Guidelines on the acquisition and reuse of software for public administrations

italia

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Note: This document is the English translation of the [original guidelines](https://docs.italia.it/italia/developers-italia/lg-acquisizione-e-riuso-software-per-pa-docs/it/stabile/) written in Italian which were enacted on May 9th, 2019, as reported in the Official Gazette Serie Generale n. 119 of May 23rd, 2019).

CHAPTER 1

Preface

This document was drafted by the working group established by Resolution No 237/2017, a collaboration between the Agency for Digital Italy (Agenzia per l'Italia Digitale - hereinafter AgID) and the Digital Transformation Team (Team per la Trasformazione Digitale):

- Giovanni Bajo, Digital Transformation Team
- Viviana De Paola, AgID - Digital transformation area
- Daniela Intravaia, AgID - Coordination of international activities
- Guido Pera, AgID - Digital transformation area
- Umberto Rosini, AgID - Architecture, standards and infrastructure area
- Guido Scorza, Digital Transformation Team.

1.1 Purpose and structure of the document

These guidelines are adopted in implementing Articles 68 and 69 of the *Digital Administration Code* (hereinafter CAD):

- as provided for in Article 68(1b), identifying in Chapter *2 Guidelines for acquiring software* (page **??**), the methods and criteria by which an administration must carry out the comparative assessment described in the aforementioned article when selecting a method for acquiring software.
- as provided for in Article 69(2*a*), identifying in Chapter *3 Guidelines for software reuse (Article 69)* (page **??**), the platform for the publication of source code under open licence and software documentation available for reuse by administrations, specifying the technical methods for use.

They also replace the previous Circular 63/2013, entitled *'Guidelines for comparative assessment provided for by Article 68 of Legislative Decree No 82 of 7 March 2005, the Digital Administration Code'* and its annexes.

This document and the methodology described within are to be understood as aids to a decision-making process that remains under the full responsibility of administrations, when they share solutions as well as when they adopt them for reuse in compliance with the regulations in force, in particular with regard to digital public administration,

public contracts and the protection of personal data. With reference to the latter area of law, EU Regulation 2016/679 has defined/specified principles and criteria that are particularly relevant with respect to the subject matter of these guidelines. Among these principles and criteria, the requirement to consider data protection from the design stage and by default (Article 25 of the aforementioned regulation) is highlighted. Furthermore, attention should be paid to AgID technical rules that may affect the subject matter, such as the Minimum security[4] measures (Circular 2/2017)[5] and Guidelines for the development of secure software[6].

This document is the starting point of a cultural process in which public administrations are the protagonists for the increasing use of open software, as is evident from Article 69(1), which requires public administrations 'that own solutions and computer programs created at the specific instructions of the public client' to 'make the relevant source code available, complete with documentation and released in a public repository **under open licence**. . . '

Therefore, the aforementioned regulation was the starting point for the preparation of these *guidelines*, highlighting the vigorous drive of the legislator towards the increasing use of open source software by public administrations. This can be seen from the simultaneous elimination of the provision of the so-called 'reuse catalogue', without this preventing, if necessary, public administrations from entering into agreements (for example, on the basis of Article 15 of Law No 241/90) for the reuse of solutions that do not comply with the provisions of Article 69(1) and that cannot fall within the scope of the cases dealt with here, which, it is stressed, must be those that are subject to an open licence.

In any case, the legislator, adopting this strong propensity towards open source for public administrations, has reasonably provided for a **general exclusion, only for 'justified reasons of public order and safety, national defence and electoral consultations'** - in Article 69(1), final bullet point - , in order to safeguard those more sensitive areas of digital government of the country, which from the sharing and community management of open software may be exposed to risk.

The approach described above, which favours open source, can also be inferred clearly from the wording of Article 69(2), which requires public administrations 'in project specifications' to 'always be the owners of all rights to programs and information and communication technology services, specifically developed for them'.

A safeguard has also been provided for in this case, uniquely for circumstances in which 'this is excessively onerous for proven technical-economic reasons'.

Consequently, Article 68 shall be understood and implemented in this document, in full compliance with the aforementioned interpretation of Article 69.

Public administrations are in the position to best know their requirements and will be capable of rejecting the methodology proposed here, in relation to its context, as well as to the characteristics of the acquisition to be carried out.

In this sense, the *guidelines* are not merely a regulatory tool, but suggestions for new follow-up, awareness and information processes.

1.2 Software covered by these guidelines

In order to dispel any interpretative doubts, in the context of Articles 68 and 69 of the CAD, the terms 'programs', 'solutions', 'computer programs' and 'ICT solutions' are to be understood as the same. The subject matter of the obligation laid down by the provision in question is 'software'. A non-exhaustive list of software thus covered by these guidelines includes the following:

- Web applications (front-end and back-end)
- Desktop applications
- Mobile applications
- Semi-finished applications and components

[4] https://www.agid.gov.it/index.php/it/sicurezza/misure-minime-sicurezza-ict
[5] https://www.agid.gov.it/index.php/it/sicurezza/misure-minime-sicurezza-ict
[6] http://www.agid.gov.it/sites/default/files/repository_files/documentazione/linee_guida_per_lo_sviluppo_sicuro_di_codice_v1.0.pdf

- Frameworks
- Libraries
- Plug-ins
- Operating systems
- Websites (front-end and back-end)

These guidelines are intended for encouraging the rationalisation of solutions used in sectors/services familiar to public administrations, such as, for example, human resources management, document management and storage, management of decision-making processes, institutional communication and administrative transparency.

Furthermore, it is important to note that the term 'software', as used in this document, refers not only to the source and/or executable code, but also to all artefacts produced during the process of developing and using software, i.e. documentation, graphical assets, manuals, etc., as explained in Article 69(1).

1.3 Software reuse

The 'reuse' of software refers to the set of activities carried out to enable the software to be used within a different context from that for which it was originally created, in order to satisfy requirements similar to those that led to its initial development. The original product is 'transported' into its new context, enriched, if necessary, with additional functionalities and technical characteristics that may represent 'added value' for its users.

Through the combined provisions of Articles 68 and 69 of the CAD, software for reuse is exclusively that released under open licence by a public administration. Therefore, this is a subset of all open source software available for acquisition. These guidelines distinguish, where appropriate, the methods in which public administration software under an open licence is acquired, in comparison to third-party open source software.

A fundamental condition of reuse in the context of public administrations is that an administration that 'reuses' software receives it free of charge from the transferring administration, and in acquiring it only incurs the costs of its adaptation, not those of design and implementation.

1.4 Subjects of the guidelines

These guidelines are addressed to public administrations referred to in Article 1(2) of Legislative Decree No 165 of 30 March 2001, in compliance with the division of competence referred to in Article 117 of the Constitution, including the port system authorities, as well as the independent administrative authorities of assurance, control and regulation, i.e. '*institutes and schools of any class and grade, and educational institutions, autonomous state companies and administrations, the regions, provinces, municipalities and mountain communities and their consortia and associations, university institutions, autonomous social housing institutes, chambers of commerce, industry, crafts and agriculture and their associations, all non-profit national, regional and local public bodies, administrations, companies and bodies of the national health service, ARAN (l'Agenzia per la rappresentanza negoziale delle pubbliche amministrazioni - Contractual Representation Agency for Public Administrations) and the agencies cited in Legislative Decree No 300 of 30 July 1999 and CONI (Comitato Olimpico Nazionale Italiano - Italian National Olympic Committee) (for the latter administration, up until the organic review of the regulations for the sector)*'.

The provisions for the reuse of solutions shall not apply where there are 'justified reasons concerning public order and safety, national security and defence, and electoral consultations'.

With reference to the scope of application of these guidelines, it is hoped that public administrations will use the cooperation and collaboration tools provided by current legislation, such as collaboration agreements provided for by Article 15 of Law No 241/1990, in order to implement co-design initiatives, broadening the sharing of knowledge, decision-making processes and common paths, through, for example, centres of expertise and support throughout the life cycle of the software.

1.5 Ownership

In accordance with Article 69 of the CAD, as regards reuse, an administration is to be considered as the owner of software designed to meet its own specifications whenever:

- it has commissioned such a solution - by means of procurement or other negotiation circumstances of a similar nature, regardless of the title given to the contract - and **the contract provides for the acquisition of all intellectual and industrial property rights** over the software developed on behalf of the public administration, or in any case does not attribute such ownership to the contractor or to third parties.
- the software was developed by resources within the administration itself.

When negotiating a contract to commission the development of software, each administration must ensure, at the conclusion of the execution of the contract, their full and exclusive ownership of all rights over the software under development, unless this is excessively onerous for proven technical and economic reasons (from Article 69(2) of the CAD).

Software under development refers to the parts of software actually developed in execution of the contract; it is understood that development could be based on the use of existing software components (e.g. open source libraries and frameworks of third parties) for which acquiring ownership is not necessary, only a licence is required (which must be compatible with the purposes of reuse).

Failure to acquire ownership of the work cannot be used to obtain more advantageous economic conditions, since it does not constitute a proven technical-economic reason within the meaning of Article 69(2) of the CAD.

An administration, within the meaning of Article 69, must also acquire all intellectual and industrial property rights to any customisations or software modules intended to be integrated with or interfaced with proprietary software. In this case, the obligation set forth in Article 69 shall apply exclusively to the module or part of the software being developed; this module must therefore be separated from the rest of the software and released in accordance with the methods specified in Development of software from scratch[7], taking care to specify the required ownership dependency within the documentation.

For example, wording such as the following, where present in software development contracts, allows for the administration to be deemed to be the owner of the rights in the sense required by Article 69 of the CAD:

- 'the client will own the developed software';
- 'the ownership of the IT solution covered by the contract will be attached to the client or administration';
- 'at the end of the contract, the intellectual property of the IT solution under development will lie within the competence of the awarding administration';
- 'all copyrights on the developed software will be transferred, after the completion of the work, to the awarding administration, which will become the owner';
- 'all economic exploitation rights as regards the contracted software shall lie within the competence of the awarding administration'.

1.6 Software compliance with regulations

Reusing software amplifies any selection made within the information technology field and is completely neutral with respect to the quality or lack thereof of selections made. It can multiply the impact of good practice or, in the same way, negatively enhance the impact of erroneous choices whose dissemination is undesirable.

In promoting the reuse and dissemination of software over which the intellectual property rights of an administration are emphasised, along with the important economic and efficiency advantage, it is crucial to draw the attention of

[7] https://docs-italia-staging.teamdigitale.it/italia/developers-italia/lg-acquisizione-e-riuso-software-per-pa-docs-en/it/new-version-master/software-reuse/development-of-software-from-scratch.html/

individual administrations to the importance of the software being reused - as with the entire software range used by each administration - complying with the regulations in force.

Since the process of acquiring software for reuse often includes customisations and aggregations of different components, some of which may no longer be in use or were released years earlier, it is important to remember that the verification of full compliance with the regulatory framework remains the responsibility of the administration that reuses the software, since it alone is responsible for decisions taken within the assigned margins of discretion and in accordance with the constitutional principles of good performance.

1.7 Glossary

Artefacts By-products created during software development that help describe functions, architecture, design and commissioning; for example: functional requirements, description of databases and processes, the test set.

Code Hosting (tool) A platform that allows for the publication of the source code, organised into multiple repositories. Code hosting tools often also offer functionalities related to software evolution such as ticketing systems, processes for third-party code contribution, an area for downloading releases, etc. Within the framework of these guidelines, the tools chosen by the administrations must have minimum requirements in terms of functionality (*3.4.1 Identifying a code hosting tool* (page **??**)).

Source code The source code (often referred to simply as 'source') is the text of a program written in a programming language (e.g. C or Visual Basic) from which the final program used by the user is derived. Access to the source code is essential for modifying a program.

Community Aggregation of natural and legal persons and resources (e.g. forums, chatrooms and technologies for meeting and interacting in a virtual location), with rules and a structure, aimed at the implementation and/or management of a common project.

Open format (data) The public data format, versioned, comprehensively documented and without restrictions at implementation. An open format is a format recognised by a standardisation body and maintained in a shared manner among multiple bodies that provide concurrent implementations, with a transparent process. The format must remain consistent with the affirmed version.

Data format Data representation method.

Interoperability In the field of information technology, the capacity of different and autonomous systems to cooperate and exchange information automatically, on the basis of shared rules.

Licence In the field of information technology, the legal text with which certain rights are granted to the software and the data distributed, which would otherwise be reserved by exclusivity rights.

Lock-in A technical and economic phenomenon in which a generic user is unable to free themselves from a previously made technological choice. This inability is typically caused by the high costs of changing technology but, in many cases, it may also depend on the adoption of proprietary solutions that prevent migration. The use of open formats for data storage, and free access to such data (especially in the case of SaaS solutions) are prerequisites for avoiding lock-in situations.

Open source This refers to a method in which software can be licensed. It is implemented by granting the public rights to use, copy, modify and distribute copies, including modified copies, of the software; to do this, the source code must also be freely available. Also referred to as 'free software', 'open software' or 'software released under open license'. The certification body for software licences corresponding to this definition is the Open Source Initiative (OSI).

Repository Within a code hosting tool, a repository is the minimum containment unit for the source code of a piece of software. The term 'reportorio' is its Italian translation (used for example in CAD Article 69(1)).

Reuse In the context of these guidelines, this refers to the process outlined by the CAD (Article 69) with which an administration distributes ('making available for reuse') software that it owns in open source, for the benefit of other

administrations that can use it ('reusing'). All reusable software is open source, but not all open source software is reusable (since not all open source software is owned by an administration).

SaaS Software as a Service. Refers to a method of software distribution that does not involve installation on operators' workstations, but that occurs through remote access to a server, for example by connecting to an address through a browser. Wikipedia is an example of software distributed in Software as a Service mode.

Proprietary software This is software that has restrictions on its use, modification, reproduction or redistribution imposed by the owner of the economic exploitation rights, i.e. the author or - in the event of a transfer of proprietary rights - the assignee of the rights in question.

TCO Total Cost of Ownership: Approach used to assess all the costs of the life cycle of an IT resource calculated over a time window appropriate to the context of the assessment and that includes the cost of migration to another solution (e.g. acquisition, installation, management, maintenance and decommissioning). The TCO approach is based on the consideration that the total cost of using an IT resource depends not only on the acquisition costs, but also on all the costs that occur during the entire operating life of the resource itself.

CHAPTER 2

Guidelines for acquiring software

2.1 Introduction and legislative context

For public administrations, the Digital Administration Code, hereinafter referred to as the CAD, governs the reuse of open solutions and standards.

Articles 68 and 69, which these guidelines aim to implement, also deal with the issues of reuse, software ownership and open source code for public administrations.

The articles referred to have been modified by Legislative Decree No 179 of 26 August 2016 as well as Legislative Decree No 217 of 12 January 2017. The latest update involved:

- the amendment of Article 68, repealing paragraph 3 and transposing the content into Article 1(3)(la-) and Article 1(3)(lb-);
- the rewording of Article 69(2);
- the introduction of Article 69(2a);
- the repeal of Article 70, which is entitled 'Database of reusable computer programs'.

The text of Article 68 remains unchanged, except for the updating of the regulatory reference to Legislative Decree No 50/2016[1] replacing the reference to the previous procurement legislation.

Up until the modification implemented by Legislative Decree No 217/2017, the following factors played a role in the acquisition of software by public administrations:

- the electronic marketplace: *'an acquisition and negotiation tool that allows for electronic purchases for amounts below the European threshold value based on a system that implements procedures for selecting the contractor entirely by electronic means'* (of particular importance is the MePA (Mercato Elettronico per la Pubblica Amministrazione - Electronic Market for Public Administration) managed by CONSIP);
- framework conventions and agreements concluded, in accordance with the legislation in force, by CONSIP and by aggregators;
- the national catalogue of reusable programs managed by AgID.

[1] http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2016-04-18;50!vig=

The first two continue to carry out their functions, while the catalogue functions, repealed as such by the CAD, are assumed by the *Developers Italia* (https://developers.italia.it[8]) portal, which assumes the role of 'platform', or more precisely of *repository* - according to the wording of Article 69(1) and of the *platforms* referred to in Article 69(2a).

This document reiterates that the 'principles of economy and efficiency, investment protection, reuse and technological neutrality' (Article 68(1) of the CAD[2]) are achieved by implementing the provisions of Article 69(2) of the CAD[3]: 'the reuse of computer programs owned by public administrations' ensuring that the latter, in addition to being owners of the software, make the software available through open source with the affixing of an open licence.

2.2 Subject of the assessment

The comparative assessment should be carried out when public administrations intend to acquire '*computer programs or parts thereof*'. Therefore the subject of the assessment is software (as identified in *1.2. Software covered by these guidelines*) that meets the specific functional requirements of the administration.

For example, the acquisition of hardware components for information systems (servers, workstations, printers, etc.) remains outside the scope of this document.

Further situations where the decision-making process proposed in this Chapter 2 is not applicable may involve, for example:

- the adoption of framework contracts already agreed, where such adoption is compulsory for administrations;
- framework agreements, as instruments that exclusively define the general clauses that, within a given period of time, regulate the contracts to be entered into (the specific characteristics of the individual supply are subsequently defined in Specific Contracts);
- completion of projects or outputs for which a comparative assessment has already been carried out prior to the initial acquisition;
- tenders with the complete outsourcing of information systems as their objective, since the option of outsourcing involves a strategic area that goes beyond the specific context of these guidelines and responds to administration governance decisions and strategic objectives of a more general nature.

Please note that in the cases listed here, the Guidelines for software reuse described in Chapter 3 must still be applied.

2.3 Comparative assessment

2.3.1 Description of solutions

Article 68(1) of the CAD indicates the types of solution subject to comparative analysis by type of software:

'Public administrations acquire computer programs or parts thereof in accordance with the principles of economy and efficiency, investment protection, reuse and technological neutrality, following a comparative technical and economic assessment of the following solutions available on the market:

a) software developed on behalf of the public administration;

b) the reuse of software or parts thereof developed on behalf of the public administration;

c) free software or open source code;

d) software that is usable through cloud computing;

[8] https://developers.italia.it/

[2] http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2005-03-07;82!vig=~art68

[3] http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2005-03-07;82!vig=~art69

e) proprietary software through the use of a user licence;

f) a combination of the previous software solutions'.

The following list of definitions describes the six solutions provided by the legislation:

A - Software developed on behalf of the public administration A solution also known as the 'make option': the public administration entrusts the development of the software (either from scratch or through modifying existing software) to a supplier and the latter undertakes to deliver the developed software to the public administration on the basis of the defined requirements. For example, during the software life cycle (analysis, design, development, testing, release, maintenance) the public administration may take care of the analysis and design phases, defining the software requirements and then entrust the development to the supplier.

B - Reuse of software or parts thereof developed on behalf of the public administration 'Reuse' of a public administration software solution (or components thereof) that already exists and is available.

C - Free software or open source code software licensed under an open source licence (see *1.7 Glossary* (page **??**)). In particular, this refers to all software distributed under an OSI-certified license (complete list[9]), as described in *3.5.2 Open software licences* (page **??**).

D - Software that is usable through cloud computing A solution in which the public administration acquires the software as a service. This solution does not include HaaS (Hardware as a Service) and IaaS (Infrastructure as a Service).

E - Proprietary software through the use of a licence Subject to proprietary software user licence conditions, to be installed 'on premises'.

F - A combination of the previous solutions Software implemented with components belonging to more than one of the previous categories. For example, software in which a reused solution relies on open source middleware and accesses a proprietary database, with components specifically designed for the administration that is receiving the solution. In fact, this is the most common type currently used in public administrations.

In addition, Article 69(1) of the CAD states that

'public administrations that are owners of IT solutions and computer programs made to the specific specifications of the public client, have the obligation to make the relevant source code available, complete with documentation and released in a public repository under an open licence, free of charge'.

With regard to solution D) (Software that is usable through cloud computing), this is to be considered as a method for the provision of IT services, and therefore can be occasionally combined with categories A), B), C) and E).

2.3.2 Description of the assessment criteria

Below is a brief description of the criteria required for the comparative assessment of solutions, for each of the criteria listed in Article 68(1a) of the CAD[10].

Total cost In the context of this document, this is to be understood as the Total Cost of Ownership (TCO) of the solution, calculated over a time window appropriate to the context of the assessment, including the cost of migration to another solution (see also paragraph 2.4).

Use of open data formats The use, by the solution to be assessed, of standard and open formats (see Glossary) for the representation of data, metadata and documents, aimed at ensuring interoperability between the computer systems of public administrations and/or public service operators.

Use of open interfaces The use, by the solution to be assessed, of open interfaces, including *Application Programming Interface*s (API), i.e. public, documented and freely implementable/extendible interfaces, to ensure interoperability between the computer systems of public administrations and/or public service operators.

[9] https://opensource.org/licenses/alphabetical

[10] http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2005-03-07;82!vig

Use of interoperability standards The adequacy of the solution to be assessed, ensuring interoperability between computer systems of public administrations and/or public service operators.

Security levels In the context of this document, this refers to the existence of suitable guarantees regarding the security levels of the solution regardless of the legal nature of the owner of the software and/or the service provider in cloud computing mode.

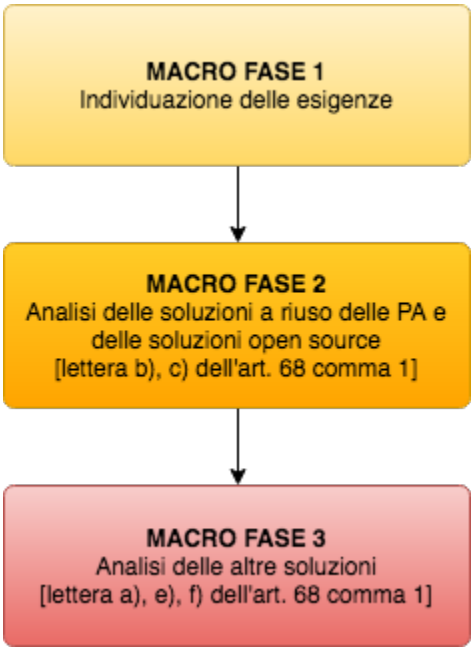
Compliance with data protection legislation This refers to the processes/procedures that comply with data protection legislation, regardless of the legal nature of the owner of the software and/or the service provider in cloud computing mode.

Service levels of the supplier This refers to the ability of the supplier to provide services in compliance with the metrics previously identified by the public administration in a Service Level Agreement (SLA).

2.3.3 Description of macro-phases

Given the varied nature of the solutions and the difficulty in making uniform quantitative comparisons, such as in the case of comparing a solution from which certain costs may be derived (an 'on premises' proprietary or cloud computing solution) with a solution to be implemented from scratch - for which only a feasibility study is available - it was decided to specify a decision-making process through the description of phases and their organisation into macro-phases.

The following diagram provides the macro-phases that characterise the decision-making process to follow up the comparative assessment provided for in Article 68 of the CAD.



MACRO FASE 1 Individuazione delle esigenze	**MACRO-PHASE 1** Identification of requirements
MACRO FASE 2 Analisi delle soluzioni a riuso delle PA e delle soluzioni open source [lettera b), c) dell'art. 68 comma 1]	**MACRO-PHASE 2** Analysis of reusable PA solutions and open source solutions [letters (b) and (c) of Article 68(1)]
MACRO FASE 3 Analisi delle altre soluzioni [lettera a), e), f) dell'art. 68 comma 1]	**MACRO-PHASE 3** Analysis of other solutions [letters (a), (e) and (f) of Article 68(1)]

The macro-phases identified are as follows:

MACRO-PHASE 1: This phase aims to define requirements by specifying the needs and constraints (organisational and economic) that affect the choices for the identification of a solution appropriate to the requirements of the administration;

MACRO-PHASE 2: In this phase the public administration considers the possibility of satisfying its own requirements by adopting a solution already in use by another administration (hereinafter referred to as a 'reusable PA solution') or free software or open source code (hereinafter referred to as 'open source solutions').

MACRO-PHASE 3: If macro-phase 2 does not allow the public administration to satisfy its requirements, the satisfaction of the same is pursued through the use of proprietary computer programs, through the use of a licence and/or from-scratch products.

In the following section, the macro-phases identified are divided into phases, describing the activities to be carried out in terms of criteria and methodologies to be adopted.

2.4 Macro-phase 1: Identification of requirements

In this macro-phase, the public administration defines the requirements (needs and constraints) that affect the options for the identification of a solution; it is recommended to prepare a document (without any format restrictions) describing the identified requirements to be used in phases that relate to the comparison and assessment of solutions.

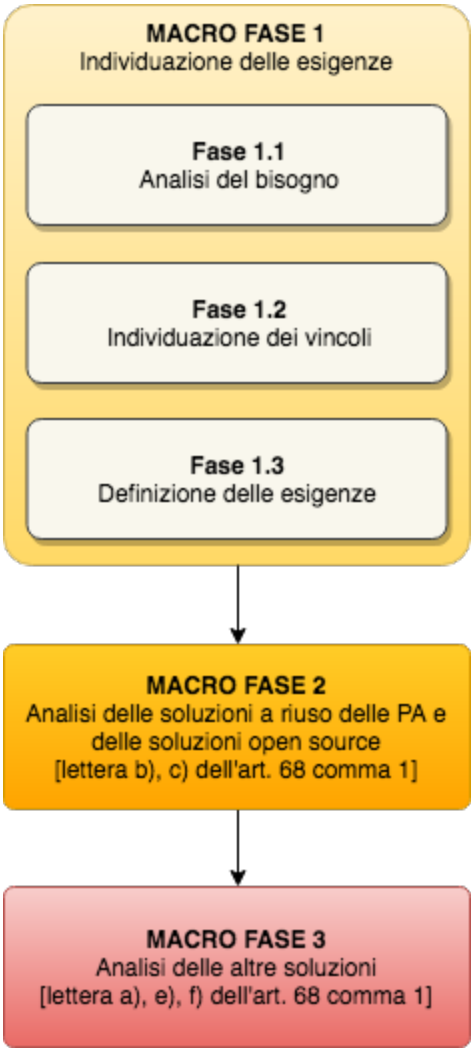
MACRO FASE 1 Individuazione delle esigenze	**MACRO-PHASE 1** Identification of requirements
Fase 1.1 Analisi del bisogno	**Phase 1.1** Needs analysis
Fase 1.2 Individuazione dei vincoli	**Phase 1.2** Identification of constraints
Fase 1.3 Definizione delle esigenze	**Phase 1.3** Definition of requirements
MACRO FASE 2 Analisi delle soluzioni a riuso delle PA e delle soluzioni open source [lettera b), c) dell'art. 68 comma 1]	**MACRO-PHASE 2** Analysis of reusable PA solutions and open source solutions [letters (b) and (c) of Article 68(1)]
MACRO FASE 3 Analisi delle altre soluzioni [lettera a), e), f) dell'art. 68 comma 1]	**MACRO-PHASE 3** Analysis of other solutions [letters (a), (e) and (f) of Article 68(1)]

2.4.1 Phase 1.1: Needs analysis

The administration defines its own needs for the identification of the software solution. In doing so, it takes into account that defined in the Acquisition programme and in the Public works planning (Article 21 of Legislative Decree No 50 of 18 April 2016).

The activities anticipated in this phase are:

- an analysis of the context through the description of the characteristics of the administration: purpose, structure and organisation;
- a description of the operational flows involved in the software to be acquired, which the public administration puts in place as a follow-up to the administrative procedures;
- the optimisation assumptions for the flows in relation to the software to be acquired;


MACRO FASE 1
Individuazione delle esigenze
Fase 1.1
Analisi del bisogno
Fase 1.2
Individuazione dei vincoli
Fase 1.3
Definizione delle esigenze
MACRO FASE 2
Analisi delle soluzioni a riuso delle PA e delle soluzioni open source
[lettera b), c) dell'art. 68 comma 1]
MACRO FASE 3
Analisi delle altre soluzioni
[lettera a), e), f) dell'art. 68 comma 1]

- identification of the 'tools' (definition of objectives) needed to implement the identified operational processes;
- declaration of requirements, i.e. the needs to which the software must respond, providing for a differentiation between indispensable and non-essential requirements.

This phase concludes with the:

- identification of the needs of the public administration.

2.4.2 Phase 1.2: Identification of constraints

The administration shall describe the constraints that will affect the supply of the software solution. The activities anticipated in this phase are:

- identification of the **budget resources available** (hereinafter T_{budget}) to ensure the availability and production of the solution to be acquired (possible data reclamation and migration from existing systems, installation, customisation, integration with existing systems, training, start-up support, management activities, payment of any surplus, etc.);
- estimate of the **time required to implement the solution** (hereinafter referred to as T_{time}), which the public administration can absorb;
- any standards and guidelines that the software should follow in its technical implementation, such as for example:
  - AgID Design guidelines[11] (which also includes compliance with Law No 4/2004 on accessibility);
  - AgID interoperability guidelines;
  - AgiD guidelines on the development of secure software[12].
- any other constraints of interest of the administration.

This phase concludes with the:

- identification of constraints (economic and time-related) that affect the choices of the administration.

2.4.3 Phase 1.3: Drafting of the document describing the requirements

The administration shall draft a document describing its requirements to be used in the subsequent stages of the comparative assessment.

The activities anticipated in this phase are:

- drafting of the document describing the requirements, which shall contain the results of the previous phases 1.1 and 1.2.

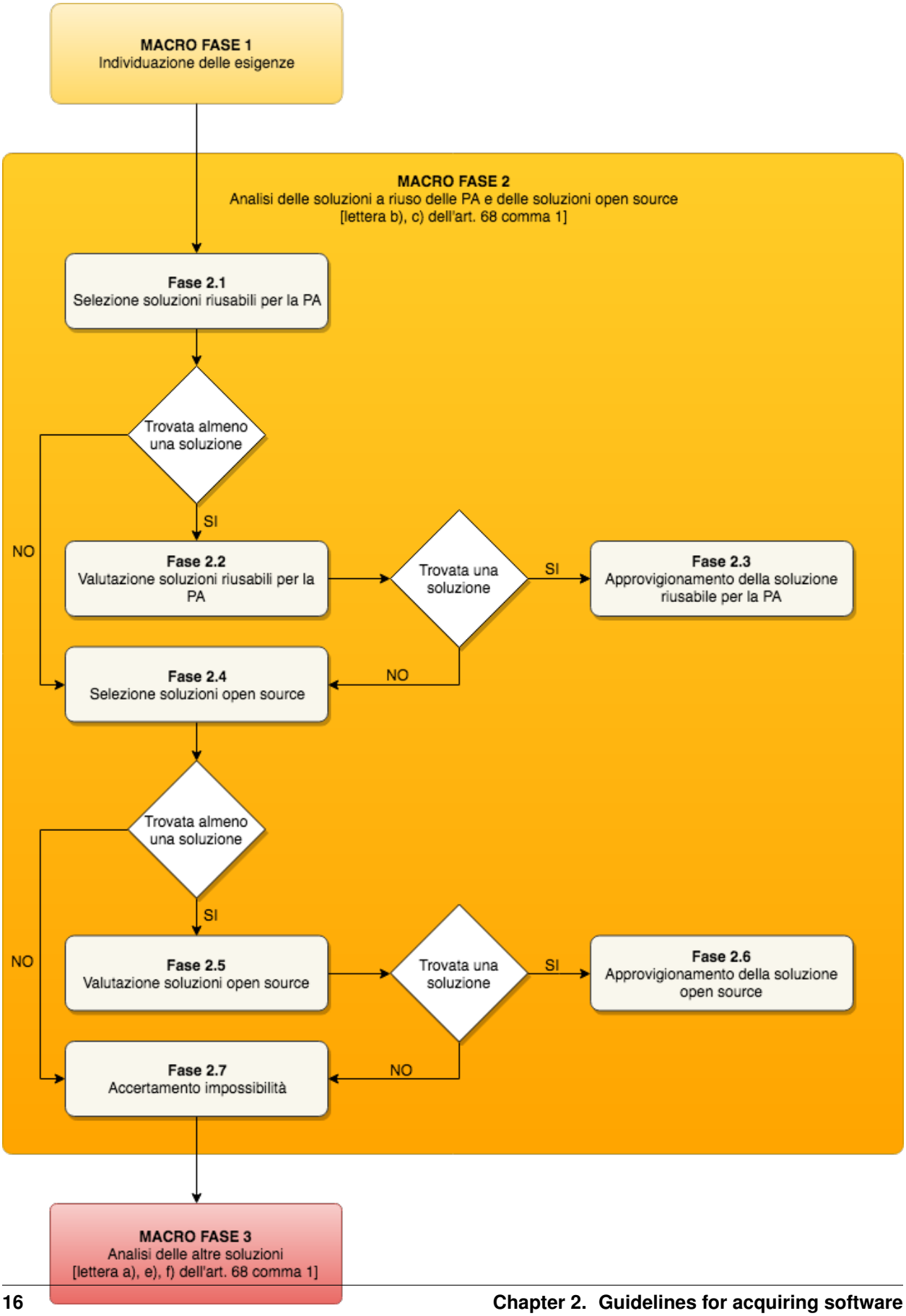
This phase concludes with the:

- availability of the document describing the requirements.

2.5 Macro-phase 2: Analysis of reusable PA solutions and open source solutions

The public administration, starting from the availability of 'reusable PA solutions' and 'open source solutions', must verify that their requirements have been satisfied with such solutions.

[11] https://designers.italia.it/guide/
[12] https://www.agid.gov.it/it/sicurezza/cert-pa/linee-guida-sviluppo-del-software-sicuro


MACRO FASE 1
Individuazione delle esigenze
MACRO FASE 2
Analisi delle soluzioni a riuso delle PA e delle soluzioni open source
[lettera b), c) dell'art. 68 comma 1]
Fase 2.1
Selezione soluzioni riusabili per la PA
Trovata almeno una soluzione
SI
NO
Fase 2.2
Valutazione soluzioni riusabili per la PA
Trovata una soluzione
SI
Fase 2.3
Approvigionamento della soluzione riusabile per la PA
NO
Fase 2.4
Selezione soluzioni open source
Trovata almeno una soluzione
SI
NO
Fase 2.5
Valutazione soluzioni open source
Trovata una soluzione
SI
Fase 2.6
Approvigionamento della soluzione open source
NO
Fase 2.7
Accertamento impossibilità
MACRO FASE 3
Analisi delle altre soluzioni
[lettera a), e), f) dell'art. 68 comma 1]

MACRO FASE 1 Individuazione delle esigenze	**MACRO-PHASE 1** Identification of requirements
MACRO FASE 2 Analisi delle soluzioni a riuso delle PA e delle soluzioni open source [lettera b), c) dell'art. 68 comma 1]	**MACRO-PHASE 2** Analysis of reusable PA solutions and open source solutions [letters (b) and (c) of Article 68(1)]
Fase 2.1 Selezione soluzioni riusabili per la PA	**Phase 2.1** Selection of reusable solutions for the PA
Trovata almeno una soluzione	At least one solution found
Fase 2.2 Valutazione soluzioni riusabili per la PA	**Phase 2.2** Assessment of reusable solutions for the PA
Trovata una soluzione	One solution found
Fase 2.3 Approvigionamento della soluzione riusabile per la PA	**Phase 2.3** Procurement of the reusable solution for the PA
Fase 2.4 Selezione soluzioni open source	**Phase 2.4** Selection of open source solutions
Trovata almeno una soluzione	At least one solution found
Fase 2.5 Valutazione soluzioni open source	**Phase 2.5** Assessment of open source solutions
Trovata una soluzione	One solution found
Fase 2.6 Approvigionamento della soluzione open source	**Phase 2.6** Procurement of the open source solution
Fase 2.7 Accertamento impossibilità	**Phase 2.7** Impossibility determination
SI	YES
NO	NO
MACRO FASE 3 Analisi delle altre soluzioni [lettera a), e), f) dell'art. 68 comma 1]	**MACRO-PHASE 3** Analysis of other solutions [letters (a), (e) and (f) of Article 68(1)]

In order to rationalise the overall expenditure of public administrations, the verification process to ensure that requirements have been satisfied must first consider 'reusable PA solutions' and then 'open source solutions'.

The implementation of Article 69 of the CAD[13] ensures that 'reusable PA solutions' make the relative source code available, complete with documentation, in a public repository under an open licence.

For further information, please refer to *3 Guidelines for software reuse (Article 69)* (page **??**).

2.5.1 Phase 2.1: Identifying reusable solutions for the PA

The administration identifies the candidate 'reusable PA solutions' that meet its requirements. The activities anticipated in this phase are:

- a search for 'reusable PA solutions' that currently exist within the Developers Italia platform.

This phase concludes with the:

- identification of 'reusable PA solutions' of interest to the public administration.

[13] http://www.normattiva.it/atto/caricaArticolo?art.progressivo=0&art.idArticolo=69&art.versione=4&art.codiceRedazionale=005G0104&art.dataPubblicazioneGazzetta=2005-05-16&atto.tipoProvvedimento=DECRETOLEGISLATIVO&art.idGruppo=14&a

2.5.2 Phase 2.2: Assessment of reusable solutions for the PA

Whereas the previous phase 2.1 made it possible to identify at least one 'reusable PA solution' of potential interest to the public administration, through the implementation of this assessment phase the best 'reusable PA solution' shall be identified. Solutions that meet the majority of needs and require modifications or customisation are also eligible at this stage.

For each of the potential 'reusable PA solutions' of interest, steps shall be taken to:

- check that at the very least, they conform to the regulations in force, which are detailed on the software data sheet in Developers Italia. In particular:
  - compliance with the interoperability rules prescribed by the guidelines issued in implementation of Article 73 of the CAD;
  - compliance with data protection regulations;
  - compliance with minimum levels of security for public administrations.
  - compliance with accessibility requirements (Law No 4/2004).
- assess the quality of the solution through the following parameters, some of which can be found on the software data sheet in Developers Italia:
  - degree of coverage of functional and non-functional requirements;
  - the presence of an expert technician for the software in question;
  - the possible presence of agreements with third parties entered into by the owner administration and usable by the assessing administration, regarding support activities for the installation and/or customisation of the solution or, in any case, the methods of use for the solution itself (e.g. a regional in-house may make open source software available for its municipalities together with an agreement to provide installation and training services);
  - the presence of mandatory constraints and dependencies with other open software and/or proprietary software; for example, open source software may require a licence for a proprietary database, or it may require a licence for a proprietary API for a cloud service;
  - the presence and level of competence of the internal resources of the PA, as regards the management of environments and languages used in the solution;
  - the number and type of other public administrations using the open source project;
  - the viability of the open source project, through the assessment of visible indicators on the repository, such as code activity, release history, user community, longevity of the project, number of unique developers.
- estimate the Total Cost of Ownership (S:sub:*TCO*) as described in *2.7 Total Cost of Ownership (TCO)* (page **??**), with particular attention paid to:
  - any software installation costs in the PA cloud or costs for using the software through SaaS mode, where present in AgID's Cloud Marketplace;
  - any costs for the training of personnel, including those necessary for the training of the parties assigned to the management of the solution as well as those for its use by the end-users;
  - any costs required to integrate the solution with its own systems;
  - any customisation costs, including those necessary to ensure functional and non-functional requirements, not already present in the reusable software;
  - any costs for verifying compliance with the regulations in force.
- estimate the time for the production of the solution (hereinafter S_{time});
- any other estimates expressing the specificity of the administration.

In order to follow up on the assessment of the above, the public administration will have to prove that, if not already in its possession, it is capable of retrieving all the necessary information in the manner provided for by the regulations.

Therefore, if:

- The cost (TCO) falls within the established budgetary constraints (S:sub:$TCO < T_{budget}$);
- Production times are compatible with the estimated times (S:sub:$tempi < T_{tempi}$);
- Any other impediments are respected.

the administration shall identify the solution best suited to its requirements on the basis of the assessment carried out. This phase concludes with the:

- determination of the best 'reusable PA solution', or possible absence of a solution.

2.5.3 Phase 2.3: Procurement of the reusable solution for the PA

If, following the previous phase 2.2, the administration has determined a 'reusable PA solution' that meets its requirements, it shall provide for procurement. The reuse process is described in *3.9 Reuse of* (page **??**)*software or use of open source software* (page **??**).

The comparative assessment shall be deemed to be complete.

In the event that the public administration has to bear costs during the procurement phase (e.g. customisation, installation, training), the administration shall acquire these services in accordance with Legislative Decree No 50/2016 and subsequent amendments and additions. (hereinafter referred to as the *Public Contracts Code*).

2.5.4 Phase 2.4: Identifying open source solutions

If it is not possible to identify a 'reusable PA solution', the administration MUST expand its search for solutions, which meet its requirements, to 'open source solutions', i.e. software released under an open licence but not owned by a public administration and therefore not published for reuse. Solutions that meet the majority of needs and require modifications or customisation are also eligible at this stage.

The activities anticipated in this phase are:

- identification of open source software projects whose ownership is attributed to parties other than public administrations. The identification process must be carried out, at the minimum, with the tools made available on Developers Italia, and can also be extended to other international platforms that manage open source software projects.

In identifying a solution, the public administration must verify:

- if the software licence is among those suggested in this document or certified by OSI (complete list[14]).
- if the licence is compatible with the software licences that may be integrated with it and/or with its intended use;

This phase concludes with the:

- identification of 'open source solutions' of interest to the public administration

2.5.5 Phase 2.5: Assessment of open source solutions

If the previous phase 2.4 has led to the identification of at least one 'open source solution' of potential interest, the best 'open source solution' for the requirements of the public administration is identified in the assessment phase.

[14] https://opensource.org/licenses/alphabetical

The assessment of open source software in this phase should follow the same assessment criteria as described for phase 2.2. Therefore, consider phase 2.5 as a duplication of phase 2.2, applied to a different set of software (third-party open source instead of reusable software).

This phase concludes with the:

- determination of the best 'open source solution', or possible absence of a solution.

2.5.6 Phase 2.6: Procurement of the open source solution

If, following the previous phase 2.5, the administration has identified an 'open source solution' that meets its requirements, it shall proceed with the acquisition. The acquisition process is described in *3.9 Reuse of* (page **??**)*software or use of open source software* (page **??**).

The comparative assessment shall be deemed to be complete.

In the event that the public administration has to bear costs during the procurement phase (e.g. customisation, installation, training), the same shall acquire these services in accordance with the *Public Contracts Code*.

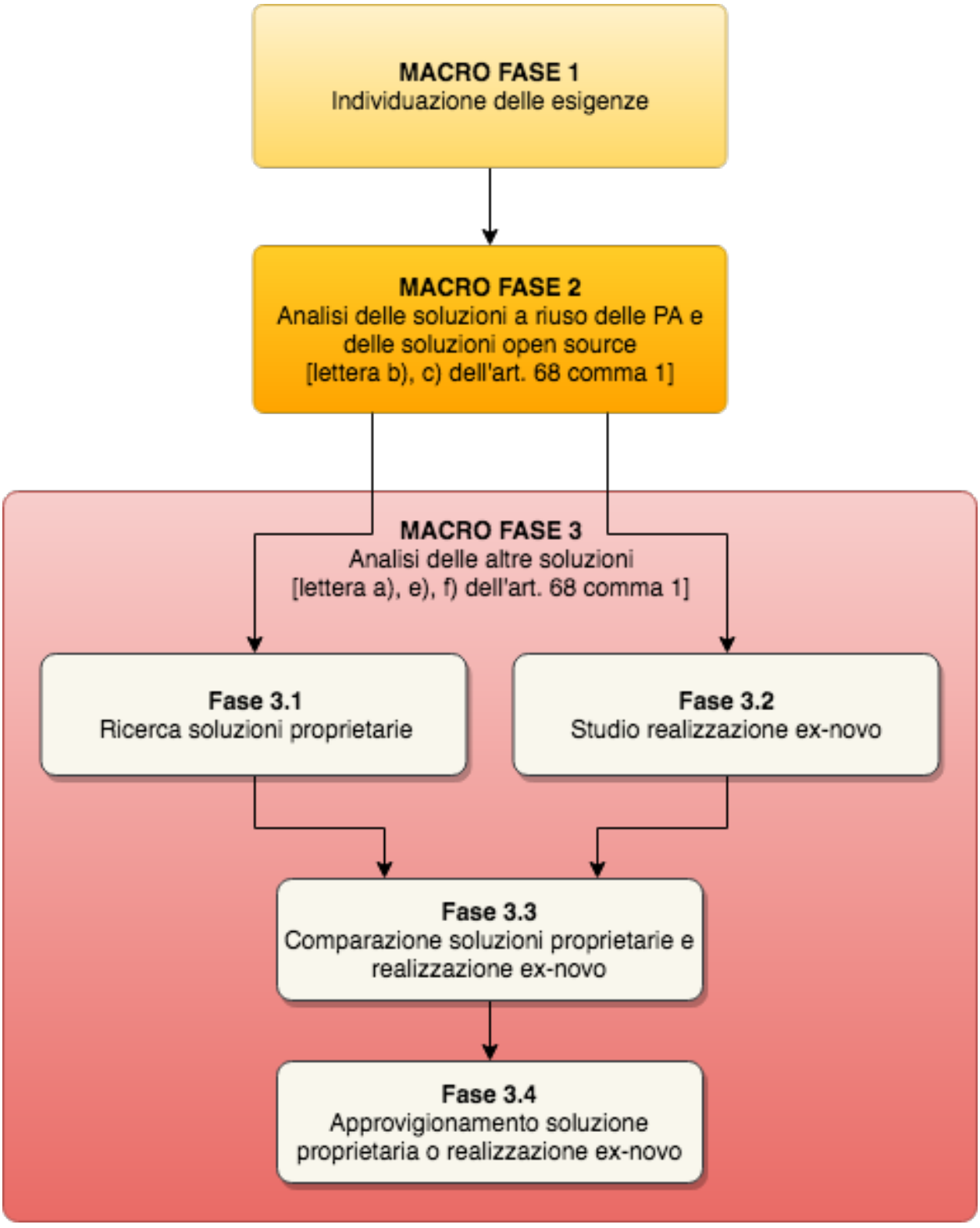
2.5.7 Phase 2.7: Impossibility determination

In the event that it is impossible to identify a solution that satisfies, at least to a large extent, the requirements of the administration, between 'reusable PA solutions' and 'open source solutions', a document is prepared (without format constrictions) that justifies the reasons for the ascertained impossibility, which will be kept with the documents filed for the proceedings.

The public administration continues the comparative assessment exercise by following up with the phases anticipated within the next macro-phase 3.

2.6 Macro-phase 3: Analysis of other solutions

AAAIn order to satisfy its requirements, the public administration MUST also examine the opportunities offered by proprietary solutions and those built from scratch.


MACRO FASE 1
Individuazione delle esigenze
MACRO FASE 2
Analisi delle soluzioni a riuso delle PA e delle soluzioni open source
[lettera b), c) dell'art. 68 comma 1]
MACRO FASE 3
Analisi delle altre soluzioni
[lettera a), e), f) dell'art. 68 comma 1]
Fase 3.1
Ricerca soluzioni proprietarie
Fase 3.2
Studio realizzazione ex-novo
Fase 3.3
Comparazione soluzioni proprietarie e realizzazione ex-novo
Fase 3.4
Approvigionamento soluzione proprietaria o realizzazione ex-novo

MACRO FASE 1 Individuazione delle esigenze	**MACRO-PHASE 1** Identification of requirements
MACRO FASE 2 Analisi delle soluzioni a riuso delle PA e delle soluzioni open source [lettera b), c) dell'art. 68 comma 1]	**MACRO-PHASE 2** Analysis of reusable PA solutions and open source solutions [letters (b) and (c) of Article 68(1)]
MACRO FASE 3 Analisi delle altre soluzioni [lettera a), e), f) dell'art. 68 comma 1]	**MACRO-PHASE 3** Analysis of other solutions [letters (a), (e) and (f) of Article 68(1)]
Fase 3.1 Ricerca soluzioni proprietarie	**Phase 3.1** Identifying proprietary solutions
Fase 3.2 Studio realizzazione ex-novo	**Phase 3.2** Analysis of from-scratch solutions
Fase 3.3 Comparazione soluzioni proprietarie e realizzazione ex-novo	**Phase 3.3** Comparison of proprietary and from-scratch solutions
Fase 3.4 Approvigionamento soluzione proprietaria o realizzazione ex-novo	**Phase 3.4** Procurement of proprietary or from-scratch solution

2.6.1 Phase 3.1: Identifying proprietary solutions

The public administration must assess the proprietary solutions available on the market.

The administration must search for a solution with a proprietary licence, analysing the offerings in accordance with the Public Contracts Code.

The administration must verify that the licensed software meets the following requirements (i.e. **the absence of even one of these makes the solution ineligible):**

- compliance with the interoperability rules prescribed by the guidelines issued in implementation of Article 73 of the CAD;
- compliance with data protection regulations;
- compliance with minimum levels of security for public administrations;
- compliance with accessibility requirements (Law No 4/2004);
- capacity to export free of charge, at any time, the entire database (including any type of index or metadata used to implement the functionalities of the software itself) in standard format, open and documented, to avoid the occurrence of lock-in, as better specified in ANAC guideline No 8[15].

Among the software that respects the aforementioned requirements, the administration carries out a comparative analysis that takes into account the following criteria:

- assurance that the functional requirements not determined in macro-phase 1 comply with those indicated in the documentation;
- assessment of the suitability of the solution to interoperate with the systems already in use in the administration;
- any software installation costs in the PA cloud or costs for using the software through SaaS mode, where present in AgID's Cloud Marketplace;
- any costs required to integrate the solution with the systems already in use by the administration;
- any costs for training personnel to manage and administer the proposed solution;

[15] https://www.anticorruzione.it/portal/public/classic/AttivitaAutorita/ContrattiPubblici/LineeGuida/_lineeGuida8

- calculation of the TCO and its adherence to the available budget determined in the previous macro-phase 1.

This phase concludes with the:

- identification of solutions with a proprietary user licence that meet the requirements of the administration.

2.6.2 Phase 3.2: Analysis of from-scratch solutions

The public administration, after having identified the existence or not of a proprietary solution suitable for its requirements, shall prepare a document containing a feasibility study[1] with an estimate of the activities, costs and time required for the implementation of a solution from scratch that fully meets the requirements indicated in the document concerning the analysis of needs, as described in *2.4.1 Phase 1.1: Needs analysis* (page **??**).

2.6.3 Phase 3.3: Comparison of proprietary and from-scratch solutions

In making a decision between the development of a from-scratch solution and the acquisition of a proprietary solution (the so-called 'make or buy' assessment), the administration assesses the advantages and disadvantages of both types of solution, using the following list as a reference point:

Advantages of acquiring a proprietary solution:

- quick commissioning;
- full guarantee and application risk borne by the supplier;
- supplier maintenance;
- lower acquisition or subscription costs than full development;

Advantages of developing a from-scratch solution:

- full compliance with needs and objectives;
- ease of management (importing and exporting) of data;
- medium/long-term TCO (Total Cost of Ownership);
- sharing of the solution and therefore optimisation of the costs of sustaining it;
- extension and updating;
- *reuse by other administrations.*

Disadvantages of a proprietary solution:

- periodic licences (monthly, annual subscriptions) or paid version updates;
- rigidity of the operative flow or inability to adapt to the operational organisation of the public administration;
- possibility of lock-in, i.e. excessive costs of changing the solution in the future;
- economic stability of the supplier.

Disadvantages of a from-scratch solution:

- more tasks to execute;
- greater need for coordination;
- longer commissioning times.

[1] 'Feasibility analysis for the acquisition of ICT supplies <http://www.agid.gov.it/node/881>'__

2.6.4 Phase 3.4: Procurement of proprietary or from-scratch solution

Following on from the previous phase 3.3, the administration identifies a solution, either with a proprietary licence or developed from scratch, which meets its requirements and provides for the procurement of the same according to the procedures set out in the Public Contracts Code.

If the from-scratch solution has been chosen, taking into account paragraphs 1 and 2 of Article 69 that govern the reuse of software that will be developed, please refer to *3.7 Developing software from scratch* (page **??**) for information on how to develop this solution to comply with the paragraphs mentioned and thus enable it to be reused.

In the event that proprietary software is acquired under licence, please note that the administration must, where possible, acquire ownership of the developed code (as explained in *1.5 Ownership* (page **??**)), so as to enable it to be reused.

The comparative assessment shall be deemed to be complete.

2.7 Total Cost of Ownership (TCO)

Economic comparative assessments are carried out using economic/financial instruments such as TCO (Total Cost of Ownership), which represents the overall cost of an asset during its life cycle. TCO takes into account both direct and indirect costs, representing the recommended method for measuring total costs (through the identification of all expenses, in clear and easily measurable terms), as well as for carrying out the above comparative assessment during phase 3.

To correctly implement TCO, the costs for the entire life cycle of the software must be calculated and not only those required for its acquisition, such as for example:

- Costs for the acquisition of hardware and proprietary software licences required for commissioning the software being acquired;
- Costs for software customisation;
- Maintenance costs (corrective and upgrading);
- Personnel training costs;
- Costs of data migration from previous solutions.

In these guidelines, it has been suggested to use TCO in two different phases: during macro-phase 2 (as a tool to estimate the cost of acquiring open source software), and during macro-phase 3 (as a tool to assist in choosing between a custom-built creation and the acquisition of proprietary software).

In order to comply with these guidelines, the administration is therefore required to make an estimate of the costs according to the model outlined here during the comparative analysis phase, while always taking account of the overall life cycle. The accuracy of this analysis is especially important when the required acquisition is substantial.

Providing TCO calculation models for the requirements of administrations goes beyond the objectives of these guidelines, as such requirements are different. AgID may, in the future, publish optional ready-to-use models within the Developers Italia platform.

2.8 Choice of software provision method

If the software (reusable, open source or proprietary) is to be installed on a server, the administration may find itself considering the following provision methods:

1. SaaS mode, if the software is available as a SaaS service in the Cloud Marketplace and is therefore qualified in accordance with the AgID circular '*Criteria for the qualification of SaaS services for the PA Cloud*';

2. installation on a server with direct availability for the administration.

The choice between these options must be made by calculating the Total Cost of Ownership as described in Section 2.7. Total Cost of Ownership (TCO).

According to the provisions of Chapter 3 of the Three-Year Plan for IT in the PA, in order to install on an available server, the administration must use the PA Cloud, choosing one of the following IaaS options:

- installation in a PSN (Poli Strategici Nazionali - National Strategic Centres);
- installation in a Batch 1 SPC Cloud;
- installation in Qualified Cloud Service Providers in accordance with the AgID circular '*Criteria for the qualification of Cloud Service Providers for the PA*'.

CHAPTER 3

Guidelines for software reuse (Article 69)

3.1 Introduction and legislative context

Article 69(1) defines the **obligation**, for public administrations that own software designed to the specifications of the public client, '*to make the relevant source code available, complete with documentation and released in a public repository under an open licence, free of charge for other public administrations or legal entities that intend to adapt it to their own requirements*'.

The new wording of Article 69(2) and (2a), below, stresses the aim of encouraging reuse by taking steps to ensure that '*the awarding administration shall always hold all rights to the programs and services of the information and communication technologies specifically developed for it', 'unless this is excessively onerous for proven technical and economic reasons' and that 'the source code, the documentation and the relative functional technical description of all the IT solutions. . . a*re *published through one or more platforms identified by AgID with its own guidelines to be adopted pursuant to Article 71*'.

3.2 Reuse model

The reuse model outlined by the CAD is described in detail below. Each point of the following flow is specified in a later section of this document.

Development phase

1. Administration 'A', by carrying out the comparative assessment provided for by Article 68, according to that described in the *acquisition* section, decides that, to meet its requirements, it must resort to the full implementation of from-scratch software or customise existing open source software.
2. Administration 'A' uses its own resources and/or makes use of procurement to develop the software. In the case of procurement, as required by Article 69(2), the administration guarantees the acquisition of ownership of all intellectual and industrial property rights over the commissioned software(*1.5 Ownership* (page **??**)).
3. During the course of the software development and/or at its conclusion, the administration publishes the source code of its software under an open licence, on a platform that meets the requirements identified in these guide-

lines (*3.4.1 Identifying a code hosting tool* (page **??**)), then registers its release within Developers Italia (*3.7 Developing software from scratch* (page **??**)).

Reuse phase

1. Administration 'B', which needs such software, during the comparative assessment phase, finds the software made available for reuse by administration 'A', within Developers Italia (*2.5.1 Phase 2.1: Identifying reusable solutions for the PA* (page **??**)).
2. The open licence allows administration 'B' to acquire and use the software of administration 'A' without having to sign a convention, subject to the terms of the licence.
3. Administration 'B' carries out an assessment of the status of the software and its applicability to its own needs (*2.5.2 Phase 2.2: Assessment of reusable solutions for the PA* (page **??**)), including the possible need for customisation.
4. If the software is customised, where possible, such customisation (as developed on the specific instructions of administration 'B') is also subject to the provisions of Article 69(1), and therefore the relevant source code must be released under an **open licence** (*3.9 Reuse of software or use of open source software* (page **??**)).

The reuse model through open source software allows for software to be found, assessed and customised **without entering into a convention** with the administration that made the software available for reuse, as well the acceptance of the open source licence that is carried out through a simple download. Furthermore, the software is available online and therefore no access request is required.

However, it is important to consider that the software may not be 'ready to use'. The administration may therefore require technical intervention to install the software, adapt it to its requirements, train staff who will use it, and ensure that support and maintenance services are available. For all these interventions, the administration **may use its own resources or supplies**, since no obligation from this point of view is imposed on the administration that created the software and made it available for reuse.

3.3 Developers Italia and identifying software for reuse

The reuse model outlined above is made possible by AgID's Developers Italia platform.

Within the platform, there is a section dedicated to software made available for reuse by administrations. In particular:

- A 'search engine' is available to identify software for reuse. Through this engine, the administration can search for free software released on the internet by other administrations, using consultation tools made available by the platform (e.g. filters by type of software, type of administration);
- Within Developers Italia, you can 'register' the administration software released in open source mode for reuse, so that it can be easily identified by other administrations.

3.4 Process of making software available for reuse under open licence

The process of making software available for reuse is as follows:

1. The administration identifies a **code hosting tool**. Once the tool has been identified, it can be utilised for all software that is to be reused (*3.4.1 Identifying a code hosting tool* (page **??**)).
2. The administration chooses an open licence to use (*3.5 Open licences and choice of licence* (page **??**)).
3. The administration, using its own resources or through procurement, publishes the complete source code of the software and the relevant technical documentation on the code hosting tool. This technological process is described in *Annex A: Guide to publishing software as open source* (page **??**), attached to these guidelines.

The guide is written in such a way that it can be attached to a tender technical specification, to facilitate the acquisition of a service by entrusting the supplier with the obligations required by these guidelines.

4. The administration shall 'register' the software on the Developers Italia platform, so that it is indexed by the search engine and made visible to other administrations looking for reusable software.

The process outlined here is valid for existing software owned by administrations (*3.6 Releasing* (page **??**)*existing software under open licence* (page **??**)), as well as for software that will be developed in the future (*3.7 Development of software* (page **??**)*from scratch* (page **??**)).

3.4.1 Identifying a code hosting tool

The release of software must be carried out through a code hosting tool, which is specialised in hosting and making distributed software available under an open licence. There are many solutions on the market, both free and commercial.

Since the purpose of Article 69(1) is to encourage reuse between administrations, the tool must follow best practices in terms of functionality for the publication of the source code, in order not to create additional costs for administrations hoping to find and use the software.

In particular, the tool must at least have the following functions:

- Free read access to the source code, without authentication;
- Free and unobstructed registration, open to the public;
- A web interface for viewing and browsing the code and its documentation;
- The use of a version control system with the functionality of managing parallel branches of development;
- An issue tracker system open to the public for read access without authentication and for write access following authentication;
- Implementation of at least one flow for sending modifications, code review and integration of the modification, fully managed by the tool, open to the public;
- A release management system;
- Availability of an API to interface with the tool and extract data and metadata related to the repositories.

To simplify the choice, in *Annex A: Guide to publishing software as open source* (page **??**) there is a non-exhaustive list of the main platforms on the market that meet the requirements.

Some platforms fully adhering to the minimum parameters are available in SaaS mode (i.e. they can be used directly via the internet without having to install a copy on a server), without any licence cost and without the need to sign contracts or conventions; selecting one of these SaaS platforms is therefore to be considered preferential, in the event that there are no other technical constraints (e.g. integration requirements), so as not to create direct or indirect costs for the administration.

The administration must choose a tool (or tools, where justified for organisational purposes) on which to release all the software it owns. Alternatively, in *Annex A: Guide to publishing* (page **??**)*software as open source,* (page **??**)an alternative process is outlined that leaves the choice to the party responsible for developing the software and/or releasing it on behalf of the administration (whether this party corresponds to a resource that is internal or external to the administration).

Once one or more code hosting tools have been selected, the administration must provide adequate visibility of the tools on its web page, as detailed in the same guide (*Registration of the* (page **??**)*repository on Developers Italia* (page **??**)).

3.4.2 Registration of open software on Developers Italia

Software released by the administration must be 'registered' in the search engine of Developers Italia, to facilitate access by other administrations that are looking for reusable software.

The precise technical process for registration is indicated in the section *Registering the repository on* (page **??**)*Developers Italia* (page **??**).

3.4.3 Responsibilities related to the release

The administration that owns the software does not incur any specific obligation related to the release: it is not necessary to provide a warranty with the software, technical or user level support, nor financially support administrations that reuse the software as regards costs or adoption procedures.

3.5 Open licences and selecting a licence

To release the software source code under an open licence, the administration must choose appropriate licence text.

3.5.1 Context

It should be noted that the legislator, in drawing up Article 69, has clearly indicated that the objective is to **encourage the reuse** of the same software between several administrations. It is therefore important that the first consideration as regards the importance of the choice of the licence is to **assess the impact that the licence text has on the possibility of reuse** by other administrations.

Since the 1980s, the world of computer research and industry has produced numerous examples of licence texts for open source software, with the aim of creating a global software sharing model. As the complexity of applications increases, it has become increasingly important to work with ready-made components rather than to start developing code from scratch each time.

3.5.2 Open software licences

An open licence, as understood in Article 69 of the CAD, is a licence that grants the user of software the following freedoms:

- Freedom to use the software as desired, for any purpose, without additional costs or restrictions;
- Freedom to analyse how the software works and to modify it in order to adapt it to your needs;
- Freedom to redistribute copies of the software;
- Freedom to modify the software and publicly distribute the modified versions.[1]

Access to the source code, or equally to the format necessary to reproduce and modify the software, is a prerequisite for respecting these freedoms.

Open Source Initiative[2] (OSI) is an international organisation, recognised worldwide for the certification process of software licences that meet these requirements. An updated list of OSI-certified licences is available at the following address (in alphabetical order): https://opensource.org/licenses/alphabetical

[1] Stallman, The Free *software* Definition - https://www.gnu.org/philosophy/free-sw.it.html

[2] https://www.opensource.org/

Compliance with Article 69 of the CAD, with regard to selecting the licence, must be carried out **by choosing a licence from those certified by the Open Source Initiative**. Alternatively, the administration that wishes to independently provide for the drafting of text for a licence, may only use this text following certification by the Open Source Initiative, to verify its adherence with the principles of open software. The process of sending a licence for approval is detailed at this link: https://opensource.org/approval.

It should be noted that to uniquely identify licence text, SPDX categorisation[3]may be used, which associates each licence (or combination) with a unique identifier and full name. An updated list of identifiers and their licence texts is available at this link: https://spdx.org/licenses/.

Attached to the guidelines (*Annex C: Guide to open source licences* (page **??**)) there is a guide that delves further into the topic of open source licences, which outlines the categorisation of the main types of licences and their features.

3.5.3 Choosing a licence

A free software licence allows for the free use of the source code to which it refers, while imposing certain constraints that must be respected. As such, the integration of multiple free software components released under different licences requires a compatibility analysis of the same. Such an analysis may be overly complex if there are multiple licences involved, leading to additional costs.

In other words, **a proliferation of different licences makes it more difficult and costly to reuse software**, contrary to the objectives outlined in Article 69 of the CAD.

Use of the following decision-making process is recommended for selecting an open licence:

- If the software release refers to modifying existing open source software (i.e. software picked-up for reuse by another administration or owned by third parties), the administration will use the **same licence** with which the software was originally distributed, to facilitate maximum interoperability and reuse with other users of the same software;
- If it is **new software**, apart from the exceptions specified below, use the EUPL v1.2 licence (SPDX identifier: `EUPL-1.2`): https://spdx.org/licenses/EUPL-1.2.html. This licence, developed by the European Commission, has been selected as a 'copyleft' licence, guaranteeing maximum interoperability at European level, and has also been translated into Italian. There are only a few exceptions to this general specification:
  - if **the software is mainly used online (e.g. via a browser)**, use the 'GNU Affero General Public Licence' version 3 or above (SPDX identifier: `AGPL-3.0-or-later`): https://spdx.org/licenses/AGPL-3.0-or-later.html;

This licence was chosen because, in addition to being compatible with most open source licences, it requires those who modify the code to release improvements even if it is used as part of a SaaS service.

- if **software components** with a wide range of applications (e.g. '**software libraries**' and '**SDKs**') are being released, use the 'BSD 3-Clause' licence (SPDX identifier: `BSD-3-Clause`) https://spdx.org/licenses/BSD-3-Clause.html;

This licence has been chosen to ensure that all stakeholders use it as freely as possible, allowing applications to be created based on such libraries, which can be released under any licence. These types of software components are normally used to facilitate interoperability with public administrations, and benefit from the emergence of ecosystems that include third-party applications, including proprietary software.

- For software **technical documentation**, use the Creative Commons licence CC-BY 4.0 (SPDX identifier: `CC-BY-4.0`) https://spdx.org/licenses/CC-BY-4.0.html. This licence was selected because it allows for easy reuse of documentation and code examples contained therein.

Please refer to *Annex A: Guide to publishing software as open source* (page **??**) for technical details on how to correctly embed the licence text to the source code at the time of publication.

[3] https://spdx.org[16]
[16] https://spdx.org/

Selected licences have a wide use in the open source ecosystem, therefore the ability to integrate third-party components released with compatible licences is maximised.

An administration that wishes to select a licence differently from that outlined here must justify their reasons, analysing the compatibility between the licenses adopted and those proposed here, ensuring that the choice does not limit opportunities for reuse and that it does not entail additional costs for administrations in the reuse phase.

3.6 Releasing existing *software* under open licence

Article 69(1) reads as follows:

'Public administrations that are owners of solutions and computer programs made to the specifications of the public client, have the obligation to make the relevant source code available, complete with documentation and released in a public repository under an open licence, for use free of charge for other public administrations or for legal entities wishing to adapt them to their own requirements, except when there are 'justified reasons of public order and safety, national defence and electoral consultations'.

The obligations mentioned here refer to the entire software range on which the rights of an administration are emphasised, with the consequence that, regardless of the requirement to comply with these obligations when concluding new contracts, each administration is required to implement them promptly, **including with reference to the existing software where they own the relevant intellectual and industrial property rights (as indicated in** *1.5* (page **??**)*Ownership* (page **??**)).

Implementing these obligations on existing software is an essential aspect of maximising the effectiveness of the provision in question and, more generally, of the good practice of reuse, since it allows other administrations to benefit without delay from the opportunities offered by reuse, avoiding the risk that they will have to reacquire solutions already belonging to the public information estate and that, therefore, could be used without generating any additional cost for the community.

Therefore the administration **must create an inventory of the software** that is already in its possession in order to verify its ownership, and if so proceed to release under open licence.

Given the rapid obsolescence of digital technologies and the importance of encouraging the reuse of available solutions, software that has not been in use by the administration for more than 5 years is deemed to be excluded from the release obligation, with reference to the date of publication of these guidelines.

Detailed specifications on how to implement the release are contained in *Annex A: Guide to publishing* (page **??**)*software as open source* (page **??**). If the administration does not have the necessary resources to align the document with the standards set out in the guide, the administration must in any case immediately proceed with the release of what it possesses in its current state, it being understood that the presence of documentation is an essential requirement set out in regulations and it will therefore be necessary to proceed with the completion and alignment of the documentation as soon as possible in order to consider the obligation completed.

3.7 Development of software from scratch

If the administration, following the comparative assessment proposed in *2. Guidelines for acquiring software* (page **??**), chooses to develop software from scratch using internal resources or through procurement, it is important to comply with the provisions of Article 69, and in particular:

- paragraph 1, which requires release under an open licence to allow for reuse by other administrations;
- paragraph 2, which requires the administration to acquire ownership of the software being developed;
- paragraph 2a, which confers the choice of platforms for the publication of the source code to these guidelines.

The following sections explore how to comply with the above provisions.

3.7.1 Releasing new software under open licence

It is important that Article 69(1), which requires release under open licence, is considered from the outset of development and not only at the end of the entire process. The technical requirements for release are described in *Annex A: Guide to publishing software as open source* (page **??**).

The costs incurred in carrying out the work described in the guide will be significantly lower if the technical specifications described are followed from the outset of development.

In the case of procurement, it is **essential that the authorities always include** *Annex A: Guide to the* (page **??**)*publication of software as open source* (page **??**) **among the tender documents,** for example, in an annex to the technical specifications.

Conversely, if the administration were to be late in complying with Article 69(1), using a tender procedure subsequent to the completion of the former, it would incur additional economic costs.

Therefore, it is recommended to develop the software directly on the selected code hosting tool, from the early stages of design, without waiting for the preliminary version to implement the release.

3.7.2 Acquisition of ownership of software developed from scratch

As already discussed in *1.5 Ownership* (page **??**), the administration must ensure full ownership of software created from scratch. Please refer to the aforementioned section for further information.

3.8 Maintenance of software by the owner administration

Software maintenance, whether upgrading or corrective, is an essential process in the life cycle, as it keeps the software updated as regards to rapid technological development, regulatory development and the new requirements of the administration.

Furthermore, during maintenance, product software updates fall within the scope of Article 69 of the CAD and must therefore be available for reuse. This section describes the maintenance procedure that we recommend to easily allow for the reuse of these improvements.

3.8.1 Ownership of the code developed during maintenance

As already discussed in *1.5 Ownership* (page **??**), the administration must assume full ownership of software developed from scratch, including any portion developed during a maintenance contract. Please refer to the aforementioned section for further information.

3.8.2 Release of modifications under open licence

To release modifications to software, it is not possible to use the process previously described in *3.7.1 Releasing new software under open licence* (page **??**); in fact, this process, regardless of the extent of the modification, would create a second source code repository separate from the original, creating high costs for any administration that, having reused the original software, hopes to continue to benefit from its ongoing development.

The proper and cheaper way (both for the owner administration, and for those who hope to reuse the software in the future) to maintain software under open licence is to adopt a **specific development process** in which every individual change is carried out directly in the original repository containing the software, providing immediate evidence of the change that has occurred.

Furthermore, it is essential to communicate that the software is in the maintenance phase (by entering this information during the software registration in Developers Italia), so that other administrations can take this into account in the comparative assessment phase.

The entire process is described in technical detail in *Annex B: Guide to maintaining* (page **??**)*open source software* (page **??**). In the case of procurement, the administration is required to **include the guide among the tender technical documents**, for example as an annex to the technical specifications, so that suppliers have immediate evidence of the process required.

3.8.3 Support for reusing administrations

Even if there is no guarantee or technical or training support obligation on the part of the owner administration towards administrations that reuse the software, where the software is subject to upgrading maintenance, it is essential that the internal resources or companies in charge of such maintenance provide basic support to those who report specific issues, or who wish to make (at their own expense) changes to the software.

In fact, the reuse model, allows for multiple administrations to invest in the same software, each with its own budget, therefore incrementally adding to the value of the original software. However, for this process to work correctly, as a minimum, a technical coordination process between the public administration that maintains the software and the administration that intends to modify it is desirable. Furthermore, this provides an opportunity to share development plans and therefore investments between multiple administrations as regards the same software, with savings for public financing.

This process of supporting software modifications is also detailed in the same guide *Annex B: Guide* (page **??**)*to maintaining open source software* (page **??**).

3.8.4 Software not yet released under open licence

If the administration initiates a process of maintenance for software that it already owns, but for which it has not yet released under an open licence, adding its initial release to the maintenance contract must be considered, because of the lower cost that is normally incurred compared to carrying it out separately.

3.9 Reuse of software or use of open source software

The second chapter of these guidelines, dedicated to Article 68, outlines the process by which the administration decides how to identify software.

If the administration, following the proposed comparative assessment, chooses to reuse existing software or to use open source software, the process used is described in this section, and is the same in both cases.

3.9.1 Use of reusable or open source software

In general, **it is not necessary to obtain authorisation from the owner of the rights to the software**; in fact, the reuse model outlined for the use of open licences, allows for the **adoption of software without the need to enter into any convention or to make a request for access**: software published as described in *3.6 Releasing existing software under open licence* (page **??**), is immediately available for a requirements compatibility analysis, for customisation and for use.

As explained in *3.8.3 Support for reusing administrations* (page **??**), it is advisable to contact the current person in charge of software maintenance, to agree, in a technical sense, how to carry out the required modifications in the most effective way and coordinate economic efforts.

3.9.2 Modifications to reusable or open source software

From a regulatory point of view, modifications or customisations to software under open licence are subject to Article 69(2) and therefore must be implemented by acquiring full ownership of the code developed. However, the reuse of software without any modifications, does not constitute an obligation to release.

From the point of view of acquisition of ownership, the fact that the software being modified is not the property of the administration making the modification does not exempt the latter from the obligation to acquire ownership of the modifications developed. Please refer to *1.5 Ownership* (page **??**).

Conversely, at a technical level, the process for making changes is different from the maintenance process described in *3.8 Maintenance of software by the owner administration* (page **??**), since the interventions will take place on software that is not fully owned and therefore technical coordination is desirable, which was previously described in relation to opportunities and benefits in *3.8.3 Support for reusing administrations* (page **??**).

The technical process is detailed in *Annex D: Guide to reusing open source software* (page **??**). In the case of procurement, the administration is required to **include the guide among the tender technical documents**, for example as an annex to the technical specifications, so that suppliers have immediate evidence of the process required.