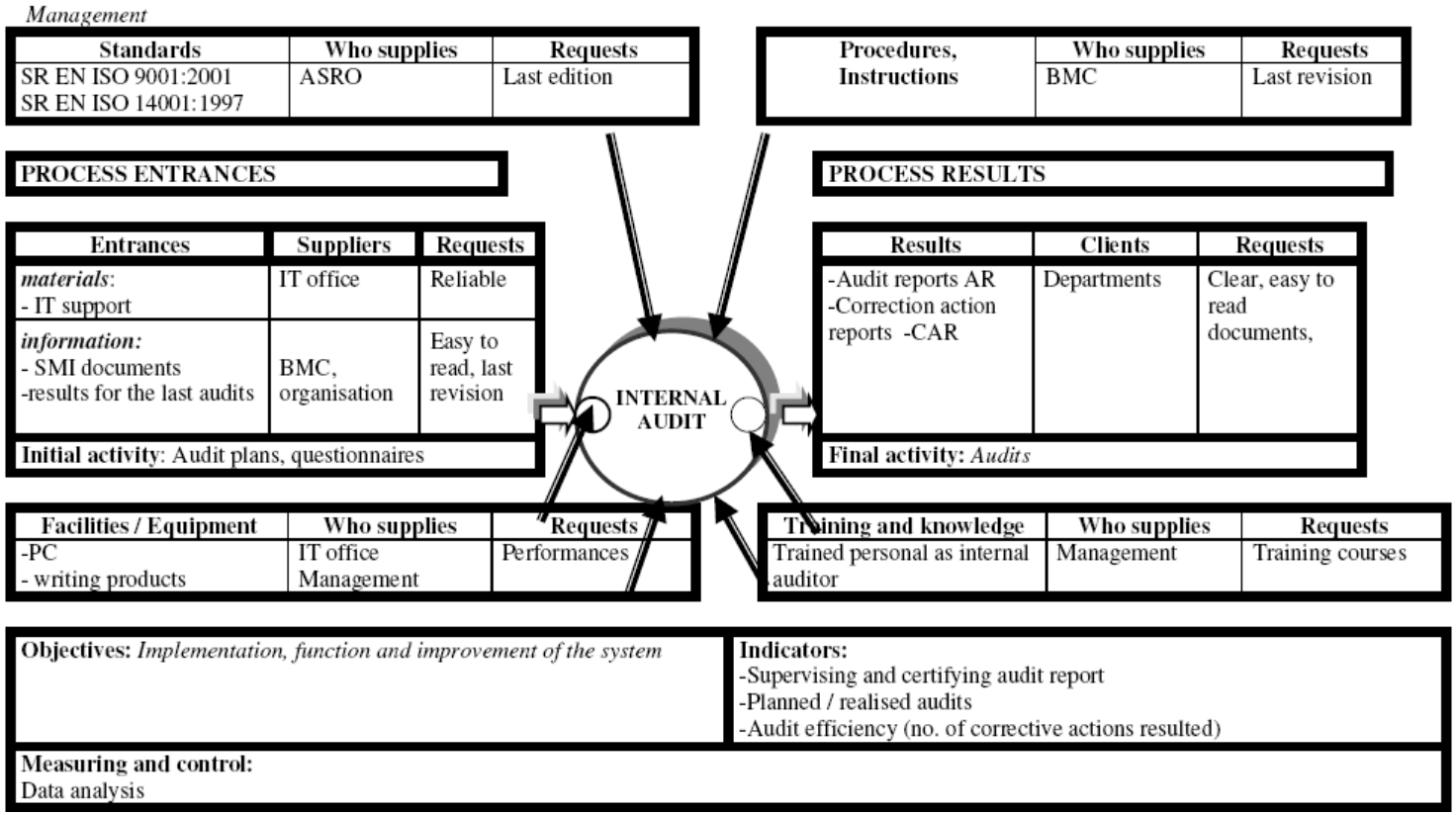


Figure 19. Internal audit

IQ/LQ

Standards	Who supplies	Requests
SR EN ISO 9000 SR EN ISO 14000	ASRO	Last edition

Procedures, Instructions	Who supplies	Requests
	IQ-LQ	Last revision

PROCESS ENTRANCES

PROCESS RESULTS

Entrances	Suppliers	Requests
materials: - DMM - chemical substances	Different companies	Reliable
information: - measuring methods - product request - legal request - technical literature	IQ-LQ Production, Logistic. Low Office Management	Easy to read, clear, complete
Initial activities: *Elaborating Quality Plan, technical specifications, analysis methods*		

Monitoring and measuring the products

Results	Clients	Requests
- Quality Plan	Production	Complete, real, easy to read
Final activities: Monitoring and measuring analysis		

Facilities / Equipment	Who supplies	Requests
- laboratory equipment - chemical substances -PC	Logistic IT Office	In term Performances

Training and knowledge	Who supplies	Requests
Trained workers professional, SMI	Head of Laboratory Quality Inspection BMC –Quality Management	Internal training

Objectives:	Indicators:
- Assuring that requests are realised	- Un-conforming products / month - realized / requested value / month

Measuring and control:
Internal audit; Data analysis

Figure 20. Monitoring and measuring the product

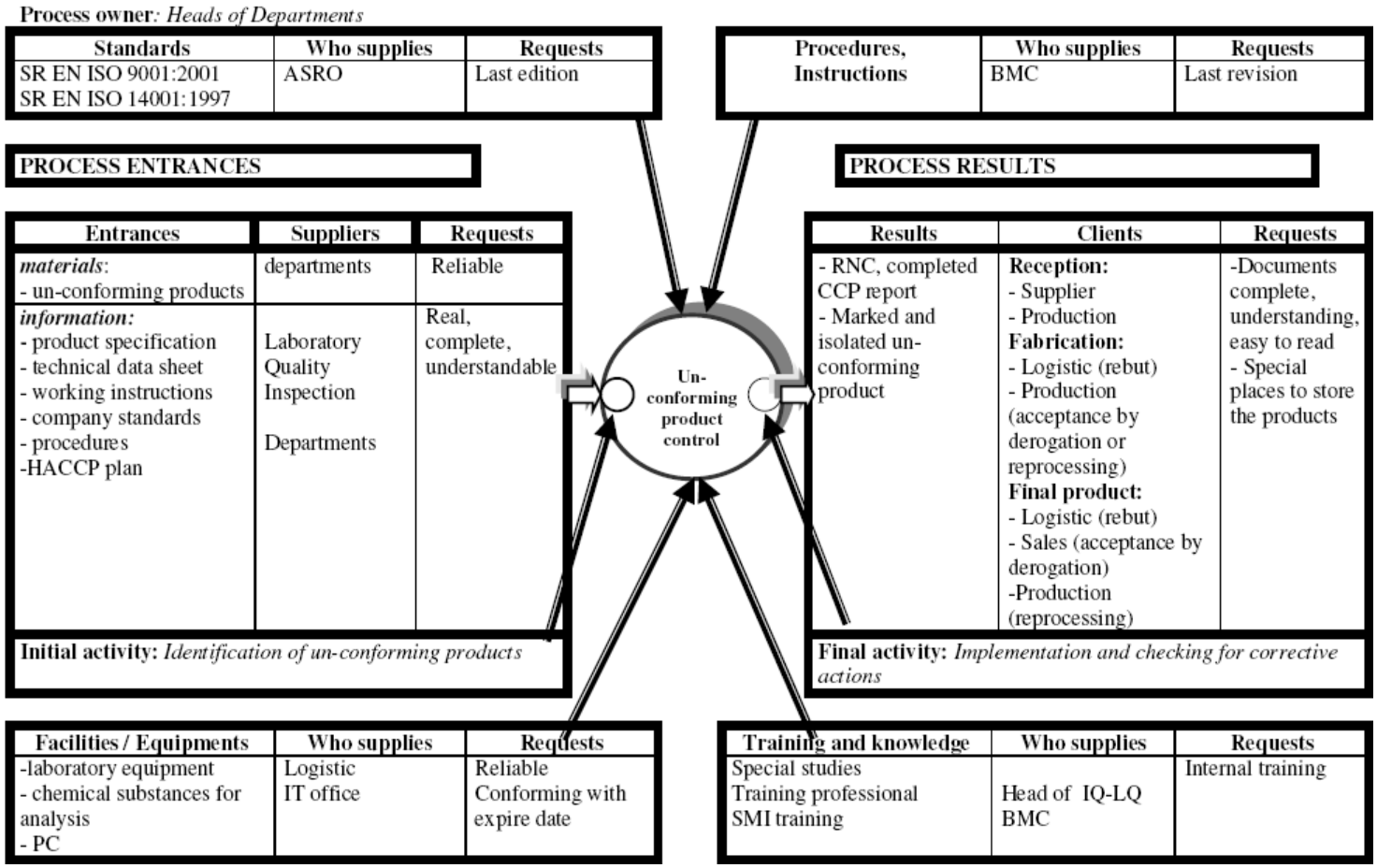


Figure 21. Monitoring and measuring the product (variant)

Objectives: - Ensuring that un-conforming product is identified and kept isolated to prevent it's unintended using and delivery	**Indicators:** - no. of solved un-conformities / no. of total un-conformities / two times a year - no. compliances and suggestions / client/ product, process, system / two times a year
Measuring and control: Internal audit; Data analysis; Monitoring and measuring the product	

Figure 21. Monitoring and measuring the product (variant) (continuation)

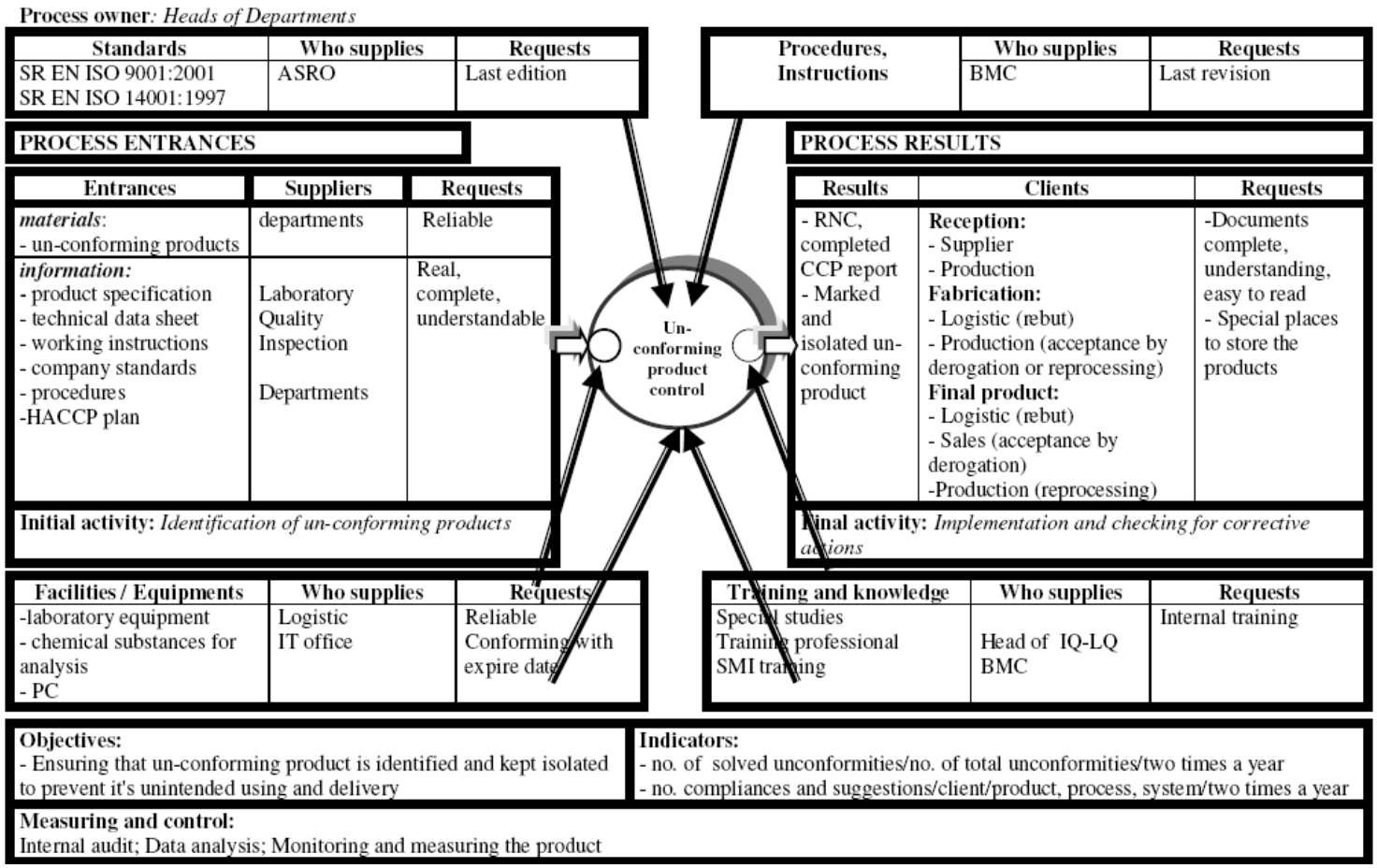


Figure 22. Un-conforming product control

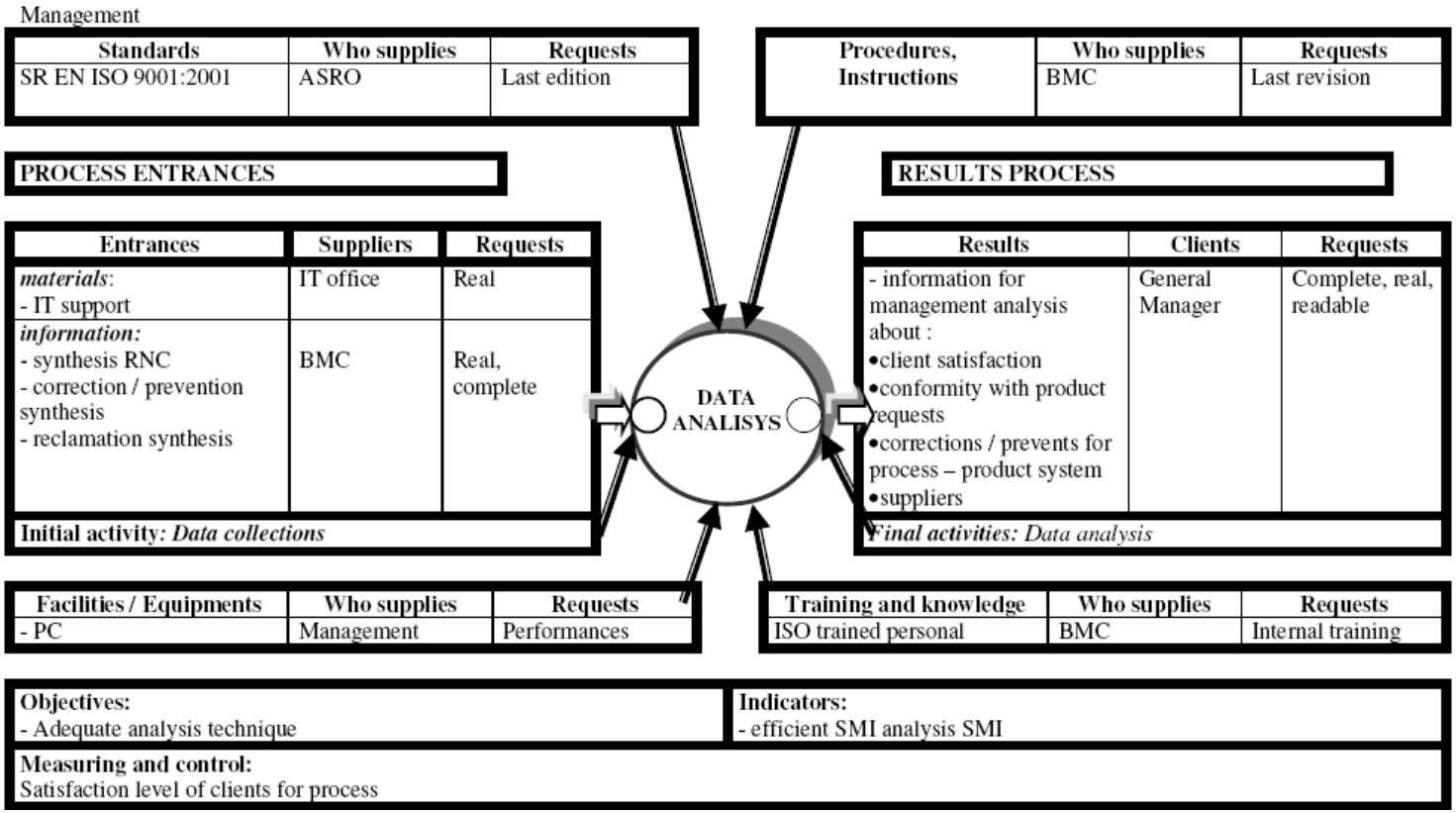


Figure 23. Data analysis

As observed in the synthetic figures presented before (Figure 1 to 23), the implementation of ISO standards requires technical comities comprising experts from the industrial, technical and business sectors which have asked for the standards, and which subsequently put them to use. These experts may be joined by others with relevant knowledge, such as representatives of government agencies, testing laboratories, consumer associations, environmentalists, academic circles and so on.
The experts participate as national delegations, chosen by the ISO national member institute for the country concerned. These delegations are required to represent not just the views of the organizations in which their participating experts work, but of other stakeholders too.
According to ISO rules, the member institute is expected to take account of the views of the range of parties interested in the standard under development and to present a consolidated, national consensus position to the technical committee.

CONCLUSIONS

The process map and process diagrams developed using ISO are useful to industrial and business organisations of all types, to governments and other regulatory bodies, to trade officials, to conformity assessment professionals, to suppliers of products and services in both public and private sectors.

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