
**Information and documentation — Work
process analysis for records**

Information et documentation — Analyse du processus des «records»

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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Introduction

All organizations, regardless of their size or the nature of their business, exist and act to achieve certain goals and objectives. To realize its own specific goals and objectives, each organization will determine and apply appropriate work processes which constitute the organization's business.

Every organization generates records from its work processes. These records constitute evidence of the organization's goals and objectives, of its decisions and of its transactions. To fully understand these "business records", it is necessary to understand the work processes that generated them. This understanding can also be used to identify the records that should be generated from work processes and to manage them through time as assets of the organization.

Work process analysis for records is undertaken to determine the requirements for records creation, capture and control. It describes and analyses what happens in a function in a specific business context. It cannot take place in the abstract but is dependent on accurate information gathering and a well-grounded understanding of the organization's context and mission.

This Technical Report is intended for:

- records professionals (or persons assigned within an organization for managing records) responsible for creating and managing records in either a business system or dedicated records application software;
- system/business analysts responsible for designing business processes and/or systems that will create or manage records.

For the purposes of this Technical Report, *work process analysis* involves identifying:

- a) the relationship between work processes and their business context;
- b) the relationship between work processes and the rules governing their application (as derived from the relevant regulatory environment);
- c) the hierarchical decomposition of work processes into their component or constituent parts; and
- d) the sequential interdependence between discrete work processes or single transactions

Analysis of work processes for the purposes of creation and control of records serves to:

- provide a clear identification of records creation requirements, facilitating automatic capture and management of records as the work is performed; and
- define business contextual links between records, and thereby lead to their logical arrangement and grouping, thus ensuring clear documentation of work processes and facilitating retrieval, retention and disposition of the records based on knowledge of the business.

Work process analysis supports the integration of the capture of records as the work is undertaken. Processing orders and accounts, payment of wages, managing assets, stock control or quality assurance systems and contract management are examples of work processes in which the creation of records is normally integrated with processing the transactions. Integrating records processes into automation protocols applied to work processes will ensure that organizations' records are created, captured and controlled systematically in their business systems.

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Information and documentation — Work process analysis for records

1 Scope

This Technical Report provides guidance on work process analysis from the perspective of the creation, capture and control of records.

It identifies two types of analyses, namely

- a) functional analysis (decomposition of functions into processes), and
- b) sequential analysis (investigation of the flow of transactions).

Each analysis entails a preliminary review of context (i.e. mandate and regulatory environment) appropriate for the analysis. The components of the analysis can be undertaken in various combinations and in a different order from that described here, depending on the nature of the task, the scale of the project, and the purpose of the analysis. Guidance provided in the form of lists of questions/matters to be considered under each element of the analysis is also included.

This Technical Report describes a practical application of the theory outlined in ISO 15489. As such, it is independent of technology (i.e. can be applied regardless of the technological environment), although it can be used to assess the adequacy of technical tools that support an organization's work processes.

This Technical Report focuses on existing work processes rather than on facilitating “workflow” (i.e. the automation of a business process in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules as outlined in Reference [1] of the Bibliography).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15489-1:2001, *Information and documentation — Records management — Part 1: General*

ISO/TR 15489-2:2001, *Information and documentation — Records management — Part 2: Guidelines*

ISO 23081-1:2006, *Information and documentation — Records management processes — Metadata for records — Part 1: Principles*

ISO/TS 23081-2:2007, *Information and documentation — Records management processes — Metadata for records — Part 2: Conceptual and implementation issues*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 15489-1 and ISO 15489-2, ISO 23081-1 and ISO 23081-2, and the following apply.

**3.1
documentation**
collection of documents describing operations, instructions, decisions, procedures and business rules related to a given function, process or transaction

**3.2
functional analysis**
grouping together of all the processes undertaken to achieve a specific, strategic, goal of an organization, which uncovers relationships between functions, processes and transactions which have implications for managing records

**3.3
sequence**
series of transactions connected by the requirement that undertaking a later transaction is dependent on completing earlier transactions

**3.4
sequential analysis**
sequential analysis maps a business process in a linear and/or chronological sequence which reveals the dependent relationships between the constituent transactions

**3.5
transaction**
smallest unit of a work process consisting of an exchange between two or more participants or systems

**3.6
work process**
work process is one or more sequences of transactions required to produce an outcome that complies with governing rules

4 Undertaking work process analysis

4.1 General

Work process analysis for records is employed to gather information about the transactions, processes and functions of an organization to identify the requirements of records creation, capture and control.

There are two approaches to undertaking work process analysis:

- a) functional;
- b) sequential.

Before selecting either analysis or a combination, the purpose of the records project, the scope and scale of the project and the organizational context (contextual review, see Clause 5) of the work to be analysed needs to be determined.

4.2 Records dimension of work process analysis

Work process analysis is the foundation needed for the following processes used for creation, capture and control of records:

- a) identification of records requirements to document a function or other aggregates of processes;
- b) development of function-based classification schemes for identification, location and linking of related records;
- c) maintenance of links between records and the context of their creation;
- d) development of naming and indexing rules and conventions to ensure maintenance of identification of records over time;
- e) identification of ownership of records over time;
- f) determination of appropriate retention periods for records and development of records disposition authorities;
- g) analysis of risk management in records system context;
- h) determination of appropriate security protection for records and development of access permissions and security levels.

4.3 Scope and scale of work process analysis

The two analyses may be undertaken in various combinations and scaled depending upon the scope of the task. The analysis can be scaled to meet various requirements, i.e. from a comprehensive identification and analysis of all functions of an organization down to the micro-level analysis of a particular process in a single business unit. The scale and level of detail used will depend on the organization's risk assessment and the purpose of the records management task.

Functional analysis uses a top-down analytical method which begins with organizational goals and strategies and may descend to the analysis of transactions. It can be used across more than one organization (within one or more jurisdictions), within one organization, or one division of an organization responsible for a function.

Sequential analysis can be scaled to analyse processes across a whole organization, across one or more organizations, (within one or more jurisdictions), or within a division, or a single business unit. It can be used to analyse an aggregate of processes, the transactions which make up a single process, or a single transaction down to the keystrokes, depending on the purpose of the analysis.

For the purposes of this Technical Report, the hierarchy of terms defined in Table 1 is used.

NOTE Many jurisdictions use different terms to designate the logical levels of analysis of a function. In some cases, jurisdictions or organizations can choose to identify different or additional levels in the decomposition of function to transaction. Both the number of levels, and points at which they are identified, depend on jurisdictional practice and on the scope and scale of the work process analysis project itself. Terms such as "sub-function", "activity" and "action" can be used but have not been employed in this Technical Report in part to facilitate implementation.

Table 1 — Hierarchy of terms

Term	Source	Example 1 (in a university)	Example 2 (in a medical practice)
Function	ISO/TS 23081-2:2007	Research	Patient services
Aggregate of processes	This Technical Report	Funding of research	Examination, diagnosis and treatment of patients
Process	ISO/TS 23081-2:2007	Approval of research grant applications	Examination of a patient
Transaction	ISO/TS 23081-2:2007	Submitting an application for a research grant	Providing a prescription for drugs for a patient

Functional analysis will be emphasized when developing a function-based classification scheme for a whole organization, particularly to identify the higher levels of the scheme. Sequential analysis will be emphasized when resolving issues of records creation, capture and control in a single process or a single business unit of an organization.

When undertaking work process analysis for a specific records project, the following questions should be asked.

Is the records project concerned with

- a) a single transaction in a process?
- b) a single process in a business unit?
- c) a number of related processes (an aggregate of processes) in a division of an organization?
- d) a whole function as it is executed across one or more organizations?
- e) a functional analysis of the whole organization?

4.4 Participants and validation

Work process analysis for the purposes of creation, capture and control of records is specific. It describes and analyses processes taking place in organizations in real time and is dependent on accurate information gathering. The participants in the work process are a key source of that information and an important reference for validation of its accuracy.

Reviewing the role of participants in a process (for example, from job descriptions) also facilitates work process analysis. The nature of their participation (for example, advice and guidance, authorization, processing, evaluation, audit) can indicate steps in the process as well as the point at which the steps are undertaken.

Validation is key to the success of work process analysis, to gain acceptance of the findings of the analysis and collaboration in implementing recommendations. Validation depends upon participants' confirming that the findings of the analysis are comprehensive, accurate and reliable.

4.5 Responsibilities

The head of an organization is responsible for the performance of the organization and for how the organization undertakes its business and conducts its work processes.

Responsibility for records arising from work processes rests primarily with the manager delegated with the operational responsibility and accountability for the business being undertaken. Adequate records are essential to enabling the accountability, risk management and monitoring aspects of managers' responsibilities.

Responsibility for records arising from any specific work process includes the documentation of the business rules, procedures and guidelines which govern that process. Maintenance and updating of documentation of the business rules and procedures specific to a work process is a managerial responsibility. Establishing procedures that ensure the work process analysis is updated when there are major changes in a work process is likewise a managerial responsibility.

Individuals in an organization have different roles and responsibilities over time which should be tracked as part of the contextual information necessary for ensuring the records arising from the work processes they undertake remain meaningful.

5 Contextual review

5.1 General

All work process analysis should start with a review of the context within which the organization conducts its business, i.e. a review of the regulatory environment, and of the organizational context in which the work processes take place.

NOTE For further guidance when undertaking contextual review, see ISO 15489-1:2001, Clause 5, 8.4 a) to 8.4 c) as well as ISO/TR 15489-2:2001, 3.2.

The regulatory environment within which an organization operates consists of the international and national legislation which impacts on the way an organization conducts its business, the business rules, mandatory standards, voluntary codes, agreements, practices, and community expectations, etc. with which the organization should comply. The hierarchy of elements involved in reviewing the regulatory environment include:

- a) statute and case law and regulations governing the sector-specific and general business environment;
- b) mandatory standards of practice;
- c) voluntary codes of best practice;
- d) codes of conduct and ethics;
- e) identifiable expectations of the community;
- f) domain or organization policy directives; and
- g) organization rules and procedures.

For public sector organizations, legislation or policy sets out expectations regarding the functions and processes to be undertaken by a particular organization. For non-public sector organizations, these expectations will be articulated in a business prospectus, mission statement or constitution that indicates what the organization is constituted to do or accomplish.

A review of the organizational context locates work processes within, or across one or more organizations. It establishes the architecture of the function or process (e.g. whether centralized or decentralized) and the accountabilities for the performance of the function or processes. It identifies the framework for situating *functions*, *processes* and individual *transactions* within an organization, and for defining how they relate to one another, an exercise that achieves precision through functional and sequential analysis (see Clauses 6 and 7).

When undertaking work process analysis, contextual review should accurately reflect, at the highest level, the regulatory environment and organizational context that authorizes the work process. If the scope of work process analysis is limited to a specific process, the scope of the contextual review should extend only to the specific policies, procedures or rules which govern that specific process. Conversely, if the scope of the work process analysis encompasses an entire function, the scope of the corresponding contextual review should extend to all elements of the related regulatory environment and organizational context.

Table 2 lists a number of questions to ask when undertaking a contextual review.

Table 2 — Contextual review

Reference No.	Question
1	What legislation or mission statement specifically governs the work process being reviewed?
2	What other legal requirements have an impact upon or influence the function or process?
3	Are there mandatory standards or regulations with which the function or process is required to comply?
4	Are there organizational rules, codes of practice or conduct relevant to the function or process(es)?
5	What are the specific procedures which govern the process(es)?
6	What community expectations might impact on or influence a function or process(es)?
7	Where are the processes located in the organization (i.e. centralized or decentralized, across more than one organization, across more than one jurisdiction)?
8	To whom is the manager responsible for the process(es) accountable, and for what key outcomes?
9	Which participants in the organization(s) are involved in the process(es) and where are they located?

5.2 Outcomes of the contextual review

The principal elements of the regulatory environment and organizational context, in relation to the work process, being analysed, are identified and documented. This provides the foundation for undertaking functional and sequential analysis.

6 Functional analysis

6.1 General

Functions are identified in relation to the goals of the organization. They may be defined as processes grouped together because they are directed to a specific strategic goal. Functions should generally be exclusive categories and should be represented once only in the analysis even though their constituent processes may be performed in several parts of the organization.

NOTE There can be several hierarchical layers within this grouping, depending on how jurisdictions or organizations choose to break down functions. These layers can be called sub-functions, activities, actions, etc., but in this Technical Report they are named collectively “aggregates of processes”.

Functional analysis is a top-down form of analysis starting with the strategic goals and purpose of an organization, identifying the programs, projects and processes employed to achieve them and breaking those programs, projects and processes down to the level appropriate to reveal the relationships between them.

It is recommended that functional analysis be undertaken independently of the organizational structure, as the function may be exercised in more than one location within, or across one or more organizations.

6.2 Analysis of the functions

6.2.1 Basic steps of functional analysis

The basic steps for undertaking functional analysis include the following.

- a) Identification of the goals and strategies of the organization.

The identification of the goals and general strategies of an organization typically draws upon the contextual review and the establishing instruments of the organization, its public reports (annual reports, strategic planning documents, annual accounts) and internal planning and budget documentation such as the corporate plan (see Clause 5). Any existing documentation providing an analysis of the organization's function(s) should also be consulted.

- b) Determination of the functions of the organization by which these goals are achieved.

Functions are identified by grouping the processes directed to each specific goal. Determining the functions of an organization is a two-way task, analysing from the top down the goals of the organization and researching and analysing the processes to group them in relation to the goals and strategies.

- c) Identification of the processes of the organization which constitute these functions.

All processes should be accounted for when undertaking a functional analysis of the whole of an organization. Processes, unlike functions, may recur in the analysis, because the same processes can be performed in several parts of the organization, or across more than one organization and/or because the same types of processes are found in different functions. For example, planning, budget development, management of project records and information, implementation and post-implementation evaluation of a project, are *generic* processes which will appear in analyses of most business projects relating to different functions. These generic processes are distinguished from one another by their specific business context or functional association, e.g. *personnel management—planning* versus *finance management—planning*. Processes, which are *specific* to the function, are described with terms which are likewise specific: e.g. property leasing (in an organization with properties for rental) or employment placement (in an employment agency). Gathering information and analysing the processes may draw on sequential analysis to identify the transactions making up the processes.

- d) Analysis of all the constituent elements of the processes to identify the transactions which constitute each process.

A detailed analysis of information, and resources needed for the execution of transactions typically draws upon the sequential analysis (see Clause 7).

The level down to which the functional analysis goes depends on the task. For example, for records *classification* or *disposition* purposes the analysis should identify all individual processes constituting a single function. For records *control* purposes, it should go down to the individual transaction, or to the point at which records creation takes place.

Table 3 lists a number of questions to ask when identifying functions, processes and transactions.

Table 3 — Identifying functions, processes and transactions

Reference No.	Question
1	What are the operational functions of the organization (i.e. those that meet the unique objectives of the organization)?
2	What are the administrative functions of the organization that support the delivery of the operational functions?
3	How are the operational and administrative functions related to one another and to the structure of the organization?
4	Who are the participants involved with the performance of the operational and administrative functions and where in the structure are they situated?
5	Is a function or a significant group of processes undertaken by more than one organization in the same or different jurisdiction?
6	Has a function or a significant group of processes been outsourced to another organization?
7	What are the main processes which constitute each operational and administrative function?
8	How are these processes related to each other?
9	What are the constituent transactions of each process?

6.2.2 Outcomes of the analysis of the functions

For a functions-based classification scheme or for determining aggregations of records for disposition, a representational model of the organization's processes which displays both the hierarchical relationships between processes and functions and the relationships between the processes is developed and documented.

To support the development of a thesaurus, naming conventions or indexing rules, documentation of the hierarchy of functions, processes and transactions is produced.

7 Sequential analysis

7.1 General

7.1.1 Sequential analysis identifies and maps the sequence(s) of transactions of a work process and their linkages/dependencies on other processes. It aims to account for every step in a work process and generally provides a chronological timeline of those steps. Identifying what is happening in the process is the foundation of sequential analysis. The aim of mapping a process is to determine the *sequence of steps*, i.e. what has to be accomplished at each step before the next transaction can occur.

When a process operates through several simultaneous sequences (parallel processes), the sequential analysis brings these back into a logical sequence at the point where they converge. Where more than one sequence occurs in the process, the mapping should identify both the point at which multiple sequences converge, and the sequences which are required to be completed before others can be undertaken. Each constituent transaction should be identified as a separate step.

Sequential analysis works on a smaller scale than functional analysis, i.e. at the transactional level. It is workplace-and time-specific.

Sequential analysis of the work process establishes

- a) the routine performance of the process,
- b) the most frequent variations, and
- c) the identification of other variations (less frequent or exceptions) which require non-standard (unusual/non-routine) intervention.

For established work processes sequential analysis compares existing chronological sequences against requirements identified during the contextual review. For the design of new work processes sequential analysis provides the opportunity to document transactions in relation to their contextual rules.

7.1.2 Sequential analysis can be applied to work processes that produce records that are filed as correspondence- or case-files, and the analysis may be used for the handling of these records and processes in design of templates and standard routes for tasks. This has the potential for the development of office automation systems, for example, using workflows which integrate the management of records with the work tasks. Hence the sequential analysis should

- a) identify the triggers for creating the records of the transactions,
- b) link transactions with organizational authorities (i.e. authorized officials within the organization and/or documentary authorities, e.g. legislation, policies),
- c) establish what data about the transactions performed by the work process are created, modified and maintained, and
- d) determine the content and metadata elements of the record needed for documenting completed transactions.

7.1.3 The principal elements in a sequential analysis are as follows:

- a) identify the sequence of transactions which constitute a process,
- b) identify and to analyse the variations to the process,
- c) establish the rules base for the identified constituent transactions, and
- d) identify the links to other processes and systems.

The order in which the elements are undertaken depends on the nature of the task. Any existing documentation providing an analysis of an organization's sequences of transactions should be consulted.

Most work consists of a number of processes which are interdependent, i.e. they require inputs from one process and produce outputs for another, they should be completed before the next process can start, or they draw data, authorization or materials from pre-existing sources. In some cases, there is total interdependence between steps in a process, insofar as that one step cannot begin before another is finished. For example, a step that involves delivering an instance of staff training cannot take place before the content of the training has been developed.

In other cases, the sequential dependency may only be partial. For example, determining staff training logistics (e.g. fixing the date and location of the training) could begin before development of the training content is completed. In other words, although a particular step in a process (step B) may depend upon another step in the process (step A), work on step B could begin before step A is finished.

7.2 Identifying the sequence of transactions in a process

The first step is to map the sequence of transactions in each process at the appropriate scale.

Table 4 lists a number of questions that should be asked to identify the sequence of transactions for each process:

Table 4 — Identification of the sequence of transactions

Reference No.	Question
1	What initiates the sequence and how is it recorded?
2	What information and other resources are required to start the sequence?
3	Where do the information and other resources come from?
4	What triggers the successive transactions?
5	How do the participants know each transaction has been completed?
6	Are there parallel sequences at any point of the process?
7	If so, where do the parallel sequences converge?
8	What are the key conditions, which should be met to authorize the sequence?
9	How and where are the decisions and transactions recorded, as the sequence unfolds?
10	What concludes the sequence and how is it recorded?

7.3 Outcomes of the analysis of the sequence of transactions in a process

7.3.1 The initial sequential analysis identifies and documents:

- a) the basic or routine pattern of transactions in the process,
- b) the records creation processes, and
- c) the critical transactions which are required to be completed before the subsequent transaction can occur.

7.3.2 The sequential analysis identifies and documents the dependencies of the work process, which include the inputs from other processes whether information or other resources, such as

- a) information about the delegations of authority,
- b) formalized procedures which identify points of records creation, capture and completion,
- c) identification of metadata elements, and
- d) auditing or monitoring processes which require recorded evidence.

7.4 Identifying and analysing the variations to the process

Many processes consist of a routine pattern and variations, which occur when changes to key elements force change on the routine. It is necessary to identify the variations, and why they occur, to ensure the system for managing records also captures them. This element of work process analysis is critical to appraisal of the work processes to determine records capture requirements.

Table 5 lists a number of questions to be asked to identify and analyse variations to the process.

Table 5 — Identification and analysis of variations to the process

Reference No.	Question
1	What conditions are attached to authorizing and/or completing the sequence of transactions?
2	What happens if the conditions are not met?
3	What are the procedures that identify these conditions and any variations to them?
4	Which participant initiates or triggers the variation to the process?
5	Who authorizes the transactions?
6	What happens if the authorizer is not available?
7	What happens if any of the information and other resources and systems needed to perform the process are not available?
8	If the work process needs to be re-routed, where does it go?
9	Are there other ways of performing the sequence of transactions which are sometimes used, and if so why?
10	What events can prevent the process from following its routine pattern?
11	What is the response?
12	Are there established contingency procedures covering situations where something goes wrong?
13	Who is accountable for dealing with breakdowns in the process or complaints about the performance?
14	What information or records are generated, stored or transferred to other processes if there are variations in the sequence of transactions?

7.5 Outcomes of the analysis of variations to the process

The analysis identifies and documents the common variations of the routine process.

Analysis of the routine process and variations can be used to develop a template for the normal sequence and the most common variations. The creation and capture of the records of the process can be built into the template. The records of the individual transactions of the process need to be assessed to ensure they remain meaningful as they move through the sequence, particularly if the route takes the process and the records beyond its originating business unit.

Operation in a purely electronic environment depends on systematically recording the identities of the users of the organization's systems on one hand, and on the other, recording the roles with their delegated powers and user permissions in the specific system. Control of the records generated by the process needs to take into account the need to record changes to the users, synchronized with the record of changes to the roles over time.

7.6 Establishing the rules governing the identified constituent transactions

After the sequence of transactions has been mapped, the reasons for each step should be documented. These can vary from reference to legislation, to organizational procedure manuals, local practices and audit requirements through to the requirements of the computer application being used.

The reasons for each step should be documented from a number of sources as follows.

- a) The organization's existing procedures should be consulted.
- b) The participants in the process should be interviewed.