

1. INTRODUCTION

1.1 What is Noark-4?

Noark-4 is a specification of functional requirements for electronic recordkeeping systems used in public administration (in Norway). The specification lists requirements with regard to *information content* (what kind of information it should be possible to register and retrieve), *data structure* (design of each data element and the relationship between these elements) and *functionality* (the functions which the systems are to maintain). In some cases there are requirements with regard to the *user interface* (how the systems communicate with the users), but this is mainly left to the individual system developers or vendors to decide. The specification does not contain requirements with regard to the how the data structure is to be implemented, or with regard to system design. This is left to the system developers.

Noark-4 is a revision of the *Noark standard* "Norsk arkivsystem" (Norwegian record-keeping system) of the Norwegian state administration, which was first introduced in 1984 and has since run through several revisions, the previous one being the Noark-3 of 1994¹. Noark-4 also elaborates the specifications of *Koark*, which is the corresponding standard for local and regional administration. The Koark report², published in 1995, essentially follows the same principles as the Noark standard, but includes some additional functions which are specifically adapted to the process of decision-making in Norwegian local and regional administration. The report assumed that Koark would later be incorporated in a common standard for the whole of Norwegian public administration, and this has been accomplished through Noark-4.

As the name suggests, Noark-4 is the fourth version of the Noark standard. It is an updated and modernized version of Noark-3 and Koark, while at the same time being substantially more comprehensive and complex than its predecessors. There is much new functionality in Noark-4, and in many areas the specifications have been more systematically implemented than in previous versions. The design of Noark-4 is based, among other things, on the following:

- Noark- and Koark-based systems have a very large and heterogeneous group of users comprising practically everybody within the Norwegian public administration. In connection with Noark-4, users have voiced many wishes and suggestions calling for enhanced functionality as compared with Noark-3 and Koark. The suggestions all point towards making Noark-4 a more comprehensive and complete information system for those functions that deal with records management and document flow.

¹ Noark-3. Standardsystem for edb-basert journalsystem i statsforvaltningen. Samlet kravspesifikasjon [Standardized system of computerized records management system for the state administration. Complete specification of requirements]. Riksarkivet [National Archives of Norway] 1994.

² Koark. Kommunal standard for edb-baserte sak-/arkivsystemer [Municipal standard of computerized records management systems]. Kommunenes sentralforbund [Norwegian Association of Local and Regional Authorities] 1995.

- Technological progress (e.g. in terms of processing capacity, storage capacity, window technique, network technology) makes it possible to fulfil more user wishes within a realistic technological framework, without the system becoming too hard to handle or too complex.
- Previous specifications have to a large extent concentrated on *registering and keeping track of documents* (recordkeeping/records management), while *electronic storage of documents* (electronic records) have only been described at a general level. The opportunities of technology and the needs of the users now suggest that the time is ripe for specifying a completely electronic recordkeeping system, where both the registered information and the documents are in electronic form. The work on Noark-4 has shown that a whole new set of requirements are being posed with regard to functionality, interaction between people involved and quality control when it is assumed that all information exists in electronic form only.
- The use of e-mail has exploded in recent years, and e-mail is probably used more and more even for documents in a legal sense being received or dispatched on behalf of organizations or enterprises. A major issue in Noark-4 has been to facilitate the capturing and filing of any e-mail that makes up or contains administration documents. Integration with e-mail are related to and presupposes the solutions for electronic records management discussed in the previous indent.
- An electronic recordkeeping system can stand on its own feet, as the Noark systems have largely done up to now, but the system can be used more efficiently if it is more closely integrated with the document flow. This has to some degree been achieved with Koark for that part of the document flow which concerns political bodies (boards), but such integration may be taken much further. The recordkeeping system ought to be perceived as an integrated part of the worktool for executive officers within public administration. The system should be able to import and store information and documents from the executive functions, and it should be possible to search for information in the records database and distribute this information to all the users. Noark-4 is described with a view to such integration, and attention has been paid to the requirements of the new edition of «Statens generelle kravspesifikasjoner for elektronisk saksbehandling» (SGK)³.

Noark-4 is described here as a specification of a *system*. This means that the specification should form the basis for the development of an independent system which maintains the records management functions of a public body. If, on the other hand, one wishes to integrate this recordkeeping system in a wider context, such as a case handling system according to the SGK specifications, Noark-4 may be implemented as a *set of functions* or a *module* within this system. However, this presupposes that the Noark functions in such systems are explicitly identifiable, and the requirements specified have the same validity within the framework of a wider system.

1.2 The project work of Noark-4

The framework of the project was defined in note 06.12.96 from Riksarkivet (the National Archives). An agreement had been reached with Kommunenes sentralforbund (KS; the

³ Elektronisk saksbehandling. Statens generelle kravspesifikasjon [Electronic case handling. General specification of requirements for the state administration]. Statskonsult 1997.

Norwegian Association of Local and Regional Authorities) to incorporate the Koark specifications in a common Noark standard for state and local administration. In a letter of 31.01.97 to the Ministry of Cultural Affairs, the National Archivist (who is also the director general of the National Archives) presented a plan for the implementation of the project. The Ministry of Cultural Affairs has supported this scheme, also in terms of financing.

The *project group* was appointed in a letter of 24.03.97 from the director general. The following people have been members of the group:

Ivar Fonnes, Riksarkivet [*National Archives*], *leader of the project group*

Steinar Abrahamsen, Interkommunalt arkiv i Rogaland [*Intermunicipal Archives of Rogaland*] (*appointed by Kommunenes sentralforbund [Norwegian Association of Local and Regional Authorities]*)

Katarina de Brisis, Statskonsult, later Arbeids- og administrasjonsdepartementet [*Ministry of Labour and Government Administration*] (*appointed by Planleggings- og samordningsdepartementet [Ministry of Planning and Coordination]*)

Ole Gausdal, Kommunaldepartementet [*Ministry of Local Government*], later Næringsdepartementet [*Ministry of Industry*] (*appointed by Arkivledergruppen for departementene [the group of records managers in the state administration]*)

Torbjørn Nystadnes, KITH AS, *hired as a consultant*

Trond Sirevåg, Riksarkivet [*National Archives*], *secretary of the project group*

Jon Atle Haugen, Riksarkivet [*National Archives*], *member of the project group from January 1998*

After consultation with the Ministry of Cultural Affairs, a reference group was set up, composed of representatives of Statsministerens kontor [*Office of the Prime Minister*], Kulturdepartementet [*Ministry of Cultural Affairs*], Planleggings- og samordningsdepartementet [*Ministry of Planning and Coordination*], Justisdepartementet [*Ministry of Justice*], Kommunenes sentralforbund [*Norwegian Association of Local and Regional Authorities*], local archives, Norsk Presseforbund [*Norwegian Press Association*], Norsk arkivråd, the state archives and selected Noark/Koark vendors. The following people have been members of the *reference group*:

Kirsten Ambjørnsen, Statens Datasentral

Anna-Brita Bakken, Buskerud fylkeskommune [*Buskerud county council*]

Helene Brynildsen, Cinet

Ingvar Engen, Kulturdepartementet [*Ministry of Cultural Affairs*]

Knut-Erik Gudim, Siemens-Nixdorf Informasjonssystemer

Arne Jensen, Norsk Presseforbund [*Norwegian Press Association*]

Thor Kristoffersen, Justisdepartementet [*Ministry of Justice*]

Guro Lysberg, Telenor Allianse

Marie Manshaus, Rogaland fylkeskommune [*Rogaland county council*]

Ragnhild Monsen, Miljøverndepartementet [*Ministry of the Environment*]

Jens Nørve, *Planleggings- og samordningsdepartementet* [Ministry of Planning and Coordination]

Kari Remseth, *Statsarkivet i Trondheim* [Regional State Archives in Trondheim]

Arne Spildo, *Statsministerens kontor* [Office of the Prime Minister]

Ragnar Sturtzel, *IBM*

Henning Søndergaard, *Oslo byarkiv* [City Archives of Oslo]

The reference group has met twice. In addition, a follow-up meeting has been arranged for the vendor members of the group.

Torbjørn Nystadnes of KITH AS has been hired as a consultant and planner throughout the project work. In the autumn of 1997, Ove Jordbakke and Ellen Strålberg Janson of ECsoft AS were hired to do writing work. Towards the end of the project period, in the autumn of 1998, Anne Mette Dørum of Forvaltningsinfo AS was hired to compare comments and contribute to the completion of the writing work.

The project group had its first meeting on 4 April 1997. The original project plan aimed at finishing the work with a version of Noark-4 to be circulated for comments in December 1997. The work was somewhat delayed, among other reasons because the specifications were more comprehensive than had been anticipated. The version to be circulated for comments was ready by June 1998. It was published on the Internet and sent to a number of state and local bodies for comments, the deadline being 15 September. 53 opinions were received, and during the autumn of 1998 a number of adjustments were made and definitions incorporated based on comments received.

The work of the project group has taken the form of internal reports and lengthy work meetings. Altogether, the group has met 14 times.

In its work, the project group has made a point of communicating with a number of people about questions relating to the way Offentlighetsloven [the Freedom of Information Act] is being used. A number of meetings have been arranged with representatives of the Ministry of Justice and Norsk presseforbund [Norwegian Press Association].

Furthermore, it has been deemed important to coordinate the specifications of Noark and SGK. For this purpose, meetings were arranged between Statskonsult, the Ministry of Cultural Affairs and the National Archives at the start of the Noark project work. Coordination has also been sought by having staff from Statskonsult (de Brisis) and the National Archives (Sirevåg) as members of both the SGK project group and the Noark project group.

The project has drawn on a wealth of experience from Noark/Koark users and vendors.

The adaption of the material after the round of comments has mainly been carried out by the project managers in co-operation with the hired consultants Torbjørn Nystadnes and Anne Mette Dørum.

1.3 The design of the report

As previously mentioned, Noark-4 is a revision of previous versions of the Noark standard as well as Koark. This leaves an imprint on the report in the form of references to previous solutions as well as discussions on changes in comparison with Noark-3 and Koark. At the same time, Noark-4 is intended to be a report that can stand on its own feet. Reading this report should be sufficient to grasp what is entailed in the new version of the Noark standard and to develop systems based on Noark-4.

The report is primarily aimed at two groups of users:

- System vendors wishing to develop Noark systems for public administration
- Administrative bodies and other institutions that use or plan to use a Noark system

For the system vendors, the report is meant to be a worktool during system development. Much work has gone into systematizing and formalizing the requirement specifications, so that it is easy to find out what are requirements, on what level the requirements are, and what are merely recommendations or suggestions. Chapter 1.4 gives a complete overview of the requirement structure of Noark-4.

Unlike earlier reports, Noark-4 includes a comprehensive technical specification where all attributes which are discussed in the report, are described. This is primarily meant as a guide for system developers, and it is stated several places that the technical implementation does not have to follow these specifications as long as the requirements are otherwise satisfied. However, many of the attributes are a mandatory part of a Noark system, both in terms of existence and design.

For existing and potential users, the report is meant to give an overview of what is contained in a Noark system and what is new in Noark-4 compared with to previous specifications. This would be particularly useful in connection with evaluation, selection and implementation of a new system, or a new version of an existing system. The report may, however, also be useful during reviews of administrative routines, outsourcing and periodization of records as well as transfer of records to an archival repository.

1.3.1 Main structure

The report has two main parts:

Part I: Functional description and specification of requirements

First a general introduction to Noark-4 is given, where the recordkeeping system is placed in context with the recordkeeping and executive functions. Then follows a comprehensive presentation of the standard both at general and detailed levels. The presentation is in the form of a functional description which is closely linked to corresponding procedures and routines. Formalized requirements are given for the individual functions, and these constitute the specification of functional requirements of Noark-4. The presentation includes:

- general description and functional requirements
- main structure of the data model
- purpose, design and functional requirements for the various parts of the system (modules)

- main tables and their information contents (details: see list of attributes in part II)
- assumptions related to administrative routines
- reports and statistics
- integration with e-mail and executive functions
- deviations from Noark-3 and Koark

Part II: Specification of technical requirements

This gives a complete technical specification of the information contents and data structure of Noark-4. The specification takes the form of

- data models for the individual modules
- a complete list of attributes for all tables, associated with individual modules

The data structure in the shape of modules and tables are only guidelines; their purpose is to describe how a Noark system may be implemented to satisfy the functional requirements of part I. The attributes, on the other hand, are part of the specification of requirements (see chapter 1.4). In addition, the following are specified:

- requirements for exchange and export formats
- deviations from Noark-3 and Koark with suggested principles for converting

Part II, together with the formalized functional requirements of part I, should be the frame of reference for the development of a system based on Noark-4. However, it is essential that system developers also familiarize themselves with the description in part I, so that they understand the meaning of the various requirements and the context which they are part of.

For the users it will normally suffice to read part I, but those who seek more detailed information on information content and data structure should turn to the list of attributes in part II. The same applies to those who wish to check to what degree a system conforms to the requirements of Noark-4.

The numbering of the chapters runs throughout the entire report. Thus, part I contains chapters 1 - 12, whereas part II contains chapters 13 - 17. Due to the comprehensive technical specifications, the report has been split into two volumes, one each for parts I and II.

1.3.2 Form of description and terminology

In the specification of information content and data structure, a simplified version of the principles in the so-called E-R model ("entity-relationship") is used. The entities in the data model are referred to as *tables* (corresponding to the concept of "entity" in the E-R model). The *table* concept has been chosen because it is easy to understand intuitively for those who are not specialists in data modelling, and because it is often natural to implement a table in the data model as a table in the data base. It should be noted, however, that the specification does not make specific *requirements* in terms of how the tables of the model should be implemented. This is left to the individual developer/vendor to decide.

The concept of *attribute* is used to represent the various pieces of information that can be included in a table. In normal usage, this is the same as a *field* in a table. An attribute may be assigned different *values*, which in effect constitute the pieces of information that are entered.

Example: The table *Case* contains, among other things, the attribute *Case date*, which may be assigned the value *12.11.1997*.

The description of records management and executive functions uses ordinary scientific terminology, which in most cases is considered part of the normal language. However, sometimes terms are used which must be further explained. This applies, in particular, to those cases where Noark-4 introduces new terms, or where established terms are used in a different or restricted meaning.

A terminology list has been compiled which contains definitions of words and phrases that may be assumed to be unknown, or that need to be precisely defined. This list has been printed as an appendix to both volumes of the report.

1.4 Requirement structure of Noark-4

Systems that are to conform to the requirements of Noark-4, must relate to the following specifications:

- formalized functional requirements in part I (chapters 3 - 12)
- modules, tables and attributes in part II (chapter 14)
- exchange and export formats in part II (chapter 15)

1.4.1 Formalized functional requirements

All the functionality that is described in this report, is not meant to be implemented in every Noark system. It must be possible to realize Noark-4 on various levels depending on the needs of the users. For this purpose, the functional requirements are grouped according to what area the function covers. Each area is indicated by a letter:

O	Obligatory basic version; must be satisfied for the system to be Noark-4 compliant
E	Basic version for functionality related to integrated e-mail
S	Basic version for functionality related to integration with case handling
U	Basic version for functionality related to board handling

If the letters stand on their own, as above, they refer to the lowest level -- the basic level. Noark-4 in its simplest version would only contain O requirements. These O requirements cover only the records management system itself and are obligatory in the sense that they must be part of any Noark solution. If the O requirements are combined with U requirements, the two together would constitute a simple Koark version. This may again be combined with E and S requirements as necessary.

The requirements within each of the four main areas may be expanded with more advanced requirements. These additional requirements constitute separate requirement levels. The levels are hierachically structured and are indicated by the letters cited above followed by a number. Requirements at a higher level must include all requirements at the level below.

The recordkeeping system in a strict sense (the O requirements) have two additional levels, and a number of recommendations are specified:

O1	Extended version; more advanced functionality, but without electronic records
O2	Full version; advanced functionality, and with electronic records
A	Recommendations

The recommendations are, strictly speaking, not requirements in themselves, and they may be applied both to the basic version and on the higher levels. Many recommendations will probably be difficult to implement in a sensible way without considering a specific level, but such conditions will often be self-evident and so are not always mentioned explicitly in the text.

The other three areas, integrated e-mail, case handling and board handling, have only one additional level, and here too recommendations have been included:

E1	Advanced functionality related to integrated e-mail
S1	Advanced functionality related to integration with case handling
U1	Advanced functionality related to board handling
A	Recommendations

All the functional requirements are presented in separate tables, requirement tables, which are integrated in the texts of the various chapters. The requirement tables have three columns: requirement number, text and requirement type/level. Following is an example of such a table, taken from chapter 8:

K8.70	When registering an access code for a registry entry, one should check off for screening of information related to that registry entry, and for electronic documents related to the registry entry (see ch. 8.61 and ch. 8.62).	O
K8.71	When a registry entry has several senders or addressees, these should be screened individually, but collective checking should also be provided for.	O1
K8.72	Screening of registered electronic documents should always be performed from a registry entry with which they are associated. It should be possible to register an access code for the registry entry when associated documents are to be screened, without any of the record information being checked off for screening (see screening code 1 of Noark-3 and Koark).	O2

1.4.2 Modules, tables and attributes

Part I does not give a complete description of all requirements and conditions. To grasp all the details regarding the functionality of the system, it is necessary to read part II as well. Part II shows an example of how all the tables and attributes in a Noark system could be designed. It should be stressed that this is only an example, and that vendors are free to model their systems in an appropriate way, as long as all obligatory attributes are included and the functionality of the attributes is maintained.

The data model in part II is based on the most advanced level, and all the recommendations are included. The list of attributes in part II contains a column K which specifies requirement type (O, O1, O2, etc.) for the individual attributes (see ch. 14.1.1).

The list of attributes also specifies unique abbreviated names for all the attributes. Use of these abbreviated names are obligatory during export (see below), but the system itself may be realized with other attribute names.

To develop a basic solution (requirement type O), it is not necessary to implement all the relations in the data model. For instance, it is perfectly possible to develop a basic version without a 1:M relationship between case and filing plan code, or between registry entry and sender/addressee.

1.4.3 Exchange and export formats

An absolute requirement is that all Noark systems should be able to export data in a uniform way, irrespective of the level at which they are implemented. This format is based on SGML syntax and is further described in chapter 15.3. During export, each attribute should be tagged with the unique field name specified in the list of attributes. Requirements in terms of formats specified in the list of attributes (such as YYYYMMDD for date fields) must also be complied with.

All attributes that are to be included during export for transfer to an archival depository, are marked with the letter «a» in column K in the list of attributes.

Example:

If the system is designed so that *File Code* and *Secondary Code* are registered in separate fields in the assembly of records which constitutes a case (as is done in Noark-3 today), it must be possible to export the contents of the two fields as rows in the table *Filing plan code*.

Chapter 15.4 describes how reports are exported, and even the basic version must be able to export reports -- such as reports from public administration -- in this format.

1.4.4 Summary of minimum requirements and possible combinations

In order for a system to satisfy the minimum requirements of Noark-4, it must

- satisfy all formalized functional requirements of type **O** without a trailing number in part I (chapters 3 - 12)
- include all attributes with requirement type **O** in the list of attributes (chapter 14) and satisfy the functional requirements associated with them
- be able to export all attributes included in the system except those which are set in italics under requirement type in the list of attributes (chapter 14), and also use the export format specified in chapter 15.3
- be able to export electronic reports according to the specifications in chapter 15.4

These are the requirements of the basic version of Noark-4. For enhanced functionality, the following combinations are likely to represent the relevant alternatives for governmental and municipal agencies:

- O + U : Noark-4 version of Koark
- O1 : Enhanced version of registration and records management system
- O1 + U : Enhanced Koark version
- O2 : Electronic recordkeeping system
- O2 + U : Electronic recordkeeping system with board handling
- O2 + S : Electronic recordkeeping system integrated with case handling
- O2 + E : Electronic recordkeeping system integrated with external e-mail

On top level, several types of functionality may be combined:

- O2 + S + E
- O2 + S + U
- O2 + E + U
- O2 + S + E + U

In addition, functions in E, S and U may be supplied with more advanced additional functions from E1, S1 and U1.

Additional recommended functionality (**A**) may be included at levels where the function in question is relevant.