

# T.I.M.E. Projects 2019-2020

## Application Form

Deadline for submission: **January 15<sup>th</sup> 2020**

Please submit the completed form to: **gwenaelle.guillerm@time-association.org**

Applications must be submitted by e-mail only. You are required to attach a scanned copy of a Letter of Support signed by the Head of your Institution.

Please remember that T.I.M.E. promotes international cooperation and therefore only applications from consortia of at least three T.I.M.E. members in three different countries can be accepted.

You will be notified of the results of the selection after the Advisory Committee meeting on **February 7<sup>th</sup> 2020**. Projects run from February 2020 to January 2021.

Title of Project	
Summer School:	<b>GeoBIM for improved asset management</b>
Acronym (if any)	
GAME	
Details of the Applicant	
<b>Name of Institution</b>	Politecnico di Milano
<b>Department</b>	ABC Department - Architecture, Built Environment and Construction Engineering,
<b>Contact Person/s and Details</b>	Fulvio Re Cecconi Via Ponzio, 31 20133-I Milano phone: +39 02 2399 6052 mail: fulvio.receconi@polimi.it skype: fulvio.receconi
Summary of the Project (max. 2000 characters)	
<p>This project will deliver an international summer school on the integration of Building Information Modelling (BIM) and Geographic Information Systems (GIS) for improved decision making in physical assets (Asset and Facilities Management – AM/FM). GIS and BIM exploit the power of ‘where’ by creating 3D models and maps of physical assets and the use of GeoBIM for AM/FM allows effective information management for decision making at both macro and micro scale. Knowing the “where” of data is also the only way to link the disparate data underpinning a digital twin.</p> <p>The interdisciplinary summer school is targeted at 10 PhD students from the universities included in the consortium, from the following research areas: AM/FM, GIS/3D City Modelling and BIM, with the goal being the creation of a network of students with a strong awareness of concepts and skills outside their home discipline and the ability to work in interdisciplinary teams. The workshop will be open to PhD students, upon the verification of their technical and interpersonal skills, through their CV.</p> <p>Through a mix of theoretical and practical work, participants will become familiar with the concepts of Condition Inspection and Assessment of assets, exploring the methodologies for condition data collection and processing in different contexts. They will link the assessment to BIM and GIS, exploring representation and modelling and information management related to the assets and the built environment..</p>	

They will then use the integrated, interoperable data (from the three different disciplines – AM/FM, BIM and GIS) within a relational database to develop a portfolio evaluation of the buildings’ market value.

The summer school will be hosted by one of the four institutions involved in the project. These include academics and PhD students from T.I.M.E. partners and one top level institution among countries within the T.I.M.E. priorities list - University College London (UCL, UK).

### **Reason for applying for T.I.M.E. funding (max. 2000 characters)**

The GeoBIM community is growing Europewide and more and more attention is given to the potential of this powerful integrated approach, from public players, industry and academia. However, practical applications of the GeoBIM approach in Asset Management are few and, in academia and teaching, the topic is not yet widely explored.

Across Europe, the GeoBIM for AM/FM topic is being currently addressed primarily through an industry/academia collaboration hosted by Euro SDR (European Spatial Data Research), with contributions from a number of the partners in this proposed summer school. Within the GeoBIM project; the Amsterdam Institute of Advanced Metropolitan Solutions (AMS-institute), co-organised the “GeoBIM benchmark workshop” in December 2019. Moreover, a successful previous experience was organised by the Politecnico di Milano and University College London (“GeoBIM for Asset and Facility Management workshop”, Milan, November 2019). Therefore, the proposed project acquires further relevance not only for promoting international teaching and research, but also for connecting the EuroSDR activities to the T.I.M.E. funding system, which supports an acknowledged European research agenda.

The T.I.M.E. association, through the present call, offers the outstanding opportunity to further develop collaboration and networking among existing and new academic partners. Thus, it will be possible to further investigate and apply the GeoBIM methodologies to case studies, through actively involving experienced academics, early career researchers and PhD students in an international and fruitful collaborative research context. This will provide visibility both to the academic partners involved and to T.I.M.E. and in addition allow the younger researchers and PhD students to start to form an international, collaborative network which is so important to their future careers. One of the Academic partners belong to the targeted priority countries and represent top ranking institutions.

### **Expected outputs of the project**

- Increasing the knowledge on the GeoBIM for Asset Management through the investigation and teaching of theories and practices in BIM, GIS and advanced information management tools.
- Development of case studies and demonstrations on the potential of GeoBIM for Asset and Portfolio Management, in the perspective of the development of a digital model of the built environment.
- Contribute to the networking, collaboration and dissemination among members of the involved institutions, contributing to the creation of a research network not only among senior academics but also among junior researchers
- Increasing knowledge exchange among different disciplines: Asset and Facility Management, Architectural Engineering and Geographic Information Science;
- Forming links between EuroSDR and T.I.M.E
- Material for an interdisciplinary school on GeoBIM in AM/FM that can be re-used to train future generations of students within and across the partner universities

### **Target group/s and expected impact**

The summer school is targeted at PhD students from the partner institutions – and we will specifically target students from all three disciplines. Working in interdisciplinary teams, the students will address the issue of how to integrate information related to the Condition Assessment (CA) of the indoor and outdoor spaces of a physical asset into a digital 3D GeoBIM environment, allowing to store, analyse and visualise geolocated AM/FM information within the context of the development of a digital twin. This assessment allows to achieve the overall evaluation of the physical assets. A subset of this information concerns the condition of the buildings. Therefore, the maintenance condition detected through the condition

assessment will be related to their market value in a GeoBIM approach for portfolio management.

The summer school is expected to impact on:

- The advancement on the knowledge in GeoBIM for Asset and Portfolio Management;
- The development of digital-based decision-making tools based on innovative approaches and technologies;
- Increasing the collaboration and knowledge exchange among the partner universities. This will provide the strong base for a further collaboration among institutions;
- Increasing the students' confidence and awareness of group work activities and improving their presentation skills and confidence (particularly where English is not their first language)
- Providing visibility to the research and teaching topics Europe-wide and to the funding institution: T.I.M.E.

In addition, we will contribute to the interdisciplinary training of PhD students – interdisciplinarity is a fundamental skill for researchers of the future.

### Sustainability of the programme

The budget will be mainly spent to cover the travel and accommodation expenses of teachers and students involved in the project. The Summer school will be preferably held in the premises of the institution belonging to the targeted priority countries (UK). This will allow to involve the partners even more actively in the development of the proposed project.

To ensure the sustainability and the success of the project meetings and discussion, organisation of the school will be done via video conference, allowing the budget to be used for the actual delivery of the summer school during the planned teaching period.

A webpage reporting the description of the summer school and the main updates of the project will be developed and the major social networks will be used to advertise the initiative and to update the scientific community.

Moreover, the teaching materials and tools will be promptly provided to the participants and shared among the teachers via a learning management system (e.g. Beep, Moodle) which will be used also as main communication channel with students when the summer school will start

### Specific deliverables

#### *Teaching*

Through the week, students will collaborate in interdisciplinary teams to capture and process GIS, BIM and Asset Condition Data, resulting in a final presentation / seminar by the students of their integrated dataset and how it can be used in decision making – i.e. a worked Case Study. Practical examples and exercises each day will start by instructing the students in specific data capture, processing and visualisation tasks which they will then put into practice for their Case Study

A preliminary itinerary is as follows:

#### Day 1

- Morning, theory: Asset Management/Condition Assessment, Building Information Modelling
- Afternoon: practical examples and exercises

#### Day 2

- Geographic Information Systems and databases
- Afternoon: practical examples and exercises

#### Day 3

- 3D City Modelling and GeoBIM, Capturing 3D city data
- Afternoon: practical examples and exercises

#### Day 4

- GeoBIM in asset management
- Afternoon: practical examples and exercises

#### Day 5

- Students' work in groups / presentation preparation
- Afternoon: final presentations and remarks

#### Organisation

- Web page activation
- Communication and advertisement (via social networks)
- Preparation of the teaching materials

#### Dissemination

- Final presentation (final seminar)
- Publication/report

### Total duration of the project

The summer school will last 1 week in September 2020 and will be held in one of the University of the consortium, preferably one of the institutions among the targeted priority countries.

### Planned budget

The planned budget is 20.000 Euro, to be used for lectures' travels.

Budget T.I.M.E	15.000
Budget other source (private sponsor/hosting university)	5.000
Grand total	20.000
<b>Costing</b>	
Travels and accommodation for teachers (7 people)	
1 Flight return	2.000
Transports round trip	700
Public transports	350
Accommodation (single room, 6n)	6.000
Meals	450
Daily allowance for students (10 people)	
Daily allowance (100€/day)	5.000
Final presentation open to public	
Welcome & coffee break	550
Publications and dissemination	
	2.500

### Requested financial support from T.I.M.E.

The total request financial support from T.I.M.E. will be 15.000. The budget will be as long as possible, divided equally among the involved institutions.

### Other sources of funding

Private companies' sponsorships and expenses born by the hosting university

## Members of the consortium

TIME members:

- Politecnico di Milano (project leader);
- Lund University;
- Norges Teknisk-Naturvitenskapelige Universitet.

Other members

- University College London (UCL);

## Key Staff (Name, Position, E-mail)

Name	Position	e-mail
Fulvio Re Cecconi	Associate professor	fulvio.receconi@polimi.it
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Hongchao Fan	Professor	hongchao.fan@ntnu.no

### Check List

- **Attach a signed Letter of Support from the Head of the Applicant Institution** ·

**Send this form and supporting documents by e-mail only to:**

[gwenaelle.guillerme@time-association.org](mailto:gwenaelle.guillerme@time-association.org)

**THE DEADLINE FOR THE SUBMISSION OF APPLICATIONS IS *JANUARY 15<sup>th</sup> 2020***