

TU1402 WG5: Standardisation

Value of Structural Health Information for Decision Support

1. **Guide for Operators:** What should the infrastructure operators and owners ask for?
 - Optimisation of the structural information and integrity management before implementation
 - Why: You can save money, reduce risks and facilitate industry 4.0!
2. **Guide for Practicing Engineers:** How can an engineer perform and support the quantification of the Value of SHI?
 - Engineering and application information
 - Real case study for implementation
3. **Guide for Scientists:** How to enter research on value of SHI? How to apply decision analyses to my research field?
 - Description and ready to use formulation of a framework and approaches for various structural health information
 - Starting set of literature





COST Action
TU I402

Quantifying the Value of Structural Health Monitoring



Quantifying the Value of Structural Health Information for Decision Support - Guide for operators -

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Final TU1402 Conference

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

Why the need of a “guide for operators”?

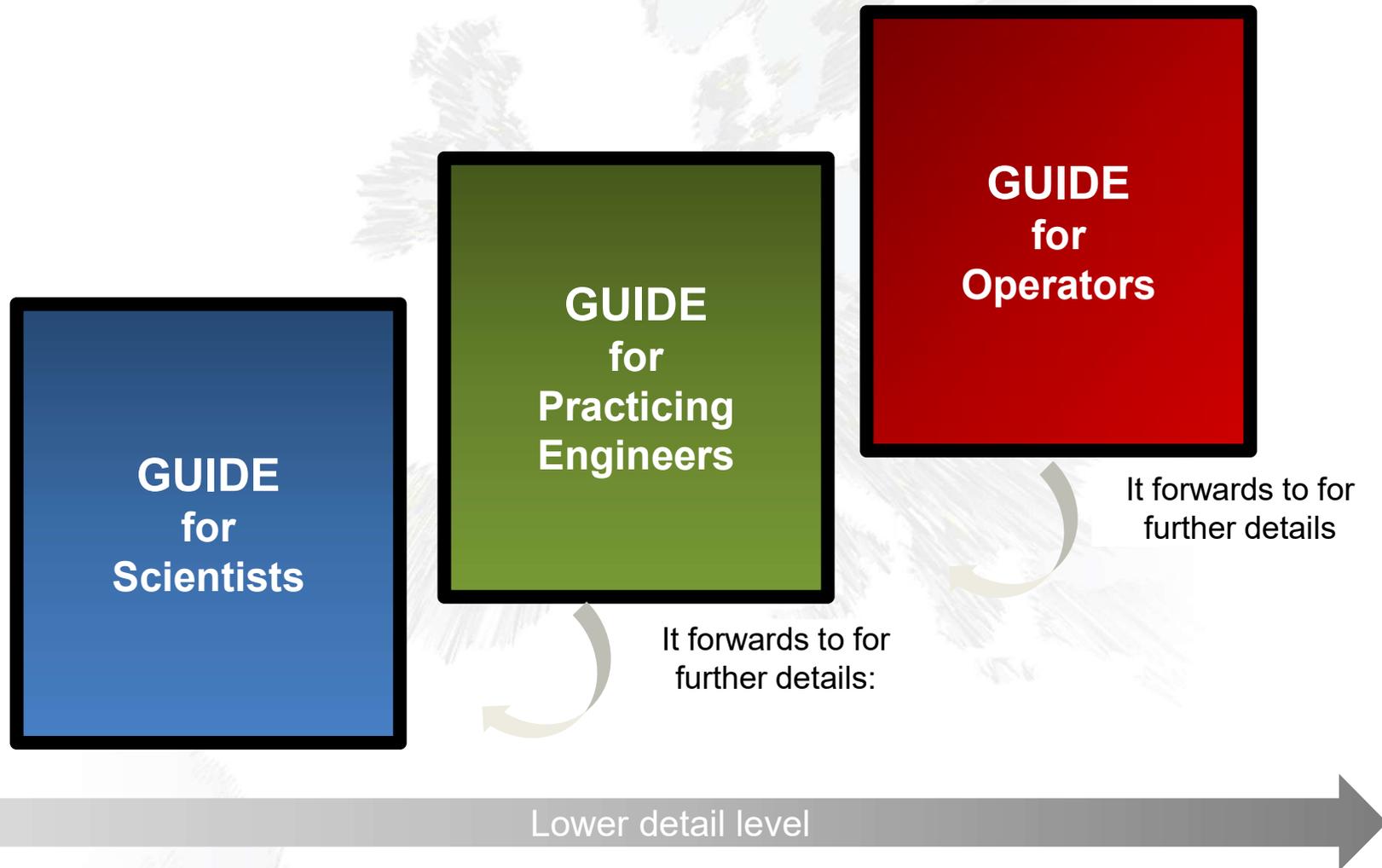
- We are dealing (i.e. doing research) on top of real structures as well
- The real structures are under the responsibility of decision-makers
- These decision makers are often non-experts or even from other fields rather from Engineering (multi-disciplinary panels)
- Hence, we, as experts, have the obligation to push this knowledge into this type of audience (at the end of the day, these are the people that sign the cheques)



GUIDE
for
operators



How it is framed in the context of the WG5 Guidelines?



The back-bone of the “guide for operators”

- The document is supported by factual information and evidence, mainly:
 - Factsheets (preliminary work at the TU1402 level)
 - Conference papers (special session “Why invest in SHM?” as further step on the factsheets)
 - Journal papers (special issue on a top-ranked journal as further step from conference papers)



Mainly from the case studies' portfolio (WG4)
(because the targeted audience are the decision-makers ⇨ language more accessible)



The structure of the “guide for operators”

- PART 1: Recommendations towards cost-benefit efficiency in asset management (up to 5 pages)
 - Aims to communicate efficiently with decision-makers (including governmental authorities) and supported by references to “all” work done in our COST Action TU1402.
- PART 2: Request form towards the governmental authorities (up to 2 pages)
 - Aims to help decision-makers to show how their investment in SHM on their structures (by means of a form) is leading to better decisions supported by the case studies’ portfolio of the COST TU1402



The vocabulary must be tuned to targeted audience
(e.g. minimum use of jargon/technical terms, use of short sentences/paragraphs, direct speech, diagrams/flowcharts to offer a holistic view, illustrative example)



The structure of the “guide for operators”

- PART 1: Recommendations towards cost-benefit efficiency in asset management
 - Page 1: Scope, Problem statement & Objective
 - What (from the decision maker point of view)
 - Why (from the decision maker and “our” point of view)
 - How (from “our” point of view)
 - Page 2: Recommendation
 - Page 3: Portfolio of structures
 - Page 4: Cost-benefit evidence
 - Page 5: Path forward



The structure of the “guide for operators”

- PART 2: “Request form” (better term) towards the governmental authorities
 - Evidence on the benefit of the utilization of SHM-based strategies
 - SHM-based strategy
 - Effective impact towards better serviceability & safety
 - Action(s) required
 - Supporting document(s)



First publication: fundamental idea & concept (on IABSE, Guimarães, 2019)



IABSE Symposium 2019 Guimarães
Towards a Resilient Built Environment - Risk and Asset Management
March 27-29, 2019, Guimarães, Portugal



An information value guide for infrastructure design and operation executives – fundamental idea & concept

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Abstract

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. 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.



Thank you for your attention

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

