



Digital Methods and Tools for Mapping Public–Private Partnership Opportunities and Evaluating Proposals in the Regeneration Plans of Building Assets

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Abstract

In recent years, Italy is experiencing a process of digital transformation and innovation intending to simplify the perspective it is a more efficient system within the public administrations. At the same time, there was a strong increase in the demand for urban redevelopment and sustainable development of the city, also thanks to the recent sustainable policies for the containment of land consumption. The research aims to analyse the potential of innovative methods, connected to information technologies (BIM and GIS) that public administrations can use to stimulate the interested parties to act on a specific territory through the presentation of proposals of public–private partnerships. The first phase of the proposed work focused on analysing the methods of making information available during a “traditional method” of making information available. In the perspective of a plan for the redevelopment of urban contexts, the research evaluates the potential for integration of various information, such as the results of relations in the area (connections, services, infrastructures, etc.) and details on the built heritage (state of conservation and history). Information can be managed by commonly used tools, such as point clouds, BIM models with an adequate level of details and GIS platforms. These platforms make a wide range of users able to access the information through the web interface, intending to define a common language between different actors, in the redevelopment process.

Keywords

BIM • GIS • Public–private partnership • Urban regeneration • Trieste

Nomenclature

GIS	Geographic Information System
BIM	Building Information Modelling
PPP	Public-Private Partnership
PMC	Preliminary Market Consultation
PA	Public Administration
IT	Information Technologies

1 Introduction

This contribution frames the progress of the research in progress, in particular, it takes up the state of the art on the subject and formulates the first proposals for the development of innovation processes of public–private partnerships. In-depth knowledge of the territory at all its scales is a fundamental requirement for effective resource management.

With the aim of a redevelopment plan of the city or parts of it, the ability to integrate various information such as the persistent relations in the area (connections, services, etc.) down to the details relating to the buildings and their history, is essential in the rationalizing of opportunities.

The aim of the research conducted is to probe the capacity of innovative methods, linked to Information Technologies, that public administrations can adopt to stimulate stakeholders to act on a specific territory through the presentation of proposals of public–private partnership.

In particular, the research starts from the study of an innovative workflow for a preliminary market consultation for the activation of a public initiative PPP operation, intending to define a standard to be replicated for the creation of an information platform, that stimulates the private entities, to present PPP proposals for private initiatives, with the consequent general revitalization of the city. In the Italian legal system, to start PPP operations, it is possible to use Preliminary Market Consultations, a preliminary phase,

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described in Public Contract Code, that makes information related to the operation available to potential investors. In detail, this work intends to compare the current method of making information available during a Preliminary Market Consultation and an alternative method related to the digitalisation of information through the use of GIS and BIM systems.

The proposed methodology is tested on the redevelopment of Trieste port warehouses, in particular on the investigation of a partnership proposal workflow for Warehouse 20 in the Old Port.

2 Public–Private Partnership

In recent years, the ability to “create value” through the enhancement of public real estate assets has been at the centre of a political, social and cultural debate regarding the appropriate ways to manage the “res publica” regarding new uses and the effects on the territory.

The real estate enhancement, seen as the maximization of the efficiency of real estate use, presupposes an in-depth study of the operation, both in regard to the efficiency of the recovery of the asset, and the urban context in which it is inserted, without neglecting a correct reading of the market needs and of the cultural and social vocation in which the operation is built.

In order to remedy the scarce availability of financial resources of public administrations, the intervention of private operators for the enhancement of public real estate assets has been used more and more frequently.

However, this area opens the way to a series of issues related to the danger of selling off the public asset, which has led many governments to seek alternative solutions to the transfer of ownership.

In Italy, the “enhancement concession” is placed within the range of public–private partnership (PPP) operational tools, i.e., characterized by the involvement of private operators in public initiatives (Provisions concerning privatization and enhancement of Public Real Estate Assets Legislative Decree (2001) art. 3-bis of No. 351) (Tajani et al., 2018; Vacca et al., 2018).

In particular, with regard to public buildings, the enhancement concession provides for the attribution to private entrepreneurs of the right to use public buildings for a specific period of time (generally a time of at least 25/30 years), in view of their functional conversion, extraordinary and ordinary requalification and maintenance. Private operators therefore become managers and non-owners, giving the public administration a share of the proceeds, in terms of financial burden and / or public works for the community (Ricchi, 2016).

It is clear that the ability to predict and analyse the behaviour of the building in all its phases, for a private investor, can only be a strong incentive to develop concrete proposals, and at the same time, the public administration can maintain transparent control over the correct management of the public good.

Once the period of concession of the asset has expired, the public administration falls within the full availability of the properties temporarily sold, with the acquisition of every transformation and improvements.

From a financial point of view, therefore, a private investor has the convenience to participate in a PPP procedure when the operation is sustainable, or if the initial investment capacity is able to generate a profit margin capable of remunerating the (market) risk of the initiative (Perino et al., 2018; Unità Tecnica Finanza di Progetto, 2010).

2.1 Public and Private Subjects, Roles, Risks and Critical Issues

Within these operations, it is essential to define and respect the roles between the different operating entities:

Public subjects have the task of identifying the public interests to be protected and guaranteeing the community the most appropriate tool to achieve them (Garilli, 2007).

As far as public actors are concerned, they have the task of identifying the public interests to be protected and guaranteeing the community the most appropriate instrument to archive them. Moreover, the role of control and protection of public good is central for the public administration, paying particular attention, where necessary, to safeguarding the context in which the projects are placed (EUBIM Taskgroup, 2018).

Private operators make their financial and technical-commercial capacities available, asking in exchange for the right to portray a specific utility (which can be represented through a fee recognized by the granting body or in the form of a direct income from the service management).

ANAC, the National Anti-Corruption Authority, has defined the guidelines to support the control activities of the administrations on the correct allocation of the risks associated with the PPP operations and the methods and terms for maintaining the risks incumbent on the private individual, the latter only for the entire duration of the contractual relationship (ANAC, 2018).

The 2018 report on PPP in Italy produced by Cresme Europa Servizi with data from the National PPP Observatory confirms a steadily growing trend of PPP tenders (Fig. 1). However, this growth does not correspond to the success of

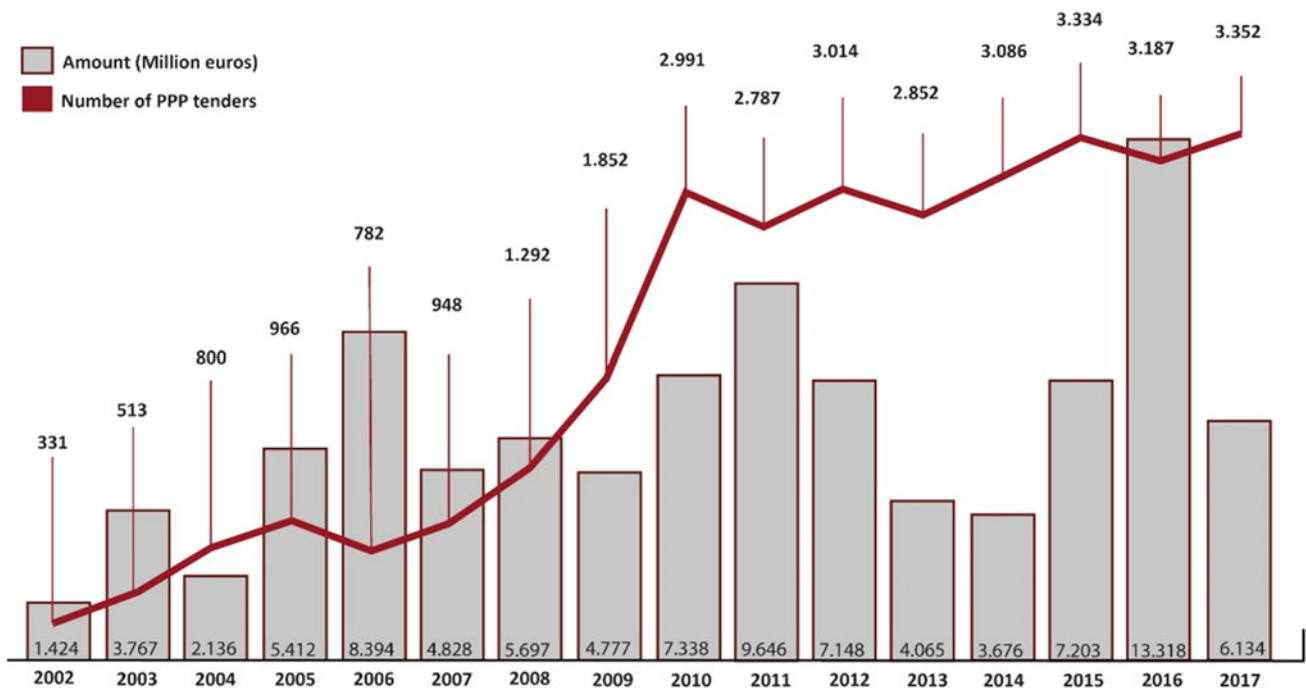


Fig. 1 Number of PPP tenders and amounts from 2002 to 2018, from the National PPP Observatory of 2018 (Cresme Europa Servizi, 2018)

all the operations: between 2002 and 2016, 13% of the procedures concerned “interrupted procedures” or cancelled tenders, deserted and not awarded tenders and revoked awards (Pasquini et al., 2019; Cresme Europa Servizi, 2018).

The difficulties encountered in these transactions were attributed to the limited preliminary and feasibility studies of the transaction, which meant that the economic assessments could not be verified, because they did not provide an updated picture of possible business risks, lengthened the time and it did not make it possible to find the right balance between ascertained risks and public guarantees (Siclari, 2019).

It is, therefore, clear that for the private operator it is essential to be fully aware of the amount of expenditure to be faced in the redevelopment of the work, in order to rationalize the hypotheses as much as possible and correctly evaluate the risk allocation, as well as the economic-financial balance of the operation.

2.2 Preliminary Market Consultation: Effectiveness and Effects Within the PPP Process

The preliminary market consultation is an instrument made available to public administrations (introduced by art. 66 of the Code of Contracts) which is part of a programmatic phase of the process (Fig. 2) which is not aimed at awarding a contract, but is a tool to initiate an informal dialogue with

private operators experienced in the sector in order to verify the strategic nature of operation and to set up the best way of tendering for its success (ANAC, 2019).

The ability to gauge the market interest in a given transaction at the programming stage means that it can be built by ensuring maximum competitiveness in resources management, through the ability to attract the attention of a greater number of potential players who can provide their views before the administration formalises the request for the tender (Bardelloni et al., 2013).

The effect of this is that there will be a substantial gain in time in the conclusion of the races (i) a greater number of participants (with consequent improvement in quality of the project) (ii) and a lower cost (iii).

3 Traditional Method and IT Innovative Approach

In view of the discipline, still little used in practice, the National Anti-Corruption Authority (ANAC) considered it appropriate to adopt ad hoc Guidelines, with the explicit aim of encouraging the use of the institute and promoting its legitimate exercise, given that the tool in question allows public authorities to reduce information asymmetries on certain markets and a better knowledge of the technical aspects of the purchases envisaged by public administrations allows the market to produce offers more effectively aimed at satisfying public needs. From the point of view of the

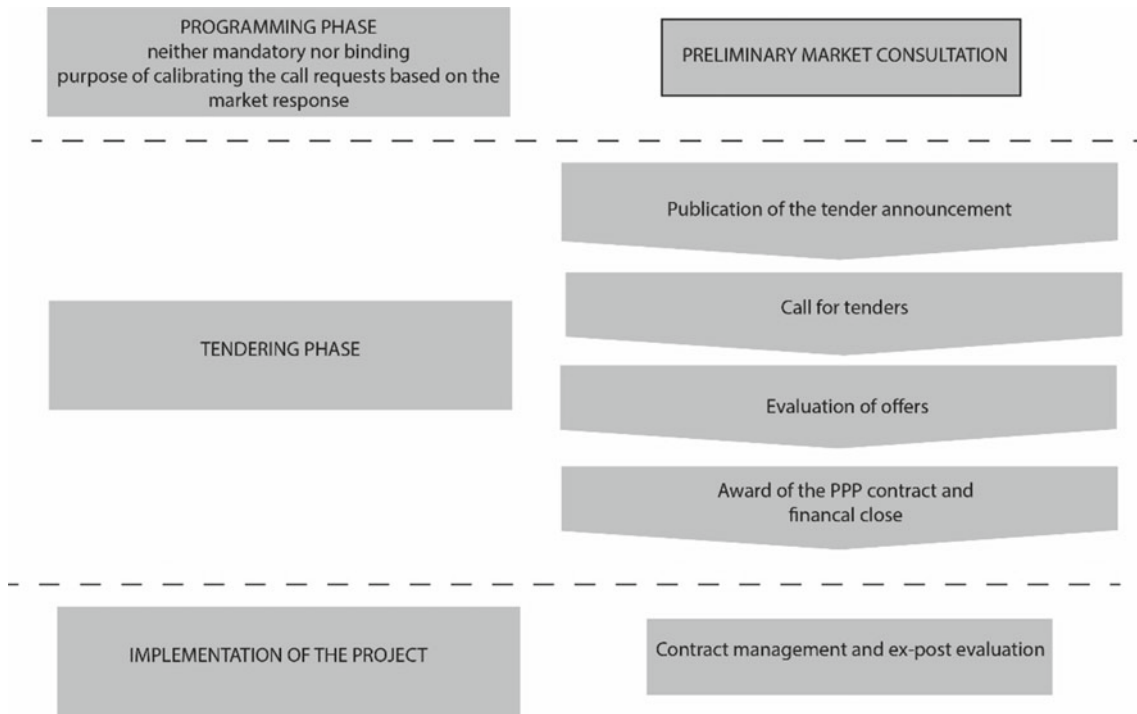


Fig. 2 Role of the PMC in the PPP operations, elaboration by the author

economy and efficiency of the administrative activity, the institution also reduces the risk of deserted tenders and represents an exercise of loyal collaboration between public and private sector (ANAC, 2019).

To date, a public administration that intends to launch a preliminary market consultation makes public a notice in which it makes available a file containing technical information related to the asset as well as a policy document in which it makes known its wishes (Fig. 3).

It is known that the modality with which the procedure will be set up will be able to determine its success, and so the

choice of the information made available is of particular importance. In detail, the need for data reprocessing or the incomplete transparency of the actual state of the assets may lead to an incorrect assessment of the operation.

The possibility of associating the use of Information and Communication Technology (ICT) with the performance of the preliminary market consultation can significantly affect the strategy of the subsequent tender.

Currently, a contracting authority that intends to test the context of the market in which it would like to start a public-private partnership operation carries out a preliminary market

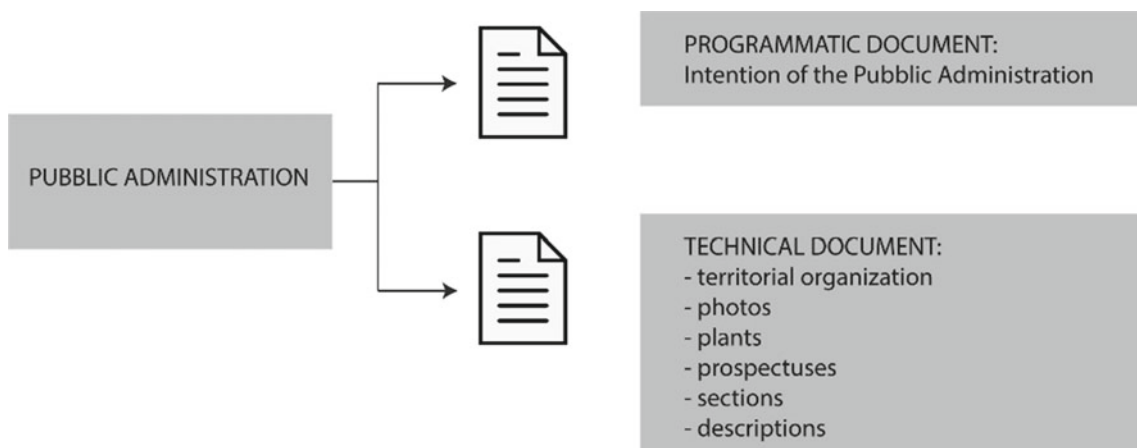


Fig. 3 Traditional PMC elements, elaboration by the author

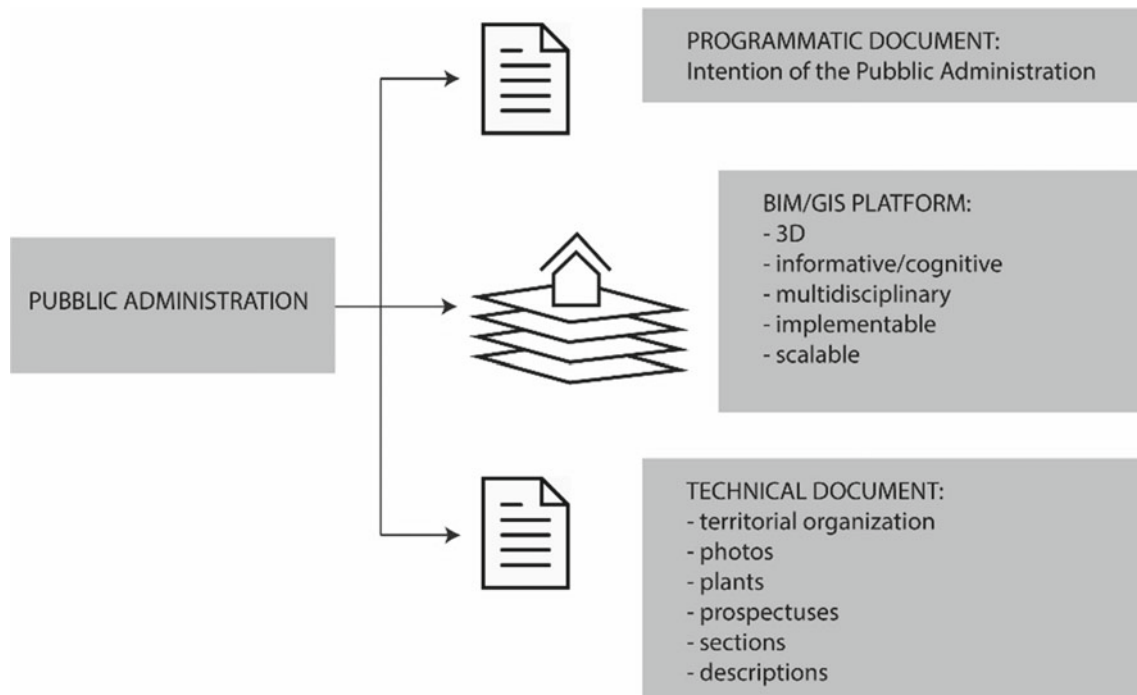


Fig. 4 Digital PMC approach, elaboration by the author

consultation. At this time, on the online platforms of the contracting authority, a series of documents containing the objectives of the operation and a file illustrating the essential information related to the asset subject to the operation are made available to hypothetical investors (Fig. 4).

The ways in which information is made available within the traditional method are therefore through the sharing of a “paper” dossier containing an essential description of the area subject to intervention, through a description of the property with respect to its appearance (photos, floor plans, etc.), its history, the context in which it is inserted, the services available, as well as the urban, landscape and monumental constraints to which it is subjected.

Providing the data in this way, therefore, leads to a disclosure in which they are not amalgamated, but combined with each other, often leading to offering a not sufficiently immediate and clear vision of the asset and its potential or problems. This, therefore, forces the private subject to analyze and remodel the information in this regard, risking compromising participation in the transaction, reducing the number of potential private subjects interested (making the “tender” less competitive) (ii) and lengthening the completion times of the works (i).

3.1 Digitalisation of the Process

The ability of IT to facilitate communication and the development of operations is therefore analysed.

In detail, reference is made to the use of technologies that make it possible to integrate the computation capabilities of geographic information systems (GIS) linked to the scale of the broad territorial context (which makes it possible to better evaluate the information related to the connections and the context in which the work is inserted) and the more precise elements of the elements inserted in it through the computerization of the asset (BIM) with respect to its characteristics.

The ability to offer a greater understanding of the state of assets through the information made ready for use is expected to change the outcome of the tender. In the face of higher commitment by the administration, it is expected that the potential investor will be more aware of all the facets of the transaction and better disposed to risk since, through the already computerized material, he will immediately be able to make fairly precise estimates of what the economic commitment could be as well as simulations of the scenarios that could arise through the tender.

The strategic objective of the project is the development of tools and methods for the proposal of PMC operations from the early planning stages through an integrated BIM-GIS approach, through a request for a project proposal to be included in a defined computational framework, which also makes it possible to compare market responses in a timely manner, allowing the PA to operate according to principles of cost-effectiveness, impartiality, effectiveness and transparency.

The tool offers greater completeness in the management of information relating to a specific asset, using a structured data set. The tool is suitable for operating in complex scenarios and decision-making models with a precise definition for investor risk, able to direct the choices of all those involved in the project and in the management of the work.

3.2 Operational Proposal

Two types of information are therefore identified to be merged into the platform: territorial data, which include all cartographic and large-scale information (in particular, information related to urban plans, infrastructures and the presence of externalities are identified); and the precise data, on a building scale, which includes all the precise studies on the object of interest (Fig. 5).

The essential aim of the research is to define a system:

- Three-dimensional, multidisciplinary and multiscale, which can offer a coherent and in-depth photograph of the asset
- That guarantees the permanence, consultation and implementation of the data, both by the public administration (owner of the asset) and by the private individual (who has invested in it and manages it to profit from it);
- Where the data is accessible and understandable.

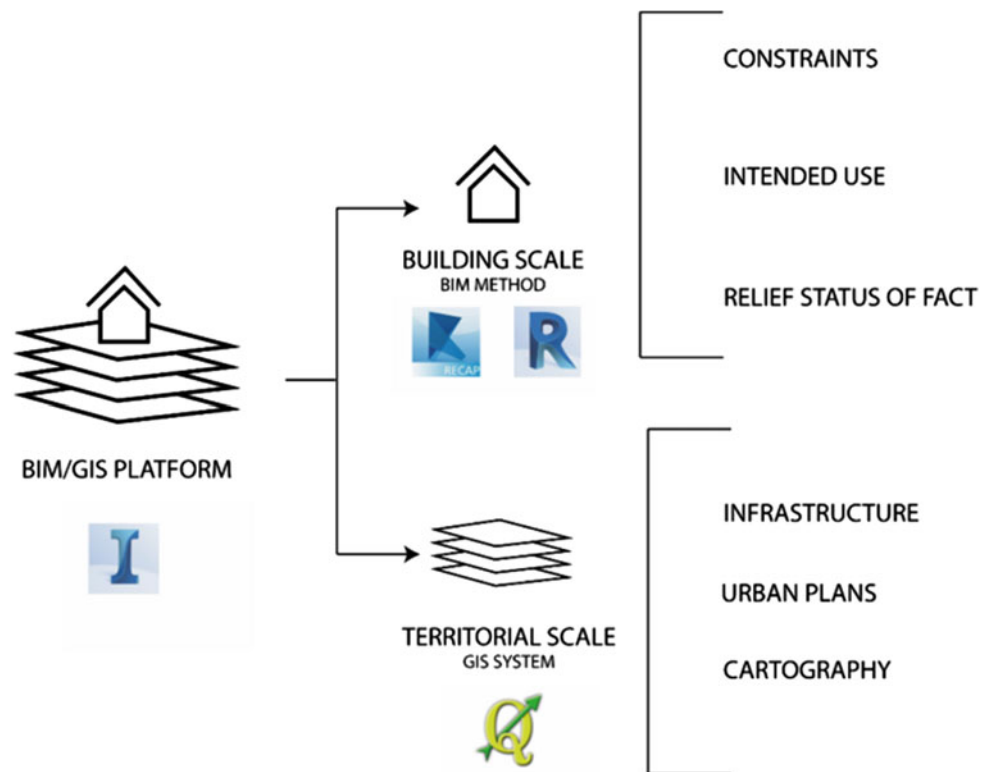
The phases identified are the result of reasoning related to the analysis of what are essential information related to in-depth knowledge of the existing real estate assets (Fig. 6) are:

- Historical and archive analysis and survey phase
- BIM modelling of the building (identification of the typological characteristics of the building and translation of the same into digital families) choice of the appropriate Level of Detail (LoD)
- Territorial analysis of the context of the operation (definition of the constraints and existing plans in the area, analysis of vehicular and pedestrian flows, etc.)
- Implementation of the two systems (definition of a multi-scale and multi-disciplinary platform).

In the request for proposals to be made by the private individual, in view of the amount of timely information made available by the public administration on the asset and the area in which it is inserted, it is required to strictly follow the correct data transmission protocol, in format *.ifc interoperable, paying attention to the characteristics highlighted by the PA (coordinate system, LoD, nomenclature, etc.), so that the comparison between the proposals is easy and consistent and to establish a correct and effective competitive dialogue between the participants.

It is important to underline that in the desire to redevelop an asset, we are faced with the need to know it in depth, in

Fig. 5 Information setting



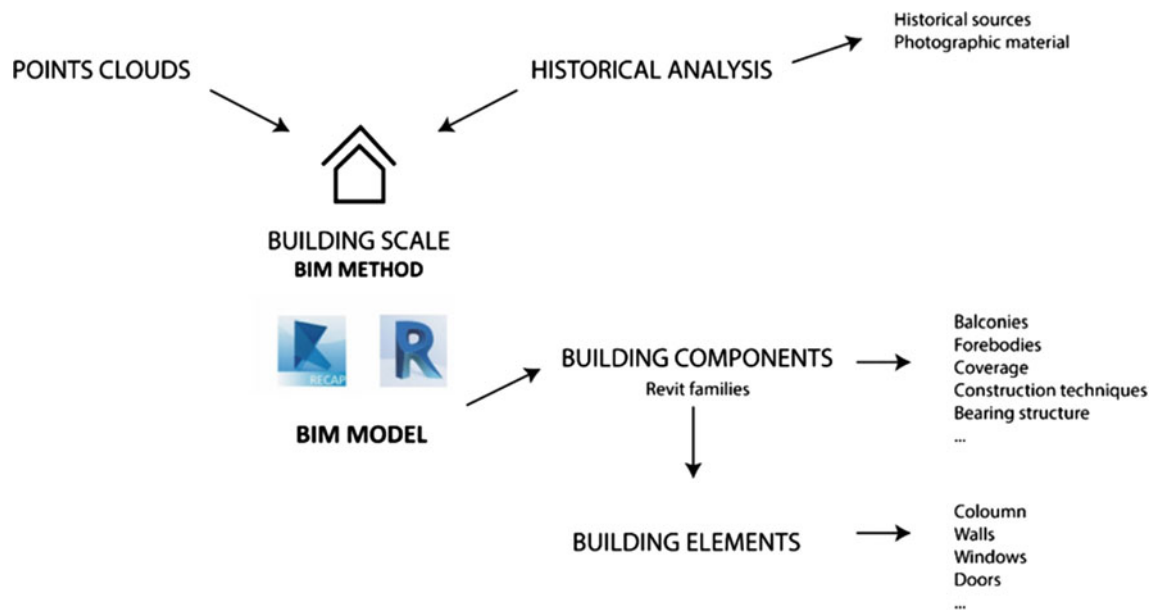


Fig. 6 Operational workflow proposal about building scale

order to be able to make calibrated and sustainable choices. In approaching these concepts, it is therefore essential to make considerations related to the knowledge of the architectural heritage in question.

One of the essential characteristics that we want to note in the definition of the method is that for which the public administration that intends to start an operation of this type, must be completely aware of the architectural characteristics of the asset subject of the operation, leaving the private individual a degree of freedom in the presentation of their own design considerations and proposals, but maintaining the utmost rigour on safeguarding the typological characteristics of the asset.

The main issues to consider in the BIM approach to existing architectural heritage are:

- The uniqueness of the historic buildings, due to the craftsmanship of its construction, the processes of modification and transformation over time and the phenomena of degradation and transformation, which should be kept track in the construction of a dynamic archive of the asset;
- The large amount of information necessary for a complete and exhaustive knowledge of the architectural heritage, requires a mapping of the elements of the asset by defining a database of the components of each building (Bianchini et al., 2016; Cianci et al., 2019; Donato et al., 2017; Giovannini, 2017).

3.3 Case Study. Warehouse 20, Old Port of Trieste

The case study is aimed at an urban survey experience (acquisition, restitution and creation of the spatial model) aimed at the preparation of a multi-scalar and multi-dimensional information model to support a potential preliminary market consultation within the Old Port area in Trieste, in particular on the building called “Warehouse 20”.

The objective, as specified above, is not simply to generate a geographic information system of the analysis area, or a 3D model with its own graphic appeal and formal complexity, but to study a dynamic process of acquisition, processing and implementation of spatial and non-spatial information that can be interrogated and functional to planning by the public administration but also to the design of details by private parties.

Initially, the Port of Austrian Trieste at the end of the nineteenth century, it is an area with a regular urban layout typical of the Lagerha users of the ports of northern Europe, with the arrangement of the port structures along three parallel axes. The events that mainly characterize the fate of this space are linked to the fact that it was made a Free Port as a Port of the Austro-Hungarian Empire, subsequently abandoned in favour of the New Port, which better responded to the need for expansion, remained as Porto Franco, essentially abandoned until 2019 When it was desmanialized.

To date, numerous project proposals insist on the area. Of course, this is a space of strong strategic interest, as well as an important opportunity for the relaunch of the city of Trieste on the European scene, and an excellent opportunity for the city, being an unused space of significant size in the immediate vicinity of the city centre.

Within this area there are now numerous examples of building techniques of a historical-identity character of the city.

Therefore, it currently appears to be an area consisting of approximately 617,000 m², with 5 piers, 3100 m of quays and 23 large buildings (hangars and warehouses). Since 2019 the area has been handed over by the port authority to the Municipality of Trieste (Caroli, 2002, 2017; Strazza, 2018).

The building types inside are mainly made up of warehouses and hangars (originally 38) which can be divided into:

- One floor above ground (warehouses and deposits)
- Two or three floors above ground with cellar and attic, with balconies between the forepart supported by cast iron columns
- Four floors above ground with cellar, ground floor and four upper floors with balconies, special buildings (hydrodynamic power station, electrical conversion substation and former inns).

3.3.1 3D Survey from Points Clouds

In the traditional PMC, a photographic review of the property is made available to the private subject.

The current technologies of massive data acquisition (laser scanner and digital photogrammetry) allow carrying out data collection of the geometric complexity of the building, even filling the gaps deriving from the lack of information of the archive material or the understanding of the changes operated in later times.

The provision of a point cloud obtained from a survey with a Leica BLK360 laser scanner, available on the market since 2017, is considered as an effective hypothesis, it is a

very simple to use and intuitive tool. This has an average accuracy at a range of up to 60 m (Table 1).

Performance studies confirm the 3D point accuracy of approximately 6 mm at a distance of 10 m, as confirmed by the manufacturer. The measurement distance is performed according to the WFD principle (digitalization of waveforms). Scanned with BLK in high density mode, which corresponds to a point's distance of 6 mm at a distance of approximately 10 m. In this mode, a complete scan, including the acquisition of panorama images, takes about 5 min. Through this tool, the data is first stored in the scanner, then transferred to the tablet computer via Wi-Fi. Data acquisition is carried out with the ReCap Pro (Autodesk) program on site (Blaskow et al., 2018; Luhmann et al., 2019) (Fig. 7).

3.3.2 BIM Model Development

A framework is developed that starting from the survey of the object of study, aims at the creation of BIM models useful to offer a coherent and in-depth photograph of the asset, in order to build a starting point for a restoration, maintenance and management project of the asset, defining a coherent and effective tool for the planning of the public administration.

The importance of the theme of modelling within the application of BIM to existing architectures is demonstrated by the presence of numerous studies in this regard, which highlight various problems.

The BIM modelling process mainly focused on the detection of the building characteristics, with the aim of planning conscious interventions, which do not alter the historical morphology of the buildings subject to PPP.

The modelling operation will therefore allow, regardless of the operation that will be carried out, to replicate the object of investigation in its digital twin, allowing to facilitate the study and analysis to better evaluate any future intervention, defining a digital archive of real estate.

Through the detailed basis given by the point cloud, we intend to generate parametric 3D models useful for detecting the typological characters of the buildings under study, with

Table 1 Technical specifications
Leica BLK360

Leica BLK360	Specifications
	Scanning unit
Range	0.6–60 m, FoV orizz. 360° vert.300°
Distance measurement method	Pulse transit time with waveform digitizing
Point of measurement rate	Up to 360.000 pts/sec
3D point accuracy	6 mm @ 10 m/8 mm @ 20 m
Camera system	15 Mpixel 3-camera system, 150Mpx full dome capture, HDR, LED flash Calibrated spherical image, 360° × 300°



Fig. 7 Warehouse 20's points clouds (Recap PRO)

the aim of defining a document addressing the project that imposes a recovery and enhancement of the same.

The proposed methodology, having as its objective the provision of a basis on which to advance a proposal to the potential investor, identifies the definition of two degrees of detail (LoD) depending on the characteristics identified:

- A simplified model of the entire building, with low geometric accuracy that contains generalized systems with approximate quantities, dimensions, shapes, position and orientation (LoD 200)
- An accurate model with construction requirements and specific elements, which reproduces as much as possible the geometric irregularities of the building's typological characteristics (details of roofs, stairwells, doors, windows, etc.) (LoD 400).

The proposed workflow uses Autodesk Revit software, which guarantees full interoperability with the other software of the Autodesk family used in the study. When providing the template, the file is exported in *.ifc interchange format.

In the case proposed, through study and historical analysis, the building was broken down with respect to its technological system typical of the construction of the Old Port of Trieste, dividing it according to its characteristics, and translating them into Revit families.

In detail, the Warehouse 20 has three floors above ground plus an attic and has a rectangular plan and, unlike other

warehouses in the port, has a smaller size of the longitudinal fronts. It also features a turret on the roof. The longitudinal fronts present on the ground floor the characteristics of the other buildings, but without the cast iron columns, two slightly projecting bodies (Fig. 8).

To set up the model, the previously mentioned typological characteristics are mapped and translated into the relative Revit families, defining an archive of information on the building. In this way, the model will be easily interrogated and implemented, allowing a quick and coherent evaluation of the project hypotheses, also with respect to the evaluation of a future economic commitment, for the respect of the economic financial equilibrium also in the perspective of the management of the asset (for the calculation expenses) as well as to count the elements.

3.3.3 GIS Analysis

In identifying the data that are considered useful for the success of PPP operations, an in-depth study of the area in which the operation is developed is identified. In detail, it is believed that an analysis of what may be the relationships that insist on the area and the characteristics of the elements within it, to allow an adequate understanding of the possibilities of success of the operation.

GIS systems are tools of high potential for the rational and controlled management of the territory, allowing an immediate understanding of its morphology and the urban elements included in it.



Fig. 8 Warehouse 20's BIM model (Revit)

In the definition of the method, for the definition of the territorial information system, the open source software QGIS was identified, connected to the regional database (Sani et al., 2019).

The choice of this software depends on its ability to support numerous vector and raster files and interact with databases and advanced analysis functions. QGIS is able to display and overlay raster vectors of different formats, using different projection systems at the same time, without any format revision being necessary.

It is therefore possible to create maps and explore spatial data through a graphical interface that simplifies the use of the software. As regards the workflow in description, the analysed and systemized data are provided to the stakeholders through the provision of the standard CityGML data format.

This format allows for the exchange of 3D data, storing different three-dimensional geometries, thus describing the objects in relation to their geometric, topological, semantic and appearance properties. This allows to perform complex data queries in GIS environments, opening the way to spatial analysis of urban models (de Laat et al., 2011).

The analyses are identified by different layers containing the urban plans insisting on the area (urban plan, regional landscape plan and containing the related constraints) flows of the driveways, pedestrian paths, and the precise analysis of the functional destination of the elements of the area, in order to easily analyse the strategic nature of the operations.

The hypothesis of investigating communication technologies capable of operating within web-based information systems is also analysed for future development. The Web-GIS, conceived as extensions towards the network of GIS platforms, allow to increase the number of potential interested parties.

3.4 Implementation BIM/GIS

The integration of BIM models and GIS systems represents a great opportunity to reach a complete level of knowledge of the territory, for the activation of winning operations, as well as the ability to offer an excellent ally to the design of a coherent and potentially digital archive, always updated.

The research in this sector is particularly active, especially with regard to territorial planning, cadastre management and environmental simulations (Basir et al., 2018; Zhu et al., 2018).

With the aim of associating the territorial elements and those on the territorial scale, the Autodesk Infracore software was identified, which associates the BIM model to the territorial element (Fig. 9). In this way, it is possible to define, within a single window, all the elements of the system, creating a database that holds together all the information entered in it and creating an error-free basis also for the evaluation of proposals arriving from private individuals both from a compositional and performance point of view (Carta et al., 2018; Fai et al., 2011).



Fig. 9 Warehouse 20 in old port of Trieste's urban model (Infraworks)

In this process, there is currently a need to define a platform that can make the models (BIM and GIS) generated by the public administration viewable (and possibly downloadable). In fact, the illustrated solution can be considered satisfactory if the public administration makes the territorial models generated, complete with the related connected *.ifc models, available to potential interested parties.

BIM and GIS can be understood as complementary solutions in different projects. Specific tools are available to solve different aspects of practical applications, allowing a more complete and interrogable perspective with respect to different scales by the various actors involved.

4 First Results

In the request for the elaboration of the projects by the private individual, it is therefore asked to follow a protocol that is the same for everyone, identifying an information specification, in which all the elements of the file to be acquired are outsourced, with the definition of its own characteristics of the model, such as the coordinate system, the orientation, the interoperable format as well as all the data concerning privacy.

This structured request is also linked to the need to analytically check the response to certain parameters determined within the address document. To do this, Autodesk Nav is works software was identified, capable of verifying the compliance of system models. Through the definition of

customized interference rules, it is possible to verify the consistency of the project with the request for the steering document.

At the same time, through the same software, the private individual will be able to effectively determine the quantities of materials and the workflow suggested for the design and quantitative take-off of architectural and structural models, allowing once again to be extremely aware of the commitment that is evaluated to undertake.

This application can also be made available to the Public Administration which will be able to transparently control the operation.

5 Conclusions

As a first methodological test, the data determining the workflow hypothesis for a preliminary market consultation for Warehouse 20 in the Old Port of Trieste were used. It was evaluated how to make available and effective the information useful to a proven who wanted to elaborate a proposal for a possible public–private partnership.

Once the method has been tested through the response of the stakeholders to the procedure, we intend to re-evaluate the data delivery and request protocol, in such a way as to define guidelines that lead to the receipt and delivery of coherent information, for the definition of an archive 3D of the public administration.

The next goal, in the face of a greater commitment by the public administration, is to define an integrated information platform that can contain all the areas and buildings of the Municipality that must be redeveloped with all the useful information, so that it can be private individuals to make proposals for partnership projects which can then be evaluated by the administration.

The experimentation illustrated in this contribution, at a methodological verification stage, has allowed us to arrive at some considerations on the results obtained and on the possible implementations of the research.

The most important result is the awareness of uniquely defining the workflow of the public administration with respect to the modelling and setting of data, in order to work in a targeted manner as necessary to stimulate the market with respect to the assets to be redeveloped.

It is particularly important to think in terms of interoperability for the structuring of the relationships between 3D GIS and BIM, as well as to ensure the complete passage of information between the various stakeholders.

The ability to make the process for retraining analytical through ICT, starting from the provision of information from the beginning of the operation, can also allow for complete transparency by the administration, which in this way will be able to collect and manage a historical and updated digital archive of all phases.

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