

## **A QUALIFICATION SYSTEM FOR BUILT HERITAGE CONSERVATION AND ANCIENT BUILDING REHABILITATION**

### **Abstract**

A Web supported system intended to simplify procurement procedures in building rehabilitation and heritage conservation, whilst ensuring suitable qualification of the involved service providers is proposed, applicable to three main areas of activity: i) Design and inspection, ii) Survey and testing, and iii) Execution (contractors and subcontractors). The system classifies the involved companies in specialties, as per the qualification of their personnel, and in size classes as per the numbers of their human resources, experience and degree of development of their organizational framework.

**Keywords:** qualification system; procurement; contracting; quality management; training.

### **The case for a qualification system**

Of all business offshoots of the construction sector, the rehabilitation of the building stock and the conservation of built cultural heritage have been growing in importance in terms of the overall economy of most countries, and ordinary citizens are becoming increasingly concerned and expectant with regard to this issue. As a result, these two areas of the construction sector have been taking a more prominent role and gaining their own identity.

Rehabilitating building stock is generally more complex than standard construction, and requires companies to implement appropriate methods and technologies. Such demands are further heightened when dealing with Heritage, when the various different agents have to take a radically different stance. The success of interventions to rehabilitate building stock and, above all, to preserve and restore the Heritage, is seriously compromised if such interventions are not entrusted to agents with the necessary qualifications, either in terms of their design or execution. As a matter of fact, inadequate interventions in current buildings are often ineffective, and are a frequent cause of degradation of heritage buildings (Fig. 1).

As well as applying only to companies undertaking these interventions and having been conceived chiefly with new construction in mind, the current qualification regimens applicable to companies in the construction sector in most countries do not take into account the qualification of the human resources who make up their work force, in particular the personnel actually involved in front-end execution – the foremen and craft workers - when assessing companies' technical capabilities.

The low demands vis-à-vis the technical capabilities of most agents is not conducive to assuring the effectiveness and durability of the interventions, ergo the satisfactory application of private and public funds, and is incompatible with taking a responsible stance in terms of safeguarding the Heritage.

The current procurement procedures, in most countries, enable such access to be restricted, by the contracting authority establishing a series of additional requirements extending beyond simply holding a contractor licence. However, it is rather time-consuming for bidders to provide evidence that these requirements have been fulfilled and likewise for contracting authorities to verify this.

These practices translate into mismanagement of moneys allocated to regular building stock rehabilitation and put Heritage at risk. Their drawbacks extend to economy and society at large, insofar as they don't encourage the demand for qualification among the workforce of the construction sector, thereby preventing much needed productivity gains.

### GECoRPA's proposal

Based on their own experience and that gained over the years by the associates of GECoRPA – Grémio do Património (the Portuguese association rallying professionals and firms specializing in heritage conservation and building rehabilitation) the authors developed a qualification system for building and heritage rehabilitation -- GECoRPA Qualification System, GQS -- intended for personnel and firms working in these demanding fields of activity, which ensures that any given company's access to executing interventions in these areas is dependent upon its fulfilment of a series of specific requirements pertaining to the qualification of the human resources available in the said company and its organizational structure.

GQS started off by systemising the business activity undertaken by companies in the sector under assessment and dividing it into three broad Areas of business activity: Design and inspection, Survey and testing and Execution (Contractors and Subcontractors) (Fig. 2).

In each Area of activity, the companies' business activity was divided into **Branches of activity**, each of which was in turn subdivided into **Specialities**, according to the companies' technical skills. The specialities were in turn subdivided further into **Types of work** and **Techniques** (Fig. 3). For example, four Branches of activity are considered for those companies which execute interventions (contractors and subcontractors):

- 1 - Constructive and structural rehabilitation
- 2 - Rehabilitation of foundations
- 3 - Rehabilitation of supply and mechanical systems
- 4 - Technical and artistic rehabilitation.

The professions relevant for building rehabilitation and heritage conservation were then also systemised in accordance with levels 2 to 6 of the European Qualifications Framework (EQF)<sup>1</sup>. For example, in the “Execution” area of activity the following categories of professionals were considered (in ascending order of autonomy and responsibility):

- Level 2 - Mainly executing staff (Skilled workers, Craftsmen)
- Level 3 - Executing staff with supervision and coordination capacities (Crew leaders)
- Level 4 - Coordination and management staff (Foremen)
- Level 5 - Intermediate technical direction and management (General foremen)
- Level 6 - Higher technical direction and management (Architect, Engineer).

Levels 2 to 4 refer to professionals with non-academic education, level 5 to professionals with intermediate academic education, and level 6 to professionals with advanced academic education. The inventory of professions covered the above referred three broad areas of activity, and included not only those pertaining to the traditional construction sector but also those belonging to conservation and restoration segment. A very large number of professions were therefore brought into play, a significant number of them being new skills, as for instance those involved in “in situ” survey and testing.

A crucial task was then undertaken, which consisted of determining “Who does What”, and linking “Techniques” and “Professions” (Fig. 4). For this purpose, only “specific” professions were considered, i.e., professions which are indispensable to actually carry out the rehabilitation techniques

<sup>1</sup> (European Parliament and Council, 2005)

at the work front and those which are directly required to their coordination and management. Again, in the “Execution” Area of activity (contractors and subcontractors), the former correspond to the Skilled worker or Craftsmen and the later to the Crew leaders and Foremen. The non-specific professions, namely those which are common to other segments of construction and those which are transversal to other sectors of activity are taken into account in the evaluation of the extent of the organizational framework of the company.

GQS’ “qualification referentials” designate the requirements of professions of each of the three areas of activity relating said professions with the nature of the interventions and the type of construction, and group them according to the various Branches of activity.

Professionals accredited by the system in levels 3 to 6 may also apply to a complementary qualification regarding training. Professionals of levels 3 and 4 may qualify as “Instructors”, while professionals of levels 4 and 6 may qualify as “Trainers”. These qualifications are granted taking into account the experience and training skills, the later depending on the attendance of courses for the purpose.

The GQS application software was then developed. It works in the Web environment, and consists in two different areas, the Front Office and the Back Office, both accessible from any point in the Internet. The former enables the application for qualification by service supplying agents, namely companies and professionals and, after processing, makes available the corresponding information to service procuring parties, namely contracting entities. Information on specialized education and training bodies and professionals is also made available. The latter is accessible only to staff of the agency in charge of GQS’ management, and enables the analysis and decision of applications and the adjustments in the system’s settings whenever required.

Summing up, there were four stages involved in developing the system:

- I. Systemising the specialist activities which constitute the services provided by the groups of agents involved;
- II. Setting out the professionals, at various different levels of qualification, who are vital both for the correct execution of these activities and for the planning, management and coordination thereof within a corporate context;
- III. Determining the relationships between the various different activities and the professionals tasked with them;
- IV. Creating an application which can be accessed via Internet, to operate the procedures.

The GQS is aimed at the following stake holders from the heritage conservation and building stock rehabilitation sector:

**Contracting authorities** which use the services of qualified companies, particularly those authorities which award building rehabilitation and heritage conservation works;

**Companies** to be qualified: companies providing building rehabilitation and heritage conservation services, from the aforementioned three groups;

**Professionals** to be qualified: Advanced and intermediate technicians, namely professionals whether or not they are part of the companies’ permanent staff;

**Training bodies:** Accredited bodies interested in providing training initiatives;

**Certification bodies:** Accredited bodies which can offer certification programmes for those technicians who are interested.

The GQS is applied to each specific case in three phases:

1. **Online registration** of the basic data on the enterprise, including the pertaining to its organizational structure and to the interventions carried out using mainly its own human resources;

2. **Qualification**, based on the training undertaken and experience gained, of the company's human resources involved in the planning, management, coordination and execution of these activities, by assigning each one with one or more specific professions (Fig. 5);

3. **Classification** of the company in specialities as per the qualification of its human resources and in categories of ability, as per the number of those human resources and the value of the interventions carried out.

### How Owners and other stake holders benefit

The advantages to the contracting authorities of the GQS are obvious: instead of stipulating additional requirements and assessing the bidders' fulfilment thereof, the contracting authorities can just choose from the system's classification grid those branches of activity and specialities which are best suited to the nature of the work to be performed. GQS enables online access to information regarding the skills of the qualified companies and of their human resources. For companies providing building rehabilitation and heritage conservation services, the advantages are equally clear: by enabling the contracting authorities to access information regarding the skills of the supply companies, GQS avoids the need to transfer supporting documentation to the platforms, thereby allowing greater simplification and streamlining of resources in responding to the pre-qualification procedures. The professionals working in the sector can also benefit greatly from the GQS, by having their skills recognised, valued and disclosed.

The GQS falls within the framework of the relevant European Directives on the award of public contracts, enabling the selection of bidding companies via compliance with a series of requirements which extend beyond simply holding a contractor licence. By the contracting authorities subscribing to the GQS, the qualified companies can have automatic access to the tender, without the need for the latter to provide evidence of and the former to verify fulfilment with those requirements.

Subscription to the GQS by the various different interested partners, particularly contracting authorities, service provision companies and professionals is voluntary, resulting from their recognition of the inherent advantages.

### Advantages for the economy and society

The Framework Convention on the Value of Cultural Heritage for Society<sup>2</sup> states in its Article 9 - Sustainable use of the cultural heritage:

*«To sustain the cultural heritage, the Parties undertake to:*

*...*

*promote high-quality work through systems of professional qualifications and accreditation for individuals, businesses and institutions.».*

The accompanying explanatory report of the convention goes on to detailing how this can be achieved:

*« The responsibility for qualification systems and professional accreditation may be undertaken through agencies such as professional associations or private bodies: the role of the state is to ensure that controls on quality contribute to achieving the aims of this Convention.»*

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<sup>2</sup> (Council of Europe, 2005)

Implementing the GQS makes it possible to assure the quality of the heritage conservation interventions, thereby enabling the sustainable development of the important asset made up by the built heritage, in compliance with the Faro Framework Convention. Adoption of the qualification system can also contribute towards the “Return to the Art of Building”, by preserving practices and know-how which themselves are a major asset and heritage<sup>3</sup>. Of no less importance is the contribution brought about by the system towards the major investments in building rehabilitation which are being lined up for the next years being translated into effective and long-lasting interventions. But the advantages of qualification extend beyond the quality of the services provided: by promoting business specialization, higher qualification translates into higher added-value of the services offer and helps creating export opportunities. Last but not least, the adoption of a qualification system like GQS and the ensuing demand for qualified suppliers, stimulates the qualification of the construction sector’s human resources, increasing the added-value of labour, thereby reducing the revenue gap.

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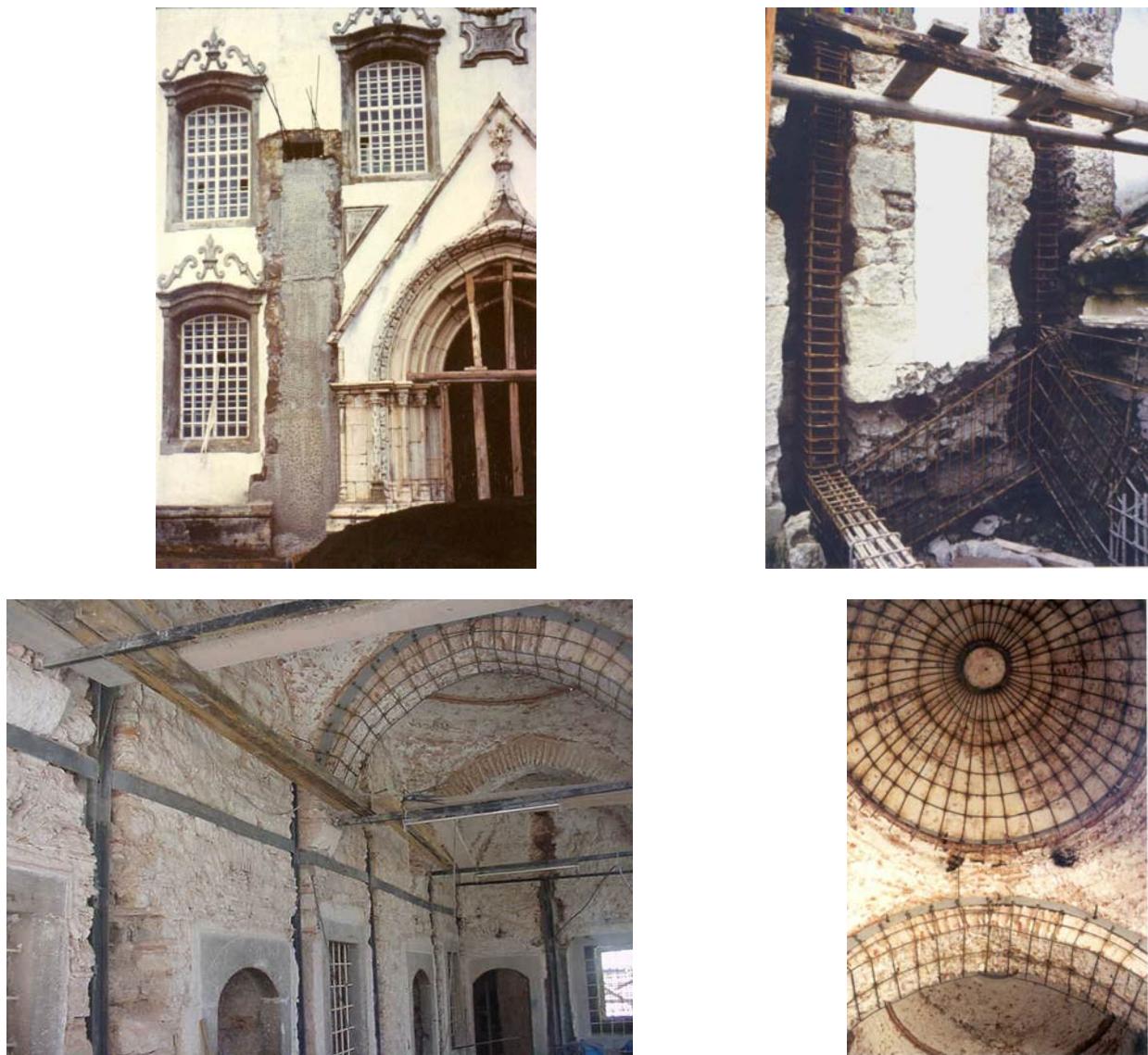
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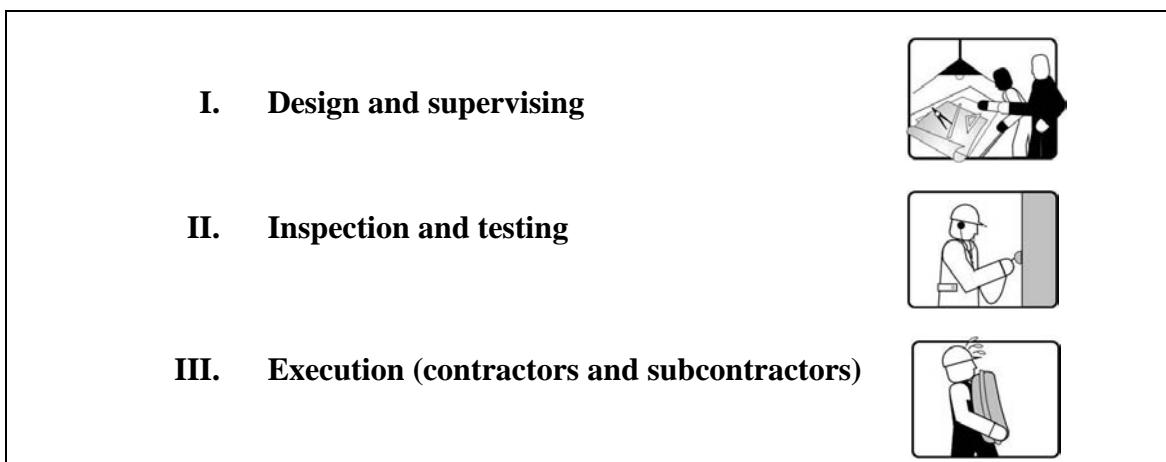
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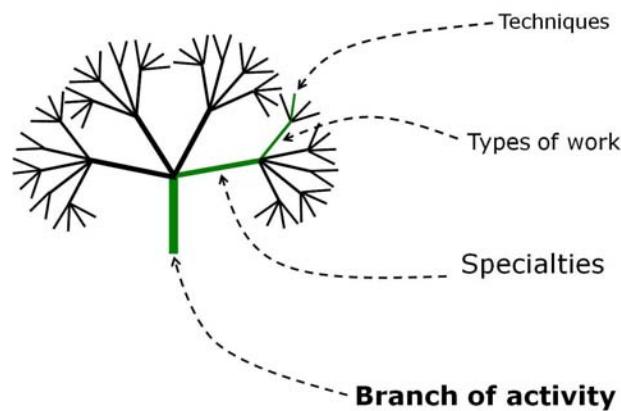
<sup>3</sup> (ICOMOS, 2011)



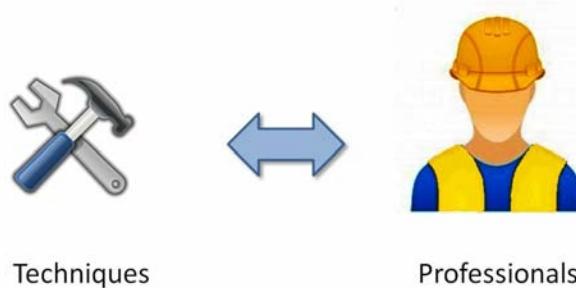
*Figure 1 – Design and execution by unqualified agents can give rise to serious aggressions to the character of historical buildings.*



*Figure 2 – The three broad areas of activity covered by GECoRPA Qualification System (GQS).*



*Figure 3 – Diagram showing the systemisation of the works in each area of activity of the rehabilitation of building stock and heritage, structured into four grades. In each area, the of activity of enterprises is divided into “Branches of activity”. The supply of a given service by an enterprise of a branch of activity, involves exerting a number of “Specialties”, implying a set of “Types of work”, employing one or more “Techniques”.*



*Figure 4 – GQS evaluates the technical capacity of each contractor or service provider based on the correspondence between the various roles and techniques required by the specialized services he intends to supply and the knowledgeable and skilled professionals present in his permanent staff.*



*Figure 5 - GQS’ “qualification referentials” designate the requirements of professions of each of the three areas of activity relating them with the nature of the interventions and the type of construction.*