



# PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 37th cycle

**THEMATIC Research Field: EVIDENCE-BASED PLANNING, DESIGN AND MONITORING OF HEALTHCARE SYSTEMS AND FACILITIES: REPORTING AND MANAGEMENT CONTROL**

**Monthly net income of PhDscholarship (max 36 months)**

**€ 1400.0**

In case of a change of the welfare rates during the three-year period, the amount could be modified.

## Context of the research activity

### Motivation and objectives of the research in this field

This research addresses the challenges that public administrations are facing in the digital era that was accelerated by the COVID-19 events.

The PhD will contribute to renew competences and instruments with the final goal to improve public administration governance and management.

Healthcare systems and facilities are complex infrastructures where different features from technological, social, clinical and architectural fields interact. In modern healthcare systems, there is a constant drive to improve quality in terms of process, outcome and structure.

Several tools already exist to evaluate quality in terms of process and outcome but very few are able to support decision makers in planning, controlling and reporting aspects.

Within the fields of Evidence Based Medicine (EBM), Evidence Based Design (EBD) and Evidence Based Policy Making (EBP), researchers have proved that significant relationships exist between health, wellbeing, organizational outcomes, sustainability, financial outcomes and the built environment. Nevertheless, the present state of healthcare assets and organizations - stressed also by the COVID-19 pandemic - is critical, with an urgent need for decision support tools to assist



	<p>healthcare managers and strategic regional directions to rapidly plan, evaluate, monitor and control the level of quality in healthcare organization and assets. An example of where such a tool would be valuable is the evaluation of where and how to direct investments in hospital refurbishment and renovation. This is evident when looking at the contemporary funds which are boosting development in the healthcare sector, referencing specifically to the resources coming from the PNRR 15.63 billion euros allocated for 'Mission 6-Health,' divided as:</p> <ul style="list-style-type: none"> <li>• 7 billion for proximity networks, intermediate facilities and telemedicine for territorial health care;</li> <li>• 8.63 billion for innovation, research and digitalization of the National Health system.</li> </ul> <p>This research proposal entitled 'Evidence-Based Planning, Design and Monitoring of Healthcare Systems and Facilities: Reporting and Management Control for Healthcare,' is positioned in this broad field of emergent needs and opportunities and aims to develop an evidence-based evaluation framework for planning, designing and monitoring healthcare systems and facilities.</p> <p>The specific objectives of this research will be to:</p> <ul style="list-style-type: none"> <li>• Identify the monitoring, planning and control needs of the healthcare sector;</li> <li>• Define internal and external (data sharing with health network) reporting lines;</li> <li>• Identify necessary indicators and information, verifying their presence and sustainability of processing; and</li> <li>• Prepare and maintain a modular dashboard for different stakeholders.</li> </ul>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The research will be conducted in collaboration with the Regione Lombardia Directorate on Welfare.</p> <p>The research will use an integrated and multidisciplinary approach related to the general topic of 'Planning, Programming Design of health and sociosanitary services.'</p> <p>The research plan will be supported by the Design &amp;</p>



Health Lab (DABC, POLIMI), an interdisciplinary group which maintains relationships at the national level (other university research centers, experts in healthcare planning and management, the Italian Center for Healthcare Architecture [CNETO], and the Italian Society of Hygiene and Public Health - SItI), and at the international level (the European Public Health Association - EUPHA, the International Academy for Design & Health - IADH, and the European Health Management Association - EHMA).

The research methodology will be subdivided into three main phases.

**Phase 1:** State of the art analysis through literature review and best practices comparison involving the:

1. Study and comparison of innovative models;
2. Definition of benchmarks for comparison;
3. Analysis of needs and demands; and
4. Mapping of national/international case studies.

This phase will also involve the collection of relevant data related to organizational models, volumes of activity, relevant international examples and existing KPIs (Key Performance Indicators).

**Phase 2:** Defining a supportive methodology and a multidimensional assessment framework useful for monitoring and control in the healthcare sector with particular reference to:

1. Identifying the structural elements of the framework and its hierarchic model;
2. Eliciting relevant indicators (KPI) and variables in specific areas;
3. Outlining the data collection processes; and
4. Preliminary testing with relevant internal/external stakeholders.

**Phase 3:** Validation of the assessment framework through testing on pilot situations to verify reliability and usability with specific regards to:



	<p>1. Define a standardized operative methodology for assessment, continuous monitoring, control and reporting;</p> <p>2. Apply the framework on a sample of pilot cases. The application of pilot case studies will help in the validation of the model and the deepening of different hypotheses of scalability.</p>
<b>Educational objectives</b>	<p>The project will provide candidate with: knowledge of the sector in which they develop the research project; methodological competences at both the theoretical and applied level; capabilities to interact with people of diverse background; problem setting and solving capabilities. Educational objectives involve both hard and soft skills with specific regards to the development of the candidate's critical thinking, creativity and ability to communicate in qualified international Academic, Scientific, Industrial and Institutional environments. The combination of academic and applied experiences will improve the PhD candidate's ability to collect and synthesize the relevant knowledge with problem solving skills. Proficiency in completing literature reviews, performing data collection and analysis, applying qualitative-quantitative methods and using business intelligence tools, will complete the overall educational objective along with the ability to work in a multidisciplinary environment.</p>
<b>Job opportunities</b>	<p>Professional career opportunities have been identified in several areas related to the planning, organization and management of healthcare systems, hospitals and other socio-sanitary facilities. The PhD graduate will have:</p> <ul style="list-style-type: none"> <li>• High-level expertise in planning, programming, monitoring and controlling complex infrastructures;</li> <li>• An international vision; and</li> <li>• Soft skills geared toward innovation in public administration and industrial partnerships.</li> </ul> <p>The competences acquired in the research journey will have a high level of applicability in quality improvement</p>



	strategies, as well as planning and control operations for institutional bodies and organizations.
<b>Composition of the research group</b>	1 Full Professors 1 Associated Professors 1 Assistant Professors 3 PhD Students
<b>Name of the research directors</b>	Prof. S. Capolongo and a Regione Lombardia tutor

Contacts	
Prof. Stefano Capolongo email: stefano.capolongo@polimi.it phone: +39 02 2399 5140	

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	566.36 €
By number of months	0

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p><b>This scholarship is funded by Regione Lombardia (Directorate on Welfare)</b></p> <p><b>Additional information can be found in the Regulations for the 37th Cycle of ABC-PhD:</b> download is available at link: <a href="https://beep.metid.polimi.it/web/abcphd/documenti-e-media">https://beep.metid.polimi.it/web/abcphd/documenti-e-media</a></p> <p><b>Additional information about ABC department and ABC-PhD programme:</b> available at link: <a href="https://www.dabc.polimi.it/">https://www.dabc.polimi.it/</a></p> <p><b>Additional economic support:</b> Budget for the research activity: total amount Euro 3.068,66 per student In detail: - 1st year 0,00 Euro - 2nd year 1.534,33 Euro - 3rd year 1.534,33 Euro</p>

**Computer availability:**

A laptop for personal use will be provided.

**Desk availability:**

The ABC department provides non-permanent desks to be temporarily booked in common PhD rooms. A part-time presence in the premises of Lombardia Region administration is scheduled.

**Teaching assistantship**

There are various forms of financial aid for activities of support to the teaching practice.

The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.