



# Job Titles 2000

*Job positions and titles  
at large-scale corporate  
information system users*

SEPTEMBER 2000



# **CIGREF**

Cigref, *Club Informatique des Grandes Entreprises Françaises*, was founded in 1970. The organisation's ultimate aim is that of promoting the use of information systems as a means of generating value for companies. It has become a veritable meeting point for managers and decision-makers from major French and European companies, all of which are high-level users of large-scale information systems. Best practices are identified through the sharing of experience and exchange of knowledge. Every year, Cigref carries out research and publishes reports on subjects that concern all member companies.

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*Issues, Challenges and Project Steering*

The Impact and Use of Electronic Messaging Systems

Java: Language & Architecture  
*Technological Fact-Sheet*

Security in the Internet Era

The Linux Phenomenon in the Corporate World  
*Technological Fact-Sheet*

Mobility and GSM (soon to be published)  
*Technological Fact-Sheet*

Job Titles 2000 (September 2000 edition)  
*Positions and job titles in the IT world*

Telecoms Observatory 2000

XML: Ever Closer to a Universal Format?  
*Technological Fact-Sheet*

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# **INTRODUCTION**

## **Context**

The reference system for "job position titles" in information technology and telecommunications has been published regularly by the IT Club of the major French corporations since 1991. It was devised and maintained over more than five years by Cigref human resources managers and representatives of IT departments. However, this reference system, completed with new data sheets in 1997, had not been revised since 1995. Meanwhile, IT in large corporations has been through a number of major technological, strategic and organisational changes.

Faced with the growth in roles and activities of IT specialists in large corporations, it seemed necessary to revise the profiles of the various players to make them reflect the developments of these professions over the past three years.

The work begun in 1999 with the Cigref human resources observatory is thus a recasting of the listing of job positions based on the work of the previous years, notably in relation to the listing published in 1994-1995 and its 1997 appendix. This recasting extends to five new job position data sheets, and also includes the incorporation of development professions.

Whilst retaining the structure of the data sheets from the previous edition, "Job titles 2000" also provides a sense of career perspective for each job position and the Cigref opinion on the development of the profession in question.

In accordance with its charter, and with a concern for public-spiritedness, Cigref believes that it has a duty to make its considerations available to a wide public.

It is also worth noting that the aim of this listing of job positions is not to reflect how any particular company and its information systems department (ISD) are actually organised. Depending on the company, its size, activities, etc., a number of IT jobs could be carried out by one person, or alternatively sub-divided into other more specific or specialist professions.

As an extension of this document, Cigref's human resources observatory has in past years produced further analysis and ideas which could illuminate and facilitate the management and support of IT and telecommunications professionals.

In 2000-2001 the human resources observatory will work on the themes of "mobility and career management for information system professionals".

⇒ *Development of ICT human resources* – report published in September 1995:

- a description of the method used to design Cigref's listing of job position;
- statistical growth in numbers of ICT professionals in large user corporations from 1989 to 1994, in terms of large job position families;
- diagram of development factors likely to impact professionals in this sector and influence competencies or organisation.

⇒ *Mobility and training* – a report published in December 1996:

- a statistical overview of the current population involved in emerging job position and potential future trends;
- growth trends of ICT professionals by major category;
- generic mobility links existing between the various job position and an assessment of their level of feasibility;
- detailed description of the required training and support paths, in the context of 35 of these mobility links.

⇒ *Effective guidance of corporate information systems: ownership players, roles and skills* – a report published in September 1998:

- a presentation of the fields for guiding information system and ownership-related activities;
- required roles, players and competencies for system ownership;
- a new model for ownership-project management co-operation.

## **Organisation of Cigref's job position reference system**

Cigref's job position reference system presents in summarised form the "main missions", "activities and tasks" and "applied knowledge" required for key IT players in large French corporations. It also gives the standard career path (profiles and prior experience) and development trends of the position in question.

It aims to provide food for thought and raise awareness, as well as helping to build and organise a reference system of roles and competencies involved in the management of information systems.

Each job position identification data sheet is built around a framework giving:

- the name of the job position or title;
- the other common or special names/titles in France, plus English-language equivalents;
- the mission of the job position, covering its main attributions, the purpose of the job for the person holding it, and how it contributes to the performance of a project, "business line" or company);
- a description of the crucial activities and tasks as experienced in most organisations;
- applied knowledge classified into three categories: technological expertise, general knowledge and behavioural abilities;
- standard career paths (*both profile and prior experience*): What is their background? What jobs can they point forward to?
- trends and factors driving the future of the job position in question: strategic context, development of markets and technologies, increased use of certain products and services, development of organisations, customers, management, regulation, etc. in recent years and in the future.

This reference system is organised into six families:

1. Consulting in information systems and ownership
2. Support and assistance to users
3. Production and operation
4. Research, development and integration
5. Internal support and technical support
6. ISD administration and financial management

Under the heading "Activities and tasks", the signs ↗, = and ↘ indicate the profession's developmental trend compared to the previous version of this listing.

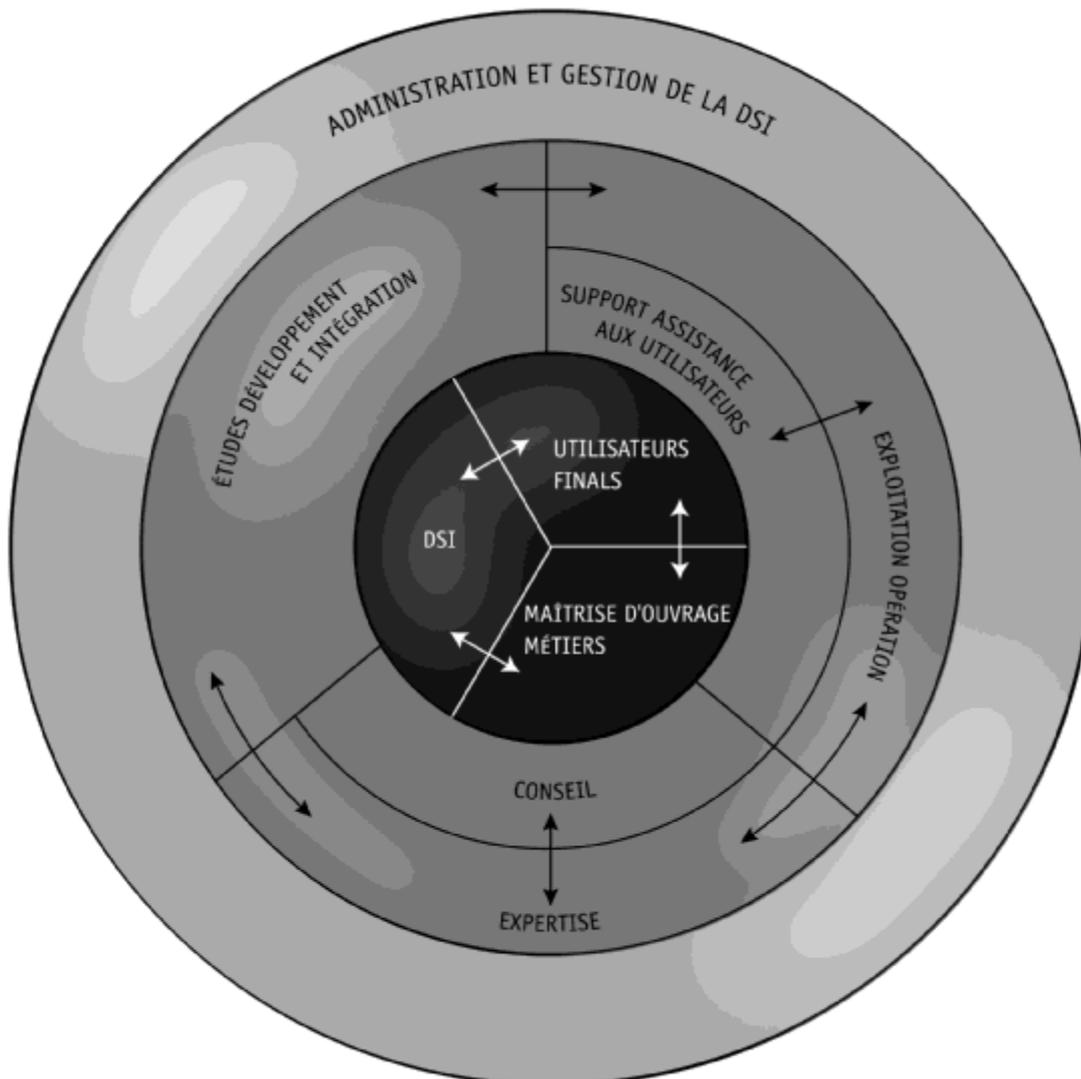
• **Breakdown of the 21 profession/job positions by family**

*Comparison with the 1995 listing*

<b>Family</b>		<b>Previous (1995) listing</b>	<b>2000 listing</b>
<b>Family 1</b>	CONSULTANCY POSITIONS IN INFORMATION SYSTEMS AND DEVELOPMENT	41- Information System Consultant	<b>1.1- Information Systems Consultant</b>
		42- Information System Architect	<b>1.2- Information System Architect</b>
		43- Development Project Manager	<i>1.3- Development Project Manager</i>
		44- "Business line" IS Manager	<i>1.4- Business Line IS Manager</i>
		45- Applications Manager	<i>1.5- Applications Manager</i>
		46- "Business Line" Project Manager	<i>1.6- Business Line Project Manager</i>
<b>Family 2</b>	USER SUPPORT AND ASSISTANCE	11- Customer Technical Assistant	<b>2.1a- Functional assistant</b> <b>2.1b- Helpdesk Technician</b>
		12- Facilitator	<b>2.2- Internal Customer Manager</b>
<b>Family 3</b>	PRODUCTION AND OPERATION	21- Operating Controller	<b>3.1- Operator</b>
		22- Network Controller	See Tools/Systems/Network Administrator
		23- PC/Network/Messaging System/Telephony Technician	<b>3.3a- Desktop Technician</b> <b>3.3b- Networks/telecoms Technician</b>
		24- Operational Analyst	<b>3.4- Systems Analyst</b>
		25- Resources Manager	<b>3.5a- Tools/Systems/ Network and Telecoms Administrator</b> <b>3.5b- Database Administrator</b>
		26- Operating Integrator	<b>3.6- Software Integrator</b>
		27- Multi-server Controller	<b>3.7- Operations Controller</b>
<b>Family 4</b>	RESEARCH, DEVELOPMENT, INTEGRATION	31- Project Manager	<b>4.1- Development Project Manager</b>
		32- Analyst Programmer/Programmer	<b>4.2- Developer</b>
		33- Applications Integrator	<b>4.3- Applications Integrator</b>
			<i>4.4- ERP parameters setter</i>
<b>Family 5</b>	INTERNAL TECHNICAL SUPPORT	51- Operations Expert	<b>5.1- Operating System Expert</b>
		52- Telecoms and Networks Expert	<b>5.2- Expert in methods and tools /quality/security/data</b>
		53- Methods/Quality/Security/Data Expert	<b>5.3- Networks/telecoms Expert</b>
		54- General Technology Expert	<i>5.4a- Expert in Internet and Multimedia Technology</i>
			<i>5.4b- Information System Security Manager</i>
		55- Technical Architect	<b>5.5- Information System Architect</b>
<b>family 6</b>	ADMINISTRATION AND MANAGEMENT OF ISD	61- ISD Management Director	<b>6.1- ISD Manager</b>
		62- ISD Functional Manager	<b>6.2- ISD Functional Manager</b>
			<i>6.3- Telecoms Manager</i>

<b>In bold:</b>	data sheets revised in 1999-2000
<b>In italics:</b>	new job position data sheets added in 1999-2000

## Structure of IT and telecommunications job positions



- Key:
- Administration et gestion de la DSI = IS department management and administration
  - Études développement et intégration = Research, development and integration
  - Exploitation opération = Running and operating
  - Support assistance aux utilisateurs = User support and assistance
  - Conseil = Consulting
  - Expertise = Expert knowledge
  - DSI = IS department
  - Utilisateurs finals = end-users
  - Maîtrise d'ouvrage métiers = Business area project management

- ***Main changes compared to the Cigref listing published in 1997***

## **2 categories of job position renamed**

The 2000 listing again incorporates the four 1997 categories. However, the "Expertise" category has been renamed "Internal technical support" to prevent any confusion with levels of competence. Similarly, the "Information System Consultancy" category, which now incorporates development activities, has become the "Consultancy in Information Systems and Development" category.

## **3 high-growth job positions which had to be sub-divided**

Due to the expansion and enrichment of its component tasks, the *Customer Technical Assistant* has been broken down into *Functional assistant* and *After Sales Support Technician*.

Similarly, the *PC/network/messaging system/telephony technician* has been divided into 3: *Operator*, *Workstation Technician* and *Networks/Telecoms Technician*.

And lastly, the data sheet for *Resources manager* has been dropped in favour of first *Tools/Systems/Networks and Telecoms Administrator*, and second *Database Administrator*.

## **4 job positions confirmed but renamed**

This is the case for *Facilitator*, which was confused with mediator type tasks, and has now become *Internal Customer Manager*, *Operational Analyst*, which has become *Systems Analyst*, *Multi-Server Controller* which has changed into *Operations Controller*, and *Analyst Programmer/Programmer*, who is now a *Developer*.

## **2 re-incorporated job positions**

The tasks specific to the *Operator/Controller* are also the responsibility of the *Operator*, and have therefore been incorporated in the latter.

The profession of *Network Controller* has disappeared, and its tasks now belong to that of *Tools/Systems/Network and Telecoms Administrator*.

## 1 job position eliminated

The "job position" data sheet for *General Technologies Expert* from the "Support and internal technical support" category seemed inappropriate, and has been reworked into several new job positions, notably that of *Multimedia Expert*.

## 4 new job position forms have been added:

Four new data sheets have been incorporated into the present listing. They are mainly related to developments of electronic communication, multimedia and large enterprise software applications.

These professions are:

- Expert in Internet and Multimedia Technology;
- ERP Parameters Operator (integrated management application package);
- Information System Security Expert;
- Telecoms Manager.

Cigref's listing has no job position data sheet for *Webmaster*. As it happened, this position was found not to exist in most large corporations or is merged with that of Publications Manager, (usually an on-line editor). Publication Managers define and validate content and set up contacts with various corporate departments or subsidiaries to gather content to be published on websites.

In other companies, the *Webmaster* profession corresponds in fact to developments in several job positions (already present in the Cigref listing) and to their emerging relations with other technologies. The design, operation and organisation of websites or Intranets require a team of web or Intranet Project Managers, HTML Integrators (Application Integrators), Operations Integrators and Authors (not an IT profession).

Only the profiles and certain technological knowledge differ.

The new listing also emphasises the professional career path and growth trends and factors affecting the job position.

The skills level assessment has been simplified to make it easier to use.

As in the 1995 listing, competencies have been classified in three categories:

- technological expertise;

- general expertise;
- behavioural aptitude.

On the other hand, each category only covers essential competencies and useful competencies (for greater clarity, additional competencies are no longer stipulated).

The level required for each competence is also simplified:

- expertise;
- command;
- elementary knowledge (which groups together "practise" and "knowledge" in the 1995 version).



# **Consultancy positions in information systems and development**

## 1 - Information System and Development Consulting

# 1.1

## **Information Systems Consultant**

### **IT and Telecommunications Service Consultant**

### **Organiser/Research Manager in Organisation**

### **IT Research Manager**

### **Project Integrator**

### **Account Relationship Manager**

## **M I S S I O N**

S/he anticipates and brings to maturity new projects by raising awareness about how new technologies can help and by forecasting emerging business processes.

S/he helps development by specifying requirements and solutions to be implemented, focusing on improved integration into the company's information system.

## **A C T I V I T I E S   A N D   T A S K S**

<b>1) Consulting in organisation</b>	<b>2) Assistance with development</b>
<ul style="list-style-type: none"> <li>• Audit, research and consulting in company organisation</li> <li>• Business Process Reengineering consulting (BPR: recasting of professional processes)</li> <li>• Consulting services in optimising use of already installed tools and systems</li> <li>• Raising the General Management's awareness of new technologies and how information technology (IT) can help</li> <li>• Informing and raising end user awareness about ISD actions and how IT can help</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance with development of the IT service</li> <li>• Guidelines and recommendations for project / solution development and implementation</li> <li>• Definition of functional specifications</li> <li>• Drafting of specifications for project manager</li> <li>• Study of application and functional architecture and its development</li> <li>• Assessment and choice of software applications</li> </ul>
<b>3) Support for developer for accompanying change</b>	
<ul style="list-style-type: none"> <li>• Recommendations concerning management in connection with project support</li> <li>• Anticipation and management of impact on the work force</li> <li>• Design of the support plan</li> <li>• User support</li> <li>• Design and production of user documentation and training materials</li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Expertise</b>	<b>Essential</b>	C	IT and telecoms (ICT) general culture.
		C	Architectural and functional knowledge of the company's IS.
		E	Anticipation of IT developments and their impact on the company.
		E	View and understanding of recent technologies.
		C	Knowledge of the ICT supply market.
		K	Development methods, standards and tools.
	<b>Useful</b>	C	Application design, modelling and architecture.
		C	Assessment and control of ICT risks.
		K	Integration of hardware, software and systems.
		K	Network software and hardware.
		K	Knowledge of the user's workstation.
K		Operating environment.	
<b>General expertise</b>	<b>Essential</b>	C	Knowledge of ISD customers, their activities and needs.
		C	Understanding of the company's environment and operation.
		K	Training.
		C	Authoring skills.
		C	Design of organisational solutions.
	<b>Useful</b>	K	Man-machine ergonomics and interfaces.
		C	Organisational techniques.
		C	Auditing techniques and procedures.
		C	Techniques for project management.
		C	Grasp of the organisational impact of a project.
		C	Fluency in English.
		C	General legal abilities (commercial, employment, fiscal, etc.).
		C	Experience of communication techniques and running meetings.
		K	Use of training methods and media.
		C	Project support engineering.
C	Negotiation skills.		
<b>Behavioural Abilities</b>	<b>Essential</b>		Open-minded and pragmatic.
			Rigour, sense of method.
			Intellectual integrity.
			Ease and speed of adaptation.
	<b>Useful</b>		Capacity to communicate, listen and express oneself.
			Interpersonal skills and relationship building.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs. (engineer).

**Experience:** Over 10 years.  
Varied experience.

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**D E V E L O P M E N T A L T R E N D S A N D F A C T O R S**

A profession at the intersection of general development and project management, tending to attract professionals with twin competencies (core business area and IT) and capable of responding to the rapid developmental requirements of information systems.

## 1- Information System and Development Consulting

## 1.2

### **Information Systems Architect**

*Functional architect*  
*Applications Architect*

#### MISSION

S/he guarantees consistent development of the entire information system with respect to the company's goals, the functional area etc., and to the external and internal constraints (risks, costs, deadlines, etc.), by making the best possible use on the latest advances in technical architecture.

#### ACTIVITIES AND TASKS

=	<b>1) Design of the information system</b>	=	<b>2) Guarantee of consistency of the IS</b>
	<ul style="list-style-type: none"> <li>• Construction and development of a 'map' of the information system or sub-unit of the information system for which s/he is responsible</li> <li>• Definition of standards</li> <li>• Propose scenarios for the development of the information system, taking account of factors likely to have an impact on the information system (management decision, supply-side/ organisational/ quantitative developments etc.), and factoring them into the map so that ensures permanent integrity with regard to the master plan</li> </ul>		<ul style="list-style-type: none"> <li>• Assessment of the relevance and consistency of projects with respect to the target architecture and existing systems (particularly feasibility studies, definition of requirements, choice of architecture for the functional system)</li> </ul>
<b>➤</b>	<b>3) Communication</b>		
	<ul style="list-style-type: none"> <li>• Promotion (consulting, communication) of the map of the information system</li> <li>• Work in close and permanent collaboration with managers in the field of functional and technical architecture</li> </ul>		

## A P P L I E D   K N O W L E D G E

<b>Technological Expertise</b>	<b>Essential</b>	E	Architectural and functional knowledge of the company's information system.
		E	Architecture development methodology.
	<b>Useful</b>	K	Management of IT and telecommunications risks.
		K	Development methods, standards and tools.
<b>General Knowledge</b>	<b>Essential</b>	E	Understanding of the company's information systems strategy (choices, priorities, etc.).
		C	Knowledge of the company (processes, environment, organisation and strategy).
		C	Scenario development and project management.
	<b>Useful</b>	K	Legal competencies.
<b>Behavioural Abilities</b>	<b>Essential</b>		Intellectual curiosity (technology watch).
			Capacity to communicate, listen, express oneself and dialogue.
			Capacity to negotiate and convince.
			Strategic and political sense.
			Ability to resist external pressures.
			Reflection (capacity for analysis and synthesis).
			Open-minded.
	<b>Useful</b>		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs. Engineer from design sector.

**Experience:** Minimum 10 years.  
In fields of project management and the successful introduction of systems in several functional fields.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

- Increased complexity and speed of development of systems both technically and functionally.
- Need to integrate outside elements into the information system (application packages, convergence platforms, etc.).
- Need to integrate increasingly interdependent elements in the information system.
- Need to control the risk of loss of information system integrity in a context of accelerating developments (technical, competitive, organisational, etc.).
- Permanently adapting to rapid changes in the legal and functional framework.

# 1.3

## **Development Project Manager**

### **User Project Manager**

### **Project Leader**

### **Strategic Guide**

#### **M I S S I O N**

S/he is basically responsible for delivering optimum results at the end of the project, in line with the specifications drawn up by (or for) the partner in terms of quality, performance specifications, costs and deadlines.

#### **A C T I V I T I E S   A N D   T A S K S**

Specifying, organising and planning the project, from design to launch, using project management skills (the project may be unitary or multiple, depending on whether it can be sub-divided into design, realisation, maintenance and support, etc).

<b>1) Responsibility for the project's functional content</b>	<b>2) Preparation and deployment of the project, and implementation of users' accompanying actions</b>
<ul style="list-style-type: none"> <li>• Definition of business area requirements and drawing up detailed functional specifications (Clarification about initial goals and requirements. Consult with those requesting goals and requirements where applicable)</li> <li>• Very precise drafting of specifications</li> <li>• Choice of application software, in liaison with project manager</li> <li>• Forecast of resources to be implemented (human, technical, financial, etc.)</li> <li>• Definition and supervision of functional prototyping and testing</li> <li>• Functional approval</li> </ul>	<ul style="list-style-type: none"> <li>• Definition of target users</li> <li>• Definition as early as possible of the methods for training users</li> <li>• Implementation of user training and of support, according to their needs</li> <li>• Definition of support service for users</li> <li>• Definition of methods for processing upgrade requests</li> </ul>
<b>3) Project management</b>	<b>4) Guarantee of optimum balance between quality, cost and deadlines</b>

<p>Organisation, coordination and leadership of the project's development team</p> <ul style="list-style-type: none"><li>• Arbitration of possible disagreements between the team and other players</li><li>• Supervision of project over time</li><li>• Coordination and synthesis of validations, and quality assurance of validation made</li><li>• Circulation and distribution of information on the project development side</li><li>• Responsibility for all events arising in the project</li></ul>	<p>Approval of results and assessment of conformity to the system's specifications</p> <ul style="list-style-type: none"><li>• Respect for deadlines</li><li>• Respect for costs</li><li>• Make proposals to the partner during the course of the project, for possible changes in goals (quality, costs, deadline) relating to pressures on delivery or changes in the environment</li><li>• Definition and management of the project's progress</li><li>• Arbitration of choices to be made on the basis of risks and results</li><li>• Setting up all indicators required to monitor and manage the project, especially for the evaluation of performance, costs and deadlines</li></ul>
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## A P P L I E D   K N O W L E D G E

<i>Technological Knowledge</i>	<b>Essential</b>		
	<b>Useful</b>		
<b>General Knowledge</b>	<b>Essential</b>	E	Familiarity with the functional field.
		E	Knowing how to express clearly the requester's requirements, and translate them into precise, useable requirements.
		E	Familiarity with the goals of the project and having a global vision of them.
		C	Good knowledge of the company (operation, history, etc.) and its context (products, markets, pressures, etc.).
		C	Project management methods.
		C	Skills in negotiating and getting actions accepted.
		C	Capacity for establishing methods for the integrated control of costs and deadlines, and knowing how to assess performance.
		C	Capacity for establishing project tracking indicators.
	<b>Useful</b>	C	Conflict management skills.
		K	Capacity for managing change usually due to external pressures.
		K	Familiarity with the principles of value analysis.
	<b>Behavioural Abilities</b>	<b>Essential</b>	
			Capacity for holding strong opinions when required.
			Capacity for perceiving the political interests of each player.
			Capacity for involving those with specific requirements in choices, and bringing them into play.
<b>Useful</b>			Determination and capacity to channel all action towards the result.
			Capacity for overcoming setbacks and disappointments.

K = Elementary knowledge   C = Command   E = Expertise

## C A R E E R   P A T H

### Educational profile:

High school leaving diploma + 5yrs (engineer).

Development project managers are professionals who represents the users of the information system, and carry out a responsible activity in the heart of the company. However, depending on the situation, project managers can also come from a project development support structure in an operational department, and belong as such to the information systems department.

They are not usually information processing specialists, but they must be capable of managing an IT project. In other words, project management competence cannot be improvised - it usually results from a given career path.

When the project is large-scale and requires real project guidance mechanisms, the project manager will report to the project's business area manager.

The user project manager must work right from the start of the project in close collaboration with his/her project management counterpart - the IT project manager. This form of twinned work is absolutely essential.

### Experience:

Minimum 3 to 5 years, on the understanding that large project type development will require prior experience on smaller scale projects.

When entrusted to an experienced manager, this position can lead to more important positions such as that of project director.

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## **DEVELOPMENTAL TRENDS AND FACTORS**

By distributing the project mode throughout the organisation, companies tend to identify the relations between development projects and project management much more closely, and also to specify the matrix-based operations that enable the project to draw on different internal resources.

## 1- Information System and Development Consulting

## 1.4

### **Business Line IS Manager**

#### **Business Field Manager**

### MISSION

S/he guides the business line information system so that it is aligned with strategic orientations and profession processes, by offering scenarios for upgrading the information system in tandem with the defined goals and processes, and by ensuring that the business area's IS is globally and dynamically consistent, relevant and performing correctly.

### ACTIVITIES AND TASKS

<b>1) Strategic guidance</b>	<b>2) IS administration</b>
<ul style="list-style-type: none"> <li>• Contribution to optimising business line processes, data, applications and associated systems (detection of opportunities, etc.). Performance guidance (especially economic)</li> <li>• Promotion (consulting, communication) of the information system 'map' as a tool to help with decision-making and guide performance</li> <li>• Anticipation of changes and their impact</li> </ul>	<ul style="list-style-type: none"> <li>• Formalisation, consolidation and development of the general 'map' of the information system:               <ul style="list-style-type: none"> <li>- functional models of the business process;</li> <li>- architecture of the business area processes;</li> <li>- reference systems containing basic and common information of the business area;</li> <li>- functional architecture of the IS (existing/target)</li> </ul> </li> <li>• Administration of the information system (reference systems, rules, approaches, methodologies, business area objects, techniques, tools)</li> </ul>
<b>3) Quality and project management</b>	
<ul style="list-style-type: none"> <li>• Assessment of per-unit and global consistency (portfolio) of the projects with respect to the information system (existing/target)</li> <li>• Consolidation of discrepancies in terms of deadlines, costs and quality</li> <li>• Capitalising on all knowledge relevant to the business area's information system and the management of the assets that it represents:               <ul style="list-style-type: none"> <li>- Quality of project management</li> <li>- Competency mapping</li> </ul> </li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Management of IS in terms of consistency and development in relation to the business area strategies and processes.
		C	Command of the various working methods and techniques relating to the activity, and in particular: supervision and assessment of IS investment projects, re-engineering, modelling, capitalising on knowledge and innovation.
		C	Conceptualisation and modelling of the IS.
		C	Assessment and control of IT and telecoms risks.
	<b>Useful</b>	C	Production of various devices, methods and instruments required to make it function and also for other guidance functions (e.g.: indicator control panels).
		K	Development methods, standards and tools..
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the corporate IS strategy.
		C	Familiarity with the company (activities and professions).
		C	Project management techniques.
		C	Organisation techniques and a vision of the organisational impact of a project.
		C	Quality techniques.
		C	Interview and group management techniques.
		C	Conflict management techniques.
	<b>Useful</b>	C	Fluency in English.
		K	Economic and financial management applied to IT.
		K	Law and regulation of IT and telecoms.
<b>Behavioural Abilities</b>	<b>Essential</b>		Capacity to communicate, listen and express oneself.
			Capacity to negotiate and convince.
			Training and consulting.
			High capacity for abstraction and synthesis.
			Open-minded and pragmatic.
			Interpersonal skills and relationship building.
			Independence and self-confidence.
	<b>Useful</b>		

K = Elementary knowledge   C = Command   E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs IT or Management studies.

**Experience:** Senior executive with a minimum of 10 to 15 years' experience in one or more of the company's business areas, having followed IT projects either in development (development project manager), or in project management (project manager), with the dual functional and IT competencies required for mastery of their field.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

- Increased complexity and speed of development of systems both technically and functionally.
- Need to incorporate outside elements in the IS (application software packages, convergence platforms, etc.), and increasingly inter-dependent elements.
- Attempt to improve the quality of relations between development projects and project management.

# 1.5

## **Applications Manager**

**General Systems Controller**  
**Process/Products Manager**  
**Information System Manager**  
**Applications Controller**

### **M I S S I O N**

The goal of the applications manager is to improve performance, contribute to operations and participate in managing and developing the business area information system to ensure consistency with directions, operational modes and processes defined in by the business area.

### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Designing upgrades to the information system</b>	<b>2) Implementation of the information system</b>
<ul style="list-style-type: none"> <li>• Representing developers during system lifetime</li> <li>• Participating in devising rules for the operations and use of the information system</li> <li>• Participating in the construction and use of the IS and its upgrades (proposals for improvements, management of ideas and proposals, participation in projects for adapting and upgrading the IS, participation in operational approvals)</li> </ul>	<ul style="list-style-type: none"> <li>• Day-to-day management actions and processes for the existing information system in all its dimensions (support, incident management, quality of service, contracts, satisfaction, training, etc.)</li> <li>• Active participation in developing the use of the information system</li> <li>• Contribution to upgrading the processes and the information system consistently with the business area strategy and as needs are expressed, paying attention to the usability of the future system in every aspect (approval conditions, acceptance, costs, performance, ergonomics, functional consistency)</li> </ul>
<b>3) Quality of IS (performance, consistency, costs, deadlines, etc.)</b>	
<ul style="list-style-type: none"> <li>• Co-ordination and organisation of network of operation players</li> <li>• Maintenance of overall operational quality and performance of the business area information system by means of appropriate actions (or applications for which it is responsible)</li> <li>• Respect for the rules for operating and using the IS in conformity with standards and norms in the business area and the company, in agreement with service contracts</li> <li>• Documentation (framing memo, specifications, procedures guide, etc.)</li> <li>• Controlling the application of rules for operation and use</li> <li>• Participation in controlling IS operating costs</li> </ul>	

**A P P L I E D   K N O W L E D G E**

<b>Technological Knowledge</b>	<b>Essential</b>		
	<b>Useful</b>	C	Knowing how to monitor and analyse the performance of processes and the information system, and knowing how to set up procedures and measurements (measurement methods, indicator control panel, etc.) to improve the operational quality of the information system.
		C	Familiarity with the principles of information system security.
		K	Familiarity with principles of information system management and operation.
		K	Knowing how to implement statistical reasoning.
K	Familiarity with production management principles.		
<b>General Knowledge</b>	<b>Essential</b>	C	Knowing how to devise and draw up effective rules and procedures for operating and using the information system.
		C	Knowing how to draw up a situation diagnosis.
		C	Knowing how to organise user support.
		C	Paying close attention to wishes and observations from the customers and users of the various applications.
		C	Being a constant driving element behind use of the information system.
		C	Knowing how to co-ordinate and organise a network of functional and operational application correspondents.
		C	Familiarity with the activities and needs of customers and users of the information system.
		C	Familiarity with the environment and operation of the business area and company.
		C	Familiarity with processes and applications in position.
	<b>Useful</b>	E	Knowing how to devise typologies of problems (a capacity to make diagnoses) in a specific field, and being capable of managing multiple demands (synthesis, prioritisation, planning).
		K	Knowing how to supervise the implementation of processes, services and applications (roll-out, training, schedule tracking, etc.).
		K	Familiarity with the principles of economic management and financial techniques applied to the information system.
	<b>Behavioural Abilities</b>	<b>Essential</b>	
			Develop a service mindset.
			Interpersonal skills and sense of relationship building.
			Capacity to communicate, listen and express oneself.
			Receptive.
		Able to make forceful proposals.	
<b>Useful</b>		Knowing how to negotiate with suppliers and partners.	

K = Elementary knowledge C = Command E = Expertise

**C A R E E R   P A T H**

**Educational profile:** High school leaving diploma + 3 or High school leaving diploma + 4.

**Experience:** Functional and operational experience of the business area and sector of activity.  
Experience in IS and project management.

It is not easy to position the applications manager with respect to the business area's information system manager. Articulating the two roles consistently fundamentally depends on the choice of organisation (does the company wish to stress innovative projects, overall consistency, or operational control?) and probably also on the life cycle phase of the information system in which the company is positioned: is it in a maturity phase of maintaining the information system in position, or is it in a phase of major re-engineering or even of designing a new information system?

## **D E V E L O P M E N T A L T R E N D S A N D F A C T O R S**

As has previously been emphasised, in a growing number of projects the quality of going on-stream, which marks the end of the project phase and the start of system operations, together with intelligent and optimum use of the existing systems by individuals and especially groups, will condition the overall success of the project.

This was much less true with previous technologies, when most of the company's efforts went into system design and development, and when there was only a minor degree of user independence (highly controlled work context).

Similarly to what happens in other sectors of activity, added value is moving increasingly up downstream the source ("production") into the development chain, i.e. customer service and usage patterns.

1- Information System and Development Consulting

## 1.6

### **Business Line Project Manager**

#### *Project Director*

#### **MISSION**

Business-area project managers are fundamentally responsible for every dimension of the project (strategic, commercial, financial, human, legal, organisational, technical, etc.).

They control the entire project in all its complexity (various parties, often differing interests, etc.).

They are guarantee the project's strategic value for the business area, company and third parties.

#### **A C T I V I T I E S   A N D   T A S K S**

<b>1)Project supervision</b>	<b>2) Communication/Organisation</b>
<ul style="list-style-type: none"> <li>• Ensure the relevance and appropriateness of project development</li> <li>• Responsibility throughout the project for all major decisions</li> <li>• Definitive project approval</li> </ul>	<ul style="list-style-type: none"> <li>• Source of every action to bring the project to a satisfactory conclusion</li> <li>• Communication about the project and organisation of people and various authorities involved</li> <li>• Preparation and steerage of change management</li> </ul>
<b>3) Management of resources</b>	
<ul style="list-style-type: none"> <li>• Every aspect of conduct, optimisation and responsibility (human, budget, customers, final decision)</li> <li>• Financial management of the project and all its requirements (quality, costs, deadlines, etc.)</li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	K	Sufficient knowledge of the information systems field to arbitrate all necessary choices.
	<b>Useful</b>		
<b>General Knowledge</b>	<b>Essential</b>	E	Familiarity with the professional environment.
		E	Anticipating environmental developments and competitor moves.
		E	Rapidly identifying opportunities, assets, etc.
		C	Principles of project supervision.
		C	Capacity to make judicious compromises rapidly (notably in cross-business area contexts).
	<b>Useful</b>	C	Negotiation methods.
		C	Team management.
<b>Behavioural Abilities</b>	<b>Essential</b>		Capacity for negotiation and persuasion.
			Leadership qualities for organising the project team.
			Ease and speed of adaptation.
			Stress management (physical and psychological).
			Capacity for mobilising broad and varied formal and information networks guaranteeing recognition and spreading the project's possibilities for action.
	<b>Useful</b>		Rapid and effective decision-maker.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 4yrs or high school leaving diploma + 5yrs. Must also have initial advanced training (manager or engineer). For very large projects, managerial level is required.

A business-area project manager who is ideally suited to the position must initially be a creative and determined strategist (first phase of creativity), but in a few months they must be capable of changing into a realistic, careful manager (project locking phase), and then into an fast-moving fireman (implementation phase). These phases of the project require an adaptive capacity which is found relatively rarely in a single individual.

The business-area project manager has responsibility for conducting all the operations required for researching, developing and realising a major project for the given business area. They must therefore assume complete responsibility for "project direction" for reaching the strategic, commercial, financial, organisational or other goal set by the business area, rather than "project management" proper, which is the responsibility of the project manager.

They also ensure the overall identity of the project (unlike other players who are concerned only with a particular aspect) and steer its gradual convergence towards the end result.

This is because, over and above developing an information system for the business area, the project's business area manager may have responsibility for the marketing, commercial, economic, organisational, legal and human aspects of the project and its operation.

**Experience:** Over 7 years as a manager and in conducting operational projects.

## **D E V E L O P M E N T A L T R E N D S A N D F A C T O R S**

Two developmental trends should be mentioned:

- firstly, "information system" projects are becoming increasingly important in terms of resources, investments, organisations involved, complexity and geographical scope;
- secondly, for the same reason, there are far fewer "IT" projects as such. They tend to be corporate projects relating to the re-engineering of internal processes, the development of new products, the reorganisation of management networks, the knowledge and retention of customers, or the reorganisation of supply chains.

This position may be the crowning achievement of a career or a stepping stone to a higher position in the company. Project management is increasingly regarded by companies as a high-level managerial competency, and this rare and sought-after competency may therefore form part of a carefully orchestrated career path.

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## **User support and assistance job positions**



2- Support and assistance to users

**2.1a**  
**Functional Assistant**  
*Software Support Assistant*  
*Users' Correspondent*  
*IT Correspondent*  
*Field Analyst*

## MISSION

Functional assistants give end-users assistance in using applications both during the deployment period and when working at full speed, and contribute to handling incidents encountered by users.

They tend to be specialists in a profession or process, and assist and advise end-users in making the optimum use of their software tools.

They are at the point of intersection between IT and project development, and work close to users.

## ACTIVITIES AND TASKS

<b>1) During the installation of new applications (office or professional applications)</b>	<b>2) At "full speed"</b>
<ul style="list-style-type: none"> <li>• Assistance in defining and participating in training actions</li> <li>• User support</li> </ul>	<ul style="list-style-type: none"> <li>• Advice to users</li> <li>• Detecting users in difficulty</li> <li>• Inventory and impact of desired functional improvements</li> <li>• 1<sup>st</sup> level intervention when incidents occur, seeking necessary resources (internal or external)</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Use of major generic applications (office tools, messaging system, browser, etc.).
		C	Use of business area tools and familiarity with how these tools are used by users.
		C	General knowledge of the company's current strategic concerns and the relative importance of the various components of the IS.
	<b>Useful</b>	C	ICT culture.
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding users' expectations.
		C	Capacity for economic management of time devoted to each user.
		C	Training. Capacity to explain and express oneself.
		C	Service and customer-supplier relation mindset, sense of perception of client satisfaction.
	<b>Useful</b>		
<b>Behavioural Abilities</b>	<b>Essential</b>		Receptive, courtesy, ability to manage stressful situations.
			Familiarity with application support teams (publishers, internal developers, etc.).
			Familiarity with technical support teams and their action methods.
	<b>Useful</b>		

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## C A R E E R   P A T H

**Educational profile:** High school leaving diploma to high school leaving diploma + 2 yrs (depending on background, see below).

**Experience:** Two possible profiles (backgrounds): experienced user/user interested by IT technologies (high school leaving diploma) or developers wishing to distance themselves from these technologies (high school leaving diploma + 2).

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

Emergence of remote support techniques (telephone support, remote assistance, etc.) possibly leading to a change in the number (fewer?) and quality (more experienced?) of the profiles in question.

An often-existing or identified profession for business area applications, but often more informal for "office" applications.

2- Support and assistance for users

## **2.1b**

### **Helpdesk Support Technician**

**Clientele Support Assistant**  
**1<sup>st</sup> level Support Assistant**  
**Hotline Assistant**  
**Help Desk Analyst**

#### **M I S S I O N**

S/he is responsible for receiving incidents (interruptions to usually-delivered service) reported by users, and has them taken in hand by the resources capable of providing a solution.

They provide first level contributions to resolving incidents affecting service quality and continuity.

Unlike a functional assistant, they deal with all types of incidents and are not always directly available for users.

#### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Receives user requests following malfunctions</b>	<b>2) Registration of requests</b>
<ul style="list-style-type: none"> <li>• Handling of customers' calls</li> </ul>	<ul style="list-style-type: none"> <li>• Registration of operational incidents or anomalies signalled</li> </ul>
<b>3) Pre-qualification of malfunctions for orientation to ad hoc supports (technique, functional)</b>	<b>4) Processing or triggering of corresponding support actions</b>
<ul style="list-style-type: none"> <li>• Pre-diagnosis and transfer of client calls to competent units</li> </ul>	<ul style="list-style-type: none"> <li>• 1<sup>st</sup> level processing of incidents or anomalies in relation to workstations, signalled internally or by a helpdesk: diagnosis, identification, formulation, resolution</li> </ul>
<b>5) Incident follow-up</b>	<b>6) Information for customers</b>
<ul style="list-style-type: none"> <li>• Follow-up of customers' calls</li> <li>• Use of incidents database: reminders, consolidation, trend analysis</li> <li>• Requests for background preventive actions</li> </ul>	<ul style="list-style-type: none"> <li>• Alerting and informing customers</li> <li>• Circulation of information</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Use of users' IT workstation (its various existing configurations) and main office applications.
		C	Technical architecture of the company's IS (network, servers, etc.) and its current limits (transmission rates, loads, etc.).
		C	Functional architecture of the company's IS (applications, profession applications, etc.).
		C	Principles of IS security (and user charter).
	<b>Useful</b>	C	General ICT culture.
		K	General familiarity with the company's current strategic concerns and the relative importance of the various IS components.
<b>General Knowledge</b>	<b>Essential</b>	C	Service and sales relation mindset.
		C	Capacity to listen, understand quickly and reformulate the way malfunctions are expressed.
		C	Capacity for expression and explanation.
		C	Sense of perception of the level of client satisfaction.
		C	Good telephone manner.
	<b>Useful</b>		
<b>Behavioural Abilities</b>	<b>Essential</b>		Perfect familiarity with support teams, and their field (technical, functional, etc.) and their methods of action.
			Courtesy, ability to mollify requesters.
			Receptive, ability to handle emergencies and stressful situations.
	<b>Useful</b>		

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## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 2 yrs

**Experience:** Beginner.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

- Grouping of multi-applications helpdesk functions into a single number for any type of problem.
- Grouping of multi-service helpdesk functions (IT, real estate logistics, etc.).

1- Support and assistance for users

## 2.2

### **Internal Customer Manager**

**Technical Sales Person**  
**Business Engineer (ensuring quality of service to users)**  
**Account Manager**  
**Facilitator**  
**Internal Customer Manager**  
**Customer Service Manager**

#### MISSION

S/he organises contractual relations, representing the customer (department, development, user) *vis-à-vis* various sub-departments of the ISD and external service providers.

S/he groups together and organises relations between customers and the ISD, highlighting malfunctions involving these relations, and suggests improvements to information system players.

#### ACTIVITIES AND TASKS

➤ 1) Information for customers	➤ 2) Putting customers/suppliers on a contractual footing
<ul style="list-style-type: none"> <li>• Listening to customers, providing information and consulting on possible services and taking their requirements into account</li> <li>• Information for customers concerning training-related services and consulting</li> <li>• Raising user awareness about security problems (backups, viruses, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Devising and updating proposals for services, estimates (quality, deadline, cost), agreements or service contracts (service supplied, quality factors, ISD organisation, customer organisation and role)</li> <li>• Organisation and preparation of monthly operational reviews</li> <li>• Drafting assessments and reports on activities and services supplied to customers concerning contractual, economic and technical issues, and on image-related features</li> </ul>
➤ 3) Analysis and control of quality of service	➤ 4) Management of "customer problems"
<ul style="list-style-type: none"> <li>• Measurement of ISD service indicators/quality</li> <li>• Tracking customer satisfaction (ranking)</li> <li>• Request for actions for progress aimed at improving quality of services</li> <li>• Analysis of discrepancies in service undertakings (including costs and performance specifications)</li> </ul>	<ul style="list-style-type: none"> <li>• Handling "customer problems" until solved</li> <li>• Intervention by skill centres concerned</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Familiarity with the architecture and operations underlying the company's IS strategy.
		C	Technical and functional familiarity with existing applications and services.
		C	Familiarity with user's workstation.
		C	Familiarity with the economic aspects of internal offerings and market.
		C	Assessment and control of ICT risks.
	<b>Useful</b>	K	General ICT culture.
		K	Competencies with respect to the various types of equipment.
		K	Procedures, norms and standards.
		K	Development methods and techniques.
		K	ICT security norms and procedures.
		K	Access rights to applications and services.
		K	Network techniques.
	<b>General Knowledge</b>	<b>Essential</b>	C
C			Familiarity with the ISD (organisation and resources).
C			Quality assurance techniques.
C			Knowledge for making sales bids (technical and contractual).
C			Use of negotiating methods.
C			Project management.
C			Authoring abilities.
C			Experience of communication techniques and media.
<b>Useful</b>		K	Group organisation, conflict management.
		K	Organisational techniques.
		K	Auditing techniques and procedures.
		K	English.
		K	ICT law and regulations.
<b>Behavioural Abilities</b>	<b>Essential</b>		Capacities for negotiation and persuasion.
			Interpersonal skills and sense of relationship building.
			Capacity to communicate, listen and express oneself.
			Rigour, sense of method and integrity.
	<b>Useful</b>		Capacity for working in a team and a network.
			Receptive.
			Ease and speed of adaptation.
		Open-minded, pragmatic.	

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## C A R E E R   P A T H

**Educational profile:** General skills.

**Experience:** At least 10 years' experience in the IT field and good knowledge of functional fields.  
Successful experience of IT project management.  
Interesting career development for IT professionals wishing to leave the purely technical field.

## **DEVELOPMENTAL TRENDS AND FACTORS**

A job function undergoing strong growth due to:

- the increasing technical complexity and diversification of IT products and services;
- client desire to control costs, deadlines and the quality of IT projects.



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# **Production and operation jobs**



## 2- Production – operation

### 3.1

## Operator

*IT Operator  
Operator/Controller  
Operations Agent  
Media Manager*

### MISSION

Operators provide day-to-day management of operations according to schedules and expected quality. They supervise the operation of the physical and logical IT facilities of the production centre, in connection with standards, operational methods and security.

### ACTIVITIES AND TASKS

	<b>1) Operation</b>		<b>2) Incident and security management</b>
↗	<ul style="list-style-type: none"> <li>• Execution of IT work and recovery of production results, in line with schedules and expected quality</li> <li>• Modelling work</li> <li>• Supervision of printing</li> <li>• Monitoring of site resource operations</li> <li>• Operational monitoring of production systems and tools</li> <li>• Operational monitoring of applications</li> <li>• Management control of quality of results</li> </ul>		<ul style="list-style-type: none"> <li>• Management of operational incidents (diagnosis, intervention, alert)</li> <li>• Maintenance of application in 1<sup>st</sup> level problem solving</li> <li>• Information on users</li> <li>• Intervention tracking</li> <li>• Contribution to the physical security of the IT site</li> </ul>
	<b>3) Maintenance of general production conditions</b>		
	<ul style="list-style-type: none"> <li>• Management of paper stocks</li> <li>• Management of magnetic media (discs, robots, automatic controllers)</li> <li>• Security of data (backup, archiving) and magnetic media</li> </ul>		

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Operating procedures, norms and standards.
		C	Competencies for different types of hardware and software.
		C	Technical and functional familiarity with existing applications and services.
		C	Familiarity with production systems and tools.
		K	ICT security standards and procedures.
	<b>Useful</b>	C	Familiarity with user's workstation.
		K	Connection facilities.
		K	Familiarity with the company and its IT.
		K	General ICT culture.
<b>General Knowledge</b>	<b>Essential</b>	E	Capacity for reporting.
		C	Physical security.
		K	Familiarity with ISD client activities and requirements.
	<b>Useful</b>	K	Understanding of the company's environment and operation.
<b>Behavioural Abilities</b>	<b>Essential</b>		Open-minded and pragmatic.
			Ease and speed of adaptation to technical developments.
			Receptive.
			Reactivity.
			Service mindset.
	<b>Useful</b>		Rigour, sense of method.
			Capacity to communicate, listen and express oneself.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma with IT option.  
High school leaving diploma + 2 yrs

**Experience:** Beginner.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

There are fewer and fewer people in this profession due to the trend towards grouping servers and cutting down on operations centres.

## 3- Production – operation

## 3.3a

### **Desktop Technician**

#### **PC Technician**

### MISSION

In the context of deployment projects, s/he handles the installation and ensures the operation of IT and telephone facilities (hardware and software). When requested by users, s/he provides maintenance (remote or on-site) of these facilities and processes incidents.

### ACTIVITIES AND TASKS

	<b>1) Installation, testing and approval</b>		<b>2) Maintenance, administration and security</b>
=	<ul style="list-style-type: none"> <li>• Initial installation of IT and telephone equipment (applications, PC hardware, telephony equipment and accessories)</li> </ul>	↗	<ul style="list-style-type: none"> <li>• Detection and limitation of viruses</li> </ul>
=	<ul style="list-style-type: none"> <li>• Installation of updates</li> </ul>	=	<ul style="list-style-type: none"> <li>• Tracking equipment developments</li> </ul>
↗	<ul style="list-style-type: none"> <li>• Remote distribution of applications according to a deployment plan</li> </ul>	↗	<ul style="list-style-type: none"> <li>• Administration of the messaging system (connection, operation, billing)</li> </ul>
=	<ul style="list-style-type: none"> <li>• User testing and approval of IT and telephone equipment</li> </ul>	↗	<ul style="list-style-type: none"> <li>• Definition of remote distribution data (targets, profiles, dependencies, etc.) and remote maintenance</li> </ul>
		=	<ul style="list-style-type: none"> <li>• Checking equipment for conformity with reference systems</li> </ul>
		↗	<ul style="list-style-type: none"> <li>• Operation and administration of the telephone network, voice messaging and video-transmission, etc.</li> </ul>
		=	<ul style="list-style-type: none"> <li>• Tracking and managing stocks of supplies for telephone (telephone sets, <i>Minitel</i> cards, etc.)</li> </ul>
	<b>3) Operations</b>		<b>4) Support</b>
↗	<ul style="list-style-type: none"> <li>• Processing of remote incidents on PCs, networks, messaging system and telephony</li> </ul>	=	<ul style="list-style-type: none"> <li>• Assistance with management of installed facilities and applications</li> </ul>
↘	<ul style="list-style-type: none"> <li>• Operational management in relation to incidents</li> </ul>		
↘	<ul style="list-style-type: none"> <li>• Diagnosis and processing of incidents</li> </ul>		
=	<ul style="list-style-type: none"> <li>• Management of network-connected IT resources</li> </ul>		

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Technical and functional familiarity with existing applications and services.
		C	ICT security standards and procedures.
		C	Hardware competencies.
		C	Technical expertise and familiarity with applications.
	<b>Useful</b>	C	Familiarity with the user's workstation.
		C	Optimisation of ICT resources.
		C	Network software and hardware.
		C	Connection facilities.
		K	Development methods, standards and tools.
		K	Familiarity with the company and its IT.
		K	Integration of hardware, software and systems.
		K	General ICT culture.
	<b>General Knowledge</b>	<b>Essential</b>	C
C			Understanding of the company's environment and operation.
C			Training.
<b>Useful</b>		C	Ergonomics and man-machine interfaces.
		C	Understanding of organisational solutions.
		C	Management of hardware stocks and supply.
		C	Use of English.
		K	Project management techniques.
<b>Behavioural Abilities</b>	<b>Essential</b>		Open-minded and pragmatic.
			Ease and speed of adaptation.
			Capacity to communicate, listen and express oneself.
	<b>Useful</b>		Rigour, sense of method and integrity.
			Capacities for negotiation and persuasion.
			Acute concern for cost-effectiveness.
			Receptive.

K = Elementary knowledge   C = Command   E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school 'vocational' leaving diploma, or high school leaving diploma + 2 yrs technical.

**Experience:** First position or step up for operators.

## **D E V E L O P M E N T A L T R E N D S A N D F A C T O R S**

The industrialisation of maintenance has led to the creation of call centres where the technician's task may be to carry out a diagnosis, provide first level support and possibly escalate to second level or involve an on-site intervention.

The profession of technician will also change, due to the introduction of new facilities, the growing complexity of installations, procedures and tests, and also because of new causes of incidents (interconnections, increasing numbers of peripherals, etc.).

3- Production – operation

## 3.3b

### **Networks / Telecoms Technician**

#### **Telecommunications Technician**

#### **Network maintenance Technician**

#### **Network & Telecommunications Technician**

### **M I S S I O N**

Networks/Telecoms Technicians guarantee the satisfactory operation and availability of the network or telecoms facilities they are responsible for.

They prevent networks or telecoms malfunctions and help make the information system operate correctly.

### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Installation and testing</b>	<b>2) Administration and security</b>
<ul style="list-style-type: none"> <li>= • Installation of the active part of connection facilities (hubs, bridges and routers), IT equipment (connected stations and servers) and network applications</li> <li>= • Respect procedures for hardware and software installation, connection, etc.</li> <li>= • Installation of updates</li> <li>= • Test of network equipment</li> </ul>	<ul style="list-style-type: none"> <li>➤ • Establishment of tools for security, backup and measurement</li> <li>➤ • Control of user respect for security of access to technical premises and signalling of anomalies</li> <li>➤ • Management and maintenance of technical infrastructure (routers, hubs, concentrators, wiring, etc.) for servers and mainframes.</li> <li>= • Tracking equipment developments</li> <li>➤ • Administration of messaging systems (connection, operation, invoicing)</li> <li>➤ • Operation and administration of the telephone network, voice messaging and video-transmission services, etc.</li> <li>= • Checking equipment conformity with reference systems</li> <li>➤ • Participation in studies for optimising the telecommunication network</li> </ul>
<b>3) Operations</b>	<b>4) Support</b>
<ul style="list-style-type: none"> <li>= • Creation of resources and user accounts</li> <li>➤ • Management of operation in case of incidents</li> <li>➤ • Processing of incidents on IT or telephone networks</li> <li>= • Monitoring of resources (hubs, network printers, servers, connected workstations, etc.)</li> <li>= • User support and advice.</li> </ul>	<ul style="list-style-type: none"> <li>= • Assessment of degree of intervention to determine resources required</li> <li>= • Participation in organisation of general maintenance and support systems</li> <li>= • User support and advice</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Connection facilities.
		C	ICT security standards and procedures.
		C	Competencies relative to the various items of equipment.
		C	Network software and hardware.
		C	Technical expertise.
		C	Techniques for physical installation of active networks and telecommunications elements.
		C	Development methods, standards and tools.
		C	Communication protocols.
	<b>Useful</b>	E	Technical and functional familiarity with existing applications and services.
		C	Familiarity with the user's workstation.
		C	Optimisation of ICT resources.
		K	Familiarity with the company and its IT.
		K	Integration of hardware, software and systems.
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the company's environment and operation.
		C	Familiarity with ISD customer activities and needs.
		K	Physical security.
		K	Training.
	<b>Useful</b>	C	Understanding of organisational solutions.
		C	Management of equipment stocks and supply.
		C	Ergonomics and man-machine interfaces.
		C	Use of English.
		K	Project management techniques.
<b>Behavioural Abilities</b>	<b>Essential</b>		Open-minded and pragmatic.
			Ease and speed of adaptation.
	<b>Useful</b>		Rigour, sense of method and integrity.
			Capacity to communicate, listen and express oneself.
			Capacities for negotiation and persuasion.
			Acute concern for cost-effectiveness.
			Interpersonal skills and sense of relationship building.

K = Elementary knowledge C = Command E =Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving 'vocational' diploma or high school leaving diploma + 2 yrs technical.

**Experience:** First position or step-up for operators.

## **DEVELOPMENTAL TRENDS AND FACTORS**

The industrialisation of maintenance has led to the creation of call centres where the technician's task may be to carry out a diagnosis, provide first level support and possibly escalate to second level or involve an on-site intervention.

The profession of technician will also change, due to the introduction of new facilities, the growing complexity of installations, procedures and tests, and also because of new causes of incidents (interconnections, increasing numbers of peripherals, etc.).

## 3- Production – Operation

## 3.4 Systems Analyst

### MISSION

S/he installs and ramps up an operating system, sub-system or production tool for production and maintains it and ensures availability and security.

### ACTIVITIES AND TASKS

	<b>1) Management of an operations project</b>		<b>2) Installation and establishment of an operating system</b>
↘	• Consulting and technical support for production units	↘	• Installation of basic hardware and software
=	• Management of a project for setting up an operation (operations engineering)	=	• Connection and testing of operating hardware and software
↗	• Integration of hardware, software and systems	=	• Drafting and updating of operating procedures and instructions and documentation
	<b>3) Maintenance and security</b>		
↗	• Access management (in general)		
↘	• Management of upgrades and maintenance of hardware, applications and system		
↗	• Management of performance specifications (alert thresholds) and fine-tuning resources and products in the application field		

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Operating procedures, norms and standards.
		C	ICT security standards and procedures.
		C	Familiarity with operating systems.
		C	Production management.
		C	Technical and functional familiarity with existing applications and services.
		C	Assessment and control of ICT risks.
		C	Integration of hardware, software and systems.
	<b>Useful</b>	C	Exchange and communication of computerised data.
		C	Development environments.
		C	Network environments.
		C	Analysis of performance and measurement techniques of IT systems.
		K	Databank products and services.
<b>General Knowledge</b>	<b>Essential</b>	C	Familiarity with ISD customer activities and needs.
		C	Physical and industrial security.
	<b>Useful</b>	C	Ergonomics and man-machine interfaces.
		C	Understanding of the company's environment and operation.
		K	Costs of products and services.
		K	English.
		K	Project management.
		K	Quality approach.
		<b>Behavioural Abilities</b>	<b>Essential</b>
	Ease and speed of adaptation.		
	Reactivity.		
	Receptive.		
<b>Useful</b>			Open-minded.
			Training.
		Capacity to work in a team.	

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 2 yrs technical.

**Experience:** 3 to 5 years (operations, development support).

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The explosion of new technologies helps explain the need to upgrade the technical knowledge of application deployment managers.

## 3- Production – operation

## 3.5a

### **Tools/Systems/Networks and Telecoms Administrator**

**Groupware Administrator**  
**LAN Administrator**  
**Voice Communications Administrator**  
**E-mail Administrator**  
**EDI Administrator**

#### MISSION

S/he manages and operates the IT resources of one or more IT sites.

S/he helps in effective information system operations by ensuring that the various system application and communication infrastructure tools are properly maintained (local, extended, voice, image, centralised or client-server architecture), in line with quality, productivity and security goals.

#### ACTIVITIES AND TASKS

	<b>1) Administration</b>		<b>2) Support</b>
<ul style="list-style-type: none"> <li>= • Optimum operation of tools, systems or networks under their responsibility</li> <li>= • Use of tools guaranteeing data consistency</li> <li>= • Overall, up-to-date view of information systems and familiarity with the company</li> <li>= • Permanent inventory and management of the various network components</li> <li>↗ • Tracking and analysis of performance, establishment of measures for improving system quality and productivity</li> <li>= • Devising rules for using the system, in accordance with company norms and standards, and respecting service contracts</li> <li>Documentation, promotion and control of their application</li> <li>= • Organisation and optimisation of resources in his/her field</li> <li>↗ • Update of weekly reference systems (equipment, configuration of associated hardware and software)</li> </ul>		<ul style="list-style-type: none"> <li>= • Participation in corrective maintenance actions, and overseeing action quality</li> <li>↗ • Proposal for improvements to optimise existing resources and organisation</li> <li>↘ • Transfer of competencies and technical support with procedures for operational teams and where appropriate participation in their training</li> </ul>	
	<b>3) Operation</b>		<b>4) Research</b>
<ul style="list-style-type: none"> <li>= • Validation of the installation and of integration of new tools (or systems, or networks and telecoms) in the production environment</li> <li>• Management of profile-enabled access rights to servers and applications</li> <li>= • Processing of incidents or anomalies from internal requests: diagnosis of the incident, identification, formulation and resolution tracking</li> </ul>		<ul style="list-style-type: none"> <li>= • Research, recommendation and introduction of hardware, tools and suitable applications</li> <li>• Technological watch on the various aspects of the system and communication infrastructure (hardware, software, architecture, protocols, transfer methods)</li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Development and operating environments.
		C	Operating procedures, norms and standards.
		C	Techniques for installing and maintaining tools, systems and networks.
		C	ICT security standards and procedures.
		C	Network software and hardware.
	<b>Useful</b>	C	Operating systems.
		C	Communication protocols.
<b>General Knowledge</b>	<b>Essential</b>	C	Familiarity with ISD customer activities and needs.
		K	Sense of organisation and planning.
	<b>Useful</b>	K	Organisation of meetings.
		K	English.
<b>Behavioural Abilities</b>	<b>Essential</b>		Faculty for listening, communication and expression.
			Rigour, sense of method.
			Faculty for adaptation.
	<b>Useful</b>		Curiosity.
			Open-minded.
			Receptive.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 2 yrs

**Experience:** 3 to 5 years' experience in a production–operating or support environment.  
Possible step up for a technician.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The growing interconnection of platforms and the increasing numbers of system and network tools in the production environment mean more positions for administrators, who have different competencies to technicians or operations controllers.

## 3- Production – operation

## 3.5b Database Administrator

### MISSION

S/he manages and administers the company's data management systems, and guarantees their consistency, quality and security.

Participates in defining and using databases and application packages chosen by the company.

### ACTIVITIES AND TASKS

	<b>1) Administration</b>		<b>2) Support</b>
=	<ul style="list-style-type: none"> <li>• Participation in choice of databases (DBMS, RDBMS, etc.)</li> <li>• Creation of databases in liaison with the relevant specialist systems engineer and project manager</li> </ul>		<ul style="list-style-type: none"> <li>• Assistance to users (training, technical queries, etc.)</li> <li>• Second level technical support for all databases</li> </ul>
=	<ul style="list-style-type: none"> <li>• Use of database management applications and of management application packages; adaptation, administration and maintenance of these applications.</li> </ul>		<ul style="list-style-type: none"> <li>• Role of technical correspondent between project managers and technical support</li> </ul>
↗	<ul style="list-style-type: none"> <li>• Operation and management of data servers (administration, automation, development of procedures, security and access authorisation, optimisation of processes and queries, etc.)</li> </ul>		<ul style="list-style-type: none"> <li>• Management of performance and optimisation of resources</li> </ul>
=	<ul style="list-style-type: none"> <li>• Creation of special tools to assist operation at the demand of the application fields or operating environment,</li> </ul>		
=	<ul style="list-style-type: none"> <li>• Participation in sizing databases</li> </ul>		
	<b>3) Operation</b>		<b>4) Research and control</b>
↗	<ul style="list-style-type: none"> <li>• Ensuring the integrity of existing databases, guaranteeing physical security (backup procedures, restoration, log management, restart after incidents, etc.) and logical security (confidentiality, access)</li> </ul>	↗	<ul style="list-style-type: none"> <li>• Technological supervision of RDBMSs and application packages chosen by the company</li> </ul>
↗	<ul style="list-style-type: none"> <li>• Implementation of supervision tools</li> </ul>	=	<ul style="list-style-type: none"> <li>• Upgrades of versions of existing databases and application packages chosen by the company</li> </ul>
↗	<ul style="list-style-type: none"> <li>• Setting parameters for the optimum use of databases</li> </ul>	=	<ul style="list-style-type: none"> <li>• Technical testing and validation of all applications and application packages</li> </ul>
		=	<ul style="list-style-type: none"> <li>• Definition of norms and standards for use and operation of DBMS</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	DBMS.
		C	Data administration and management.
		C	Development environments.
		K	Familiarity with the standard operating system.
	<b>Useful</b>	K	Basic networks concepts.
		K	ICT culture.
<b>General Knowledge</b>	<b>Essential</b>	C	Familiarity with ISD customer activities and needs.
		C	Physical security.
		C	Sense of organisation and planning.
		C	Familiarity with IS.
	<b>Useful</b>	C	Authoring skills.
		K	Project management method.
<b>Behavioural Abilities</b>	<b>Essential</b>		Capacity for listening and communication.
			Rigour.
			Sense of method.
	<b>Useful</b>		Open-minded.
			Curiosity.
			Forward thinking.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** From high school leaving diploma + 2 yrs, to high school leaving diploma + 4 yrs.

Traditionally, database administrators not only have IT competencies but above all perfect knowledge of the company. Which is why this position tends to be filled via internal recruitment.

Implementation of RDBMSs, client-server architecture and the growing importance of data (Datawarehousing, datamining, etc.) are changing this position into that of database director. Candidates with advanced training (high school leaving diploma + 4 yrs) and at least 5 years' experience in development professions are therefore being sought.

**Experience:** Minimum 5 years in development.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The position of database administrator has become essential, even in light IT structures. The widespread use of DBMS for applications across various platforms, the success of client-server architecture and collaborative work, and the development of Datawarehouses require specialists who can ensure data integrity and consistency, and whose competencies are distinct from those of the database engineer.

3- Production – operation

## 3.6

### **Software Integrator**

**Application Deployment Manager**  
**Production Integrator**  
**Operating Manager**  
**Software Supervisor**

#### **M I S S I O N**

At the system developer's request and supervision of the IS operating manager, s/he integrates the software solution delivered by the applications integrator into the production environment, and deploys it.

#### **A C T I V I T I E S   A N D   T A S K S**

The Software Integrator acts when a new application is put into operation, or when a new version of this application is delivered.

<b>1) Acceptance and integration of the application in the production environment</b>	<b>2) Installing the application on servers and workstations</b>
<ul style="list-style-type: none"> <li>• Implementation of approval, industrialisation and entry into production, in liaison with project management, taking account of volume levels and performance</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial approval of PC solutions</li> <li>• Control of usability of the deliverable PC solution</li> <li>• Validation of deployment feasibility for PC solutions</li> <li>• (Possible) definition of remote distribution data (targets, profiles, dependencies, etc.) and of implementation according to a deployment plan</li> <li>• (Possible) introduction of remote maintenance tools</li> </ul>
<b>3) Version management (updating of versions in use)</b>	<b>4) Throughout the IS, organisation and implementation of a system for approving new applications and updates</b>
<ul style="list-style-type: none"> <li>• Managing changes of applications in the production environment</li> <li>• Tracking production quality (performance specifications) according to the service contract and representative bodies and proposals for improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Support for projects in a given field of activity as a production specialist</li> <li>• Planning and monitoring of integration activity in the given field in association with research</li> <li>• Organisation and implementation of an IS quality assurance plan</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Development and production environment.
		C	View of existing company-internal facilities for the applications set.
		C	Operational methods, tools and standards.
		C	Familiarity with the user's workstation and the company's IS technical architecture (networks, OS, etc.).
	<b>Useful</b>	C	Administration of databases.
		C	Management of ICT risks (security).
<b>General Knowledge</b>	<b>Essential</b>	C	Organisation of work and flows.
		K	Understanding of the company's environment and operation.
	<b>Useful</b>		
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour and sense of method.
			Receptive.
	<b>Useful</b>		Capacities for negotiation and persuasion.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs (engineer).

Preferably with technical experience (operational analyst, resource manager, research and development).

**Experience:** 2 to 3 years.

Broad experience of the various techniques to be mastered.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The explosion of new technologies has driven the need for upgrading the technical knowledge of software integrators.

3- Production – operation

## **3.7**

### **Operations Controller**

**Server Controller**  
**Systems, Resources and Services Controller**  
**Server Supervisor**  
**Resources Supervisor**  
**IT production manager**  
**Systems Administrator**  
**Shift Supervisor**  
**Capacity Planner**

#### **MISSION**

S/he constantly supervises all IT resources (except for networks) and their operational management, guaranteeing service levels and undertakings, and also the quality of processes, in accordance with the quality assurance and security plan.

#### **A CT I V I T I E S   A N D   T A S K S**

	<b>1) Analysis of messages received in the control unit</b>		<b>2) Alert and intervention following incidents</b>
=	<ul style="list-style-type: none"> <li>• Diagnosis of an incident in the event of a problem observed in the network, on servers or following a user alert</li> </ul>	=	<ul style="list-style-type: none"> <li>• Launch restart tools or commands (manual restart, reconfiguration of resources, file copying, backup operations, etc.)</li> <li>• Restart work after problem resolution</li> <li>• Feed the incidents database</li> <li>• Maintenance of guidance documentation</li> </ul>
	<b>3) Supervision</b>		<b>4) Maintenance of general production conditions</b>
	<ul style="list-style-type: none"> <li>• Start-up, stop, and constantly supervise resources related to the day's work schedule</li> </ul>	=	<ul style="list-style-type: none"> <li>• Availability of physical resources (disks, robots, automatic controllers, etc.) and logistical resources (applications, disc space, power, etc.)</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Competencies concerning the various items of equipment.
		C	Familiarity with operating systems.
		C	Operating procedures, norms and standards.
		C	Local network applications.
		C	Network software and hardware.
		K	Production management.
	<b>Useful</b>	C	Security standards and procedures.
		K	Analysis of IS performance and measurement methods.
		K	Network administration tools.
		K	Remote processing.
<b>General Knowledge</b>	<b>Essential</b>	C	Authoring skills.
	<b>Useful</b>		
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method and integrity.
			Receptive.
			Ease and speed of adaptation.
			Capacity to communicate, listen and express oneself.
	<b>Useful</b>		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** Technical high school leaving diploma.  
Independent action within a defined context.

**Experience:** A minimum of 2 or 3 years in IT production.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

- The growth of open systems is increasing the number of tools and servers being supervised and boosting remote controlled set-ups.
- The growing automation of surveillance activities and control procedures is having the effect of grouping global supervision into a single unit, with a focus on server monitoring.
- In the long run, raising the reliability level of systems will require complete professional independence.

# **Research, development and integration jobs**



## 4.1

# Senior Project Manager

### Operational Controller IT Project Manager Project Manager

## MISSION

S/he is basically responsible for obtaining in situ, on conclusion of the project, an optimum result in accordance with the reference system established by (or for) the project developer, from the quality, performance, cost and deadline standpoints.

## ACTIVITIES AND TASKS

Organising and planning the project, from design to completion, relying on internal or external competencies.

<b>1) Responsibility for the project's technical content</b>	<b>2) Technical deployment of the project and implementation of user support actions</b>
<ul style="list-style-type: none"> <li>• Definition of technical design</li> <li>• Detailed technical specifications</li> <li>• Participation in choice of application package, in liaison with the developer</li> <li>• Realisation (specific developments or integration)</li> <li>• Definition of tests</li> <li>• Approval</li> </ul>	<ul style="list-style-type: none"> <li>• Deployment of the new application and the new service</li> <li>• Organisation of maintenance</li> <li>• Training of users</li> <li>• Organisation of user support</li> </ul>
<b>3) Project management in the field</b>	<b>4) Guarantee of optimum trade-off between quality, cost and deadlines</b>
<ul style="list-style-type: none"> <li>• Organisation, co-ordination and leadership of the project's management team</li> <li>• Arbitration of any disagreements between the team and the other players</li> <li>• Supervision of project activities</li> <li>• Co-ordination and synthesis of validations, guarantee of quality of validations delivered</li> <li>• Circulation and distribution of information on the project management side</li> </ul>	<ul style="list-style-type: none"> <li>• Respect of schedule of specifications</li> <li>• Respect for deadlines</li> <li>• Respect for costs</li> <li>• Proposal to project developer, during the project, for any modifications of goals (quality, cost, deadline) relating to delivery constraints</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Development methods, standards and tools.
		E	Design, modelling and architecture of applications.
		E	Architectural and functional familiarity with the IS.
		C	Operating environments.
		C	General ICT culture.
	<b>Useful</b>	K	Integration of hardware, software and systems.
		C	Assessment and control of ICT risks.
<b>General Knowledge</b>	<b>Essential</b>	E	Project management techniques.
		K	Familiarity with the business area of the company concerned by the project.
		C	Team management.
		C	Ergonomics.
	<b>Useful</b>	C	Management of service providers' contracts.
		C	Use of English.
		C	Ease of communication with different groups.
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour and method.
			Adaptability.
			Integrity.
			Pragmatic.
			Faculty for listening and expression.
			Operational independence.
			Capacity for negotiation.
	<b>Useful</b>		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs (engineer).

For projects with a large-scale information system component, the senior project manager generally comes from the information systems department.

They are specialists in information processing, but their competence extends far beyond this field, and they must be able to dialogue effectively with the project development team about the latter's business area-related concerns.

For large projects requiring genuine project direction, the senior project manager reports to the manager of the business application area for which the project is being developed.

**Experience:** 3 to 5 years, on the understanding that project management for large projects will require prior experience in smaller scale projects.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

When companies go into 'project mode', they try to identify the relationship between project development and project management much more carefully and to specify the matrix structure that will allow the project to draw on various internal resources.

## 4- Research – development – integration

## 4.2

### **Developer**

**Analyst-Programmer**  
**IT Project Manager**  
**Functional Analyst**  
**Programmer**

### MISSION

At the request of project management, and on the basis of the functional specifications issued by the latter, the developer analyses, sets parameters for and codes the new application components, in accordance with standards and procedures, as well as making upgrades to existing components.

### ACTIVITIES AND TASKS

<b>1) Analysis</b>	<b>2) Development</b>
<ul style="list-style-type: none"> <li>• Definition of specifications</li> <li>• Organic analysis</li> <li>• Adapting and setting parameters for application packages</li> <li>• Prototyping</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of modules (objects and software components)</li> <li>• Assembly of these elements</li> <li>• Authoring documentation</li> <li>• Industry-strength components and applications</li> </ul>
<b>3) Qualification</b>	<b>4) Maintenance</b>
<ul style="list-style-type: none"> <li>• Devising test sets (unitary integration tests)</li> <li>• Testing</li> <li>• Identification and processing of malfunctions</li> </ul>	<ul style="list-style-type: none"> <li>• Corrective maintenance</li> <li>• Developmental maintenance</li> <li>• Administration of re-usable software components and management of categorisation for these components</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Development methods, standards and tools
		C	Programming languages (modelling and prototyping).
		C	Technical and functional familiarity with installed applications and services.
		K	Integration of hardware, software and systems.
		C	Application design, modelling and architecture.
		K	Database administration.
	<b>Useful</b>	K	General ICT culture.
		C	Production management.
		K	Operating environments.
		C	Analysis of performance and measurement methods of information systems.
		K	Network software and hardware.
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the company's environment and operation.
		C	Understanding of the ISD's customers, and their needs.
		C	Ergonomics and man-machine interfaces.
	<b>Useful</b>	C	Algorithms.
		C	Training.
		C	Authoring skills.
		K	Use of English.
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method, intellectual honesty.
	<b>Useful</b>		Open-minded and pragmatic.
			Capacity to communicate, listen and express oneself.
			Receptive.
			Capacities for negotiation and persuasion.
			Ease and speed of adaptation.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 2 or 3 yrs (technology degree, etc.).

**Experience:** Beginner.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

Factors influencing the future of the profession:

- growing use of application packages, hence increasing importance of parameter-setting, objects, and functional applications at the expense of special developments and algorithm production;
- rapid turnover of languages: Java, object-oriented languages, etc.;
- increasing importance of ergonomics;
- shorter application lifetime;
- concern for re-using existing developments.

3- *Research - development – integration*

## 4.3

### **Applications Integrator**

*Development Integrator  
Designer-Integrator  
Systems Architect*

#### **MISSION**

Under the responsibility of the Project Manager of the development project, s/he helps choose the various software components (application packages, databases, special developments, etc.) and assembles them, respecting the general mapping plan of the company's information system and the architecture chosen for the project.

In the case of special developments, the work is undertaken either internally by the developer, or outsourced to a service supplier.

#### **ACTIVITIES AND TASKS**

The application integrator develops new applications or maintains an existing application.

<b>1) Identification and selection of the project's technical components</b>	<b>➤ 2) Definition of interfaces and any developments to components to ensure integration</b>
<ul style="list-style-type: none"> <li>• Under the responsibility of the project manager of the development project, definition of the information system's functional and technical architecture</li> <li>• Use of existing objects from the range of re-usable elements</li> </ul>	<ul style="list-style-type: none"> <li>• If applicable, modification or creation of new components</li> <li>• Use of developments specific to certain technological environments (multimedia, etc.)</li> <li>• Definition and development of interfaces</li> </ul>
<b>3) Acceptance, validation and assembly of these components</b>	<b>4) Delivery of the developed system to the operation integrator</b>
<ul style="list-style-type: none"> <li>• Assembly and integration of the various components</li> <li>• Testing and approval</li> </ul>	<ul style="list-style-type: none"> <li>• Participation, with development, in devising training systems</li> <li>• Documentation of the delivered system</li> <li>• Delivery of the solution to the software integrator</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	Application design, modelling and architecture.
		C	View of application packages and other components on the market, and of what exists inside the company.
		C	Development methods, tools and standards.
		C	Familiarity with the user's workstation and of the technical architecture of the company's IS (networks, OS, etc.).
	<b>Useful</b>	C	Database administration.
		K	Operating norms and standards.
		K	Management of ICT risks (security).
<b>General Knowledge</b>	<b>Essential</b>	C	Organisation of work and project management.
		K	Understanding of the company's environment and operation.
	<b>Useful</b>		
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour and sense of method.
			Pragmatic and capacity to reconcile the different interests of the project, the operating process and the IS map.
	<b>Useful</b>		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs (engineer).

Preferably from a technical background (research, development). Must have varied experience of the techniques they will have to implement.

**Experience:** 3 to 5 years.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The growing role that application package-type components play in projects, and the complexity and range of technologies and components to be mastered, are driving the increasing need for application integrators and the strong demand for training and upgrading of technical knowledge for these profiles.

## 4- Research, development, integration

## 4.4

### **ERP Parameter Setter**

#### **Module Expert**

### MISSION

At the request of project management or development management, and on the basis of the functional specifications expressed by the business area Project Managers or the business area Project Manager, the ERP parameter setter analyses, prototypes and sets the parameters for the new application components in accordance with standards and procedures, and with desired upgrades to existing components.

S/he assists and contributes their understanding of the module in which they have expertise, and of the associated modelling processes.

Their expertise relates to one of the functional ERP (Enterprise Resource Planning) modules.

### ACTIVITIES AND TASKS

<b>1) Analysis</b>	<b>2) Development</b>
<ul style="list-style-type: none"> <li>• Prototyping in collaboration with the functional expert and data administrator</li> <li>• Justification of differences between requirements and ERP standard</li> <li>• Organic analysis of requirements in terms of interfaces with the surrounding products in the company's information system (database, applications, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Adaptation and parameter-setting of the ERP's application programs</li> <li>• Modelling and parameter-setting of processes according to the methodology specific to the chosen ERP</li> <li>• Documentation (BPR – process re-engineering, user manual, etc.)</li> <li>• Participation in building interfaces</li> <li>• Participation in creating user training media</li> </ul>
<b>3) Qualification</b>	<b>4) Support and maintenance</b>
<ul style="list-style-type: none"> <li>• Devising of test sets (unit and integration tests)</li> <li>• Testing of internal developments and solutions supplied by software publishers</li> <li>• Identification and processing of malfunctions noted during testing</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance for support analysts</li> <li>• Corrective and developmental maintenance using tools and the publisher's resources</li> <li>• Traceability of solutions devised in the knowledge base</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Functional and technical familiarity with their ERP module.
		C	Programming languages.
		C	Modelling of processes.
		C	Technical and functional familiarity with the company's IS.
		K	General environment of the IS of the company on which the ERP depends (ERP's operating environments, database, etc.).
		K	Integration of hardware, software and systems.
		K	Ergonomics.
	<b>Useful</b>	C	Application methods and standards.
		C	Analysis of performance and measurement methods of information systems.
		K	Operating environments.
		K	Network software and hardware.
		K	General ICT culture.
		K	ICT security standards and procedures.
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the company and its environment.
		C	Understanding of ISD customers (functional users) and their needs.
		C	Ergonomics and man-machine interface.
		C	Technical English read, written and spoken.
	<b>Useful</b>	C	Algorithms.
		C	Drafting abilities.
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method, intellectual honesty.
			Logical mind.
			Capacity for sharing knowledge.
	<b>Useful</b>		Open-minded and pragmatic.
			Sense of service.
			Capacity to communicate, listen and express oneself.
		Ease and speed of adaptation.	

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 2 or 3 yrs (first degree in IT, etc.).

**Experience:** First experience in development or in a similar project.  
Publisher certification.

## **D E V E L O P M E N T A L T R E N D S A N D F A C T O R S**

Factors influencing the development of the profession:

- more extensive use of application packages, hence growing importance of parameter-setting, objects, and functional aspects rather than specific development and expertise in handling algorithms;
- growing importance of ergonomics;
- shorter application lifetimes (rapid development of application packages);
- focus on re-using components;
- risk of shortage of candidates with the profile, which sometimes means developing intensive training courses;
- possible difficulties in advancing towards other types of jobs (especially other special development jobs).



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# **Technical support and internal technical support jobs**



5- Internal technical support

## 5.1

### **Operating System Expert**

**Operations Engineer**  
**Expert in Desktop OS and Middleware**  
**Desktop Applications Specialist**  
**Network Software Specialist**

#### **MISSION**

S/he acts as consultant, support, information, training and alert officer. They may intervene directly in all or part of a project in their field of expertise.

Operating system experts carry out technology tracking, and study general upgrades in technical architecture. They guarantee smooth operations on IT platforms.

#### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Support for teams</b>	<b>2) Establishment of developments</b>
<ul style="list-style-type: none"> <li>• Assistance and consulting in implementing technical solutions</li> <li>• Diagnosis of causes of malfunction and proposals for corrections and alternative solutions</li> <li>• Information for development teams</li> <li>• Training in the use of new systems</li> </ul>	<ul style="list-style-type: none"> <li>• Recognised interface for experts from other fields</li> <li>• Definition, establishment and satisfactory management of operating systems</li> <li>• Technical and functional qualification of systems</li> <li>• Verification of application of standards (IT security, quality, etc.)</li> </ul>
<b>3) Forward thinking</b>	<b>4) Towards the outside</b>
<ul style="list-style-type: none"> <li>• Technology watch</li> <li>• Proposal of solutions to improve system performance specifications</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in conferences, for a and task forces</li> <li>• Teaching and publication</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Architectural and functional familiarity with the company's IS.
		E	In-depth knowledge of operating systems and hardware architectures.
		C	Assessment and control of ICT risks.
		C	Familiarity with organisation of the company's IS.
		C	Architectural and functional familiarity with the company's IS.
	<b>Useful</b>	C	Security standards and procedures.
		C	Development environments.
		C	Familiarity with and understanding of IT technologies and their development.
		C	Integration of hardware, software and systems.
<b>General Knowledge</b>	<b>Essential</b>	E	Familiarity with the ISD customer activities and needs.
		E	Understanding of the company's environment and operation.
		C	Physical security.
		C	General ICT culture.
	<b>Useful</b>	C	Use of English.
		C	Teaching skills.
<b>Behavioural Abilities</b>	<b>Essential</b>		Capacity to communicate, listen and express oneself.
			Ease and speed of adaptation.
	<b>Useful</b>		Receptive.
			Rigour and sense of method.
			Ability to management emergency and stressful situations.
			Open-minded and pragmatic.
	Ease and speed of adaptation.		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs.

**Experience:** 4 to 5 years' experience minimum.

5- Internal technical support

## 5.2

### **Expert in Methods and Tools/Quality/Security/Data**

**IT and Telecoms Security Engineer**  
**IT Methods Engineer**  
**Quality Engineer**  
**Data Architect**  
**Quality Assurance Engineer**  
**Security Specialist**  
**Disaster Recovery Specialist**

#### **M I S S I O N**

S/he acts as consultant, support, training information and alert officer. They may intervene directly in all or part of a project in their field of expertise.

Carries out technology watch for their field and suggests developments deemed necessary for optimising the satisfaction-costs-deadlines equation.

They are the recognised interface for external experts.

#### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Support for teams</b>	<b>2) Introduction of upgrades and certifications</b>
<ul style="list-style-type: none"> <li>• Support and consulting in choosing and using methods</li> <li>• Information on developments</li> <li>• Training in new technologies and systems</li> </ul>	<ul style="list-style-type: none"> <li>• Definition and management of standards, methods, tools and reference systems</li> <li>• Checking on the implementation of standards, methods and tools</li> <li>• Certification of components and developed applications</li> </ul>
<b>3) Audit and control</b>	<b>4) Forward thinking</b>
<ul style="list-style-type: none"> <li>• Establishment and monitoring of indicators to ensure norms and standards are applied. Alerts in the event of discrepancies</li> <li>• Carries out studies when required</li> </ul>	<ul style="list-style-type: none"> <li>• Technology watch and assessment</li> </ul>
<b>5) Participation in research and development</b>	<b>6) Towards the outside</b>
<ul style="list-style-type: none"> <li>• Advice on rare and cutting-edge techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in conferences, forums and task forces</li> <li>• Teaching and publication</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Development method, standards and tools..
		E	ICT security standards and procedures.
		E	Assessment and control of ICT risks.
		E	Familiarity with DBMS.
	<b>Useful</b>	E	Development environments.
		E	Operating environments.
		E	Data administration.
		C	Specific development techniques ("client-server", "object-oriented", "RAD", etc.).
		C	Familiarity with the organisation of the company's IS.
		C	Architectural and functional familiarity with the company's IS.
		C	Architecture and networks, system, language, database, tools.
		C	Integration of new technologies in the IS.
		C	Anticipation of IT developments and their impacts on the company.
		C	Integration of hardware.
C	Integration of software.		
K	Design, modelling and architecture of applications for methods experts (database).		
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the company's environment and operation.
		C	Physical security.
		C	General ICT culture.
		K	Familiarity with the ISD customer activities and needs.
	<b>Useful</b>	C	Authoring skills.
		C	Use of foreign languages.
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method and integrity.
	<b>Useful</b>		Open-minded and pragmatic.
			Ease and speed of adaptation.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs.

**Experience:** 4 to 5 years' experience minimum.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

## 5- Internal technical support

## 5.3

### **Networks/Telecoms Expert**

**Telecommunications and Networks Engineer**  
**Telecommunications and Networks Architect**  
**Company Networks Specialist**  
**Telecoms Consultant**  
**Networks Consultant**  
**Network Specialist**  
**Telecommunications Specialist**  
**Voice Communications Specialist**

#### MISSION

S/he tracks technological developments, and defines the network architecture for the company or for specific projects.

They are the recognised interface with external experts.

They act as consultants, support, information, training and alert officers. They may intervene directly all or part of a project in their field of expertise.

#### ACTIVITIES AND TASKS

<b>1) Participation in research and development</b>	<b>2) Introduction of upgrades and certifications</b>
<ul style="list-style-type: none"> <li>• Carries out studies on defining a needs-based network (digital data, voice, images, etc.)</li> <li>• Intervention in choosing carriers</li> </ul>	<ul style="list-style-type: none"> <li>• Definition and management of methods, tools and addressing plans</li> <li>• Verification of implementation of network protocols and equipment</li> <li>• Certification of components and developed applications</li> </ul>
<b>3) Support for teams</b>	<b>4) Forward thinking</b>
<ul style="list-style-type: none"> <li>• Information on states of the art</li> <li>• Training in new technologies</li> <li>• Consulting and support in network-using projects (messaging system, workflow, e-commerce, technical data, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology watch and evaluation</li> </ul>
<b>5) Audit and control</b>	<b>6) Towards the outside</b>
<ul style="list-style-type: none"> <li>• Conducting audits to check solution fit</li> <li>• Proposals for corrective actions</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in conferences, forums, task forces</li> <li>• Teaching, publication</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Communication protocols.	
		E	Network software and hardware.	
		E	ICT security standards and procedures.	
		E	Assessment and control of ICT risks.	
		E	Familiarity with and command of the company's IS.	
	<b>Useful</b>	E	Networks' administration tools.	
		E	Integration of hardware, software and systems.	
		E	Data administration.	
		C	Development techniques.	
		C	Familiarity with organisation of the company's IS.	
		C	Architectural and functional familiarity with the company's IS.	
		C	Architecture and networks, system, language, database, tools.	
		C	Integration of new technologies in the IS.	
		C	Anticipation of developments of information techniques and their impacts for the company.	
<b>General Knowledge</b>	<b>Essential</b>	C	Understanding of the company's environment and operation.	
		C	Physical security.	
		C	General ICT culture.	
		K	Familiarity with the ISD customer activities and needs.	
	<b>Useful</b>	C	Authoring skills.	
		C	Training.	
		C	Use of foreign languages.	
	<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method and integrity.
		<b>Useful</b>		Open-minded and pragmatic.
				Ease and speed of adaptation.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs.

**Experience:** 4 to 5 years' experience minimum.

5- Internal technical support

## **5.4a**

### **Expert in Internet and Multimedia Technology**

**Multimedia Engineer**  
**Internet/intranet Expert**  
**Multimedia Designer/Developer**  
**New Media Expert**

#### **MISSION**

S/he designs the architecture of a multimedia system for communication over various types of media. They design and control roll-out.

#### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Consulting/recommending</b>	<b>2) Design</b>
<ul style="list-style-type: none"> <li>• Analysis of requirement queries for content</li> <li>• Familiarity with and understanding of the company's strategies and purposes of developed products</li> <li>• Make technological choices that fit the requirements</li> <li>• Integration of constraints and rules for IS security.</li> </ul>	<ul style="list-style-type: none"> <li>• Definition of architectural concepts meeting the requirements of the communication system.</li> <li>• Choosing of tools that fit the architecture.</li> <li>• Proposals for technical upgrade scenarios for existing architectures and systems</li> </ul>
<b>3) Support for teams, communication, training</b>	<b>4) Forward thinking</b>
<ul style="list-style-type: none"> <li>• Provide teams with standards and tools used in multimedia</li> <li>• Training in the technical aspects of the media and its operation, and of content creators/aggregators</li> <li>• Support for teams using communication and training</li> </ul>	<ul style="list-style-type: none"> <li>• Technology watch</li> <li>• Proposals for upgrades to improve the technical performance of operational systems</li> <li>• Guiding users towards appropriate techniques in light of constraints and goals</li> </ul>
<b>5) Audit and control on use and access</b>	
<ul style="list-style-type: none"> <li>• Familiarity with and focus on security</li> <li>• Control, optimisation, measurement and analysis of access to and circulation of information.</li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Technologies for communication systems.
		E	Methodology for developing intranet and extranet architecture.
		C	Architectural and functional familiarity with the company's information system.
		C	Technologies relating to media and their respective languages.
		C	Network standards and procedures.
		K	Integrating communication standards (functional, technical, ergonomic).
	<b>Useful</b>	K	Management of IT and telecommunications risks.
		K	Development methods, standards and tools.
<b>General Knowledge</b>	<b>Essential</b>	E	Understanding of the company's strategy in terms of information systems (choices, priorities, etc.).
		C	Familiarity with the company (process, environment, organisation and strategy).
		C	Devising of scenarios, management and project management.
	<b>Useful</b>	K	Legal knowledge.
<b>Behavioural Abilities</b>	<b>Essential</b>		Intellectual curiosity (technology watch) and open-mindedness.
			Communication, listening, expression and dialogue skills.
			Capacity to negotiate and convince.
			Ability to resist external pressure and to incorporate target media requirements.
			Consideration (capacity for analysis and synthesis).
	<b>Useful</b>		

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 4 or 5 yrs or equivalent experience.

**Experience:** In the field of design and management of IT media for internal and external communication.

5- Internal technical support

## **5.4b**

### **Information System Security Manager (ISSM)**

**Security Expert**  
**Security Administrator**

#### **M I S S I O N**

The ISSM acts as consultant, support, information, training and alert officer. They may intervene directly in all or part of their organisation's IT and telecoms systems.

They carry out technology and regulatory watch in their field and suggest upgrades they deem necessary to ensure the logical and physical security of the entire information system. They act as the recognised interface with carriers and project managers, as well as with external experts and other actors for security problems in all or part of the IS.

The ISSM usually reports to the IT department.

#### **A C T I V I T I E S   A N D   T A S K S**

<p><b>1) Definition of security policy</b></p> <ul style="list-style-type: none"> <li>• Definition of goals</li> <li>• Definition and establishment of procedures</li> <li>• Definition of security organisation and policy</li> </ul>	<p><b>2) Risk analysis</b></p> <ul style="list-style-type: none"> <li>• Analysis of risks and assessment of consequences</li> <li>• Feedback of all elements enabling decision-taking</li> <li>• Study of resources guaranteeing security and respect for their application</li> <li>• Drawing up the prevention plan</li> </ul>
<p><b>3) Raising awareness of and training in security aspects</b></p> <ul style="list-style-type: none"> <li>• Raising awareness of general management</li> <li>• Training of operational and core business divisions</li> <li>• Participation in drafting the security charter</li> <li>• Organisation of meetings to raise awareness about security</li> <li>• Consulting and support for teams</li> </ul>	<p><b>4) Study of resources and recommendations</b></p> <ul style="list-style-type: none"> <li>• Technical validation of security tools</li> <li>• Definition of security norms and standards</li> <li>• Participate in creating global security rules for the company or group</li> </ul>
<p><b>5) Audit and control</b></p> <ul style="list-style-type: none"> <li>• Assurance that security plans meet pre-established plans</li> <li>• Guarantee that all measures are taken to manage security</li> <li>• "Tester" of company weak spots</li> </ul>	<p><b>6) Technology watch and forward thinking</b></p> <ul style="list-style-type: none"> <li>• Monitoring of regulatory and technical developments in their field.</li> <li>• Watch for and introduction of upgrades to ensure the logical and physical security of the whole IS.</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	ICT security standards and procedures.
		E	Networks and Internet protocols.
		C	Familiarity with market offerings in the security field.
		C	Assessment and control of ICT risks.
		C	Anticipation of developments of IT techniques and their impacts on the company.
	<b>Useful</b>	K	General ICT culture.
		K	Development methods, standards and tools.
<b>General Knowledge</b>	<b>Essential</b>	E	Legislation in relation to security (costing, etc.).
		E	Risk analysis method.
		E	Ability to undertake projects with multiple agents.
		E	Fluent English.
		C	Understanding of the company's strategy in terms of information systems (choices, priorities, etc.) and familiarity with core business activities.
		C	General organisation of the company and "core business" procedures.
	<b>Useful</b>	C	Establishment of contractual instruments.
		C	Vision of the organisational impact of a project.
		K	Understanding of organisational solutions.
<b>Behavioural Abilities</b>	<b>Essential</b>		Strong personality and inter-personal skills.
			Rigour, sense of method and intellectual integrity.
			Capacity for persuasion.
			Capacity for analysis and synthesis.
			Open-minded and pragmatic.
			Ease and speed of adaptation.
			Capacity for negotiation.
			Communicator skills (drafting of schedule of specifications, reports, summaries, presentations, etc.).
	<b>Useful</b>		Capacity for listening.
			Strategic and political sense.
		Intellectual curiosity.	

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** Engineer or equivalent high school leaving diploma + 4 or 5 yrs in IT.

**Experience:** 10 to 15 years' experience, including at least some experience in the security field.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The profession of ISSM is set to develop in the years ahead, mainly due to e-business (B-to-B and B-to-C projects), network linkage to the Internet, and the rapid growth of technologies and standards. There may be a shortage of specialists.

## 5- Internal technical support

## 5.5

### **Information System Architect**

#### **Technical Architect**

### MISSION

S/he defines the technical architecture of the information system.

They guarantee the consistency of all IT resources (hardware, applications, databases, networks, middleware, operating system) and their upgrades, optimally exploiting the available possibilities within the context of the company's "town plan".

### ACTIVITIES AND TASKS

= 1) <i>Design</i>	= 2) <i>Recommendation</i>
<ul style="list-style-type: none"> <li>• Design of the technical architecture of the information systems in the functional field for using IT and telecommunications tools, and verifying technical consistency</li> <li>• Verification and analysis of the technical impact of new solutions</li> </ul>	<ul style="list-style-type: none"> <li>• For any new project or any new technology, participation in studying the impact on the existing or planned architecture, and recommending on technical choices to ensure consistency of the upgrade.</li> </ul>
3) <i>Administration</i>	= 4) <i>Advice</i>
<ul style="list-style-type: none"> <li>• Definition and management of the information system's reference system for tools, procedures, standards, vocabulary, security, etc.</li> <li>• Definition and management of technical standards.</li> </ul>	<ul style="list-style-type: none"> <li>• Advice to the information system architect in the functional field on using IT and telecommunications tools.</li> </ul>
5) <i>Communication</i>	
<ul style="list-style-type: none"> <li>• Work in a team with the IS architect</li> <li>• Promotion of technical architecture among IT specialists</li> </ul>	

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Architectural and functional familiarity with the company's information system.
		E	Design, modelling and architecture of applications.
		E	Development methods, standards and tools.
		E	Anticipation of developments in IT techniques and their impact on the company, and a view of available specialist application packages.
		C	IT production techniques and tools.
		C	Telecommunications networks techniques.
		C	General ICT culture.
		C	Integration of new technologies in the IS.
		C	Management of IT and telecommunications risks.
	<b>Useful</b>	C	Familiarity with the market and ICT supply.
		C	Specific development techniques (client-server, objects, RAD).
		C	Data management methods.
		K	Processing modelling and analysis.
		K	Using a software engineering workshop.
<b>General Knowledge</b>	<b>Essential</b>	E	Understanding of the company's strategy in terms of information systems (choices, priorities, etc.).
		C	Familiarity with the company (processes, environment, organisation and strategy).
		C	Authoring scenarios and project management.
	<b>Useful</b>	C	Quality assurance approach.
		C	Use of English.
		C	Ergonomics and man-machine interface.
		K	Management and control of IT and telecommunications costs.
		K	Purchase and investment techniques and procedures.
		K	Rights and regulation of IT and telecoms.
		K	
<b>Behavioural Abilities</b>	<b>Essential</b>		Intellectual curiosity (technology watch).
			Communication, listening, expression and dialogue skills.
			Capacities for negotiation and persuasion.
			Strategic and political sense.
			Ability to resist external pressures.
			Ability to analyse and synthesise.
	<b>Useful</b>		Open-mindedness.

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## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs engineer (operation, development, project management).

**Experience:** Minimum 10 to 15 yrs.

## **DEVELOPMENTAL TRENDS AND FACTORS**

- Increasing complexity and speed of development of systems both technically and functionally.
- Need to incorporate outside elements into the information system (application packages, convergence platforms, etc.).
- Need to control the risk of loss of integrity of the information system in a context of accelerating upgrades (technical, competitive, organisational, etc.).



# **ISD Administration and Management Jobs**



## 6- ISD administration and management

## 6.1

### **IS Department Manager**

#### **IT and Telecommunications Manager**

#### **Information Systems Director**

#### **Chief Information Officer**

### **M I S S I O N**

S/he is responsible for the design, implementation and maintenance under operational conditions of the nature and quality of the information system. They decide on and validate the major developments of the company's IT, anticipate any necessary developments in line with the company's strategy, and control costs.

They assess and recommend investments on the basis of desired technological advances. They guarantee information system effectiveness and control of relevant risks.

### **A C T I V I T I E S   A N D   T A S K S**

	<b>1) Definition, supervision and implementation of the IS policy</b>		<b>2) Internal communication, motivation and organisation of the ISD personnel</b>
↗	• Advice on and definition of an IS policy	=	• Definition and supervision of the ISD's general management
=	• Definition of the major tracks of the IT and telecoms master plan	=	• Internal organisation of the ISD
↗	• Definition of strategic ICT orientations	↗	• Organisation and motivation of experts
=	• Tracking of all research and responsibility plans	↗	• Management, co-ordination and monitoring of multi-disciplinary projects involving geographically scattered members
=	• Optimisation of resources (research, definition of ISD budgets, investments, etc.)	↗	• Change management support for IT specialists
↗	• Study of application and functional architecture and its developments		
	<b>3) Promotion of quality in relations with partners inside the company</b>		<b>4) Supervision of relations with service providers and external partners</b>
↗	• Organisation, leadership and monitoring of relations between General Management and IS managers	=	• Management of relations with ICT partners
↗	• Responsibility for quality of the customer-supplier relationship	=	• Monitoring of relations with external partner organisations
	<b>5) Definition and implementation of a policy of "do or get done"</b>		<b>6) Guarantor of IT security</b>
↗	• Monitoring and control of subcontracting contracts and their implementation	=	• Definition and implementation of the risk management policy
↗	• Analysis of the market, assessment of subcontracting offers and proposals to general management	=	• Guarantees information system reliability, confidentiality and integrity
↗	• Analysis of subcontracting performance and quality control		
↗	• Negotiation of subcontracting contracts		

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	C	General ICT culture.
		C	Development methods, standards and tools.
		C	Architectural and functional familiarity with the company's IS.
		C	Familiarity with the market for ICT offerings.
		C	Assessment and control of ICT risks.
		C	Familiarity with and management of the company's IS.
		K	Technical and functional familiarity with existing applications and services.
	<b>Useful</b>	C	Familiarity with the subcontractor market.
		C	Overview and understanding of recent technologies.
		C	Competencies in and view of the market offering for various types of hardware and software.
		K	Development and operating environments.
		K	ICT security standards and procedures.
		K	Anticipation of developments in IT technologies and their possible impact on the company.
<b>General Knowledge</b>	<b>Essential</b>	E	Understanding of the company's IS strategy.
		E	View of the company's IS requirements and priorities.
		E	HR management.
		C	Techniques for project management.
		C	Understanding of the company's environment and operation.
		C	Familiarity with the ISD (organisation, resources).
		C	Familiarity with the ISD customer activities and needs.
		C	Economic management and financial techniques applied to IT.
		C	Use of methods of negotiation.
		C	Use of English.
		C	Design of organisational solutions.
	K	General legal knowledge (commercial, employment, tax, etc.).	
	<b>Useful</b>	C	Team management methods.
		C	Definition and monitoring of operating budgets and accounts.
		C	Experience of contractual ICT relations.
		C	Communication methods and media.
		C	Use of negotiation methods.
K		Physical security.	
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method and integrity.
			Ease and speed of adaptation.
			Capacities for negotiation and persuasion.
			Open-minded and pragmatic.
			Interpersonal skills and sense of relationship building.
			Communication, listening and written and spoken expression skills.
	<b>Useful</b>		Training (with General Management).
			Receptive.

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## C A R E E R   P A T H

**Educational profile:** High-level manager.

**Experience:** IT or major project management (at corporate level).

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

Definition and implementation of a policy of "do it or get it done" and impact of this on the ISD (change management support, quality assurance, security, HR policy, familiarity with and control of costs, etc.).

Impact of new technology on project management methods (integrated application packages, Internet, etc.).

## 6- ISD administration and management

## 6.2

### **ISD Functional Manager**

**Buyer**  
**HR Manager**  
**Management Controller**  
**Logistics Specialist**  
**Asset Management, Resource Broker**

### **M I S S I O N**

S/he helps the ISD operate smoothly, providing administrative support for budget management, procurement, human resources, legal, etc.

These are company job positions which are not specific to the IS domain but which can be carried out within the ISD for certain requirements such as outsourcing, the specifics of IT purchases, IT financial control, etc.).

Depending on the size of the company, this job position covers all or part of the functional services in question.

### **A C T I V I T I E S   A N D   T A S K S**

<b>1) Management control</b>	<b>2) ICT human resources</b>
<ul style="list-style-type: none"> <li>• Analytical accounting and ISD reporting</li> <li>• Financial control and analysis of performances of the ISD</li> <li>• Organisation and monitoring of the ISD budget</li> <li>• Management and tracking of investment procedures</li> <li>• Invoicing of ISD services</li> </ul>	<ul style="list-style-type: none"> <li>• Organisation and implementation of salaries, training and recruitment of ICT HR</li> <li>• Definition and implementation of management, training and mobility of ICT HR</li> </ul>
<b>3) Administration of the ISD: purchases and legal aspects</b>	<b>4) Maintenance of facilities relating to the ISD</b>
<ul style="list-style-type: none"> <li>• IT purchases (hardware, software, services, etc.)</li> <li>• Administrative management of subcontracting</li> <li>• Administrative management and monitoring of facilities management contracts</li> <li>• Legal obligations (information access and privacy laws, ownership of applications, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Management of premises and other fixed assets</li> <li>• Management of maintenance of IT-related equipment</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	K	General ICT culture.
		K	Use of specialist applications packages.
	<b>Useful</b>	C	Architectural and functional familiarity with the company's IS.
		K	Optimisation of ICT resources.
		C	View of ICT market offering (hardware, software, services).
<b>General Knowledge</b>	<b>Essential</b>	C	General legal knowledge (commercial, employment, tax, etc.).
		C	Definition and monitoring of operating budgets and accounts.
		C	ICT contractual relations.
		C	Authoring skills.
	<b>Useful</b>	C	Understanding of the company's environment and operation.
		C	Economic management and financial techniques applied to IT.
		C	ICT law and regulations.
		C	Design of organisational solutions.
		C	Familiarity with the company's activities and professions.
		K	View of requirements and priorities of the company in terms of IS.
		K	Techniques and procedures for purchase and investment.
		C	Familiarity with ISD customer procedures and requirements.
		C	Management and control of IT costs.
		C	Upkeep of technical installations.
		C	Physical security.
C	Corporate management.		
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour, sense of method and integrity.
			Capacity to communicate, listen and express oneself.
	<b>Useful</b>		Open-minded and pragmatic.
			Capacities for negotiation and persuasion.
			Interpersonal skills and sense of relationship building.
			Ease and speed of adaptation.
	Receptive.		

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## C A R E E R   P A T H

**Educational profile:** From high school leaving diploma + 2 yrs, to high school leaving diploma + 5 yrs, depending on coverage of the field of functional services concerned and the size of the company.

Management, sales, HR or engineering profiles (possibility of an IT-based background).

**Experience:** Varies according to coverage of the functional services concerned and size of company.

**DEVELOPMENTAL TRENDS AND FACTORS**

Some aspects (purchase management and human resources in particular) of this job position are becoming far less "peripheral" to the ISD due to:

- increasing use of applications packages;
- growth of amount of subcontracted or outsourced operations;
- problems in how to manage IS competencies (turnover, lack of resources, rapid renewal of technologies and competencies).

## 6- ISD administration and management

## 6.3 Telecoms Manager

### MISSION

The Telecoms and Networks Manager is responsible for managing the company's telecommunications infrastructure. They are considered as both a developer *vis-à-vis* carriers and operators, and a project manager and internal service provider *vis-à-vis* other enterprise departments. Their mission ranges from defining architecture to purchasing telecoms services, and includes financial control and technology watch in the broad sense. A telecoms and networks manager may also have responsibility for the roll-out and operation of the infrastructure, and for managing and supervising a telecoms team. Their field of action covers the company's voice, data and Internet services both nationally and internationally. The telecoms manager usually reports to the information systems department, at least for data issues. Telephone services, however, are often managed from each site, or on a country basis.

### ACTIVITIES AND TASKS

<b>1) Definition and design of architecture</b>	<b>2) Invitation to tender/Purchase of telecoms services</b>
<ul style="list-style-type: none"> <li>• Definition of requirements</li> <li>• Choice of telecoms and networks architecture, and administration and security tools</li> <li>• Validation of choices and compatibility with the IT architecture</li> </ul>	<ul style="list-style-type: none"> <li>• Definition of specifications (scope, services, etc.)</li> <li>• Analysis of calls for tender</li> <li>• Choice and monitoring of carrier</li> <li>• Purchases generally carried out with the purchases department</li> </ul>
<b>3) Audit/management control</b>	<b>4) Project management-Development relations</b>
<ul style="list-style-type: none"> <li>• Optimisation and control of telecoms costs</li> <li>• Quality control of carriers' service</li> <li>• Cross-company or cross-carrier benchmarking</li> <li>• Indicator panels</li> </ul>	<ul style="list-style-type: none"> <li>• Definition of requirements</li> <li>• Services contract with internal customers</li> <li>• Re-billing of internal services</li> <li>• Partnership with core business units for company projects (portals, marketplaces, web call centres, etc.) and for financing infrastructure</li> </ul>
<b>5) Technology watch/Forward thinking</b>	<b>6) Continuity of service for voice and data communications</b>
<ul style="list-style-type: none"> <li>• Architecture</li> <li>• Technology</li> <li>• Pricing</li> <li>• Regulatory</li> <li>• New market offerings and entrants</li> </ul>	<ul style="list-style-type: none"> <li>• Responsibility for operation and administration of added value networks and services</li> <li>• Indicator panel on quality of network service</li> <li>• Support and assistance for voice and data communication services</li> <li>• Application of security policies for key security systems and use of security logs</li> </ul>

## A P P L I E D   K N O W L E D G E

<b>Technological Knowledge</b>	<b>Essential</b>	E	Mastery of communication protocols and infrastructures.
		C	Familiarity with wiring systems.
		C	Familiarity with architecture of the company's IS.
		C	ICT security standards and procedures.
		C	Assessment and control of ICT risks.
	<b>Useful</b>		
<b>General Knowledge</b>	<b>Essential</b>	E	Negotiation methods.
		E	Perfect knowledge of telecoms and Internet sectors.
		C	Good knowledge of company organisation and operation.
		C	Ability to anticipate developments in the environment.
		E	Financial audit and control.
		E	Use of English.
	<b>Useful</b>	C	Team management.
		C	Legal knowledge (contract law, etc.).
<b>Behavioural Abilities</b>	<b>Essential</b>		Rigour and sense of organisation.
			Ease and speed of adaptation.
			Ability to work in an international environment.
			A capacity for synthesis.
	<b>Useful</b>		Faculty for communication.
			Capacity for listening and making proposals forcefully.

K = Elementary knowledge C = Command E = Expertise

## C A R E E R   P A T H

**Educational profile:** High school leaving diploma + 5 yrs. Generally has first advanced training (top engineering school, top telecom school, etc.)

**Experience:** 4 to 5 years' experience (preferably international) either with a supplier or with a smaller-sized user. Internal promotion is also a possible path.

## D E V E L O P M E N T A L   T R E N D S   A N D   F A C T O R S

The main challenges faced by telecoms managers today are:

- economic challenges: competition and deadlines for implementing solutions;
- technical challenges: fixed-mobile convergence, voice-data-multimedia convergence, high speed communications and Internet communications;
- organisational challenges: how to acquire and maintain competence in telecoms teams in a context of strong infrastructure and facilities growth, whilst ensuring quality of service
- corporate challenges: globalisation, mergers and acquisitions and their impact on the network, inter- and intra-company mobility, customer relations management, electronic commerce and outsourcing.

Telecoms no longer involves an exclusively technical position. It increasingly requires managerial competencies, and knowledge of the functional requirements of its customers and international reach.