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HOW WE SHOULD DEFINE WHAT "DEPENDABILITY" IS

Currently, the Technical committee for standardization "Dependability in equipment" (TC 119) is developing a new interstate standard "Dependability in equipment. Terms and definitions" that will replace GOST 27.002–89. The issue was already discussed at the pages of our journal. In Issue 2 this year there was a report about the meeting of a permanent scientific seminar "Dependability and quality of system functioning" that took place on the 30th of January 2014 and was devoted to discussion of key issues related to the development of this standard. In the same issue there was a paper by active participants of the work V.A. Netes, J.I. Tarasyev, V.L. Shper Current issues of terminology standardization in dependability where the authors started a detailed consideration of this important topic.
Now we offer a new paper by the same authors that further discusses terminology issues in dependability. The editors invite all involved readers to express their opinions about issues put forth in the paper. Letters can be sent to the editors or directly to TC 119.

"When I use a word," Humpty Dumpty said to Alice, "it means just what I choose it to mean – neither more nor less."
Lewis Carroll "Alice in Wonderland"

1. Introduction

In the paper [1] we briefly told the history of cancellation of GOST R 27.002-2009 [2] and return to GOST 27.002-89 [3] – to the standard of 25-year remoteness, and also about the beginning of work on the new version of the fundamental terminology standard and difficulties the working group (WG) faced when undertaking this work. In the same work it was marked out that one of the main problems is a question about what definition of the fundamental term "dependability" should be taken as a basis of the new standard: the old definition from GOST 27.002-89 or the new one from the international standard (IS) prepared by IEC [4] (its publication was expected in August, 2014). In this study we shall try to state the essence of disagreements which have arisen among WG members and the reasons, which forced us to consider this issue as fundamental.

But before to proceed to discussion proper, we believe reasonable to briefly remind readers how the term "dependability" was defined in all previous domestic terminological standards and how it is defined in the international documents including the last edition of IEC IS.

2. Definition of the term "dependability" in standards of the Soviet period

Table 1 presents definitions of the fundamental term in old documents issued in 1962 and notes with explanations as to this term beginning from the Collection of recommended terms of the USSR Academy

of Sciences. We have cited definitions completely, and explanations and notes are given as pertaining to the subsequent discussion.

Table 1. Definitions of the term "dependability" in the Soviet documents

No.	Source	Definition	Note to the definition
1	The Collection of recommended terms. Issue 60.1962 [5]	System attribute (system element attribute), conditioned mainly by its reliability and maintainability and providing task performance in the volume established for the system (system element); it is quantitatively defined by probabilistic characteristics and parameters	
2	The collection of recommended terms. Issue 67.1964 [5]	System or product attribute, conditioned by their reliability, durability and maintainability, and providing normal performance of the specified system (product) functions; it is quantitatively estimated, for example, as a product of probability of non-failure operation by utilization factor use (or by availability factor)	
3	GOST 13377-67 [7]	Product attribute to perform the specified functions, retaining the operational parameters in the set limits during a required time or required non-failure operation time	Dependability of a product is conditioned by its "reliability', "maintainability", "storageability", and also "durability" of its parts
4	GOST 13377-75 [8]	Product attribute to perform the specified functions, retaining in time values of the established operational parameters in the set limits corresponding to the specified modes and conditions of use, maintenance, repairs, storage and transportations	Dependability is complex property, which depending on object purpose and conditions of its operation can include reliability, durability, maintainability and storageability separately or a certain combination of these properties both for the object and for its parts. "Operational parameters" are parameters of productivity, rate, consumption of power, fuel, etc. *From the explanation to the term:* "Quality of production is understood as the aggregate of its properties conditioning production suitability for satisfaction of certain needs according to its purpose. One of properties of this aggregate is dependability".
5	GOST 27.002-83 [9]	Object attribute to retain in time in the established limits the values of all parameters describing an ability to perform required functions in specified modes and conditions of application, maintenance, repairs, storage and transportation	Dependability is a complex property which depending on object purpose and conditions of its application consists of combinations of properties: reliability, durability, maintainability and storageability

6	GOST 27.002-89 [3]	Object attribute to retain in time in the established limits the values of all parameters describing ability to perform required functions in specified modes and conditions of application, maintenance, repairs, storage and transportation	Dependability is complex property, which depending on object purpose and conditions of its operation can include reliability, durability, maintainability and storageability separately or certain combination of these properties. *From the explanation to the term:* Terminology on dependability is applied to any technical objects – products, constructions and systems, and also to their subsystems … Assembly units, parts, components or elements can be considered as subsystems. If necessary the information and its carrier and also the human factor can be included in concept "object" (for example, in case of dependability consideration of the system "machine – operator"). … The following definition does not change boundaries of the concept "dependability": *Dependability is an object's attribute to retain in time an ability to perform required functions in specified modes and conditions of application, maintenance, repairs, storage and transportation.* This definition is applied when the parametrical description is unreasonable (for example, for the elementary objects, whose operability is characterized as "yes – no"), or it is impossible (for example, for systems "machine – operator", i.e. for such systems, in which not all properties can be characterized quantitatively). Kinematic and dynamic parameters, parameters of structural strength, parameters of functioning accuracy, productivity, rate, etc. are applied to the parameters describing ability to perform required functions.

From table 1 it is evident that dependability definition has changed with acceptance of each new document. As a result we have the following sequence of transformations of dependability definition (we simplify formulations, retaining the sense):

1962 – system attribute to perform the task;

1964 – system (product) attribute to perform specified functions;

1967 (the first GOST) – Product attribute to perform specified functions, retaining its parameters in the specified limits;

1975 – object attribute to perform specified functions, retaining the specified parameters in in the set limits;

1983, 1989 – object attribute to retain in the established limits the values of all parameters describing an ability to perform required functions;

1989 (appendix) – object attribute to retain ability to perform required functions.

Thus, in GOST, since 1983, the ability to perform required functions began to be interpreted as retention in the specified limits of all parameters established in normative and technical and (or) design (engineering) documentation. For the sake of brevity, we shall further on name such a definition as parametrical definition.

It should be noted that in currently acting GOST 27.002-89 there are actually two definitions of dependability: in the basic text of the standard and in the reference appendix containing the explanations to terms (table 1, clause 6). At the same time it is indicated that the second definition does not change boundaries of the concept "dependability" and it is "applied when the parametrical description is unreasonable … or it is impossible …"

In this connection, it is expedient to discuss the issue on what definition should be used as the fundamental one and what can be retained as auxiliary definition. We shall return to this issue later for now we shall continue the historical review.

3. Definition of the term dependability in the international standards and the domestic standards based on international ones

Right up to 1984 in IS there was no general term equivalent to Russian "dependability". There were only terms for separate and narrower properties: reliability, availability etc. In particular, IEC Technical committee (TC) 56, named now "Dependability", referred to as "Reliability and Maintainability". There were also longer word-combinations, for example, Reliability, Availability, Maintainability and Safety (non-failure operation, readiness, maintainability and safety) – the concept widely used, in particular, on railway transport to which abbreviation RAMS is usually applied.

To tell the truth, in 1960 the American researcher J. Hosford introduced the term dependability and corresponding measures [10]. Generally they were defined as the probability that the system will be able to function, when it is required. He wrote that it is one of the important characteristics of any systems in which failures can occur. In special cases these measures were availability factors (instant or averaged interval) and probability of non-failure operation.

From the end of 1970th J.C. Laprie from the Department of information and engineering sciences of the French national center of scientific researches in Toulouse began to apply the term dependability to computing systems [11, 12, etc.]. It was interpreted rather widely and with reference to this area began to be translated into Russian as "ability to guarantee" [13]. This concept was defined as system property, allowing to rely on performance of services for which it is intended.

In 1984 the International advisory committee on telephony and telegraphy (IACTT) of the International Telecommunication Union (ITU) adopted Recommendation G.106 [14] containing terms and definitions in the field of service quality and dependability in which the general term "dependability" appeared. The concepts introduced in it soon began to be used actively by branch experts, including experts in our country [15].

Thus, expansion of concept "dependability" happened under the initiative of the most advanced and dynamically developing branches: computer facilities and telecommunication.

Then the term dependability was introduced in IEC IS 50-191 accepted in 1990 which IEC developed together with ITU. Afterwards, in connection with the change of IS notation system it received number 60050-191. As all others TCs of ISO and IEC recognize the leading role of IEC /TC56 in issues of dependability, this standard is "horizontal" (inter-branch and inter technological), and the terms defined in

it are used in all ISO and IEC standards where dependability is mentioned. It provides coordination of all ISs in interpretation of the dependability fundamental concepts. In this respect, as it will be obvious from the further, they differ on the positive side from domestic standards.

Table 2 presents Russian translation alternatives for "dependability" term definition and notes to it from official documents: Russian versions of Recommendation G.106 [14] and IEC IS 50-191 [16], Russian standards [17, 18] and the interstate standard [19].

Table 2. Translations of dependability term definition from the international documents in domestic documents

No.	Source	Definition	Note to the definition
1	Recommendation of IACTT G.106 [14]	The collective term used for characteristics of availability and factors of its conditioning: reliability, maintainability and ensuring of object maintenance	The given term is used only for the general descriptions without quantitative expressions
2	IEC IS 50-191 [16]	The collective term used for the description of availability attribute property and influencing it properties of reliability, maintainability and ensuring of maintenance and repair	The given term is applied only to the general not quantitative description of availability property
3	GOST ISO 9000-2011 [19]	The same	The term "dependability" is applied only to the general non-quantitative description of property
4	GOST R 51901.3-2007 (IEC 60300-2:2004) [17]	Property of availability and influencing it properties of reliability, maintainability and ensuring of maintenance and repair	The given term is applied only to the general non-quantitative description of availability property
5	GOST R 27.002-2009 [18]	Property of availability and influencing it properties of reliability and maintainability and maintenance support	The given term is used only to the general non-quantitative description of dependability

In comparison with domestic standards one more dependability component was added in IS: ensuring of maintenance and repair – the ability of the organization which is carrying out maintenance and repair, under the specified conditions on demand to provide the resources necessary for object maintenance and repair, according to the given rules of maintenance and repair. It is made in order to reflect the characteristics of maintenance and repair system, concerning to this object in addition to maintainability describing internal properties of a technical object proper. In general, a maintenance and repair system nowadays is frequently considered as integral part of an object which it maintains [19].

The sense of the note to definition consists in the fact that there are no measures quantitatively describing dependability as a whole, but all measures describe only components of dependability: availability, reliability, etc.

It is evident from table 2 that dependability definition in GOST R 27.002-2009 which is based on IEC 60050-191 contains serious mistakes: insuring of maintenance influencing availability is missed, but "maintenance support" appeared, which is not defined in the standard. As a result, the sense of the term was deformed, and its definition became not quite clear. As it has been already noticed in [20], this standard contained also a number of other mistakes and discrepancies that caused the suspension of its use and restoration of application of GOST 27.002-89 [21].

The analysis of Table 2 also allows us to draw the following conclusions:

- developers of domestic standards, unfortunately, not always take into account existing standards and sometimes give their own definitions to terms already available in them;
- despite of presence of domestic terminological standard currently in force, at creation of standards harmonized with IS ISO and IEC, terms and definitions from IS are used the way it should be.

Thus, there are disagreements in definitions of the same terms in various standards that should create difficulties in their use. Moreover, in general it generates mistrust and nihilism in relation to standards. Really, standards are intended to provide compatibility, coordination, etc. but how can they solve this problem if they are unmatched among themselves?! This circumstance is an important reason for the benefit of harmonization of standards, as it can if not absolutely remove, at least essentially reduce discrepancies between standards.

4. Harmonization with IS: pro et contra

The formal bases of standard harmonization:

- According to item 12 of Federal laws of the Russian Federation "About technical regulation" "standardization is put into practice according to principles: <…> applications of the international standard as the bases of the national standard development …";
- WTO rules require taking for a basis the international standards at preparation of national standards and technical norms.
- Standard harmonization in essence:
- Provides technical and information compatibility;
- Facilitates mutual understanding and interaction with suppliers, partners, clients, colleagues (particularly with foreign ones);
- Allows using of experience and knowledge of all world professional community;
- Reduces a risk of discrepancy occurrence between standards as it has been already specified above, other systems of standards (for example, systems of quality management, risk management) use terminology and methodology of dependability from IEC standard.

At the same time harmonization of standards generates also some problems. First, it can demand destruction of stereotypes, refusal of old convictions and conceptions. However even in the past our conceptions also changed from time to time (see Table 1). Second, difficulties of translation can occur, especially with reference to terminological standards. They just became one of the reasons of unsuccessful introduction of GOST R 27.002-2009. However these difficulties somehow are overcome in other countries. In this connection it is necessary to refer to portal "Electropedia" representing an online version of the International electrotechnical dictionary. Its part 191 [22] is just IS IEC 60050-191 (1990). So it should be noted that it presents terms in 10 languages (unfortunately, Russian among them is not present).

Certainly, the international standards not always coordinate with experience and convictions of domestic experts and our realities; therefore it is necessary to carry out a careful, unbiased comparative analysis of international and domestic standards fundamentals when there are disagreements between them.

5. Dependability definition in a new IEC standard

Over time it became clear that dependability definition in IEC 60050-191:1990 has certain shortcomings. Exactly it:

- has "enumerative" nature, i.e. does not provide its own definition of concept "dependability", and only lists more simple properties making up these complex concept;

- does not cover some other important properties also concerning dependability, for example, durability.

Therefore, when work on revision of IC 60050-191:1990 began in IEC TC 56, it was decided to update also the dependability definition. In the beginning it was supposed that the 2-nd edition of the same standard would be accepted, but then it received new number 60050-192. All this work was carried out for long enough and, at last, came into a finishing stage: in August, 2014 the official publication of this standard is expected [4].

After long disputes and discussions the following rather general dependability definition has been formulated:

"an ability (of an item) to perform as and when required."

It can be translated as "an ability (of an object) to perform as and when it is required." Or, what seems more exact by implication, "an ability (of an object) to function as and when it is required."

The second translation version is also more correct from the point of grammar. The verb "to perform" is a transitive verb, i.e. it demands after itself the direct object absent in this definition – an object of action (to perform what?), and the verb "to function" is an intransitive verb. It should be noted that an English verb to perform, generally speaking, can be both transitive and intransitive, but in this case it is an intransitive verb.[1]

The first translation version is able to distort the sense of definition as the absent but suggesting itself direct object after the transitive verb "perform" can be thought up by a reader as missing (for example, to perform a task), giving to the definition a sense which is there.

At first sight, the dependability definition in IS 60050-192 seems absolutely unlike usual definitions of dependability in our standards, presented in Table 1. However, a more attentive analysis shows that it is close enough to the basic part of nonparametric definition in GOST 27.002-89 (table 1, item 6).

First of all, we shall note that in GOST 27.002-89 dependability is an attribute, but in IS 60050-192 it is an ability. However, if to address to the Explanatory dictionary of Russian under the editorship of D.N. Ushakov [23], we shall see, that "ability is a quality, property, condition giving an opportunity to make some actions, to execute this or that work" and "attribute is a quality, feature, ability, describing somebody/something, making up a distinctive feature of somebody/something". Thus, among word meanings of "ability" there is "attribute" and on the contrary, the word "attribute" means "ability". But not this semantic distinction has caused disputes among members of WG. The essence of the arisen disagreements is in the following.

One of the parties considers that "ability to perform required functions" is practically the same as "ability to function as … it is required", and "to retain in time" means "when it is required". The other party considers that it is not obvious, and the offered formulation in IS can be understood in such a manner that it will define not dependability attribute, but an object ability to perform a required task (job).

In the first party's judgment, the dependability definition in IS only for the sake of brevity does not include some refinements, assuming understandable that the ability criterion to function as it is required (or abilities to perform required functions) should be given in normative-technical and (or) in design (engineering) documentation (as it is specified in GOST 27.002-89). In particular, it can be made by specifying limits for values of all parameters describing the ability to perform required functions, i.e. possibility of the parametrical approach when applicable is not excluded. Also, as a rule, the documentation should have modes and conditions of application, maintenance, storage and transportation in which only the ability to function as it is required is considered.

[1] It should be noted that the official Russian translation of this document is still not available, therefore we explain our version of translation in such details.

In addition to that, the general concept "dependability" in IS it traditionally considered as only conceptual, aggregative, not having the quantitative description (see table 2). For practical application individual properties making up dependability are important (reliability, maintainability, durability), which are characterized by quantity measures. Stipulation "under the given conditions" certainly is present in definitions of these properties in IS.

If we agree with the first point of view about practical identity of two "functional" definitions of dependability, then both of these definitions will not overstep the boundaries of the parametrical definition of dependability in accordance with GOST 27.002-89.

In the second party's judgment, "ability to function as … it is required" in IS IEC essentially differs from "ability to performance of required functions" in accordance with GOST 27.002-89 as in the latter there is obvious indication on "conditions and modes of application" established in technical documentation. Therefore, it is possible to assert that the old formulation as opposed to new one does not take into account the external influences, which have not been specified by "conditions and modes of application" i.e. it characterizes what can be named as "own" dependability of an object.

So, the automobile standing in "traffic congestion" (or for any other reasons not connected to its characteristics) has not lost the attribute "to retain … ability to perform required functions in specified modes and conditions of application …" On the other hand, since in the international standard definition there is no reference to "specified modes and conditions of application …" then "ability to function as … it is required" can be considered dependent, on the presence of "traffic congestion" inclusive (i.e. in these conditions the automobile loses this ability if we understand the meaning of "ability to function as it is required" as mentioned above).

In other words, supporters of this point of view believe that the absence in IEC IS of reference to "modes and conditions …" creates an opportunity of expansion of the concept "dependability" which in this case will include not only rigidly regulated "own" dependability of an object, but also a wider ability to function "as it is necessary, when it is necessary" i.e. to perform a task, in which the object participates.

In this case, discussion can lead to consideration of a final task solution, which should be performed by the object (to execute calculation – computer, to provide steady communication – communication system, to light a dark entrance – an electric bulb, etc.). As a consumer, a user, a customer is interested only in a final result, without dependence from any reasons, due to which the result can be not achieved (where "own" dependability of an object is only one of them), such interpretation of IS can be represented quite justified from the point of view of the end user who does not understand deeply problems of dependability.

6. Parametrical and functional definitions of the term "dependability"

As it was already said, we shall name the definition from clause 6 of table 1 as a parametrical definition, and the definition from the same clause, but in column of notes – a functional definition (it is highlighted in italics). The definition in IS IEC considered in the previous section is also functional. As a result, we have three definitions:

- parametrical: *dependability is an attribute of an object to retain in time in the established limits the values of all parameters describing ability to perform required functions in specified modes and conditions of application, maintenance, storage and transportation;*

- functional (domestic): d*ependability is an object's attribute to retain in time ability to perform required functions in specified modes and conditions of application, maintenance, repairs, storage and transportation;*

- functional definition in IS IEC: *dependability is ability of an object to function as and when it is required.*

Two functional definitions were compared among themselves in the previous section, and here we shall compare parametrical (GOST 27.002-89) and functional (IS IEC) approaches to dependability definition.

Before to switch over to discussion of advantages and disadvantages of each of them, we would like to make one back-off and to remind readers of an extremely important concept, which is seldom presented in the Russian technical literature. We mean so-called "operational definitions" (OD) – the term introduced into the scientific and technical literature of XX century by distinguished American statisticians U. Shuhartom and E. Demingom [24][1]. Definition is named as a operational definition, which:

а) is understandable and;

б) for which the *practical* way of its *unambiguous* realization / check is specified.

Necessity of OD introduction is caused by a simple fact that in any language there is a lot of ambiguous words, which various people understand differently, that, naturally, leads to different reaction to the same words. It is natural that in the terminological standard use of operational definitions is especially dangerous: the different understanding of fundamental terms can lead to the most unpredictable consequences[2].

So, we come back to our definitions of the term "dependability". The parametrical formulation defines dependability through the finding of all object parameters in the specified ranges. In a situation when object parameters are always listed in the accompanying normative-technical documentation, and ranges of their change in modes are specified in the set modes, this definition meets requirement for OD. Indeed, it is always possible to check up practically whether these object parameters are in the established limits, and the answer to this question will be always unambiguous: parameters are either within a certain range, or outside.

On the other hand, as it was already mentioned in GOST 27.002-89, a parametrical definition is not always suitable, especially if we apply it not in theory, but in practice. To understand it, it is enough to try to make a list of "all parameters describing an ability to perform required functions" and to establish allowable limits of their values, for example, for such widely used products, as TV, a computer, a phone, an automobile, etc. It is rather difficult to make it even by experts of corresponding branches, and to understand it by users will be practically impossible.

With a functional definition, in relation to an ability to operate, everything is much worse, because an object's attribute "to function, as and when it is required" can be interpreted differently, for example, by the manufacturer of an object and its consumer. Indeed, for the manufacturer these words mean the same, as words about parameters: to operate as it is necessary within the established limits. But the consumer, as a rule, does not know anything about the established parameters and their ranges, and what it is even more important, he does not want to know. For him words "to function, as and when it is required" can mean that he receives that from object what he expects, i.e. the object performs functions in conditions interesting to the consumer. Here again there is inevitably a conflict connected with the fact that performance of some functions, satisfying the consumer, can differ in many cases from the function which the manufacturer means. Let's consider the elementary example to explain these general reasoning.

You have on your staircase the illuminating device lighting a passage. A parametrical definition of dependability demands the assignment of a list of unit technical parameters with indication of limits where each of the parameters should belong to. Functional definition of dependability for the manufacturer of this device coincides with a parametrical definition: the manufacturer will understand under the meaning of functioning "as and when it is required" such a functioning when parameters describing device operability are in the specified ranges. But the consumer has an absolutely different idea about operation of the given device. He wants that the device performs its function to illuminate a corridor. But

[1] The concept itself goes back to studies of P. U. Bridgman – see [25].

[2] We deliberately have italicized the word "practically" and "unambiguous" in the formulation of OD concept because of their fundamental importance.

illumination of a corridor depends not only on a lighting device itself, but also on many other factors, for example, on the electrician who serves the given house, on Housing office, which is responsible for entrance illumination, etc. Clearly, all these factors have no any relation to device dependability. But should we do with its performance of a function? If we say that dependability is an ability of the given object "to function, as and when it is required", the consumer can understand it as "ability to illuminate a corridor as how and when it is required" that will depend actually on our device as well, and on many other factors which directly are not connected with an illuminating device. For example, the electrician becomes the factor influencing performance of a function by our device – it is included into the system of his service, and, hence, influences, for example, the period of its repair. In other words, a functional definition of dependability can lead to the blurring of boundaries between dependability of an object and an ability of performance of the task.

To avoid this ambiguity, it is required, that words "*to function as and when it is required"* should be accompanied by the operational description of what the necessary function consists, and which system is responsible for its performance. Coming back to our example: the illuminating device cannot have a function "to illuminate a corridor" – it is made not for a corridor or a room, but it is made with the purpose to create a certain light stream under specified conditions, and it can be installed anywhere. If the consumer says that he needs light in a corridor he should understand that it is addressed to the system where the device giving light presents only one of the subsystems, and a function "to illuminate a corridor" concerns the task solved by a system which includes both the device, the electrician, and Housing office. Accordingly, if there is no light, it is necessary to understand due to what reason. If this reason has no relation to the device, then its dependability here should be ignored.

In other words, a property to retain parameters in some range is the internal property of an object dependent on its condition at present, but an ability to perform a certain function can be understood both as its internal property or as a result of its interaction with an outside world – all depends on the fact who and how has defined what words "to function as and when it is required" means. The ambiguity mentioned above could be avoided if there would be a separate concept of "ability to perform a task" (APT) and it would be defined how it correlates with dependability, safety, efficiency, etc. Unfortunately, such concept as a standard international term is not known to authors.

Thus, we have the following dilemma: either to retain a narrower parametrical definition of dependability from the old GOST and to receive a matrix of its strong and weak sides, shown in Table 3, or to agree with a more general functional definition, and to receive a matrix shown in Table 4.

Table 3. Parametrical definition: advantages and disadvantages

	Advantages	**Disadvantages**
Internal factors	*Meet the condition of an ability to operate.*	Does not cover a situation when the parametrical description is inexpedient or it is impossible.
External factors	*Well familiar and usual.*	Increases disparity between Russian and foreign experts and standards

Table 4. Functional definition: advantages and disadvantages

	Advantages	**Disadvantages**
Internal factors	*Suits a more broad range of situations, including those when a parametrical definition is inexpedient or it is impossible.*	*Does not meet the condition of an ability to operate, i.e. can lead to the ambiguous interpretation of dependability.*
External factors	*It is harmonized with IS.*	*Requires higher competence concerning dependability.*

Why did we write in table 4 about competence concerning dependability? The reason is simple: it is necessary that everyone who can anyhow deal with problems of dependability has learned to divide functions (task), performed (solved) by a system, and functions, which are performed by its parts and/or elements. In this conditions both of these definitions inherently coincide. This is what one group of experts believes. The other group believes that the definition in IEC IS admits the interpretation determining not just dependability, but APT; therefore, it is necessary to keep the old definition of dependability in accordance with GOST 27.002-89, and the translation of IEC IS to issue as the draft standard determining the APT concept.

We have stated the arguments reflecting positions of the discussing parties. We have consciously avoided the attempt to give any final recommendations so that experts in the field of dependability, designing, operation, repair of elements, systems, and objects will support this or that version of a dependability definition and terms related to it. The only thing that it would be necessary to add: we understand that the concept of dependability is very wide and whatever side in the given discussion we take, the formalistic approach will not give the correct answer in some cases at any choice. Therefore, in any case we should hope for competence of those who will put dependability terms into practice.

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