



COST Action  
TU I402

Quantifying the Value of Structural Health Monitoring



# Innovation Committee

Helder Sousa, Innovation Committee of the COST Action TU1402

Final TU1402 Conference  
BAM Federal Institute for Materials Research and Testing, Berlin, Germany, February 18 and 19, 2019

## INDEX

- Mission
- Innovation
- Entrepreneurship
- Dissemination
- Remarks for beyond TU1402 timeframe



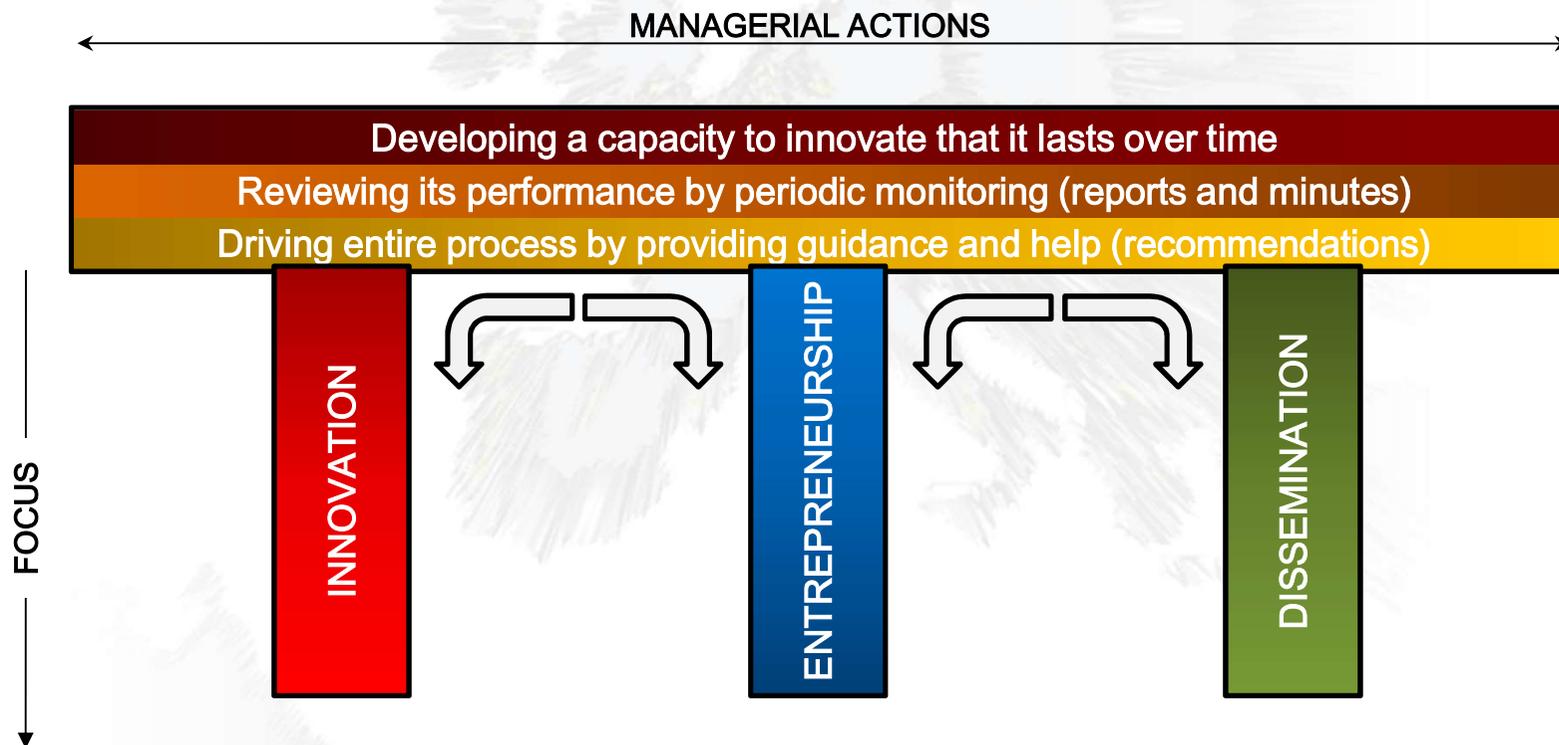
## INDEX

- Mission



## Mission

- ❑ The Innovation Committee advises the Steering Committee in conjunction with the Advisory Board in regard to the dissemination of innovations



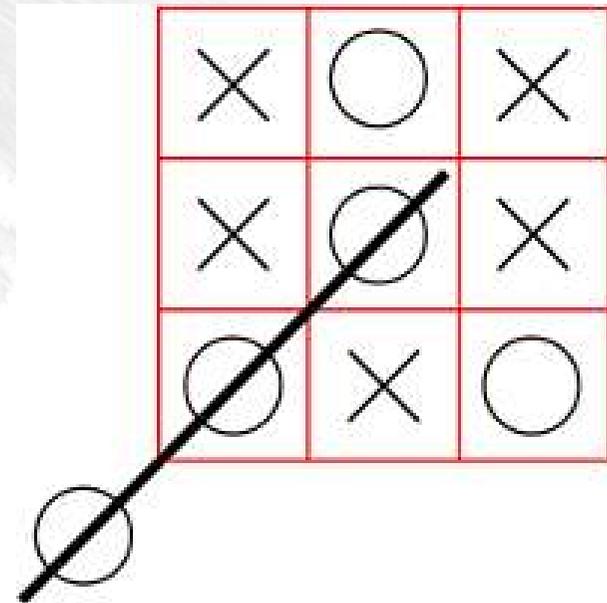
1<sup>st</sup> Workshop of the COST Action TU1402, Technical University of Denmark, 04<sup>th</sup> of May, 2015



## INDEX

- Mission
- Innovation

Think outside of the box (:



## Innovation pillar

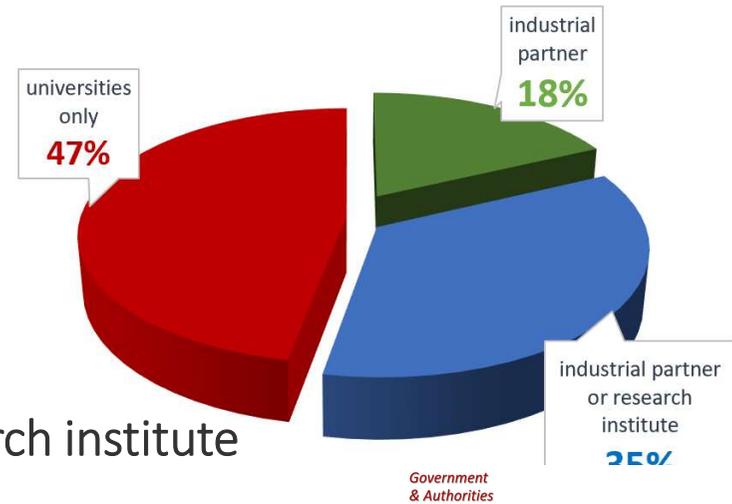
Activities	Possible approaches
Inspire teams to innovate	<ul style="list-style-type: none"> <li>By presenting <b>successful cases related to SHM applications</b> in infrastructures and having a potential link with the quantification of the Value of Information (Vol)</li> <li>By presenting exciting cases to inspire people</li> </ul>
Raise innovating culture	<ul style="list-style-type: none"> <li>By presenting <b>challenges related to case studies</b>, i.e. what can be done to improve the usefulness of SHM in those cases</li> <li>By arranging <b>brainstorming sessions</b>, during workshops, focussing on ideas/approaches that might lead to solutions for those real cases</li> </ul>
Get industry feedback	<ul style="list-style-type: none"> <li>By <b>bringing the infrastructure managers experience</b> into the problem formulation.</li> <li>By <b>highlighting their perspective about the problems they are currently facing</b></li> <li>How they see SHM information as a solution (e.g. questionnaires)</li> </ul>
Focus on industry needs	<ul style="list-style-type: none"> <li>By <b>formulating an industrial problem</b> based on SHM</li> <li>Applied research</li> </ul>
Competitions	<ul style="list-style-type: none"> <li>By <b>promoting prizes</b> for the best idea that is able to answer properly a specific problem (e.g. best paper, best short scientific mission, best oral presentation)</li> </ul>
Promote activities	<ul style="list-style-type: none"> <li>Brainstorming sessions, <b>Innovation days</b>, patent seminars, others</li> </ul>

1<sup>st</sup> Workshop of the COST Action TU1402, Technical University of Denmark, 04<sup>th</sup> of May, 2015



## Innovation pillar

- **STSM** towards industry sector
  - Involving an industrial partner
  - Involving an industrial partner or a research institute
- Call 1: “TU1402 IIDs: **Project Workshops**”
  - Announcement on the 07th September, 2018
  - Reminders on: 19th October, 2018 and 11th February, 2019
- An information value **guide for infrastructure design and operation executives**
  - First official presentation in the special session “Why invest in SHM of Civil Engineering infrastructures” and is part of the WG5 - Guidelines



**(CALL STILLS OPENED)**

Manu & Eng

Academics & Researchers

Technology validated in lab (TRL 4)

Technology relevant (T)

COST Action TU 1402  
Quantifying the Value of Structural Health Monitoring

**Quantifying the Value of Structural Health Information for Decision Support**

GUIDE FOR OPERATORS

Planned investigations → Results investigations → Risk and mitigation actions → Activity performance → Consequences

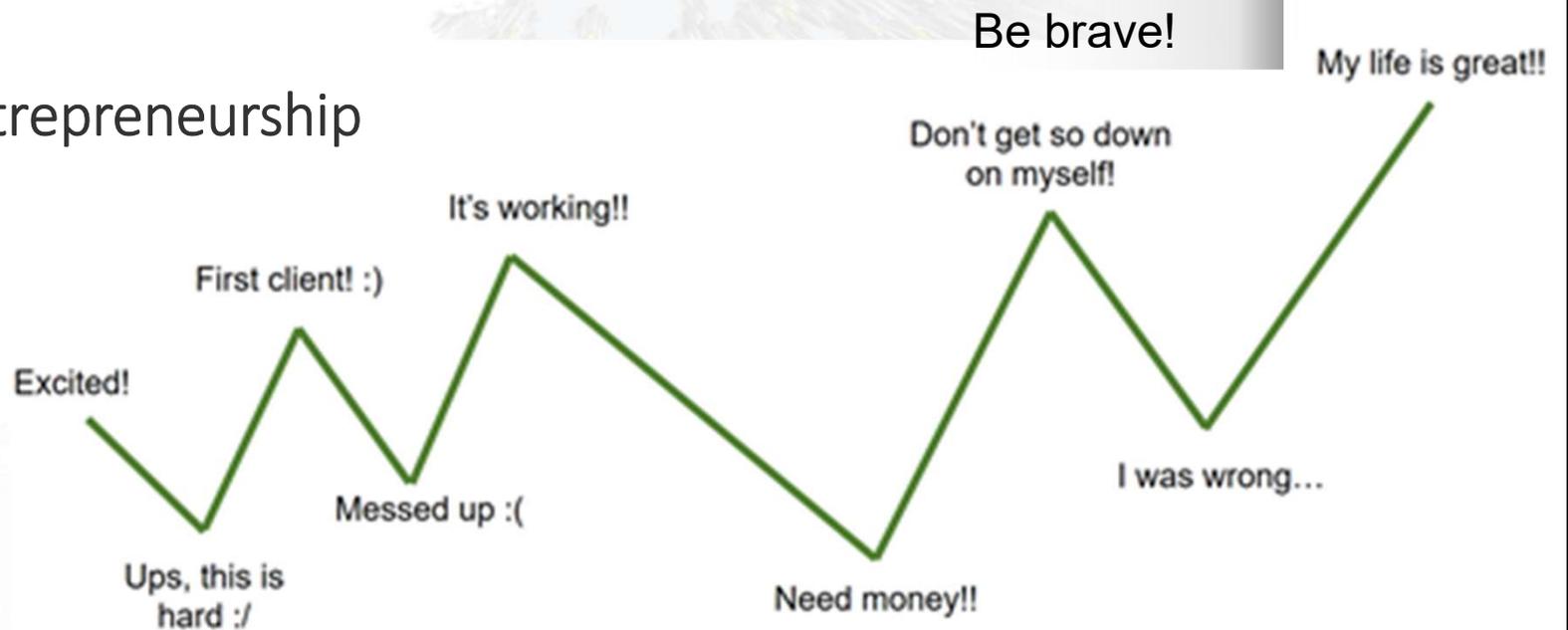
Authors  
Helder Sousa <sup>1</sup>  
Sebastian Thöns <sup>2</sup>  
Helmut Wenzel <sup>3</sup>

<sup>1</sup> HS Consulting / BRISA Group, Portugal  
<sup>2</sup> DTU, Denmark / BAM, Germany  
<sup>3</sup> VCE Holding GmbH, Austria



## INDEX

- Mission
- Innovation
- Entrepreneurship



## Entrepreneurship pillar

Activities	Possible approaches
Entrepreneurship lecture series	<ul style="list-style-type: none"> <li>• By setting an <b>international panel of entrepreneurs</b>.</li> <li>• By giving the opportunity to discuss challenges and solutions to creating an <b>entrepreneur-friendly business culture</b>.</li> </ul>
Entrepreneur fair	<ul style="list-style-type: none"> <li>• By <b>involving entrepreneurs, investors and innovators</b> to present their work.</li> </ul>
<i>Chasing</i> markets	<ul style="list-style-type: none"> <li>• By analysing the <b>potential of the best ideas</b> previously presented (innovation pillar) in different markets (e.g. buildings, bridges, tunnels, ports, wind turbines and offshore structures).</li> </ul>
Create value	<ul style="list-style-type: none"> <li>• By encouraging <b>short scientific missions to be hosted in the industrial partners</b> and to focus on specific problems they are currently analysing.</li> <li>• By exploring <b>potential ventures new business opportunities</b>.</li> </ul>
Projects	<ul style="list-style-type: none"> <li>• By using the most suitable formulated problems as input in the preparation of <b>proposals for funding</b> (e.g. H2020).</li> <li>• By <b>exploring different possibilities</b> (e.g. private funding, public funding, national/international).</li> </ul>

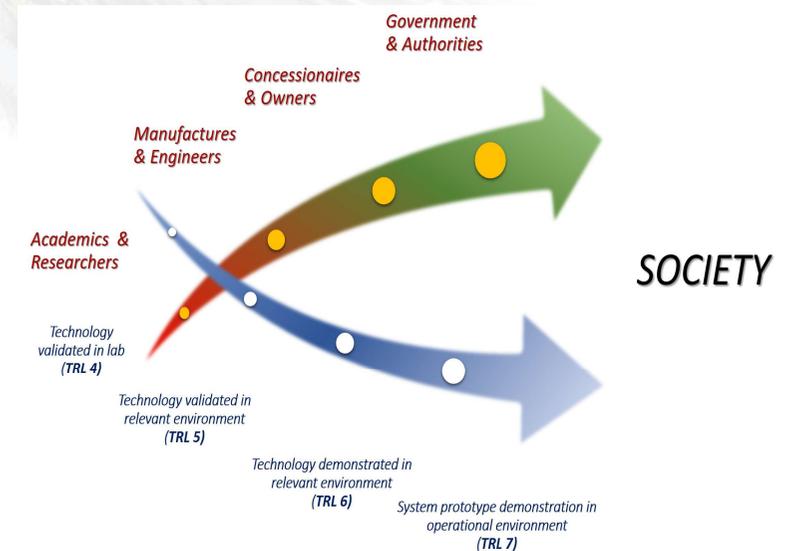
1st Workshop of the COST Action TU1402, Technical University of Denmark, 04th of May, 2015



## Entrepreneurship pillar

- **TU1402 Industry Innovation Days**, 18<sup>th</sup> – 19<sup>th</sup> April 2018, Lisbon, Portugal
- Call 2: “TU1402 IIDs: **Diffusion Events**”
  - Announcement on the 07<sup>th</sup> September, 2018
  - Reminders on: 19<sup>th</sup> October, 2018 and 11<sup>th</sup> February, 2019

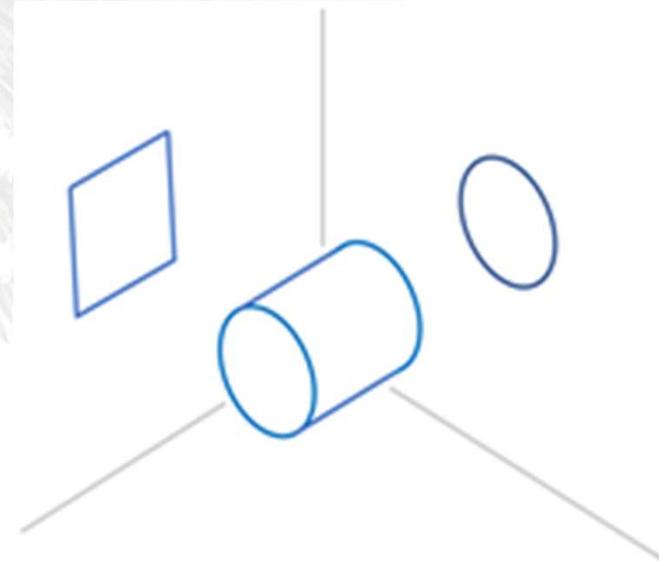
**CALL STILLS OPENED**



## INDEX

- Mission
- Innovation
- Entrepreneurship
- Dissemination

Let's enhance people's perspectives?



## Dissemination pillar

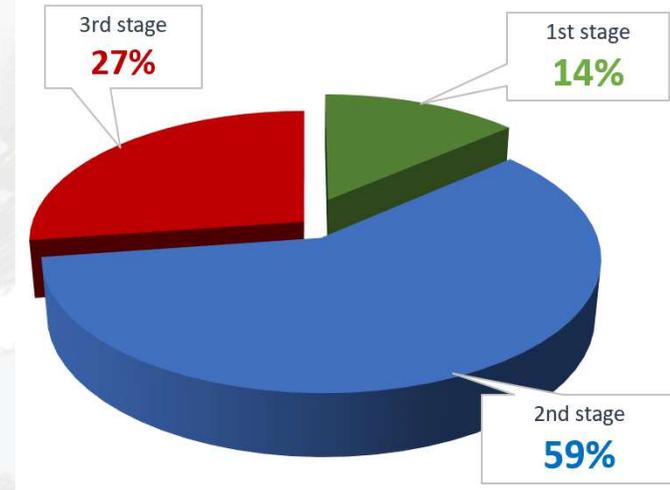
Activities	Possible approaches
Disseminate the knowledge	<ul style="list-style-type: none"> <li>• By <b>sharing the outcomes</b> with the scientific community (e.g. guidelines, journal and conference papers) and the general public, including non-specialist audience.</li> <li>• Some <b>potential channels</b> for the dissemination targeting non-specialist audience:                             <ul style="list-style-type: none"> <li>Website,</li> <li>Wikipedia,</li> <li>TED,</li> <li>Linkedin,</li> <li>Television.</li> </ul> </li> </ul>
Monitor knowledge use	<ul style="list-style-type: none"> <li>• By <b>assessing the degree of the dissemination</b> based on quantitative parameters (e.g. citations/downloads of journal/conference papers, number of views/downloads of presentations).</li> <li>• By following the different visitor profile (e.g. private companies, public sector, students)</li> </ul>
Evaluate impact	<ul style="list-style-type: none"> <li>• By <b>evaluating how the action has changed paradigms</b> in different environments (e.g. lecturing in the university, new products in the market, job creation)</li> </ul>

1st Workshop of the COST Action TU1402, Technical University of Denmark, 04th of May, 2015



## Dissemination pillar

- Special Session **“Why invest in SHM of Civil Engineering infrastructures?”**
  - IABSE, 19<sup>th</sup> – 21<sup>st</sup> September, Nantes, 2018
  - IABSE, 27<sup>th</sup> – 29<sup>th</sup>, Guimarães, 2019



Information – fr

- From the mat

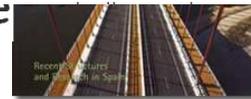


Why invest in SHM of Civil Engineering infrastructures?

### Objectives:

Structural Health Monitoring (SHM) has been a subject of major international research in Civil Engineering structures mainly during the last 20 years. While in the beginning, SHM mainly focused on sensor developments, nowadays practical implications regarding the acquisition, collecting and processing of data are being addressed. Indeed, SHM systems have been evolving along the two last decades and have been steadily implemented as a complement to visual inspections.

Nevertheless, the decision to invest on a SHM system should be set on evidence that a payback is given to the owners/authorities and/or to society in terms of reduced maintenance costs and/or increased structural safety. Indeed, the understanding of the value of SHM, particularly before its implementation, remains an open issue. A novel utilization of applied decision analysis on how to assess the value of SHM is being addressed in the COST Action TU1402 – Quantifying the Value of SHM. This

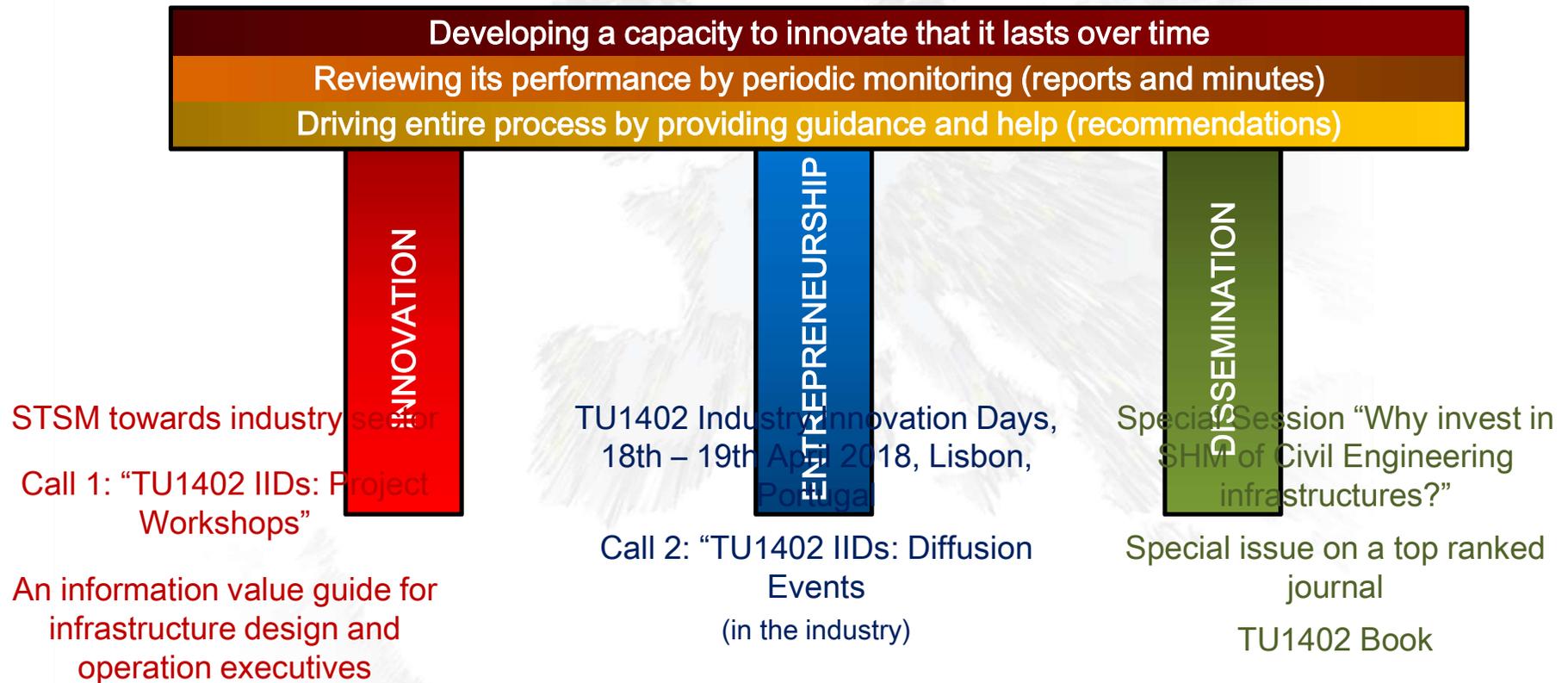


## INDEX

- Mission
- Innovation
- Entrepreneurship
- Dissemination
- Remarks for beyond TU1402 timeframe



## Remarks for beyond TU1402 timeframe



## Remarks for beyond TU1402 timeframe

- TU1402 can be seen as a good example to be disseminated in the future on how to implement innovation (e.g. workshops in industrial partner, STSM devoted to industry needs, special sessions and special issues on in-situ case studies)
- Capitalize the STSM in research institutes and industrial partners to create new and cutting-edge job opportunities
- Push these 4 years of collaborative work into a reference book in the literature towards educational purpose
- Although more work is needed, there is high potential in the mid-/long-run to see effective impact in the industry sector, mainly in more proactive and rational asset management protocols



Thank you for your attention

<http://www.cost-tu1402.eu/>

