REFERENCE OF CERTIFICATION FOR SOLUTIONS DESIGNED UNDER THE PRINCIPLES OF TECHNOLOGICAL EFFECTIVENESS

Ed. 1

PREPARED BY:	**VALIDATED BY:**
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CHAPTER I

OBJECT AND SCOPE

With the aim of promoting, helping and improving citizens well being to the highest possible degree, I2BC has produced the following regulatory document based on PLI (People Led Innovation), allowing people to manage this innovation.

The aims of this document are to:

- Specify the characteristics and requirements that need to be met by an organization so that its products or services can be classed as suitable, in terms of technological effectiveness.
- Define valid measurement methods for observing citizen contribution, including them as part of the processes of technological and methodological innovation

Technological effectiveness is understood to be the ability of a solution to be simultaneously: a) effective, producing the desired effect in a controlled environment (resolving the theoretical problem or meeting on a technical level the need for which it was designed); b) efficient, achieving results with an adequate relation to cost-benefits (responsible use of resources); but above all, c) capable of guaranteeing (as judged by the receiver in their own true area of self-assurance) the resolution of the problem or specific need. All this must be achieved without negatively affecting any other essential aspect of their quality of life. Consequently, the citizen is given the role of leader in the final definition and acceptance of the innovation. This is the only way for the process to remain aligned with the principles of PLI (People Led Innovation).

This document will be open to any business or organization that wishes to certify its product or service with technological effectiveness criteria, whether the solution to be certified is either a product or a service provided by a private organization or a public entity.

CHAPTER II

APPLICATION FRAMEWORK

i2BC was created on March 27, 2007 with the aim of promoting optimum levels of citizen well being in Andalusia and the rest of the world, through the innovative use of information and communication technologies and the development of new methods, processes and models of personal self-assurance and social interaction. Its vision is to “innovate" the everyday- make innovation an everyday thing”.

In this way, i2BC promotes this Reference of Certification, based on designated PLI factors as criteria to test if a product or service can be certified due to its alignment with the defined principles and that grant the citizen the ultimate control over the innovation process.

The field of performance of the Reference covers any organization that desires wishes to use it. It is available and can be consulted on the I2BC website. **www.i2bc.es/Referencial**.

The I2BC will be responsible for the maintenance of this Reference, updating it as new conceptual and market trends arise.

Due to the application of regulation EN-45011, this Reference has been checked and validated by a committee of experts made up of the following people:

- **I2BC:**
    - **Mr. Julio Lorca** (Director of I2BC). **www.i2bc.es**
- **SGS:**
    - **Mr. Juan Manuel Arnándis** (Regional Director of SGS SSC in The Valencian Community/ Andalusia). **www.sgs.es**
- **User associations and administrations involved:**
    - **Mr. José Manuel Ojel** (Project Technician of the Fundación Andaluza de Servicios Sociales - FASS). **www.juntadeandalucia.es/fundaciondeserviciossociales**
    - **Mr. Jesús Hernández** (Director of Accessibility Universal of the ONCE Foundation). **www.fundacionONCE.es**
    - **Mr. Francisco López Segarra** (Director of the Asociación de Centros de Día – ASECEDI and the foundation PATIM). **www.asecedi.org y www.patim.org**
- **Independent experts in the evaluation of conformity:**
    - **Mr. Peter Frank** (Director of Corporate Quality of MAN TRUCKS Spain). **www.man-mn.es**
    - **Mr. Mariano Navarro** (Head of Division TIC - Sub-direction I+D+i of TRAGSA). **www.tragsa.es**

CHAPTER III

GLOSSARY

- **B.A.T:** "Best Available Techniques". European directive on environmental sustainability in which the use of the most efficient current technologies are indicated.
- **B.A.T.N.E.E.C:** "Best Available Techniques Not Entailing Excessive Costs". A variant of B.A.T in which the concept of the best technology available without excessive cost is defined.
- **Characteristic:** Each one of the sections into which a PLI factor is divided.
- **Certificate of Conformity:** Act by which a third party certifies that they have obtained the adequate confidence and trust in a correctly identified solution, with a regulation or other specified regulatory document.
- **CIBIC:** Centro de Innovación para el Bienestar Ciudadano (Centre of Innovation for citizen Well-being). The building that houses the laboratories, CMER and different infrastructures of I2BC.
- **CMER:** Centro de Mediación en Entornos Reales (Centre of Measurement in Real Environments). Functional unit of I2BC, designed as a support mechanism for the process of innovation in real environments by means of the so called Living Labs in order to capture, process and manage technological effectiveness and to study and experiment with new models of innovation at the hands of the citizens in their everyday environments...
- **Technological Effectiveness:** the ability of a solution to be effective, efficient and to solve the real problems of the target population within a real environment.

- **ENoLL:** "European Network of Living Labs". A network of Living Labs created by the European Living Labs together with the E.U., regional and national governments, and large, medium and small companies.
- **Social Space of Innovation (ESdI):** Model developed from the Living Labs school of thought and orientated towards truly identifying the citizen as the main protagonist of the innovation process, in search of effective solutions for the problems that most affect them or endanger their everyday well-being and quality of life.
- **PLI factors or Families of Characteristics for technological effectiveness:** Represent each of the groups of specific characteristics that make up a coherent level of addition. The sum of these groups or families of PLI factors make up the Reference.
- **Guide GRI:** A model for the elaboration of memories of sustainability that serve as a generally accepted framework in order to inform about the economic, environmental and social activity.
- **Compliance Check Sheet:** Sheet that an organization should use in order to carry out a periodic revision of the compliance of the Reference, with the object of keeping it up-to-date.
- **Citizen innovation:** Complete integration of the citizen in the innovation processes, especially in the innovation of products and services aimed at said citizens.
- **Certifying Organization:** An organization that carries out the certification of conformity, by which it is shown that the idea that a solution follows a regulation or regulatory document is reasonably supported. A Certifying Organization should be impartial and competent. The criteria applicable to Certifying Organizations are set by Regulation EN-45011 for the Certification of Services.
- **PLI: "People Led Innovation".** Conceptual model elaborated by I2BC by which the situating of people as leaders in the innovation process of any product or service that directly or indirectly influences their quality of

life is promoted, integrating previous approaches such as “Customer Driven Innovation”, “Outcome Driven Innovation”, “Voice to Consumer”, “Open Innovation” or the approximations related with the innovation based on social networks (prosumers).

- **Reference:** Document that provides rules, guidelines or characteristics for the certification of a solution.
- **Register:** Any document or specific medium that an organization should present to the auditor for the verification of the compliance of a specific aspect of the Reference.
- **Requirement:** Attribute that any organization should comply with in order to certify its solution under the criteria of this Reference.
- **SGSI:** Sistema de Gestión de la Seguridad de la Información. (Management System of Information Security)
- **Solution:** Any prototype, product or service that an organization wishes to certify under the criteria set out by the Reference.

CHAPTER IV

CHARACTERISTICS OF THE REFERENCE

In this chapter, we equally define the characteristics of both obligatory compliance and those that have a recommendatory nature. They will be encapsulated in “families”, groups of characteristics of effectiveness or PLI factors; parallel to this, each characteristic will be defined by certain requirements that set the aspects to be complied with, as well as the recommended or obligatory methods for the measurement of the desired results. In this way, it is hoped to obtain an adapted reference so that any certifying organization is able to grade the relevant organizations based on criteria of technological effectiveness.

These characteristics have been set down and are::

- Appreciable for the final users and clients of the solution.
- Objective.
- Quantitatively or qualitatively verifiable, depending on the case in question.
- Controllable.

1. FAMILIES OF BASIC CHARACTERISTICS OF THE REFERENCE

The Reference contains five families of basic characteristics:

A. SUSTAINABILITY
B. EMOTIONAL FOCUS
C. ERGONOMICS
D. SECURITY MANAGEMENT
E. CITIZEN INNOVATION

These families of characteristics are reinforced by others, which we will call FAMILIES OF COMPLEMENTARY CHARACTERISTICS and which are the following:

F. NEURO-USABILITY
G. ETHICAL VALUATION

These complementary characteristics will only be verifiable and applicable in certain fields and only as and when required by a solution.

The following diagram (Figure 1) reflects the distinct families of characteristics of the Reference.

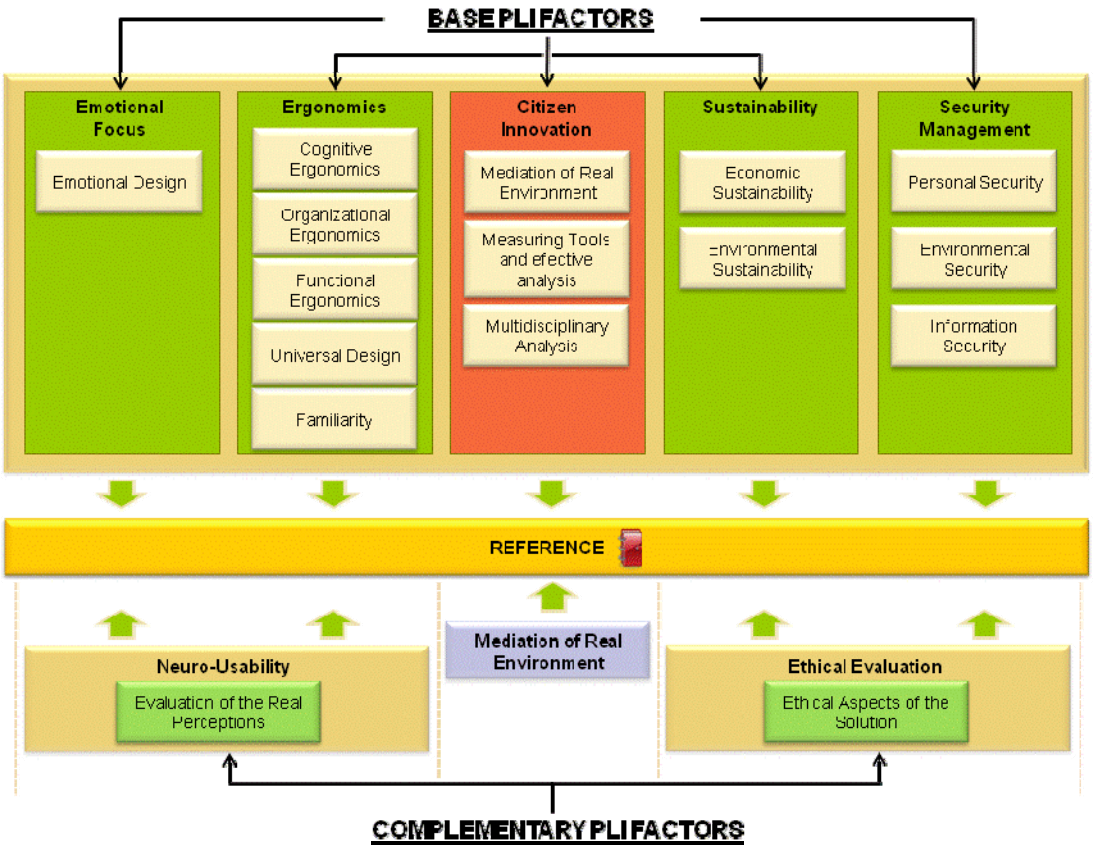


Figure 1: Families of characteristics of the Reference

2. DETAILS OF THE CHARACTERISTICS OF THE REFERENCE

In this section, we define the characteristics that an organization wishing to certify a solution must comply with. In all cases, the families of characteristics A, B, C, are broken down into their characteristic components: A1, A2, and each of these are completed with the requirements or aspects to be complied with, setting the relevant details and commentaries.

As well as the detailed description of each of the aspects that define a characteristic, the entries, documentation, or evidence necessary for the verification of compliance is also identified. For some characteristics, the auditor will have to carry out evaluations of requirements and aspects that are not necessarily associated with entries or documentary evidence.

In this same chapter we can also see a Summary Table with the Registers necessary for demonstrating compliance with the requirements expressed by the Reference.

#	Families of Characteristics	Characteristics	Details of the Aspect and Measurement Mechanisms	Entries and Aspects to be Revised
1	**A.- Sustainability**	A.1.- Economic Sustainability	* **Efficiency of the solution** The organisation must show information, by means of studies and documents, to accredit an improvement in the efficiency of the costs of the proposed solution during the whole of the life cycle of the product. * **360º Economic study** The applicant organization must demonstrate that it has carried out a study in which the orientated cost of the solution and an evaluation of the market and users are indicated, with the object of making the solution viable for the company and affordable to the target public. In the public domain, this study will be more important- it being necessary that the solution is lasting and within a cost affordable to the Administration.	(R1). Solution design (including the manufacturing process) (R2).Study to demonstrate "Cost Efficiency". (R3). Market study. (R4). Solution Viability Plan
		A.2.- Environmental Sustainability	***Sustainability Memory** The organization must demonstrate that it has used the most efficient technology registered in the European Directive 16-2002.	(R5). Document verifying technologies registered in the B.A.T (Best Available Techniques) or in the BATNEEC. -*See appendix I.I, appendix I.II y appendix I.V*- (R6). Report on environmental impact or responsible declaration.
.2	**B.- Emotional focus**	B.1.- Application of Emotional Design criteria	* **Emotional Engineering (Methodology)** The applicant organization must demonstrate that it has followed the principles of emotional engineering in the design of the solution, describing the methodology used and the techniques and tools applied. * **Emotional Engineering (Results)** The applicant organization must show the results of the measurements carried out on the real perception of the solution.	(R7). Document showing the methodology used, with proof of real entries of the solution that is under assessment. (R8). Results obtained by the application of said methodology.

3	**C.- Ergonomics**	C.1.- Cognitive Ergonomics	*** Learning processes and assimilation of the solution** The applicant organization must describe the methodology used to study the capacities and limitations of the users related with the learning and processing of the information influenced by the design of the solution. *** Cognitive Usability** The applicant organization must demonstrate that, in the design or validation of the prototypes, they have taken into account the cognitive ergonomic criteria in order to raise the level of ease of use of a solution. *** Human team profile** Description of the team in charge of the test, showing its professional profile.	(R9). Documentation that shows the methodology used and the conclusions obtained by the introduction of the same. (R10). Cognitive usability in real environments test. (R11). Diagram of the work team, showing the profile of each member. -See appendix I.IV-
		C.2.- Organizational Ergonomics	*** Organizational Aspects of the Solution** In the event that the solution requires a specific organization or team in order to function, the posts required, functions to be developed and the general operative process to be followed must be indicated.	(R12). Document with the study carried out on the organizational aspects of the solution (posts, functions and procedures).
		C.3.- Functional Ergonomics	*** Physical Usability** The applicant organization must demonstrate that, in the design or validation of the prototypes, physical ergonomic criteria have been taken into account in order to raise the level of ease of use of the solution.	(R13). Physical usability in real environments test.
		C.4.- Universal Design	*** Accessibility** The applicant organization must demonstrate that the solution does not present any impediment for the users in terms of its use, visit or access- independent of their technical, cognitive or physical capacity.	(R14). Accessibility in real environments test

		C.5.- Familiarity	*** Aspects of familiarity** The organization must demonstrate that the solution has been designed copying templates that the final user finds especially close to them. The familiar character of a solution is directly proportional to the level of learning, knowledge and confidence in the same. To this end, the organization must evaluate with users, using different techniques in order to find the most adequate solution.	(R15). Document with the results obtained in the practices carried out with users.
4	**D.- Security Management**	D.1.- Physical Security Management	*** Personal Security** The organization must assure that the solution does not present any risk for the integrity of the belongings or person that the solution is destined to the real environment of the use of the product.	(R16). Report with the practices and tests carried out, showing that the use of the solution does not carry any type of risk for the integrity of the user.
		D.2.- Environmental Security management	*** Environmental Security** The organization must demonstrate that all the material used in the solution is recyclable, non toxic, that it will not damage the environment and contain actions suggested for the mitigation of any environmental impact of the solution throughout its entire life cycle.	(R17). Report with the materials used in the solution, their properties, their environmental impact and actions to minimize said impact.
		D.3.- Information Security Management	*** Information Security** The organization must show that the treatment of data or information of a personal nature is managed in a secure and adequate way.	(R18). Possession of an information security management system (SGSI) for the protection of data of a personal nature.

5	**E.- Citizen Innovation**	E.1.- Measurement in Real Environments	*** Practices in Real Environments** The applicant organization must demonstrate that it has carried out practices prior to the launch of the solution and in a real environment of the target public of the product. *** Social Space of Innovation** The applicant organization must demonstrate that the practices in real environments have been carried out in a "social space of innovation" or equivalent, recognized by the I2BC or other official organization (e.g. ENoLL) or that complies with the basic characteristics such as Living Lab or ESdl. A measurement so that the solution covers a real necessity existing in the target public and does not create any new, unnecessary demands, must also be carried out.	(R19). Documentary evidence of the practices, indicating when they were carried out, what characteristics of the solution were tested and the results. (R20). Added value perceived by the user in their everyday environment. (R21). Documentation about the integration with the technological ecosystem.
		E.2.- Measurement and Analysis	*** Measuring and Effective Analysis Tools** The applicant organization must demonstrate the tools and techniques of analysis used for the measurement and analysis of the information and validation.	(R22). Verification that the data is integrated in an adequate tool or computer support, permitting the consultation, visualization and exploitation of the collected information. (R23). Documentation with the techniques of analysis used (Probability models, statistical estimates, hypothesis tests…). *-See appendix II.I-*

		E.3.- Multidisciplinary Analysis	*** Human Team Profile** The applicant organization must demonstrate that, in the execution, monitoring and checking of the practices of the solution in real environments, that there has been an integration of distinct visions of professionals or participants implicated in the Social Space of Innovation (e.g.: technological, welfare, social, etc…).	(R11). Diagram of the work team, indicating the profile of each member. *See appendix I.IV-* (A1). Interviews with members of the team. (R24). Check on the minutes of the committees/ meetings linked to the trial and analysis.
6	**F.- Neuro-usability**	F.1.- Evaluation of Real Perceptions	*** Measurement of Perceptions** The applicant organization must demonstrate that techniques have been used to measure, objectively, human perceptions with respect to usability beyond the normal traditional methods. *** Human Team Profile** The applicant organization must demonstrate that the measurements have been taken with objectivity and with adequate profiles for such work.	(R25). Documentation of the methodology used (including the mechanisms used) and the documents (records) created by its application. (R11). Description of the team in charge of the trial, indicating its professional profile. - *See appendix I.IV* -
7	**G.- E**	G.1.- Ethical Aspects of the Solution	*** Ethical Implications** The applicant organization must demonstrate, when the solution requires it, that the ethical commitments have been met. E.g.: The solutions of security normally record or collect personal information; biotechnology solutions can involve the manipulation of genetic material, embryos, etc…	(A2). Evidence that all the ethical considerations necessary for the solution have been made.

The following is the **Register Summary Table** of necessary registers and aspects to be checked in order to demonstrate compliance with the requirements expressed in the Reference.

Id	*Registers and Aspects to be checked*	*Withholding Period (years)*
(R1)	Solution design (including the manufacturing process)	5
(R2)	Study to demonstrate "Cost Efficiency".	5
(R3)	Market study.	5
(R4)	Solution Viability Plan	5
(R5)	Document verifying technologies registered in the B.A.T (Best Available Techniques) or in the BATNEEC. -*See appendix I.I, appendix I.II y appendix I.V*-	5
(R6)	Report on environmental impact or responsible declaration.	5
(R7)	Document showing the methodology used, with proof of real entries of the solution that is under assessment.	5
(R8)	Results obtained by the application of said methodology.	5
(R9)	Documentation that shows the methodology used and the conclusions obtained by the introduction of the same.	5
(R10)	Cognitive usability in real environments test.	5
(R11)	Diagram of the work team, showing the profile of each member. -See appendix I.IV-	1
(R12)	Document with the study carried out on the organizational aspects of the solution (posts, functions and procedures).	1
(R13)	Physical usability in real environments test.	5
(R14)	Accessibility in real environments test.	5
(R15)	Document with the results obtained in the practices carried out with users.	5
(R16)	Report with the practices and tests carried out, showing that the use of the solution does not carry any type of risk for the integrity of the user.	5
(R17)	Report with the materials used in the solution, their properties, their environmental impact and actions to minimize said impact.	5
(R18)	Possession of an information security management system (SGSI) for the protection of data of a personal nature.	5
(R19)	Documentary evidence of the practices, indicating when they were carried out, what characteristics of the solution were tested and the results.	5
(R20)	Added value perceived by the user in their everyday environment.	5
(R21)	Documentation about the integration with the technological ecosystem.	5
(R22)	Verification that the data is integrated in an adequate tool or computer support, permitting the consultation, visualization and exploitation of the collected information.	
(R23)	Documentation with the techniques of analysis used (Probability models, statistical estimates, hypothesis tests…). -*See appendix II.I*-	5
(R24)	Check on the minutes of the committees/ meetings linked to the trial and analysis.	5
(R25)	Documentation of the methodology used (including the mechanisms used) and the documents (records) created by its application.	5

Tabla 1: Resumen de registros ligados al Referencial

(A1)	Interviews with team members.	1
(A2)	Evidence that all the ethical considerations necessary for the solution have been made.	1

Table 2: Summary of evidence connected to the Reference

As a general rule, all the registers linked to the design of the solution, its target market and constituent elements (security, environment etc. etc., will have a recommended withholding period of 5 years. The rest will have 1 year.

3. ANNUAL COMPLIANCE ASSESSMENT

With the aim of the compliance to the Reference being precise, the organizations must check the compliance of the same, carrying out an internal audit based on the Compliance Check Sheet attached to appendix I:III of this document.

4. REGISTER WITHHOLDING PERIOD

With the aim of carrying out the checking tasks adequately, a minimum maintenance time is recommended for each register according to the table of Registers and evidence linked to the Reference.

CHAPTER V

IMPLEMENTATION OF THE SYSTEM

This reference will be useful to any company or organization that wishes to certify a solution with criteria of technological effectiveness but without entering into its organizational model. Therefore, a methodology is presented as a guide in order to make the design and development of solutions compliant with the criteria of PLI, a further process of the aforementioned organization.

The methodology is based on the known PDCA cycle (Plan – Do – Check – Act) of Deming, which supports the activities designed to continuously improve a specific process or activity.

The establishment of this methodology is carried out through a cyclic action made up of tour fundamental phases:

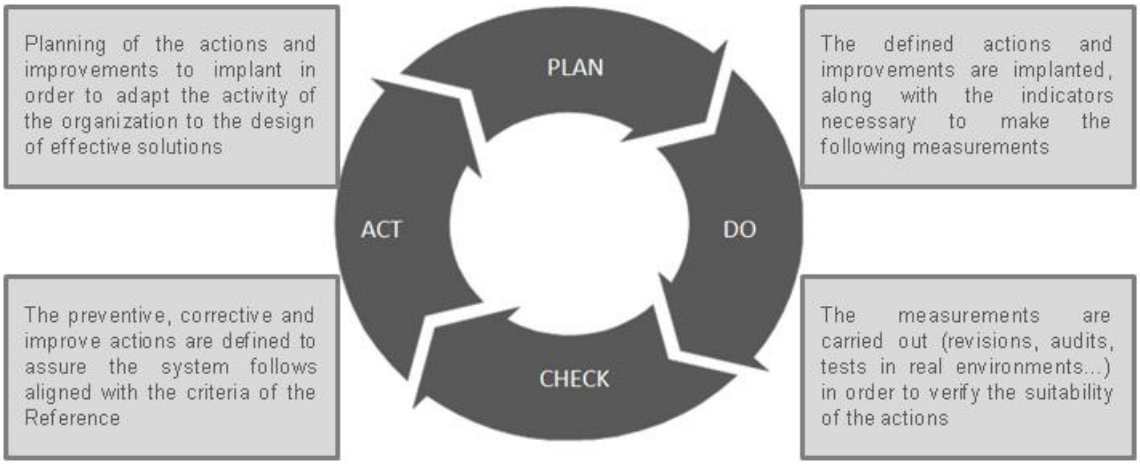
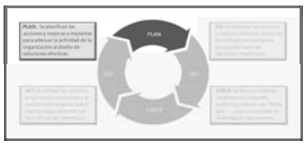


Figure 2: Deming PDCA cycle for the application of PLI principles

The following is a description of the actions to be carried out in each of the phases:

- **PLAN**:



This is the phase which most influences the others. Its objective is to plan the process to be established, including all the relative aspects of the unfolding of the Management System for Technological Effectiveness (SISGET) in the organization. The plan should define three key aspects:

- Organization.
- Scope.
- Planning and Assignment of resources.

Organizational aspect:

This aspect answers the question “Who establishes and maintains the system?” The first step to take is the definition of a policy approved by the management, reflecting the highest commitment to SISGET. Next, roles and responsibilities should be assigned as well as training tasks and jobs of communication and awareness within the organization.

Scope:

With scope, the “What” is identified? This is to say, the “field” of activity of the System. Defining the scope will assure the application of the PLI criteria of the Reference in the processes or activities truly involved in the design and development of solutions.

Planning:

The planning is linked to the "How". In this case, the steps to be taken will be to define objectives, establish measurement indicators and assign both economic and human resources.

The following is a figure that details the aforementioned in relation to the planning of the SISGET:

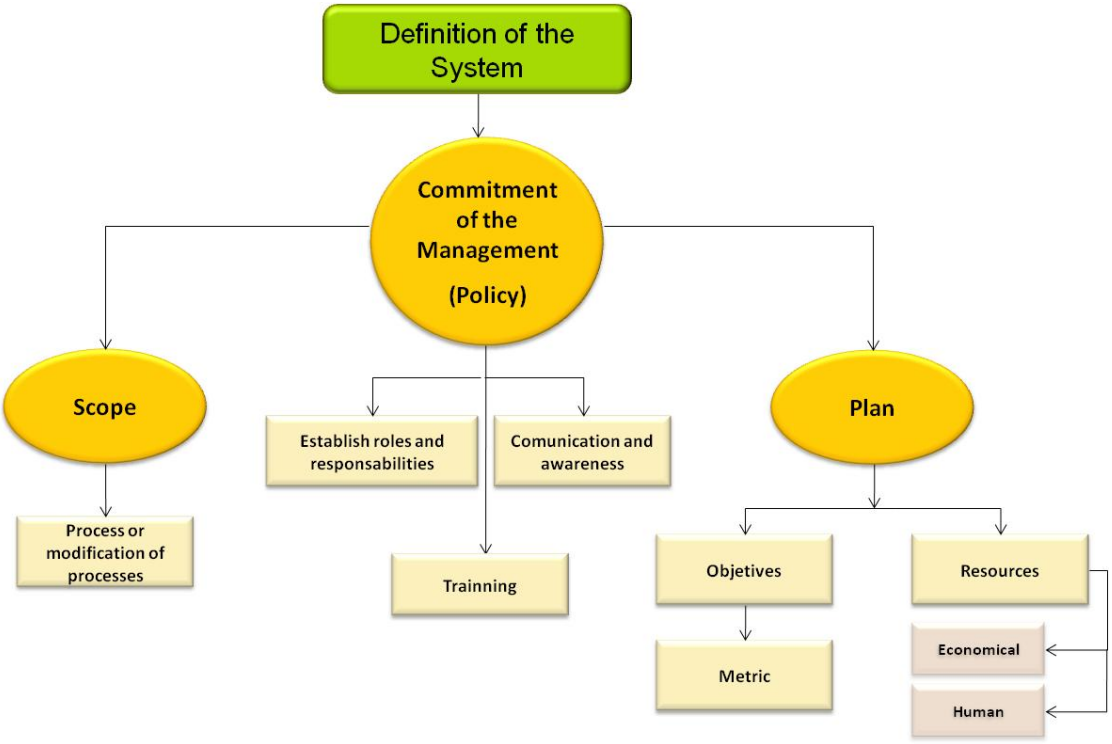


Figure 3: Action areas for the implementation of SISGET.

- **DO:**

The aim of this phase is to establish the actions necessary for the implementation of the principles of the Reference from an organizational point of view. The establishment of the planning from the previous phase will include, at least, the following:

- Budget assignment.
- Assignment of roles and responsibilities.
- Documentation and maintenance of policies, plans procedures and definitions for each process or group of processes.
- Identification and management of risks involved in the process.
- Management of installations and budget.
- Management of teams and operations.
- Progress reports about the plan.
- Coordination and management of the process.

Training of the personnel who are to apply the proposals and the recording of the work carried out and the results obtained are all very important at this stage.

Finally, corrective measures should be taken in the manner suggested and these measures should be checked to see if they are applied in a well-defined manner.

- **CHECK:**

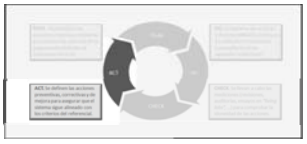
The aim of the **CHECK** phase is to visualize measure and check that the objectives marked in the planning are being met. To do this, measurement methods are carried out that check the suitability of the actions. To achieve this we must focus on what is to be checked and where it is to be monitored.

The check should be:

- According to the plan and the requirements of this Reference.
- Effectively established and maintained.

On the other hand, and as has been commented upon in the previous chapter; independently from the establishment of this PDCA methodology by the organization, it should periodically carry out an internal audit based on the **Compliance Check Sheet** in order to verify the establishment of the requirements indicated in the Reference. These audits must be registered in order to be monitored and be able to carry out the corrective measures necessary in each case.

- **ACT:**



The aim of the ACT phase is to establish the improvements in the system after the verification stage (Check). In this way, we have three types of action to establish:

- **Improvement actions**, aimed at the continuous improvement of the design and development of technologically effective solutions.
- **Corrective actions**. Once a non-conforming element is identified, its impact is analysed, and in the event that it is possible, an improvement or a correction is made.
- **Preventive actions**. The job of continuous monitoring of the System will detect potential risks whose mitigation is immediately carried out through these actions.

CHAPTER VI

APPENDICES

The following is a series of documents and techniques that allow a better understanding of this Reference.

These appendices are divided into two groups:

- **APPENDIX I: Support Document**
    - Appendix I.I: Best Available Techniques (BAT) and Best Available Techniques Not Entailing Excessive Costs (BATNEEC).
    - Appendix I.II: Memory of Sustainability – Law 16/2002 and Guide GRI for the making of Memories of Sustainability
    - Appendix I.III: Compliance Check Sheet
    - Appendix I.IV: Qualitative description of professional profile
- **APPENDIX II: Lists of techniques**
    - Appendix II.I: Basic Statistic Techniques
- **APPENDIX III: Bibliography and Links of interest**
    - Appendix III.I: A Study of Familiarity.
    - Appendix III.II: Definitions of Ergonomics

APPENDIX I – Support Document

I. Best Available Techniques (BAT) and Best Available Techniques Not Entailing Excessive Costs (BATNEEC)

The concept of Best Available Techniques (BAT) was introduced as a key element of the European Directive 96/61/EC. The objective of this mechanism is to assure that the companies invest in the technology that allows them to fulfil, to the extent of their capabilities, the standards set by the administration.

The aim is the search for the best technology available, that is to say that the industry should not hold back on spending in order to adapt its installations and processes to the best technology available (BAT).

Nowadays, and due to the fact that many companies (for economic reasons) are not capable of developing and establishing the best technology available, there tends to be another concept: “the best technology available at a cost that is not excessive BATNEEC (Best Available Techniques Not Entailing Excessive Costs).

All the information about the best technology available, classified by sectors, can be found at:

http://www.en.prtr-es.es/fondo-documental/documentos-de-mejores-tecnicas-disponibles,15498,10,2007.html

APPENDIX I – Support Document

II. Memory of Sustainability – Law 16/2002 and Guide GRI for the making of Memories of Sustainability

Law 16/2002, of the 1st of July, of prevention and integrated control of pollution, incorporated the Spanish judicial order Directive 96/61/CE, of the 24th of September, relative to the prevention and integrated control of the aforementioned pollution.

On the 20th of April 2007, the Royal Decree was approved for which the Ruling for the development and execution of Law 16/2002, of the 1st of July of prevention and integrated control of pollution.

Information on this topic can be found at:

http://www.boe.es/boe/dias/2007/04/21/pdfs/A17704-17717.pdf

The GRI model for the elaboration of memories of sustainability serves as a generally accepted framework in order to be informed about economic, environmental and social activity. It has been designed to be used by organizations, independently of their size, sector or location. It takes into account the practical considerations faced by a wide range of organizations, from the smallest to those with a large volume of operations operating at various geographical locations at the same time.

The following is an attached document with more information on this subject:

ANEXO I – Documentación de Soporte

III. Hoja de Revisión del Cumplimiento

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
A.- Sustainability	A.1.- Economic Sustainability	* Efficiency of the solution * **360º Economic study**	(R1). Solution design (including the manufacturing process) (R2).Study to demonstrate "Cost Efficiency". (R3). Market study. (R4). Solution Viability Plan				
	A.2.- Environmental Sustainability	* **Sustainability Memory**	(R5). Document verifying technologies registered in the B.A.T (Best Available Techniques) or in the BATNEEC. -See appendix I.I, appendix I.II y appendix I.V- (R6). Report on environmental impact or responsible declaration.				

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
B.- Emotional focus	B.1.- Application of Emotional Design criteria	*** Emotional Engineering (Methodology)** *** Emotional Engineering (Results)**	(R7). Document showing the methodology used, with proof of real entries of the solution that is under assessment. (R8). Results obtained by the application of said methodology.				

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
C.- Ergonomics	C.1.- Cognitive Ergonomics	*** Learning processes and assimilation of the solution** *** Cognitive Usability** *** Human team profile**	(R9). Documentation that shows the methodology used and the conclusions obtained by the introduction of the same. (R10). Cognitive usability in real environments test. (R11). Diagram of the work team, showing the profile of each member. -See appendix I.IV-				
	C.2.- Organizational Ergonomics	*** Organizational Aspects of the Solution**	(R12). Document with the study carried out on the organizational aspects of the solution (posts, functions and procedures).				
	C.3.- Functional Ergonomics	*** Physical Usability**	(R13). Physical usability in real environments test.				
	C.4.- Universal Design	*** Accessibility**	(R14). Accessibility in real environments test				
	C.5.- Familiarity	*** Aspects of familiarity**	(R15). Document with the results obtained in the practices carried out with users.				

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
D.- Security Management	D.1.- Physical Security Management	*** Personal Security**	(R16). Report with the practices and tests carried out, showing that the use of the solution does not carry any type of risk for the integrity of the user.				
	D.2.- Environmental Security management	*** Environmental Security**	(R17). Report with the materials used in the solution, their properties, their environmental impact and actions to minimize said impact.				
	D.3.- Information Security Management	*** Information Security**	(R18). Possession of an information security management system (SGSI) for the protection of data of a personal nature.				

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
E.- Citizen Innovation	E.1.- Measurement in Real Environments	* **Practices in Real Environments** * **Social Space of Innovation**	(R19). Documentary evidence of the practices, indicating when they were carried out, what characteristics of the solution were tested and the results. (R20). Added value perceived by the user in their everyday environment. (R21). Documentation about the integration with the technological ecosystem.				
	E.2.- Measurement and Analysis	* **Measuring and Effective Analysis Tools**	(R22). Verification that the data is integrated in an adequate tool or computer support, permitting the consultation, visualization and exploitation of the collected information. (R23). Documentation with the techniques of analysis used (Probability models, statistical estimates, hypothesis tests...). -See appendix II.I-				
	E.3.- Multidisciplinary Analysis	* **Human Team Profile**	(R11). Description of the team in charge of the trial, indicating its professional profile. - See appendix I.IV - (A1). Interviews with members of the team. (R24). Check on the minutes of the committees/ meetings linked to the trial and analysis.				

Families of Characteristics	*Characteristics*	*Details of the Aspect and Measurement*	*Mechanisms Entries and Aspects to be Revised*	*Compliance*			
				YES	*NO*		
					(Impact Caused)	*Correctable*	
						(Corrective Action)	*Correction Date*
F.- Neuro-usability	F.1.- Evaluation of Real Perceptions	*** Measurement of Perceptions** *** Human Team Profile**	(R25). Documentation of the methodology used (including the mechanisms used) and the documents (records) created by its application. (R11). Description of the team in charge of the trial, indicating its professional profile. - See appendix I.IV -				
G.- Ethical Evaluation	G.1.- Ethical Aspects of the Solution	*** Ethical Implications**	(A2). Evidence that all the ethical considerations necessary for the solution have been made.				

Compliance Check Sheet.English.xlsx

The following is an attachment with the **Compliance Check Sheet.**

APPENDIX I – Support Document

Qualitative description of professional profile

The following mentions the profiles considered as suitable for the measurement and evaluation of the characteristics that are requested by a diagram of a work team, indicating the profile of each member. (R10)

The following profiles are given as examples:

- Sociologists
- Psychologists
- Social Workers
- Ergonomists
- Doctors and other Health Care professionals
- Engineers
- Mathematicians
- Architects
- Other indivduals or specialists
- Other professionals with proven experience in innovation projects, as much from a social or humanistic perspective as a technological one.

APPENDIX II – List of Techniques

I. Basic Statistical Techniques

This reference makes mention of the "Effective tools of measurement and analysis" within the Measurement and Analysis of Social Spaces of Innovation. To this end, the applicant organization must demonstrate that, for said measurement and its analysis, it has made use of basic statistical techniques.

Amongst these techniques, we can mention:

- Frequential Distributions
- Distributions of Probability
- Hypothesis Tests
- Intervals of Confidence
- Estimate Statistics
- Tolerance Limit Statistics
- Bayes Theory
- Theory of Statistical Decision

A reference text of a sufficient level for these techniques is:

Juran's Quality Handbook" (Joseph M. Juran – A. Blanton Godfrey);
Ed: McGRAW-HILL

APPENDIX III – Bibliography and Links of interest

A Study of Familiarity

- According to the RAE, familiarity is defined as “Belonging to or being related to the family; it is said about something well-known or in which one is an expert; A person who one has frequent contact with and confidence in and can trust.”
- In order to broaden this definition: we understand familiarity as a collection of feelings, emotions and thoughts of a greater level of coincidence between the perception of something (or someone) and the special memory that is quickly evoked, in relation to the memory of previous events involving great confidence due to an accumulation of moments of satisfaction or knowledge obtained due to a very close experience.
- There is a study related to human behaviour, its memory and learning, in which the existence of familiarity is demonstrated in comparison to popularity, when a memory is evoked when faced with a sensory stimulus.
- In this Reference, we apply familiarity as an attribute of quality in the evaluation of the design of environments and personalized solutions that are more familiar to the user.

APPENDIX III – Bibliography and Links of interest

II. Definitions of Ergonomics

- **Ergonomics**: Ergonomics places human necessities and capacities as the focus of the design of technological systems. Its aim is to assure that humans and technology work in complete harmony, keeping the equipment and tasks in line with human characteristics.

- **Cognitive Ergonomics:** Cognitive ergonomics deals with mental processes, such as perception, memory, reasoning and motor responses as far as these affect interactions between human beings and other component elements of a system. Its relevant aspects include mental workload, decision making, expert functioning, computer-human interaction, work related stress and entertainment and training in so far as these factors can be related to the design of human-system interaction.

- **Physical Ergonomics:** Physical ergonomics deals with the anatomical, anthropometric, physiological and bio-mechanical human characteristics as they interact with physical activity. Its most relevant topics include posture at work, manual movement of materials, repetitive movements, tendon and muscle injuries of a work related nature, workplace design, safety and occupational health.

- **Organizational Ergonomics:** Organizational ergonomics deals with the optimization of socio-technical systems, including organizational structure, politics and processes. Communication, human resources management, task design, work schedule design and shift design, team

working, participatory design, community ergonomics, cooperative work, new paradigms of work, virtual organizations, telephone work and quality assurance are all relevant topics in the domain of organizational ergonomics.

Bibliography: http://www.ergonomia.cl/def_ergo.html