Final TU1402 Conference, BAM Berlin, Germany, February 18 and 19, 2019

COST Action
TU 1402

Quantifying the Value of Structural Health Monitoring

WG6
DISSEMINATION

Maria Pina Limongelli

STRATEGY OF DISSEMINATION

What?

Who?

How?

What?

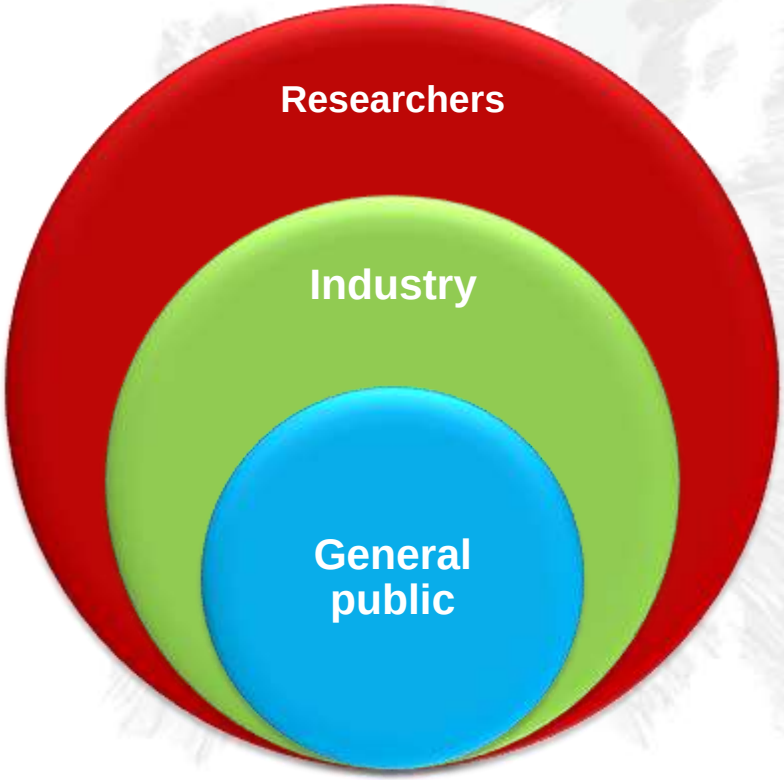
COST Action are **research and networking projects** with focus on the creation of a research network through the cooperation and joint research efforts on a common subject.

research outcomes

networking activity

Who?

Communication has been differentiated targeting 3 different stakeholders groups:



Language and tools used to convey the message have to be tailored to the recipient. An increasing level of simplification is needed going from Researchers to Industry to General public.

What?

research outcomes

networking activity

How?

Message to convey for **OUTCOMES**:

Why the VoI of SHM is important for :

RESEARCHERS

INDUSTRY

GENERAL PUBLIC

How for General public

why VoI4SHM is important for society

Website of the action

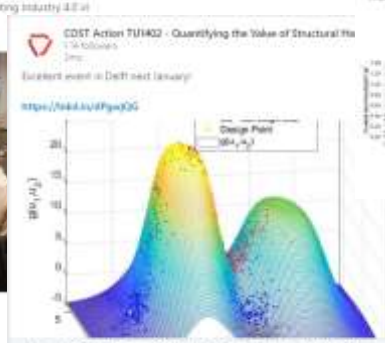
Trailer (3 minutes) + **Video** (10 minutes)

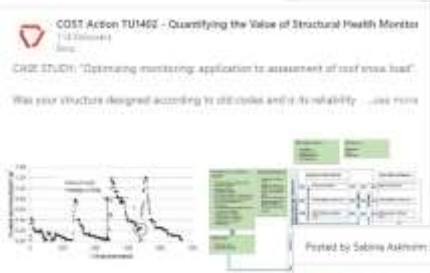
Social media

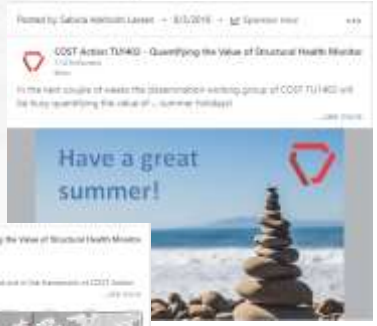
LinkedIn, Facebook, Youtube

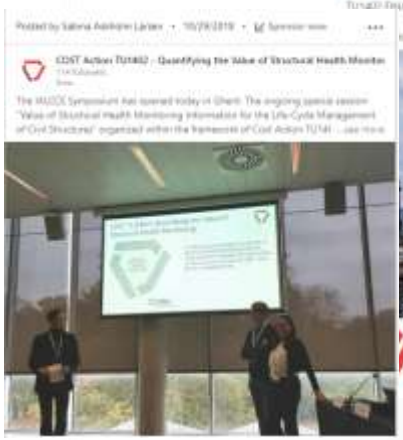
easyVoI

LinkedIn and Facebook posts









TU1402 FINAL CONFERENCE
18-19 February 2019 – Berlin, Germany

LinkedIN and Facebook posts

All Posts Published

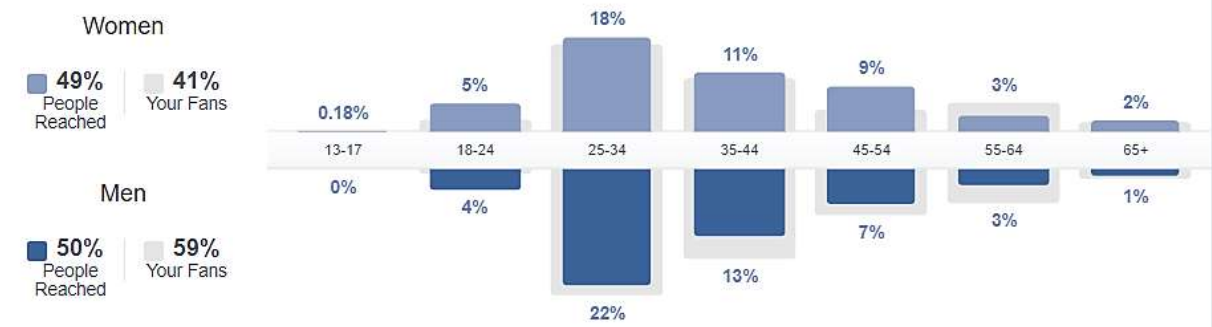
Reach: Organic / Paid | Post Clicks | Reactions, Comn

Published	Post	Type	Targeting	Reach	Engagement
10/11/2018 1:20 PM	TU1402 at IALCCE 2018 in Ghent! How can the			144	22 13
10/04/2018 1:10 PM	TU1402 FINAL WORKSHOP COMING SOON! In two weeks,			128	24 9
10/02/2018 3:31 PM	The TU1402 Training School 2018 in Trogir, Croatia, focused			233	123 17
09/27/2018 5:28 PM	Live from the second TU1402 Training school, Trogir, Croatia.			128	19 8
09/27/2018 12:38 PM	Live from the second TU1402 Training school, Trogir, Croatia.			136	25 8
09/27/2018 9:44 AM	Live from the second TU1402 Training school, Trogir, Croatia.			241	58 18
09/21/2018 4:43 PM	COST Action TU1402 explained in less than 10 minutes!			218	93 39
09/14/2018 1:11 PM	Service life extension of offshore wind parks A service life			100	15 9
09/07/2018 1:15 PM	TU1402 TRAINING SCHOOL COMING SOON The Training			89	18 8
08/31/2018 12:15 PM	CASE STUDY: "Structural health monitoring to understand			106	16 9
08/24/2018 1:45 PM	Why invest in SHM of Civil Engineering infrastructures?			233	14 10
08/03/2018 1:00 PM	In the next couple of weeks, the Dissemination working group of			105	12 7
07/27/2018 1:35 PM	SAVE THE DATE! The next workshop of COST Action			108	21 9
07/20/2018 1:30 PM	RESEARCH OPPORTUNITY! If you are willing to embark on a			126	24 9
07/13/2018 1:20 PM	CASE-STUDY: "The value of information for the seismic			247	45 15
07/12/2018 1:29 PM	Today in Melbourne we greatly enjoyed the IABMAS 2018			130	50 11
07/06/2018 1:20 PM	Still undecided whether to apply or not for the 2nd Training			125	18 10
07/03/2018 1:17 PM	GREAT NEWS! The COST Association approved the			254	30 20
06/29/2018 1:15 PM	CASE-STUDY: "The Value of SHM applied to real heat			106	4 9
06/22/2018 1:30 PM	TRAINING SCHOOL ANNOUNCEMENT Do you want			460	64 19
06/15/2018 5:00 PM	The fib (International Federation for Structural Concrete) Action			103	26 8
06/15/2018 1:20 PM	SPECIAL SESSION ANNOUNCEMENT COST			99	22 10
06/08/2018 1:20 PM	TU1402 GUIDELINES IN PROGRESS! The lessons learnt			76	10 6
06/01/2018 1:15 PM	CASE STUDY: "Structural health monitoring for a multi-			93	11 4
05/25/2018 1:20 PM	SPECIAL SESSION ANNOUNCEMENT COST			90	15 8
05/18/2018 1:00 PM	Researchers on the move in 2018! Another Short Term			99	13 6
05/11/2018 6:17 PM	Researchers on the move in 2018! The number of COST			640	77 22
05/04/2018 2:05 PM	CASE STUDY: "Optimizing monitoring: application to			136	16 3

Facebook posts (statistics)

Your Fans | Your Followers | **People Reached** | People Engaged

The number of people who saw any content by your Page or about your Page, grouped by age and gender.



Country	People Reached	City	People Reached	Language	People Reached
Italy	213	Milan, Lombardia, Italy	49	Italian	220
Mexico	56	Bari, Puglia, Italy	33	English (US)	97
Denmark	48	Zagreb, Croatia	24	Spanish	52
Croatia	35	Copenhagen, Capital R...	21	English (UK)	51
France	24	Toluca, State of Mexico...	19	French (France)	20
Portugal	22	Aalborg, North Denmar...	19	Croatian	19
Germany	20	Pescara, Abruzzo, Italy	13	Portuguese (Portugal)	16
United Kingdom	16	Guimarães, Braga Dist...	12	Spanish (Spain)	12
Norway	13	Rome, Lazio, Italy	11	German	10

easyVoI

EasyVoI: Ingredients

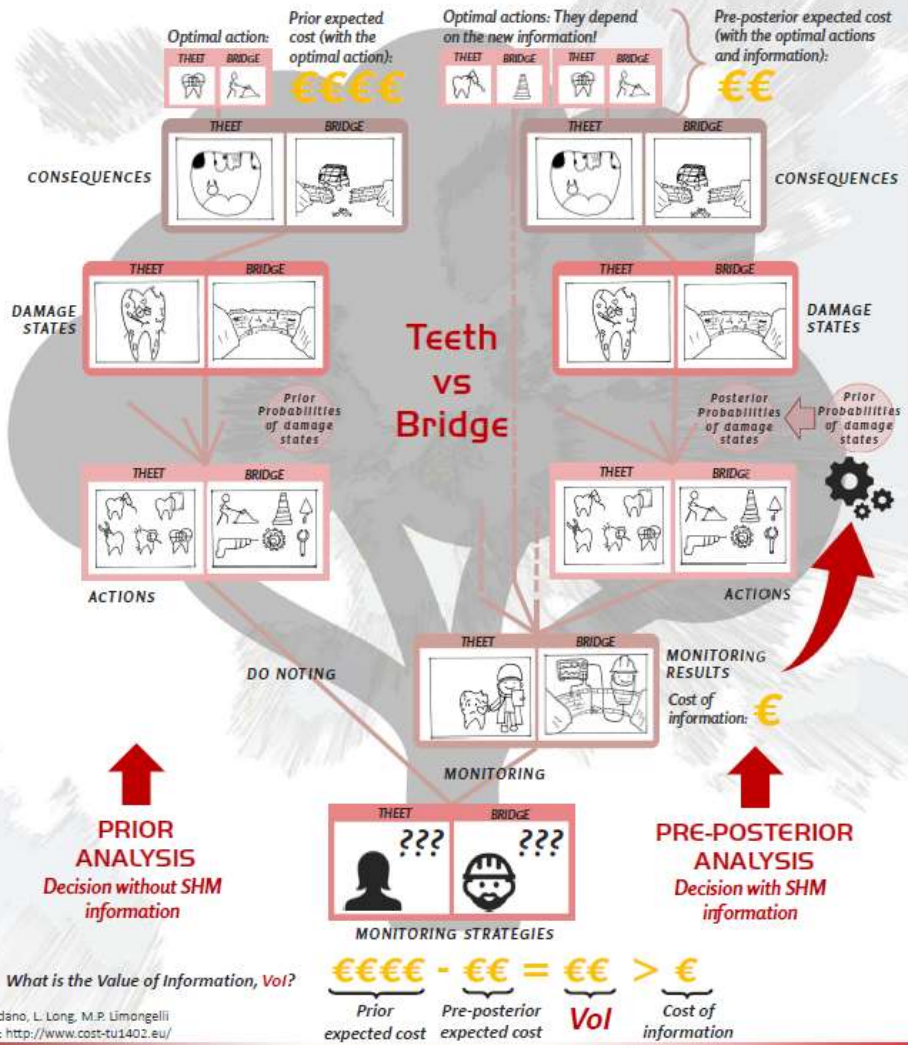
Teeth vs Bridge

	Teeth	Bridge
DECISION MAKER	You!!! Objective: Get well soon with least efforts!	Bridge operator Objective: Safe and functional structure with the least expected costs
EXPOSURE	○ Every day eating ○ Eating too much sugar ○ Breaking due to a fall	○ Operation (traffic), Natural actions (temperature, wind...) ○ Aggressive environment, climate change ○ Extreme events
DAMAGE	○ Stains, small cracks, cavities ○ Gums inflamed ○ Wear and tear	○ Corrosion, small cracking from loading ○ Deflections, excessive vibration ○ Fatigue
ACTIONS	○ Brush teeth regularly ○ Go to the dentist for a check up ○ Do x-rays of teeth	○ Preventive or corrective maintenance ○ Replace part or the entire bridge ○ Do nothing
MONITORING	○ Our nervous system (for free) ○ Go to the dentist for a check up ○ Do x-rays of teeth	○ Visual inspection ○ Non-Destructive Testing ○ Day Monitoring
CONSEQUENCES	○ You don't look so good... ○ You are in pain ○ You cannot eat properly ○ You cannot eat at all ○ Your teeth fall out	○ Unsafe appearance... ○ Excessive deformation ○ Traffic restriction ○ The bridge has to close ○ The bridge collapses!

L. Long, P.F. Giordano, E. Bismut, M.P. Limongelli — Website: http://www.cost-tu1402.eu/

EasyVoI: Decision tree

Have you ever thought about the connections between our teeth care and bridge management?



P.F. Giordano, L. Long, M.P. Limongelli
Website: http://www.cost-tu1402.eu/

How for Industry

why VoI4SHM is important for professionals

Brochure

Ppt on the Action

Poster of the Action

Page dedicated to Innovation on the website (HS)

Special sessions at conferences

Support to the Innovative Industry day in Lisbon

Glossary

Posters of case studies on the website

work done in strict collaboration with the Innovation Committeee

Brochure


SHM
... just value it.
Grant Holder:
DTU
VALUE OF STRUCTURAL HEALTH MONITORING
The COST Action TU1402 is unique world-wide
TU1402: a COST for a VALUE

Poster and Presentation of the Action

COST Action
TU 1402

Quantifying the Value of Structural Health Monitoring

The project

TU1402 strives to enhance the benefit of Structural Health Monitoring (SHM) by novel utilization of applied decision analysis on how to assess the value of SHM - even before it is implemented.
We want to improve the decision basis for design, operation and life-cycle integrity management of structures and facilitates more cost efficient, reliable and safe strategies for maintaining and developing the built environment to the benefit of society by utilisation of SHM.

WG1: Theoretical Framework

Leader:
Michael Faber
Aalborg University, Denmark

Co-leader:
Dimiti Val
Harriot-Watt University, UK

WG2: SHM Strategies and Structural Performance

Leader:
Marios Chryssanthopoulos
University of Surrey, UK

Co-Leaders:
Geert Lombaert
Katholieke Universiteit Leuven, Belgium

Michael Döhler
Inria, France

WG3: Methods and Tools

Leader:
Daniel Straub
Technical University of Munich, Germany

Co-leader:
Eleni Chatzi
ETH Zurich, Switzerland

WG4: Case Studies Portfolio

Leader:
Jochen Köhler
Norwegian University of Science and Technology, Norway

Co-leader:
Helmut Wenzel
Vienna Consulting Engineers ZT GmbH, Austria

WG5: Development of Guidelines

Leader: John Dalsgaard Sørensen
Aalborg University, Denmark

WG6: Dissemination

Leader: Maria Pina Limongelli
Politecnico di Milano, Italy

STSM - Short Term Scientific Mission

Leader: Alan O'Connor
Trinity College Dublin, Inland

Innovation Committee

Leader: Helder Sousa
BRISA Group, Portugal

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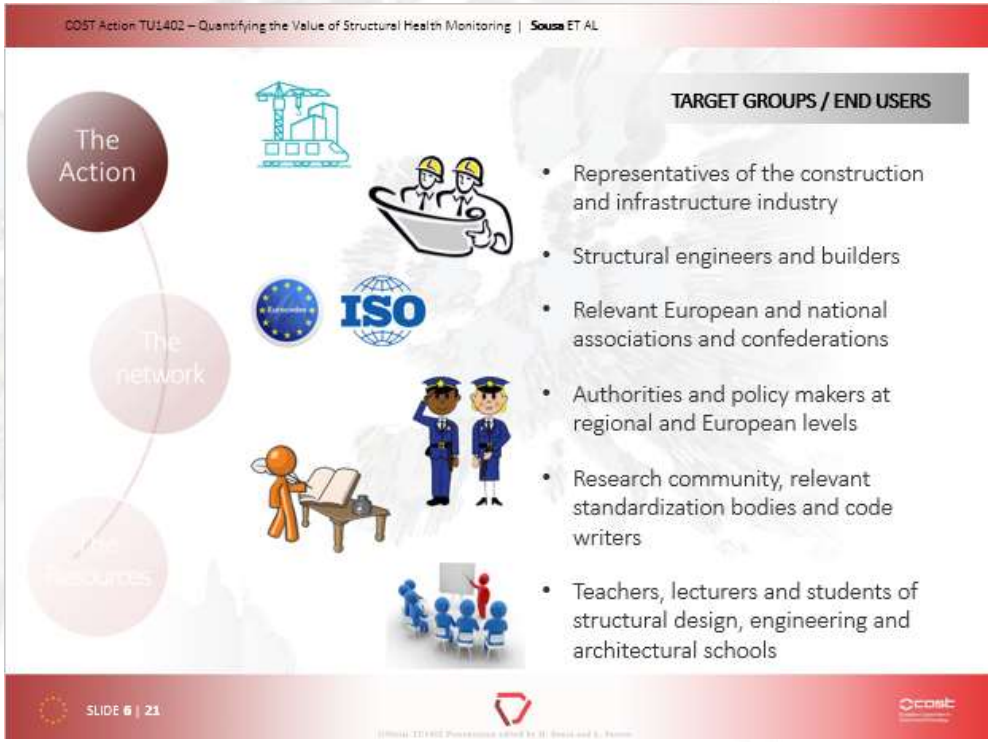

11 Special Sessions at Conferences

"IWSHM 2019 - Assessment of the Value of Structural Health Information" at the 12th International Workshop on Structural Health Monitoring, Stanford, USA, 10 - 12 September 2019.
Session organizers: Sebastian Thöns, Michael D. Todd, Maria Pina Limongelli.

"ICASP13 Mini Symposium - Value of Information and Decision Analyses in Civil Engineering" at the 13th International Conference on Applications of Statistics and Probability in Civil Engineering, Seoul National University, Seoul, South Korea from 26 - 30 May 2019.
Session organizers: Sebastian Thöns, Matteo Pozzi, Daniel Straub, Michael H. Faber.

"IABSE symposium 2019 - Why invest in SHM of Civil Engineering infrastructures?" International Association for Bridge and Structural Engineering, Guimaraes, Portugal, 27 - 29 March 2019.
Session organizers: Helder Sousa, Jochen Kohler, Maria Pina Limongelli, Sebastian Thöns, Ana Mandic, Wim Courage

"IALCCE Special Session 10 - Value of Structural Health Monitoring Information for the Life-Cycle Management of Civil Structures" at The Sixth International Symposium on Life-Cycle Civil Engineering, Ghent, Belgium from 28-31 October 2018.
Session organizers: Sebastian Thöns, Geert Lombaert, Maria Pina Limongelli.

Special Session on "Case studies and theoretical developments in quantifying the value of SHM" at the 9th European Workshop on SHM, Manchester, UK, July 10-13, 2018.
Session organizers: Piotr Omenzetter, Sebastian Thöns, Jochen Köhler.

"IABMAS Special Session 21 - Value of Information of SHM for Life-Cycle Management of Bridges" at the 9th International Conference on Bridge Maintenance, Safety and Management in Melbourne, Australia from 9-13 July 2018.
Session organizers: Sebastian Thöns, Mark Stewart, Dagang Lu, Alan O'Connor.

Special session "Assessment of the Value of SHM Information" at 11th International Workshop on Structural Health Monitoring from 12. to 14. September 2017 in Stanford, California, USA.
Session organizers: Sebastian Thöns, Michael D. Todd, Maria Pina Limongelli.

12th International Conference on Structural Safety & Reliability (ICOSSAR 2017) with a mini symposium on "Value of information in structural health monitoring", 6th to 10th August 2017 in Vienna, Austria
http://www.icossar2017.org/
Session organizers: Sebastian Thöns, Michael H. Faber, Daniel Straub, Matteo Pozzi.

Reliability, Safety and Value of Information "Materials, Systems and Structures in Civil Engineering 2016 with a mini symposium on" 21. to 24. August 2016 in Kongens Lyngby, Denmark. http://www.conferencemanager.dk /MSSCE2016
Session organizers: Michael H. Faber, John D. Sørensen, S. Thöns, Ton Vrouwenvelder.

8th European Workshop on Structural Health Monitoring (EWSHM 2016) with a special session on "Health monitoring and structural performance assessment" related to Working Groups 2 and 3, 5th to 8th July 2016 in Bilbao, Spain
http://www.ndt.net/events/EWSHM2016/app/content/toc.php?eventID=34&present=oral
Session organizers: Michael Döhler, Geert Lombaert, Eleni Chatzi, Sebastian Thöns.

12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12) with a mini symposium on "Value of Information in Civil Engineering", Vancouver, Canada, July 12-15, 2015
http://icasp12.ubc.ca
Session organizers: Michael H. Faber, Marc Maes, Jochen Köhler, Sebastian Thöns.

Glossary

COST TU1402: Quantifying the Value of Structural Health Monitoring

Fact Sheet

GLOSSARY OF TU1402

Acoustic emission: non destructive passive method of monitoring which makes use of the elastic energy released when a material undergoes a change at the atomic scale, such as plastic deformation or cracking. Piezoelectric sensors attached to the surface of the structure detect the surface waves caused by these events and produce a voltage output. Signals which reach any sensor with amplitude greater than a user defined threshold are recorded and subsequently stored on an AE acquisition system. (Mc Rory et al.)

Adverse state: State in which a performance criterion is not met.

Asset management: broadly defined, refers to any system that monitors and maintains things of value to an entity or group. It may apply to both tangible assets such as buildings and to intangible concepts such as intellectual property and goodwill. Asset management is a systematic process of operating, maintaining, upgrading, and disposing of assets cost-effectively. Alternative views of asset management in the engineering environment are: The practice of managing assets to achieve the greatest return (particularly useful for productive assets such as plant and equipment), and the process of monitoring and maintaining facilities systems, with the objective of providing the best possible service to users (appropriate for public infrastructure assets). (IRIS)

Availability: The probability that a component or system is functioning at a time t.

Bayesian decision theory: is based upon Utility theory (Von Neumann & Morgenstern) and is formulated in reference (Raiffa&Schlaifer 1961).It represents a probabilistic framework to quantify the utility and decision attributes (such as costs, benefits, consequences for human safety). It is differentiated between a prior, posterior, pre-posterior and a Value of information analysis.

Bayesian updating: takes basis in the Bayes theorem

Benefit: A benefit constitutes a decision attribute associated with a gain.

Capacity: ability of a member or a component, or a cross-section of a structure to action without mechanical failure e.g. bending resistance, buckling resistance, available ductility.. (*IRIS-CEN modified*).

Condition assessment: the process of reviewing information gathered about the current condition of structure or its components, its service environment and general circumstances, allowing a prognosis to be made of current and future performance, taking account of active deterioration processes and actual damage and, if appropriate, predictions of potential future deterioration processes and future damage.

Condition monitoring: damage identification in rotating and reciprocating machinery (Farrar&Worden, 2007).

X-ray technology: non destructive inspection method based on the use of X-rays to detect variations of density in the material which is a function of the amount of radiation that passes through.

Contact information

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References

CEN - Ageing Behaviour of Structural Components for Integrated Lifetime Assessment and Asset Management (VCE). Contact: veit-egerer@vce.at

Farrar, C.R. and Lieven, N.A.J., (2007). Damage prognosis: the future of structural health monitoring, Philosophical Transactions of the Royal Society A - Mathematical, Physical and Engineering Sciences, 365, 623—632.

Farrar, C.R. and Worden, K.,(2007) An introduction to structural health monitoring, Philosophical Transactions of the Royal Society A - Mathematical, Physical and Engineering Sciences 365, 303—315.

IAEA Safety Glossary. Contact: Klaus.Kerkhof@mpa.uni-stuttgart.de

IRIS - GLOSSARY OF RISK RELATED TERMS (AUTH). Contact: wenzel@vce.at

JCSS. Joint Committee on Structural Safety (2008). Risk Assessment in Engineering. Principles, System Representation & Risk Criteria.

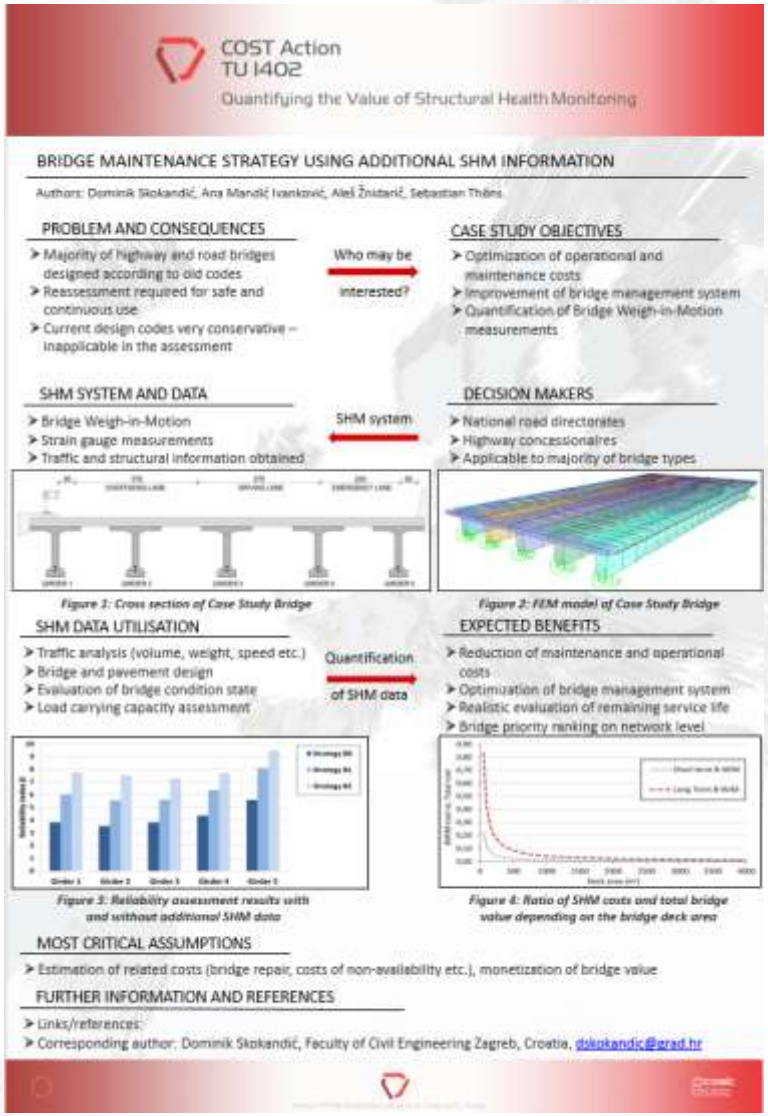
Mc Rory et al. (2015). Damage classification in carbon fiber composites using acoustic emission: A comparison of three techniques. Composites: Part B 68 424–430.

Raiffa h., Schlaifer R. (1961). Applied statistical decision theory, Wiley classics library, Originally published: Boston : Division of Research, Graduate School of Business Administration, Harvard University, 1961. ed., Wiley (2000), New York, 1961.

SAMCO MONITORING GLOSSARY. STRUCTURAL DYNAMICS FOR VBHM OF BRIDGES (VCE). Contact: wenzel@vce.at

Structural health monitoring glossary (IBS-Glisic). Contact: bglisic@Princeton.EDU

Posters of the case studies in WG4 webpage



COST Action
TU1402
Quantifying the Value of Structural Health Monitoring

BRIDGE MAINTENANCE STRATEGY USING ADDITIONAL SHM INFORMATION

Authors: Dominik Skokandić, Ana Mandić Ivanković, Aleš Žnidarič, Sebastian Thöns

PROBLEM AND CONSEQUENCES

- Majority of highway and road bridges designed according to old codes
- Reassessment required for safe and continuous use
- Current design codes very conservative – inapplicable in the assessment

Who may be interested?

CASE STUDY OBJECTIVES

- Optimization of operational and maintenance costs
- Improvement of bridge management system
- Quantification of Bridge Weigh-in-Motion measurements

SHM SYSTEM AND DATA

- Bridge Weigh-in-Motion
- Strain gauge measurements
- Traffic and structural information obtained

SHM system

DECISION MAKERS

- National road directorates
- Highway concessionaires
- Applicable to majority of bridge types

Figure 1: Cross section of Case Study Bridge

Figure 2: FEM model of Case Study Bridge

SHM DATA UTILISATION

- Traffic analysis (volume, weight, speed etc.)
- Bridge and pavement design
- Evaluation of bridge condition state
- Load carrying capacity assessment

Quantification of SHM data

EXPECTED BENEFITS

- Reduction of maintenance and operational costs
- Optimization of bridge management system
- Realistic evaluation of remaining service life
- Bridge priority ranking on network level

Figure 3: Reliability assessment results with and without additional SHM data

Figure 4: Ratio of SHM costs and total bridge value depending on the bridge deck area

MOST CRITICAL ASSUMPTIONS

- Estimation of related costs (bridge repair, costs of non-availability etc.), monetization of bridge value

FURTHER INFORMATION AND REFERENCES

- Links/references:
- Corresponding author: Dominik Skokandić, Faculty of Civil Engineering Zagreb, Croatia, dskokandic@grad.hr

How for Researchers

why VoI4SHM is important for science

Papers

Special sessions at conferences

Reports of workshops (pdf, ppt, videos)

Glossary

Training schools on VoI of SHM

4 Special Issues on VoI of SHM

List of pubblications on the website

Scientific papers

This page lists TU1402 journal papers and conference papers. The members of COST Action TU1402 have produced so far 9 journal articles and 43 conference papers, thus in total 52 peer-reviewed articles in the scope of this network. If you have a contribution please contact Simona Miraglia (smi@civil.aau.dk).

2018

C. Leyder, V. Dertimanis, A. Frangi, E. Chatzi and G. Lombaert, "Optimal sensor placement methods and metrics – comparison and implementation on a timber frame structure". Structure and Infrastructure Engineering. DOI: 10.1080/15732479.2018.1438483.

S. Thöns, M. Döhler and L. Long (In press). "On Damage Detection System Information for Structural Systems". Structural Engineering International.

2017

R. Schneider, S. Thöns and D. Straub. ,"Reliability analysis and updating of deteriorating systems with subset simulation". Structural Safety 64: 20-36. DOI: 10.1016/j.strusafe.2016.09.002.

B.J. Leira, S. Thöns. "System reliability of concrete structures subjected to chloride ingress". European Safety and Reliability Conference (ESREL 2017); Portoroz, Croatia.

Ja. L. Beck, Y. Huang. " Keynote presentation: Bayesian uncertainty quantification and sparse Bayesian learning for model updating in structural health monitoring". In Proceedings of the Joint COST TU1402 - TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Managment, March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org/10.5592/CO/BSHM2017.2.2

E. Chatzi, K. G. Papakonstantinou, D. Straub and R. Hajdin. " Observation-based Decision-making for Infrastructure". In Proceedings of the Joint COST TU1402 - TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Management, March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org/10.5592/CO/BSHM2017.4.1

P. Haardt, R. Holst." Monitoring during life cycle of bridges to establish performance indicators". In Proceedings of the Joint COST TU1402 - TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Management, March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org/10.5592 /CO/BSHM2017.4.2

L. Saucedo-Mora, C. Andrade Perdrix, C. L. Hombrados, J. Barroso and A. Z. Bragado. " Application of DIC to monitor reinforced concrete structures". In Proceedings of the Joint COST TU1402 - TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Management, March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org/10.5592/CO/BSHM2017.4.3

B.J. Leira, S. Thöns and M. H. Faber. "System Reliability of Bridge Structure Subjected to Chloride Ingress". In Proceedings of the Joint COST TU1402 - TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Management, March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org /10.5592/CO/BSHM2017.4.4

P. Omenzetter, M.P. Limongelli, U. Yazgan and S. Soyoz, "Quantifying the value of SHM for emergency management of bridges at-risk from seismic damage based on their performance indicators". In Proceedings of the JOINT COST TU1402 - COST TU1406 - IABSE WC1 WORKSHOP: The Value of Structural Health Monitoring for the Reliable Bridge Management. March, 02 and 03, 2017, Zagreb, Croatia. DOI: https://doi.org/10.5592 /CO/BSHM2017.4.5

Factsheets for COST Action TU1402

Below factsheets are compiled in the Action TU1402 reports, which are available at the reports page.

WG 1

M.H. Faber, D. Val, S. Thöns, "Value of Information in SHM- Considerations of the Theoretical Framework", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

D. Honfi, D. Lange, "Structural health monitoring, a tool for improving critical infrastructure resilience", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

C. Xing, R. Caspeele, L. Taerwe, "Evaluating the value of structural heath monitoring with longitudinal performance indicators and hazard functions using Bayesian dynamic predictions", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

S. Thöns, M.H. Faber, " Damage and resistance correlation influence on the value of structural health monitoring", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

P. Omenzetter, "Framework for structural reliability assessment and risk management incorporating structural health monitoring data", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

C. Xing, R. Caspeele, D. Val, "Classes of decision analysis", 3rd workshop of COST Action TU1402, Miraglia et al.(Eds), March 14-15, 2016, Barcelona, Spain.

J. Hackl, "Introduction to Bayesian networks", 3rd workshop of COST Action TU1402, Miraglia et al.(Eds), March 14-15, 2016, Barcelona, Spain.

H. Brüske, S. Thöns, "Domains of the Value of Information in Structural Health Monitoring", 3rd workshop of COST Action TU1402, Miraglia et al.(Eds), March 14-15, 2016, Barcelona, Spain.

D. Zonta, B. Glisic, S. Adriaenssens, " Why should I waste my money on Monitoring?", 3rd workshop of COST Action TU1402, Miraglia et al.(Eds), March 14-15, 2016, Barcelona, Spain.

S. Thöns, M.H. Faber, "Test case for offshore wind park operation", 5th workshop of COST Action TU1402, Brüske et al.(Eds), August 24-25, 2016, Copenhagen, Denmark.

H. Brüske, "Expamples of cost and benefit analyses for offshore wind turbines", 5th workshop of COST Action TU1402, Brüske et al.(Eds), August 24-25, 2016, Copenhagen, Denmark.

P. Omenzetter, "Optimization of structural health sensing system topology for maximizing the value of information: An initial sketch of a theory", 5th workshop of COST Action TU1402, Brüske et al.(Eds),August 24-25, 2016, Copenhagen, Denmark.

WG2

M.P. Limongelli, M. Domaneschi, L. Martinelli, M. Dilena, A. Morassi, A. Zambrano, A. Gecchelin, " The interpolation method for the detection of localized stiffness losses", 1st workshop of COST Action TU1402, Thöns (Eds), May 04-05, 2015, Copenhagen, Denmark.

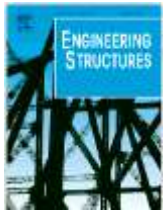
Training Schools

Cadenabbia

Trogir

Special Issues on VoI of SHM

Structural Engineering International

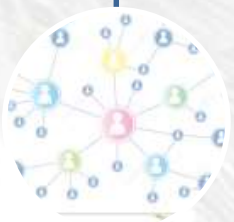


Engineering Structures

Structural Health Monitoring

Structural Safety

What?



research outcomes

networking activity

Size and composition of the network

Trailer and video

'how to join the Action'

Map

Testimonials

Social media

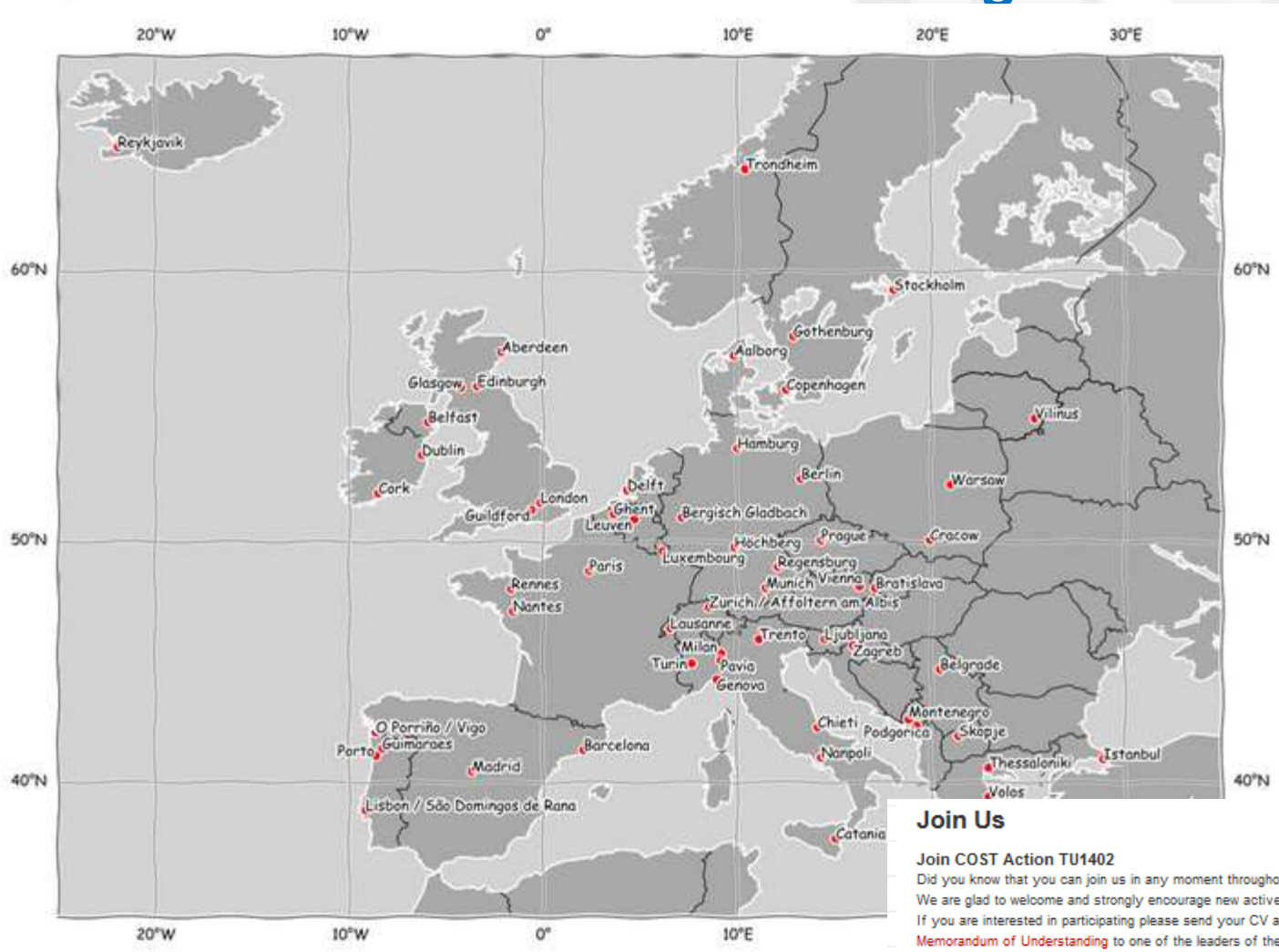
Networking dinners and jogging

Active participants

Researchgate

Wikipedia

Networking



Join Us

Join COST Action TU1402

Did you know that you can join us in any moment throughout the duration of the Action?
We are glad to welcome and strongly encourage new active participants from research institutions and industry.
If you are interested in participating please send your CV and your intended contribution according to the TU1402 Memorandum of Understanding to one of the leaders of the Working Groups.
You will be notified your involvement immediately after the approval of the TU1402 Steering Committee.

A description of the COST Action Networking Tools can he found here.

Testimonials

training school students

international guests

STSM

participants

WG6 Active participants












Lessons learned

dissemination does not mean only papers (open and user innovation)

a strategy for dissemination is needed

the website is the main tool for communication together with papers

Ideas ideas ideas

Joint effort (WGs) and mechanisms to reward WG active participants

PhD students are great!

an open minded coordinator is a must

Thank you for your attention

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