



BSI Standards Publication

**Value management —
Functional expression of
the need and functional
performance specification
— Requirements for
expressing and validating the
need to be satisfied within
the process of purchasing
or obtaining a product**

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

National foreword

This British Standard is the UK implementation of EN 16271:2012.

The UK participation in its preparation was entrusted to Technical Committee MS/2/-/3, Value management.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013.
Published by BSI Standards Limited 2013.

ISBN 978 0 580 74624 6

ICS 03.100.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2013.

Amendments issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD

EN 16271

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2012

ICS 03.100.10

English Version

Value management - Functional expression of the need and functional performance specification - Requirements for expressing and validating the need to be satisfied within the process of purchasing or obtaining a product

Management par la valeur - Expression fonctionnelle du besoin et cahier des charges fonctionnel - Exigences pour l'expression et la validation du besoin à satisfaire dans le processus d'acquisition ou d'obtention d'un produit

Value Management - Funktionale Beschreibung der Bedürfnisse und funktionale Leistungsbeschreibung - Anforderungen an das Beschreiben und Validieren der Bedürfnisse, die während der Erstellung oder des Erwerbs eines Produktes zu befriedigen sind

This European Standard was approved by CEN on 27 October 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	4
0 Introduction	5
0.1 General.....	5
0.2 Basis	5
0.3 Organisation and presentation of processes and deliverables.....	5
0.4 Functional need analysis (FNA)	6
0.5 Functional Need Expression (FNE).....	7
0.6 FPS	7
0.7 Fields of use.....	7
0.8 Relationships with Value Analysis and Design To Objective (DTO)	8
1 Scope	9
2 Normative references	9
3 Terms and definitions	10
4 Requirements applicable to the deliverable “Functional Need Expression”	14
4.1 General.....	14
4.2 Adaptation of the requirements to the FNE usage context.....	15
4.3 Global Need Definition	15
4.3.1 (FNE.01) Global need formulation.....	15
4.3.2 (FNE.02) Product integration into a 'larger' system	16
4.4 Definition of the strategic elements of the target market and product outlet (Customer side).....	16
4.4.1 (FNE.03) Definition of the economic stakes.....	16
4.4.2 (FNE.04) List of the inquirer's strategic data	16
4.4.3 (FNE.05) Fields of processed needs.....	17
4.4.4 (FNE.06) study of each targeted functional coverage.....	17
4.5 Highlighting of Principles/Concepts Selected Beforehand.....	17
4.5.1 (FNE.07) Statement of principles or concepts selected beforehand.....	17
4.6 Description of the functions to be provided and their compliance with the constraints.....	18
4.6.1 Depth, fineness of analysis (granulation) and field to be covered.....	18
4.6.1.1 (FNE.08) Identification of the fineness (granulation) of the Need description	18
4.6.2 Life cycle and interacting agents	18
4.6.2.1 (FNE.09) Selection and description of life cycle phases	18
4.6.2.2 (FNE.10) List and description of interacting agents.....	18
4.6.3 Description of the functions and the constraints.....	19
4.6.3.1 (FNE.11) List of user-related functions.....	19
4.6.3.2 (FNE.12) Technical neutrality of user-related functions	19
4.6.3.3 (FNE.13) Organisation of functions.....	19
4.6.3.4 (FNE.14) Function characterisation	20
4.6.3.5 (FNE.15) Function ranking/weighting	20
4.6.3.6 (FNE.16) Identification of mandatory and possible additional characterisation elements	20
4.6.3.7 (FNE.17) Possible functional variations	21
4.6.3.8 (FNE.18) Organised list and constraints description	21
5 Requirements applicable to the deliverable “Functional Performance Specification”	21
5.1 General.....	21
5.2 FPS contents	22
5.2.1 (FPS.01) Mandatory sections of an FPS.....	22
5.2.2 (FPS.02) Other sections of an FPS.....	23
5.2.3 (FPS.03) Structure adaptation to the defined usage of the FPS	23
5.3 Characteristics defining the quality of an FPS	24
5.3.1 (FPS.04) Compliance with the processes	24
5.3.2 (FPS.05) Legibility and understanding by the recipient	24

5.3.3	(FPS.06) Capacity to support the usage phase	24
6	Requirements applicable to the three processes (the FNA process, the process for the drawing up of the FPS, FPS utilisation process)	24
6.1	General	24
6.2	Common requirements applicable to the three processes	25
6.2.1	(PROC.01) Framing of the subject of the action	25
6.2.2	(PROC.02) Supported decision for starting an action	25
6.2.3	(PROC.03) Mandate of the person in charge of the action	25
6.2.4	(PROC.04) Mobilisation of resources and implementation of an operational structure	26
6.2.5	(PROC.05) Search for information and consolidation	26
6.2.6	(PROC.06) Handling of possible conflicts or contradictions	26
6.2.7	(PROC.07) Traceability of the action	26
6.3	Particular requirements applicable to the FNE generation process: Functional Need Analysis	26
6.3.1	(PROC.08) Adaptation of the resources to the need to be described	26
6.3.2	(PROC.09) FNE validation	27
6.4	Particular requirements applicable to the drawing up process of the functional performance specification	27
6.4.1	General	27
6.4.2	(PROC.10) FPS integration into the process used to obtain a product	27
6.4.3	(PROC.11) Selection of the FNE elements to be integrated into the FPS	27
6.4.4	(PROC.12) Transmissibility to a third party	28
6.4.5	(PROC.13) FPS validation	28
6.5	Particular requirements applicable to the process implemented to make use of the functional performance specification	28
6.5.1	General	28
6.5.2	(PROC.14) Search for and selection of potential providers	29
6.5.3	(PROC.15) FPS appropriation by a provider	29
6.5.4	(PROC.16) Drawing up of the final version of the FPS	29
6.5.5	(PROC.17) Suggestion processing recording	29
6.5.6	(PROC.18) Intellectual property, rights of the partners	30
6.5.7	(PROC.19) Arbitration processing	30
6.5.8	(PROC.20) Examination of proposals	30
Annex A	(informative) The variety of situations where FNE and FPS can be used	31
A.1	General	31
A.2	Universality	31
A.3	Initial condition of the object under study	31
A.4	Use of the FNA and FNE in a VA approach	32
A.5	Use of the FNE and the FPS in the process used to obtain a product	32
A.6	Use of the FPS with Design To Objective	33
A.7	Relationships with other methods	33
Annex B	(informative) Conditions of use of deliverables	34
B.1	Background for the drawing up of a FNE	34
B.2	Variety of FPS (or FNE) usage cases	34
B.3	Compatibility with the rules applicable to public contracts	35
Bibliography	36

Foreword

This document (EN 16271:2012) has been prepared by Technical Committee CEN/TC 279 “Value management, value analysis, functional analysis”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

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

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

0 Introduction

0.1 General

This European Standard states the conditions for the successful implementation of the Functional Need Analysis, Functional Need Expression and Functional Performance Specification and determines the compliance requirements for the parties involved. It extends the generic standard on Value Management, EN 12973. It separately presents the requirements applicable to the processes that have to be implemented and those applicable to the deliverables derived from these processes.

0.2 Basis

In highly competitive markets, the durability and the development of organisations depend on their capacity to provide competitive products which are best suited to satisfy the need, whether expressed or implicit, of the users.

The statement of the need in a functional form, i.e. in terms of purpose, without reference to solutions (technical, administrative, procedural, and organisational, etc.) likely to satisfy it, ensures there is every chance that competitive and innovative solutions will emerge at the design stage.

The statement of the need in a functional form is essential. It permits the expression of the:

- reference of this need in validated terms (in terms of obligations, expected services, rather than in terms of means) which can be used to control the evolution of this reference at the later stages of the product's life;
- level of importance of the main requirements which make up the cost of a product.

Using a structured need statement approach in a functional form promotes the:

- offer of competitive and innovative products;
- mobilisation of all the interested parties to obtain a unified expression of the need which can be used at each step - from the development to the evaluation of offers satisfying the same need;
- dialogue between the partners, while respecting the responsibilities of each partner and with a clearer relationship between the customer and the provider.

This European Standard addresses the quality of specification under the responsibility of the enquirer, the handling of the customer/provider relationship and the search for the optimum solution in relation to the expressed need. The standard also addresses the performance levels and the grade of quality required by the enquirer.

0.3 Organisation and presentation of processes and deliverables

Figure 1 below shows schematically the relationship between the three key processes (Functional Need Analysis (FNA) process, the Process for drawing up the Functional Performance Specification (FPS), and the FPS utilisation process:

- The Functional Need Analysis (FNA) process: this enables the defining of the result named Functional Need Expression (FNE).
- The process for the drawing up of the Functional Performance Specification (FPS) from the FNE: this process generates a document (FPS) used within the framework of external enquiries, calls for tenders, the Design To Objective (DTO) approach, or internally by certain organisations.

- The FPS utilisation process: this enables, from the initial FPS, a stabilised and final version of the selected need (FPS reference version) to be defined so that the future product shall satisfy.

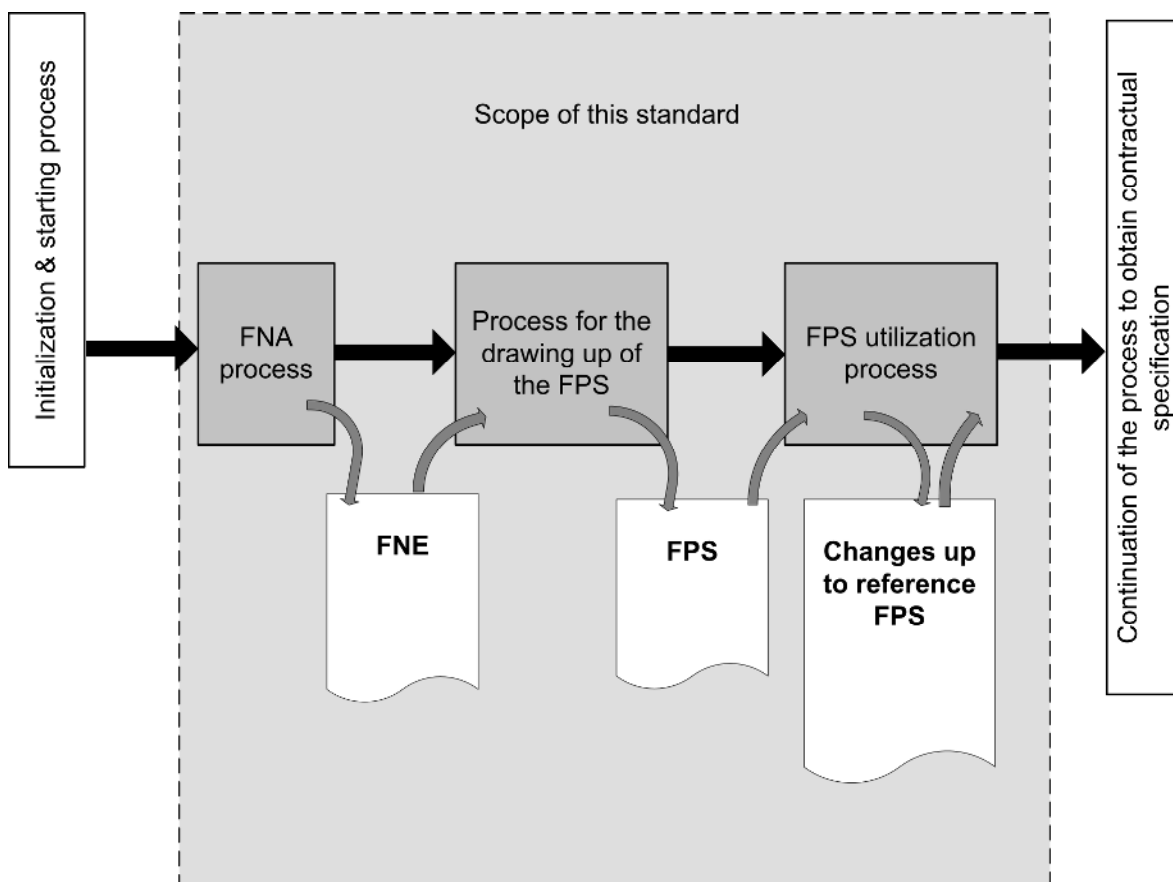


Figure 1 — Process organisation and relations between deliverables

Annex B proposes a detailed presentation of the processes and deliverables highlighting the respective roles of the owner or project manager and of designers/producers.

0.4 Functional need analysis (FNA)

The FNA is a process which applies to a physical object, as well as an organisation, a service, an intellectual service, a process, software, an information system or any combination of the preceding elements. The functions (User Related Functions) that any product provides shall be defined before it is made, thus justifying its acquisition or, more generally, its procurement. The FNA:

- highlights and takes into account the point of view of all the interested parties involved;
- relates to the entire life cycle, from upstream (supply, storage etc.), utilisation, to downstream (maintenance in operational conditions, upgrading and end-of-life operations) phases, and thus introduces the consideration of time;
- defines the expected results and not the means to be implemented. The FNA makes it possible to avoid the premature freezing of technical solutions.

Therefore, the FNA is fully in line with the perspective of a sustainable development since it takes account of all the interests involved and contributes to optimising resources by focusing on what is essential: to determine sound and acceptable objectives prior to any action.

0.5 Functional Need Expression (FNE)

The FNE materialises the results obtained with the FNA. The FNE:

- organises information according to a rigorous and detailed explanatory logic. It gives an assessment of the elements, enabling decision-making with full knowledge of the facts;
- makes it possible to initiate the design and the making of the product which is the most appropriate to provide the desired service, the most suitable for the expected use, with the best suitable performance;
- is a reference of the customer need for all the product development steps.

Seen from this perspective, the FNE complies with the transparency or visibility principle defined in the sustainable development approaches.

0.6 FPS

The FPS is a structured and detailed presentation of the need based on the FNE. It enables inquirers to begin a dialogue (or even an initial negotiation) with providers or developers responsible for meeting an identified and specified need. The FPS:

- is used to introduce and make competitive dialogue easier between owners or project managers and providers since they raise a legitimate issue and require a tailor-made response;
- leaves to the provider a broad initiative in the search for original and efficient solutions with regard to the quality/price/lead-times/risks ratios;
- allows all parties to appreciate the differences between the solutions and the need, and makes comparisons easier between competing solutions;
- allows verification and evaluation of the effective results by reference to an expressed expectation.

The implementation of an approach with the FPS changes the 'customer-provider' relationship from an obligation to respond to a predetermined technical specification to an obligation to achieve a result.

0.7 Fields of use

The FNA, FNE and FPS concepts are applicable whenever any entity (organisation or an internal department thereof etc.) expresses a request to another entity which has sufficient capacities and competences to propose to it a product as a response.

The FNE establishes the accurate definition of the need to be satisfied by the product:

- either within the framework of relationships between a customer and their providers; or
- between two entities belonging to the same organisation; or
- within the framework of work groups where it is an integral part of various methods (value analysis, dependability, security analysis, etc.); or
- within the framework of larger and 'integrating' managerial policies and approaches, such as sustainable development, system engineering, design to objective, etc.

These concepts are applicable to all economic sectors, including the service sector. The desired end products or projects may be intended for public or professional use, for investment or for consumption, based on current or future needs. The required products/services may consist of mature products (consisting of subsets at different levels of maturity) as well as products that come from research and exploration.

The FNE may be successfully applied to projects of any size and complexity by adapting this approach.

0.8 Relationships with Value Analysis and Design To Objective (DTO)

The processes and documents produced in compliance with the recommendations of this standard are also integrated into other Value Management approaches. The Value Analysis and Design To Cost/Objective which are core methods of the Value Management (EN 12973) are particularly concerned.

1 Scope

This European Standard is a tool to be used by any partner wishing to draft and make use of the reference of any need to be satisfied. In light of this purpose, it:

- a) states the interests and fields of application of the Functional Need Analysis, Functional Need Expression and Functional Performance Specification concepts;
- b) determines the contents requirements of the functional need expression structured in four main bodies:
 - 1) global definition of the need;
 - 2) definition of the strategic elements and the consolidation of needs;
 - 3) highlighting of principles, and concepts chosen beforehand, if any;
 - 4) description of the functions to be provided and of the constraints to be complied with.
- c) determines the requirements on the composition and contents of a functional performance specification and those used to assess its quality, i.e. requirements concerning:
 - 1) its contents and structure;
 - 2) the assessment of the characteristics which define its quality.
- d) precisely specifies, in the form of requirements:
 - 1) the conditions for a successful Functional Need Analysis (FNA) action producing a deliverable called Functional Need Expression (FNE);
 - 2) the conditions for drawing up a successful functional performance specification (FPS) based on the available functional need expression (FNE);
 - 3) the conditions of use of the FPS by the inquirer and the various partners involved (the provider for example);
- e) specifies the various conditions of use of these concepts.

This European Standard is applicable in principle to all product types and dimensions (from the elementary tangible object to the definition of an organisation and its strategy, including the systems or processes and activities implemented by an organisation) and to all sectors of activity (including the service sector). Lastly it is applicable within the framework of relationships between external partners (between a customer and its providers) or internally (between two entities of the same organisation for example).

2 Normative references

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

EN 1325-1:1996, *Value Management, Value Analysis, Functional Analysis vocabulary — Part 1: Value Analysis and Functional Analysis*

EN 1325-2:2004, *Value Management, Value Analysis, Functional Analysis vocabulary — Part 2: Value Management*