



University of Minho
School of Engineering



Universidade de Vigo



UNIVERSITY OF
BIRMINGHAM



UNIVERSITÉ DE NANTES



About SIRMA

Most of the transportation of people and goods in Atlantic Area is made through rail and road. The performance of this infrastructure is directly affected by extreme natural events and by the strong corrosion processes that result from proximity to the Atlantic Ocean.

SIRMA project aims to develop a robust framework for the management and mitigation of such risks, by implementing immediate, medium and long-term measures, thus increasing the resilience of transportation infrastructure.

This project will address the transportation infrastructures by developing a systematic methodology for risk-based prevention and management; developing a real-time process to monitor the condition of transportation infrastructure; and enhancing the interoperability of information systems in the Atlantic Area, by taking into account the data normalization and specificity of each country.

Note: This event is carried out in the framework of the Strengthening the Territory's Resilience to Risks of Natural, Climate and Human Origin (SIRMA) project, which is co-financed by the European Regional Development Fund (ERDF) through INTERREG Atlantic Area Programme with application code: EAPA_826/2018.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the INTERREG Europe programme authorities are responsible for any use that may be made of the information contained therein.



SIRMA

STRENGTHENING INFRASTRUCTURE RISK
MANAGEMENT IN THE ATLANTIC AREA

First SIRMA Workshop

Tuesday, 14th January
EEI Sede Cidade
Vigo, Spain

Universidade de Vigo

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www.sirma-project.eu



sirma@sirma-project.eu



[@SIRMAPROJECT](https://twitter.com/SIRMAPROJECT)



www.linkedin.com/groups/8841869

Agenda

8:30-9:00h Opening and Welcome

Manuel Reigosa,

Chancellor of the University of Vigo

09:00-10:45h Invited Lecturers (I)

Large-scale testing and monitoring for resilient buildings and bridges, by **Jose M. Adam**, Polytechnic University of Valencia, Spain.

Microwave interferometry: a consolidated technique for estimating the dynamical behaviour of civil structures, by **Guido Luzi**, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain.

Bridge maintenance system. Recent experiences in bridge survey and pathologies by **Sergio Couto Wörner**, K2 Ingeniería SL (Spain)

Preventive maintenance for infrastructures affected by extreme natural events, based on mobile sensors, non-dedicated vehicles and Big Data techniques, by **Miguel Rodríguez**, Ingeniería Insitu, SL (Spain)

10:45-11:00h Coffee Break

11:00-13:00h Invited Lecturers (II)

MeteoGalicia: Weather Warning and Forecast Services, by **Santiago Salsón**, Meteogalicia (Spain).

Fuel treatment planning opportunities and limitations for the protection of infrastructures, by **José M^a Fernández**, CIF Lourizán, Xunta de Galicia (Spain)

Infrastructure, Resilience and Adaptation - thoughts on how Standards support Policies, Strategies and Delivery in Asset Management, by **John Dora**, Climate Sense, and John Dora Consulting (UK).

My experiences relevant for SIRMA project, by **Brian Bell**, Network Rail (retired), (UK).

APCAP challenges, by **Rui Manteigas**, APCAP (Portugal).

13:00-14:00h Lunch

14:00-16:00h Open presentations

SIRMA: Strengthening infrastructure risk management in the Atlantic Area, by **Jose C. Matos**, University of Minho (Portugal).

Climate change adaptation of reinforced concrete structures subjected to chloride-induced corrosion, by **Emilio Bastidas-Arteaga**, University of Nantes (France).

Climate change effects on metallic bridges, by **Boulent Imam**, University of Surrey (UK).

Structural Health Monitoring for a More Resilient Rail Network, by **Eugene O'Brian**, University College Dublin (Ireland).

A framework for climate-change-ready railway infrastructure, by **Andrew Quinn**, The University of Birmingham (UK).

Contact-Drone. Smart payload for contact inspection with a UAV system, by **Luis Miguel González de Santos**, University of Vigo (Spain).

16:00-16:30h Closing

Where?



Escola de Enxeñaría Industrial - Sede Cidade
School of Industrial Engineering – City Campus
University of Vigo
Rúa Conde de Torrecedeira, 86
36208 Vigo (Spain)

“Bridge Durability & Network Resilience Seminar 2020”

Tuesday, 1 September 2020

Programme

08:45 **Registration**

09:00 **Welcome** | Eugene OBrien, University College Dublin

09:05 **Welcome and Introduction from SIRMA** | Jose Antonio Silva Campos Matos, SIRMA project

Session 1 – Durability of Bridges | Chair: Pat Maher, Transport Infrastructure Ireland

09:15 **Durability of TII Bridges** | Liam Duffy, Transport Infrastructure Ireland

09:40 **Integral Bridges** | Anne Marie Gallagher, Arup Consulting Engineers

10:05 **Durability of Irish Rail Bridges** | Cathal Mangan, Irish Rail

10:30 *Coffee & Networking – Break-out sessions*

Session 2 – Bridge Scour and Network Resilience | Chair: Vikram Pakrashi, University College Dublin

11:00 **Bridge Scour** | Cathal Bowe and Shane Creaven, Irish Rail

11:20 **Network Resilience** | Beatriz Martinez Pastor, University College Dublin

11:40 **Resilience in Transportation Networks: Conceptualization and Quantification** | Igor Linkov, US Army Engineer Research and Development Centre

12:00 **Panel Discussion on Transport Network Resilience** | Chair: Eugene OBrien, University College Dublin

Panellists: Pat Maher, TII; Andrew Quinn, University of Birmingham; Boulent Imam, University of Surrey; Cathal Mangan, Irish Rail; Joe Kelly, Roughan & O'Donovan.

13:00 **Closing Remarks**

This Seminar is organised in association with the SIRMA Research Project –
Strengthening Infrastructure Risk Management in the Atlantic Area





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SIRMA

STRENGTHENING INFRASTRUCTURE RISK
MANAGEMENT IN THE ATLANTIC AREA

Third SIRMA Workshop

Wednesday, 22nd September



UNIVERSITÉ DE NANTES



Agenda

09:00 – 09:10h Opening and Welcome

José Campos e Matos, SIRMA Project Coordinator

09:10 – 10:20h Climate Change & Natural Hazards in Atlantic Area

Investigating the vulnerability of Irish critical infrastructure to climate change, by **Paraic Ryan**, University College Cork, Ireland.

Consequence analysis of transport networks, by **Boulent Imam**, University of Surrey, UK.

Impact of climate change on future hurricane wind and storm surge hazards across US Atlantic and Gulf Coast regions, by **Abdullahi Salman**, The University of Alabama in Huntsville, USA

Questions & Answers

10:20 – 11:10h Instrumenting Transportation Infrastructures for Extreme Natural Hazards

Rail Infrastructure Monitoring with Instrumented Trains: A SIRMA WP5 Perspective, by **Vikram Pakrashi**, University College Dublin, Ireland.

PANOPTIS: an integrated system for Road Infrastructure management, by **Philippe Chrobocinski**, Airbus DS, France.

Questions & Answers

11:10 – 11:20h Coffee Break

11:20 – 12:10h Risk & Resilience-Based Decision-Making procedure for Transportation Infrastructure

Transportation Infrastructure Holistic Risk Management Framework, by **Andrea Tarazona**, University of Minho, Portugal.

Resilience assessment and adaptation of coastal bridges in a life-cycle context, by **You Dong**, The Hong Kong Polytechnic University, Hong Kong.

Questions & Answers

12:10 – 12:50h Panel discussion with SIRMA Advisory Board

Moderator: **Emilio Bastidas-Arteaga**

Panellists:

Brian Bell, Network Rail (retired), UK.

Rui Manteigas, APCAP, Portugal.

12:50 – 13:00h Closing remarks

LINK FOR REGISTRATION:

<https://bit.ly/3zKlkPz>

Where?





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SIRMA

STRENGTHENING INFRASTRUCTURE RISK
MANAGEMENT IN THE ATLANTIC AREA

Fourth SIRMA Workshop

Friday, 10th June 2022
University of Birmingham
Birmingham, UK



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Agenda

10:00 – 10:20 Reception, welcome and overview of BCRRE and UKRRIN

Professor Clive Roberts
University of Birmingham, UK

10:20 – 11:00 Transport network analysis under single and multi-hazard scenarios

Chia Sadik
University of Surrey, UK

Questions & Answers

11:00 – 11:20 *Coffee break*

11:20 – 12:00 Network resilience to flooding - a transport perspective

Dr Maria Pregnotato
University of Bristol, UK

Questions & Answers

12:00 – 12:40 Analysis of instability in the Atlantic Area using Mt-InSAR

Ignacio Rodriguez-Antuñano
University of Vigo, Spain

Questions & Answers

12:40 – 13:40 *Lunch and networking break*

13:40 – 14:20 Transport infrastructure, resilience and adaptation

Dr Anam Hashmi
University of Birmingham, UK

Questions & Answers

14:20 – 15:00 Risk Assessment and Real-time Forecasting of Rainfall-related Hazards

Dr Xilin Xia
University of Birmingham, UK

Questions & Answers

15:20 – 16:00 Closing remarks

Dr Andrew Quinn
University of Birmingham, UK

Link for ZOOM online call:
<https://bit.ly/3NM45nU>

Meeting ID: 894 6457 6208
Passcode: 955489

Where?



UKRRIN Building
(SW of School of Engineering)
University of Birmingham
Birmingham, UK



**UNIVERSITY OF
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BCRRE





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de Portugal



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SIRMA

STRENGTHENING INFRASTRUCTURE RISK
MANAGEMENT IN THE ATLANTIC AREA

Fifth SIRMA Workshop and Meeting

Wednesday, 27th September 2022 -
28th September 2022

University College Dublin, Ireland



Iarnród Éireann
Irish Rail

Ireland Implementation
Discussions: 29th September 2022

Agenda: 27 September 2022

09:00 – 09:30h Welcome and Registration

Vikram Pakrashi, SIRMA UCD Principal Investigator

09:30 – 10:30h Instrumenting Trains for Infrastructure Monitoring: Perspectives

Next Steps – Fleet Monitoring of Bridges, by [SIRMA UCD Team], UCD, Ireland by Eugene OBrien.

Monitoring Bridges in Ireland for Detecting Features of Interest, by [SFI UCD Team] by Alexandra Micu, Ireland.

Automated and Rapid Fault Diagnosis of Railway Tracks using In-Service Train Measurements, by [SFI Di-Rail UCD Team], by Abdollah Malekjafarian UCD, Ireland

Questions & Answers

Coffee Break 10:30-11:00

11:00 – 12:00h Instrumenting Trains for Infrastructure Monitoring: Future Steps

Development of trackside sensing systems and energy harvesting devices, by [Other EU project], Filip Ksica, Brno University, Czech Republic

Effect of windbreak walls on train aerodynamics, by [SIRMA UBirmingham Team], Syeda Anam Hashmi, University of Birmingham, UK.

Structural Health Monitoring using Drone Technology, by [Outside EU Expertise], Naveet Kaur, Central Road Research Institute, India.

Questions & Answers

12:10 – 12:50h Panel discussion on Hazards

Moderator: **Vikram Pakrashi**

Panelists: **SIRMA Members**

12:50 – 13:00h Closing remarks

Vikram Pakrashi, SIRMA Project, University College Dublin, Ireland

13:00 Lunch

LINK FOR REGISTRATION (In-Person):
<https://www.eventbrite.ie/e/fifth-sirma-workshop-and-meeting-tickets-423630067937>

Where?

University College Dublin, University Club, Cedar and Cypress Suites

Day 1 Link: <https://ucd-ie.zoom.us/j/64304633244?pwd=K0YyYWZpcy8wSzlvVXZlc1FPbkV5UT09>



Agenda: 28 September 2022

09:00 – 09:30h Welcome and Registration

Vikram Pakrashi, SIRMA UCD Principal Investigator

09:30 – 10:30h Instrumenting Trains for Infrastructure Monitoring: Guidelines

The SIRMA Project Overview, by **José António Silva Carvalho Campos Matos**, SIRMA Coordinator, University of Minho

How to Select Good Features for Monitoring, by **Tadhg Buckley**, Data Science Team Lead Peak.ai, UK

Rail WIM (Rail Technology) Rail Weigh in Motion and more, by **Daniel Kobler, Kistler**, Switzerland

Questions & Answers

Coffee Break 10:30-11:00

11:00 – 12:00h Bridge Infrastructure Monitoring: Outlook

Eurostruct – A Vehicle for Guidelines and Recommendations, by **Vikram Pakrashi**, Eurostruct/UCD, Ireland. [Interactive]

Sustainability Demands: The Blade-Bridge Example, by **Kieran Ruane**, Munster Technological University, Ireland.

Fatigue Assessments for Railways, by **Maria Chiara Leva**, Technological University Dublin, Ireland.

Questions & Answers

12:10 – 12:50h Panel discussion on Guidelines and Recommendations on Monitoring

Moderator: **Eugene OBrien**

Panelists: **SIRMA and Di-Rail members**

12:50 – 13:00h Closing remarks **Vikram Pakrashi**, SIRMA, University College Dublin, Ireland

13:00 Lunch

LINK FOR REGISTRATION (In-Person):
<https://www.eventbrite.ie/e/fifth-sirma-workshop-and-meeting-tickets-423630067937>

Where?

University College Dublin, University Club, Cedar and Cypress Suites

Day 2 Link: <https://ucd-ie.zoom.us/j/69853225841?pwd=Q1dHZnYvRFJEUGc5ZzNWRS9wWXpSQTO9>



Publ. No.	Title	Type of publication (journal, proceedings, book/book chapter, thesis, etc.)	Journal or equivalent (journal, conference, publisher, etc.)	Date of accept.	Date of pub.	DOI	ISSN/ ISBN	Place of pub./ Conf. name	Issue	Peer review (Yes/No)	Open access (Green/ Gold/ No)	SIRMA partner	Status (planned/ completed)	Embargo [months]	APC [€]	Repository Link	Reads	Date	
1	Bhowmik B, Hazra B and Pakrashi V. (2019). Real-Time Damping Estimates of a pedestrian foot	Conference	Irish Transportation Research network 2020	05/sep/19	N/A	N/A: Copyright with authors	N/A	Belfast,UK	N/A	Yes	No	UCD	Completed	N/A	0	Sent to SIRMA	No idea	09/04/2020	
2	Bhowmik, B., Tripura, T., Hazra, B. and Pakrashi, V., 2020. Real time structural modal identification using recursive canonical correlation analysis and application towards online structural damage detection. <i>Journal of Sound and Vibration</i> , 468, p.115101.	Journal	Journal of sound and vibration	03/mar/20	03/mar/20	https://doi.org/10.1016/j.jsv.2019.115101			468	Yes	No	UCD	Completed	N/A	0	https://www.researchgate.net/publication	No idea	09/04/2020	
3	Bhowmik B, Tripura T, Hazra B and Pakrashi V. (2020). Robust linear and nonlinear structural damage detection using recursive canonical correlation analysis. <i>Mechanical Systems and Signal Processing</i> , 136, 106499.	Journal	Mechanical Systems and Signal Processing	31/oct/19	15/nov/19	https://www.sciencedirect.com/science/article/pii/S0888327019307204			136	Yes	No	UCD	Completed	N/A	0	https://www.researchgate.net/publication	No idea	09/04/2020	
4	Pakrashi V. (2020). Transport networks: Bring resilient and change ready	Online Journal	Engineers Journal, Engineers Ireland		13/jul/20	https://www.engineersireland.ie/Engineers-Jo	N/A			136	No	No	UCD	Completed	N/A	0	https://www.researchgate.net/publication	No idea	09/04/2020
5	Conde, B., Matos, J., Oliveira, D., Ribeiro, B. 2020. Probabilistic-based structural assessment of a historic stone arch bridge	Journal	Structure and Infrastructure Engineering	19/02/2020	18/abr/20	https://doi.org/10.1080/15732479.2020.1752157	1573-2479	England		yes	yes	Uvigo	Completed	N/A	0				
6	González-deSantos, L. M., Martínez-Sánchez, J., González-Jorge, H., & Arias, P. (2020). Path planning for indoor contact inspection tasks with UAVs.	Journal	The International Archives of Photogrammetry, Remote Sensing and Spatial Information	August 2020	10.5194/isprs-archives-XLII-B4-2020-345-2020	16821750			43	yes	yes	Uvigo	Completed	N/A	0			August/2020	
7	Mapping forest fire risk: A case study in Galicia (Spain)	Journal	Remote Sensing	November 2020	10.3390/rs12223705	2072-4292		12(22)	43	yes	Gold	Uvigo	Completed	N/A	0	http://www.investigao.biblioteca.uvigo.e		nov/20	
8	Bhowmik B, Hazra B, O'Byrne M, Ghosh B and Pakrashi V. (2020). Damping estimation of a pedestrian footbridge – An enhanced frequency-domain automated approach	Journal	Journal of Vibroengineering	11/nov/20	04/12/2020	https://doi.org/10.21595/jve.2020.21577		23(1)		yes	yes	Gold	Completed	N/A	0				
9	Mucchielli P, Bhowmik B, Hazra B and Pakrashi V. (2020). Higher-order stabilised perturbation for recursive eigen-decomposition estimation.	Journal	ASME Journal of Vibrations and Acoustics		11/06/2020	https://doi.org/10.1115/1.4047302		142(6)		yes			Completed		0				
10	Pakrashi V, Chawla R, Hester D, Micu A and Obrien EJ. Instrumented Trains as a Probe for Structural Health Monitoring of Railway Infrastructure. (2020).	conference	Civil Engineering Research in Ireland 2020 (CERi2020) and Irish Transportation Research Network 2020			https://word.cil.ie/cer/		(ITRN2020) Conference, Cork Institute of Technology, Ireland (held online due to Co	Completed	N/A	0				0				
11	McGowen C, Huseynov F, Hester D, McGettrick P, Obrien EJ and Pakrashi V. Identifying damage in a bridge by analysing rotation response to a moving load. (2020).	conference	Civil Engineering Research in Ireland 2020 (CERi2020) and Irish Transportation Research Network 2020			https://word.cil.ie/cer/		(ITRN2020) Conference, Cork Institute of Technology, Ireland (held online due to Co	Completed	N/A	0				0				
12	Buckley B, Ghosh B and Pakrashi V. (2021). A Dynamic Harmonic Regression Approach for Bridge Structural Health Monitoring. <i>Structural Health Monitoring</i> .	Journal	Structural Health Monitoring	24/01/2021		https://doi.org/10.1177/1475921720981735				yes	no	UCD	Completed	N/A	0	https://www.researchgate.net/publication	No idea	13/2/2021	
13	Khan MA, McCrum D, Obrien EJ, Bowe C, Hester D, McGettrick PJ, O'Higgins C, Casero, M, Pakrashi V. (2021). Re-deployable Sensors for Modal Estimates of Bridges and Detection of Damage-Induced Changes in Boundary Conditions. <i>Structure and Infrastructure Engineering</i> , 10.1080/15732479.2021.1887292	Journal	Structure and Infrastructure Engineering			https://doi.org/10.1080/15732479.2021.1887292				yes	no	UCD	Completed	N/A	0		No idea	13/2/2021	
14	E.A. Baron, S. Fernandes, J.C. Matos & H.S. Sousa (2020) An overview of the project Strengthening Infrastructure Risk Management in the Atlantic Area (SIRMA). <i>International Association for Life-Cycle Civil Engineering (IALCCE)</i> , October 27-30, Shanghai, China	Conference	IALCCE 2020		27/out/20			7th International Symposium on Life-Cycle	yes	no	UMinho	Completed		0					
15	C. Santos, S. Fernandes, M. Coelho, J. Matos (2021) The impact of clustering in the performance prediction of transportation infrastructures. <i>18th International Probabilistic Workshop (IPW2020)</i> , May 12-14, Guimarães, Portugal.	Conference	IPW2020		12/mar/21			18th International Probabilistic Workshop (IPW	yes	no	UMinho	Completed		0					
16	C. Santos, M. Coelho, M. Santamaría-Ariza, J. Matos, M. Sánchez-Silva (2021) Life-cycle cost analysis of a viaduct considering uncertainties on the interventions plan. <i>18th International Probabilistic Workshop (IPW2020)</i> , May 12-14, Guimarães, Portugal.	Conference	IPW2020		12/mar/21			18th International Probabilistic Workshop (IPW	yes	no	UMinho	Completed		0					
17	E. Bastidas-Arteaga. Towards climate change adaptation of existing and new deteriorating infrastructure. <i>18th International Probabilistic Workshop (IPW2020)</i> , May 12-14, Guimarães, Portugal.	Conference	IPW2020		12-mai-21			18th International Probabilistic Workshop (IPW	yes	no	UNantes	Completed		0					
18	B. Habeeb, E. Bastidas-Arteaga, H. Gervasio and M. Nogal. Stochastic Carbon dioxide forecasting model for concrete durability applications. <i>18th International Probabilistic Workshop (IPW2020)</i> , May 12-14, Guimarães, Portugal.	Conference	IPW2020		12-mai-21			18th International Probabilistic Workshop (IPW	yes	no	UNantes	Completed		0					
19	B. Habeeb, E. Bastidas-Arteaga and M. Sánchez-Silva. Stochastic river flow forecasting using a Markov-switching autoregressive model. In: <i>31st European Safety and Reliability Conference (ESREL2021)</i> , 19-23 September 2021, Angers, France	Conference	ESREL 2021		19-sep-21			31st European Safety and Reliability Confere	yes	no	UNantes	Completed		0			No idea		
20	D. Hajjalzadeh, C. Sadik and B. Imam. Probabilistic-Based Consequence Analysis for Transport Networks. <i>18th International Probabilistic Workshop (IPW2020)</i> , May 12-14, Guimarães, Portugal.	Conference	IPW2020		12-mai-21			18th International Probabilistic Workshop (IPW2020)	no	USurrey	Completed			0					
21	Cahill P and Pakrashi V. (2021). Dynamic Response Equivalence of a Scaled Bridge Model Due to Vehicular Movement. <i>International Probabilistic Workshop (IPW2021)</i> , May 12-14, 2021, University of Minho, Guimarães, Portugal. Online due to Covid19.	Conference	IPW2020		12-mai-21			18th International Probabilistic Workshop (Yes	no	UCD	Completed		0			No idea		
22	Joseph M, Banerjee S and Pakrashi V. (2021). Estimation of the dynamic amplification factor at backfill soil behind a gravity wall. <i>ICE Geotechnical Research</i> , Paper 2100005, 1-13.stimulation of the dynamic amplification factor at backfill soil behind a gravity wall. <i>ICE Geotechnical Research</i> , Paper 2100005, 1-13.	Journal	ICE Geotechnical Research	06/05/2021	15-jun-21	https://doi.org/10.1680/jgere.21.00005				Yes	Yes	UCD	Completed	??	https://www.jconwtrialibrary.com/doi/full/10.1680/jgere.21.00005				
23	M. Cabaleiro, C. Suñer, H.S. Sousa, J.M. Branco, Combination of laser scanner and drilling resistance tests to measure geometry change for structural assessment of timber beams exposed to fire. <i>J. Build. Eng.</i> 40 (2021) 102365. https://doi.org/10.1016/j.jobe.2021.102365 .	Journal	Journal of Building Engineering	02/27/2021	3-mar-21	https://doi.org/10.1016/j.jobe.2021.102365				Yes	No	UMinho	Completed		0				
24	Micu EA, Obrien EJ, Bowe C, Oksoun FO, Morgan D and Pakrashi V. (2021). Instrumenting an Operational Train for Continuous Monitoring of Bridges and Track. <i>Eurostruct 2021 – 1st Conference of the European Association on Quality Control of Bridges and Structures –</i>	Conference	EUROSTRUCT 1st Conference Padova					EUROSTRUCT		Yes	Green	UCD, Irish Rail	Completed						
25	Eurostruct, Padova, Italy	Conference	EUROSTRUCT 1st Conference Padova					EUROSTRUCT		Yes	Green	UCD, Irish Rail	cOMpleted						
26	Micu EA, Khan MA, Bhowmik B, Casero Florez M, Obrien EJ, Bowe C and Pakrashi V. (2021). Scour Repair of Bridges through Vibration Monitoring and Related Challenges. <i>Eurostruct 2021 – 1st Conference of the European Association on Quality Control of Bridges and Structures –</i>	Conference	EUROSTRUCT 1st Conference Padova					EUROSTRUCT		Yes	Green	UCD, Irish Rail	cOMpleted						
27	Eurostruct, Padova, Ital	Conference	EUROSTRUCT 1st Conference Padova					EUROSTRUCT		Yes	Green	UCD, Irish Rail	cOMpleted						
28	Bhowmik, B., Panda, S., Hazra, B. and Pakrashi, V., 2021. Feedback-driven error-corrected single-sensor analytics for real-time condition monitoring. <i>International Journal of Mechanical Sciences</i> , p.106898.	Journal	International Journal of Mechanical Sciences	24/10/2021	01/11/2021	https://doi.org/10.1016/j.imecsci.2021.106898				214	Yes	Green	UCD	COMpleted					
29	Buckley, Tadhg, Bidisha Ghosh, and Vikram Pakrashi. "Edge Structural Health Monitoring (E-SHM) Using Low-Power Wireless Sensing." <i>Sensors</i> 21, no. 20 (2021): 6760.	Journal	Journal of Building Engineering	08/10/2021	12/10/2021	https://doi.org/10.1016/j.jobe.2021.102360		21(20)		Yes	Gold	UCD	COMpleted						
30	From vertical pedestrian-induced vibrations of footbridges for smart monitoring	Journal	Computer Aided Civil and Infrastructure Engineering	14/10/2021	10.1111/micc.12777					Yes	Green	UCD	COMpleted						
31	McGowen C, Huseynov F, Hester D, McGettrick P, Obrien EJ and Pakrashi V. Identifying damage in a beam by analysing rotation response to a moving load. (2021).	Journal	Journal of Structural Integrity and Maintenance	07/06/2021				6(3)		Yes	Green	UCD, Irish Rail	COMpleted						
32	Basel Habeeb, Emilio Bastidas-Arteaga, Climate change index-tors dataset for coastal locations of the European Atlantic area, Data in Brief (2022), doi: 10.1016/j.dib.2022.108339.	Journal	Data in Brief	26/05/2022	01/06/2022	https://doi.org/10.1016/j.dib.2022.108339				Yes	Gold	UNantes	Completed		440				
33	Truong, U. L., Li, C., Li, P., Li, S., Li, Y., Li, H., Li, S., Bastidas-Arteaga, J. J. J. "Probability-based maintenance modeling and planning for reinforced concrete assets subjected to chloride ingress." <i>Journal of Building Engineering</i> , 54: 104675.	Journal	Buildings	20/01/2022	23/01/2022	https://doi.org/10.3390/buildings12020107		12(2)		Yes	Gold	UNantes	Completed		1732		727	junho 2022	
34	Benchmark for Structural Health Monitoring "Structural Health Monitoring (2022): Monitoring the Condition of Narrow Bridges Using Data from Rotation-Based and Strain-Based damage and repair detection using an instrumented train." <i>Journal of Bridge</i>	Journal	Journal of Building Engineering	16/05/2022	19/05/2022	https://doi.org/10.1016/j.jobe.2022.104675				54	Yes	Green	Unantes	Completed	24				
35	"Bridge damage and repair detection using an instrumented train." <i>Journal of Bridge</i>	Journal	Structural Health Monitoring	09/09/2022	09/09/2022	https://doi.org/10.1177/1475921722111114				Yes	Yes	UCD	Completed						
36	Chawla, Rohit, and Vikram Pakrashi. "Dynamic responses of a damaged double Euler-Bernoulli beam subjected to a moving load." <i>Journal of Bridge Engineering</i>	Journal	ASCE Journal of Bridge Engineering	03/05/2022	03/05/2022	DOI: 10.1061/(ASCE)1080-5999(2022)127:1(1114)				Yes	Green	UCD	Completed						
37	Chawla, Rohit, and Vikram Pakrashi. "Dynamic responses of a damaged double Euler-Bernoulli beam subjected to a moving load." <i>Journal of Bridge Engineering</i>	Journal	ASCE Journal of Bridge Engineering	17/12/2021	17/12/2021	https://doi.org/10.1061/(ASCE)1080-5999(2022)127:1(1114)				Yes	Green	UCD, Irish Rail	Completed						
38	Chawla, Rohit, and Vikram Pakrashi. "Dynamic responses of a damaged double Euler-Bernoulli beam subjected to a moving load." <i>Journal of Bridge Engineering</i>	Journal	Structural Control and Health Monitoring	16/01/2022	16/01/2022	https://doi.org/10.1002/ltc.2933				Yes	Yes	UCD	Completed						
39	reinforced concrete structures subjected to carbonation and climate change. <i>Structures</i>	Journal	Structures	16/09/2022	27/09/2022	https://doi.org/10.1016/j.struc.2022.09.061		novembro 2022		Yes	Yes	UNantes	Completed						
40	Habeeb B, Imam B, Bastidas-Arteaga E. Shock Degradation Modelling for Bridges subjected to Riv	Conference	32nd European Safety and Reliability Conference (ESREL 2022)							Yes	No	UNantes, USu	Completed						

Activity	Type of activity	Title of activity	Link	Objective	Date	Target type of Audience	Target	SIRMA partner contribution	SIRMA	Status
1	Poster	Project dissemination poster		General information about the project	3-oct.-19	Scientific community & Higher-education		Project beneficiary display	UMINHO	Completed
2	Social media	Twitter account open	https://twitter.com/SIRMAPROJECT/status/1187651158959120384	General information about the project	12-oct.-19	Media, Public in general	3	Social media	UVIGO	Completed
3	Social media	LinkedIn account open	https://www.linkedin.com/feed/update/urn:li:activity:658729500262221	General information about the project	25-oct.-19	Media, Public in general		Social media	UVIGO	Completed
4	Roll-up banner	To show at fairs, conferences and workshops to enhance the project		General information about the project	28-oct.-19	Public in general, industry, scientific		Roll-up design and printing	UVIGO	Completed
5	Social media	LinkedIn post on SIRMA attending the Industrial Fair and conference	https://www.linkedin.com/feed/update/urn:li:activity:659525862489591	General information about the project	29-oct.-19	Media, Public in general	3	Social media	UVIGO	Completed
6	Social media	Twitter post on SIRMA attending the Industrial Fair and conference	https://twitter.com/SIRMAPROJECT/status/1189093209361833984	General information about the project	29-oct.-19	Media, Public in general	3	Social media	UVIGO	Completed
7	Social media	LinkedIn post summarising the 3 days attendance of SIRMA to the	https://www.linkedin.com/feed/update/urn:li:activity:6595610493040443	General information about the project	31-oct.-19	Media, Public in general	3	Social media	UVIGO	Completed
8	Social media	Twitter post summarising the 3 days attendance of SIRMA to the	https://twitter.com/SIRMAPROJECT/status/1189844485783601152	General information about the project	31-oct.-19	Media, Public in general	7	Social media	UVIGO	Completed
9	Website	Launch of the official website	http://sirma-proiect.eu/	General information about the project	1-nov.-19	Media, Public in general	222 (up to	Social media	UMINHO	Completed
10	Social media	LinkedIn post advertising the 1st SIRMA Open Workshop and	https://www.linkedin.com/feed/update/urn:li:activity:662107279715629	General information about the project	9-nov.-20	Media, Public in general	2	Social media	UVIGO	Completed
11	Social media	Twitter post advertising the 1st SIRMA Open Workshop and	https://twitter.com/SIRMAPROJECT/status/1215307385998319622	General information about the project	9-nov.-20	Media, Public in general	3	Social media	UVIGO	Completed
12	Social media	LinkedIn post with the link to the UVIGO TV streaming link to follow	https://www.linkedin.com/feed/update/urn:li:activity:662242530369422	General information about the project	13-nov.-20	Media, Public in general	3	Social media	UVIGO	Completed
13	Social media	Twitter post with the link to the UVIGO TV streaming link to follow up the Workshop	https://twitter.com/SIRMAPROJECT/status/1216653076383461377	General information about the project	13-nov.-20	Media, Public in general	3	Social media	UVIGO	Completed
14	Newspaper	Especialistas de cinco países debaten como mejorar a resistencia das	https://www.uvioo.aal/universidade/comunicacion/duvi/especialistas-	General information about the project	14-nov.-20	Media, Public in general		Press release	UVIGO	Completed
15	Newspaper	Científicos aalligos estudiarán los efectos del cambio climático en las	https://www.laopinioncoruna.es/sociedad/2020/01/14/cientificos-	General information about the project	14-nov.-20	Media, Public in general		Press release	UVIGO	Completed
16	Newspaper	La UVioo participa en un proyecto europeo para prever y combatir los	https://www.farodevao.es/oran-viao/2020/01/14/uvioo-participa-	General information about the project	14-nov.-20	Media, Public in general		Press release	UVIGO	Completed
17	Newspaper	Crean un sistema para fortalecer infraestructuras de transporte	https://www.elcorreoalago.es/tendencias/eco/especialistas-choados-	General information about the project	14-nov.-20	Media, Public in general		Press release	UVIGO	Completed
18	Newspaper	Especialistas choados de cinco países nun foro da Escola de	https://www.uvioo.aal/universidade/comunicacion/duvi/especialistas-	General information about the project	14-nov.-20	Media, Public in general		Press release	UVIGO	Completed
19	Social media	LinkedIn post sharing the opening of the 1st SIRMA Open Workshop	https://www.linkedin.com/feed/update/urn:li:activity:662276678056362	General information about the project	14-nov.-20	Media, Public in general	3	Social media	UVIGO	Completed
20	Social media	Twitter post sharing the opening of the 1st SIRMA Open Workshop	https://twitter.com/SIRMAPROJECT/status/1217000692453429249	General information about the project	14-nov.-20	Media, Public in general	6	Social media	UVIGO	Completed
21	Social media	LinkedIn post sharing the success of the 1st SIRMA Open Workshop	https://www.linkedin.com/feed/update/urn:li:activity:662353605012598	General information about the project	16-nov.-20	Media, Public in general		Social media	UVIGO	Completed
22	Social media	Twitter post sharing the success of the 1st SIRMA Open Workshop	https://twitter.com/SIRMAPROJECT/status/1217770119255949312	General information about the project	16-nov.-20	Media, Public in general		Social media	UVIGO	Completed
23	Fliers in NSAI Dublin	Distribution of fliers in National Standardization Authority Ireland	See attachment sent	General information about the project	16-oct.-19	Industry and experts active in	20	At the location	UCD	Completed
24	Newspaper	Avzi studies how to mitigate the effects of climate change on Atlantic	http://www.avzi.eu/en/avzi-studies-how-to-mitigate-the-effects-of-	General information about the project	21-nov.-20	Media, Public in general	100	Social media	AZVI	Completed
25	Online Journal	Transport networks: Being resilient and change ready	https://www.engineersireland.ie/Engineers-Journal/More/Editors-	Disseminate about the relevance of the resilience on	13-jul.-20	Industry, stakeholders	25000	Online publication	UCD	Completed
26	Social media	Grupo AZVI Sharepoint Communication Site: Azvi investiga los	https://grupoavzi.sharepoint.com/sites/COMUNICACION/SitePages/Azvi-	General information about the project	29-dic.-20	Media, Public in general	298 (clicks)	Social media	AZVI	Completed
27	Social media	Grupo AZVI spanish website: Azvi investiga los efectos del cambio	http://www.avzi.eu/en/avzi-sirma-cambio-climatico-infraestructuras/	General information about the project	29-dic.-20	Media, Public in general	Dec 2020: 98	Social media	AZVI	Completed
28	Social media	Grupo AZVI english website: Azvi investiga los efectos del cambio	http://www.avzi.eu/en/avzi-climate-change-infraestructuras/	General information about the project	29-dic.-20	Media, Public in general	Dec 2020: 98	Social media	AZVI	Completed
29	Social media	Grupo AZVI LinkedIn: #Azvi investiga los efectos del	https://www.linkedin.com/posts/avzi_avzi-investiga-los-efectos-del-	General information about the project	29-dic.-20	Media, Public in general	19,730	Social media	AZVI	Completed
30	Newspaper	Europapress: Azvi investiga los efectos del cambio climático en las	https://www.europapress.es/andalucia/noticia-avzi-investiga-efectos-	General information about the project	30-dic.-20	Media, Public in general	237 (clicks)	Press release	AZVI	Completed
31	Newspaper	La Vanguardia: Azvi investiga los efectos del cambio climático en las	https://www.lavanguardia.com/local/sevilla/20201230/6157175/avzi-	General information about the project	30-dic.-20	Media, Public in general		Press release	AZVI	Completed
		infraestructuras de transporte en un proyecto de ámbito europeo	https://www.lavanguardia.com/local/sevilla/20201230/6157175/avzi-investiga-efectos-cambio-climatico-infraestructuras-transporte-proyecto-ambito-europeo.html							
32	Newspaper	Vía Libre: Un consorcio europeo investiga los efectos del cambio climático en las infraestructuras de transporte	https://www.vialibre-fe.com/noticias.asp?not=30722	General information about the project	12-nov.-21	Railway Industry and experts	7000 (suscriptors)	Press release	AZVI	Completed
33	Press Release	UCD Press Release on SIRMA project	https://www.ucd.ie/innovation/news-and-events/latest-news/sirma-	General information about the project	12-nov.-21	Media, Public in general	No Idea	Press Release	UCD	Completed
34	Newspaper	News on SIRMA	https://www.engineersireland.ie/Engineers-Journal/News/european-	General information about the project	13-nov.-21	Practitioners	25000	News Item	UCD	Completed
35	Newspaper	News on SIRMA	https://irishtechnews.ie/european-researcher-infrastructure-climate-	General information about the project	13-nov.-21	Media, Public in general	No Idea	News Item	UCD	Completed
36	Newspaper	News on SIRMA	https://irishdev.com/Home/News/1941-SIRMAs-Atlantic-Rail-Project-	General information about the project	13-nov.-21	Media, Public in general	No Idea	News Item	UCD	Completed
37	Newspaper	News on SIRMA	http://collaboratetogether.ie/european-researchers-collaborate-to-	General information about the project	13-nov.-21	Media, Public in general	No Idea	News Item	UCD	Completed
38	Social media	Twitter post on new work on temperature effects on monitoring	https://twitter.com/DSRL_UCDMECH/status/1354523416053698560	Temperature effects and monitoring	27-nov.-21	Media, Public in general	1000, 1114	Social media	UCD	Completed
39	Social media	Twitter post on SIRMA from UCD	https://twitter.com/UCDInnovation/status/1349033825461039105	General information about the project	12-nov.-21	Media, Public in general	10000	Social media	UCD	Completed
40	Social media	Twitter post on new work on image based monitoring	https://twitter.com/DSRL_UCDMECH/status/1334980323617202179	Image based bridge monitoring	4-dic.-21	Media, Public in general	1000, 468	Social media	UCD	Completed
41	Social media	LinkedIn post on temperature effects and monitoring	https://www.linkedin.com/posts/vikram-pakrashi-2039632_a-dynamic-	Temperature effects and monitoring	1-feb.-21	Media, Public in general	2187 views	Social media	UCD	Completed
42	Social media	LinkedIn Post on SIRMA general description	https://www.linkedin.com/posts/vikram-pakrashi-2039632_europea-	General information about the project	30-nov.-21	Media, Public in general	2686 views	Social media	UCD	Completed
43	Social media	LinkedIn Post on image processing for monitoring	https://www.linkedin.com/posts/vikram-pakrashi-2039632_damping-	Image based bridge monitoring	5-nov.-21	Media, Public in general	1861 views	Social media	UCD	Completed
44	Presentation	Presentation made in the V International Congress on Risks		Presentation of a SIRMA overview to risk research	18-may.-20	Public in general, industrv, scientific	No Idea	Dissemination	UMinho	Completed
45	Newspaper	News on SIRMA	https://www.uvioo.aal/es/universidad/comunicacion/duvi/grupo-	General information about the project	22-feb.-21	Media, Public in general		Press Release	UVIGO	Completed
46	Press Release	USurrev Press Release on SIRMA project	https://www.surrev.ac.uk/news/surrev-helo-strengthen-euroepes-	General information about the project	1-dic.-20	Media, Public in general		Press Release	USurrev	Completed
47	Newspaper	News on SIRMA		General information about the project	4-oct.-19	Media, Public in general		Press Release	UMINHO	Completed
48	Newspaper	News on SIRMA	http://www.jornaldaconstrucao.pt/index.php?id=68n=6811	General information about the project	20-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
49	Newspaper	News on SIRMA	https://bragaatv.pt/uminho-vai-prevenir-riscos-nas-vias-de-transporte-	General information about the project	22-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
50	Newspaper	News on SIRMA	https://eco.sapo.pt/2019/09/22/uminho-vai-prever-riscos-nas-	General information about the project	22-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
51	Newspaper	News on SIRMA		General information about the project	21-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
52	Newspaper	News on SIRMA	https://www.antenaminho.pt/noticias/uminho-quer-criar-modelos-	General information about the project	20-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
53	Newspaper	News on SIRMA	https://ominho.pt/uminho-quer-criar-modelos-preditivos-de-riscos-nas-	General information about the project	20-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
54	Newspaper	News on SIRMA	https://semananov.pt/2019/09/20/uminho-quer-criar-modelos-	General information about the project	20-sep.-19	Media, Public in general		Press Release	UMINHO	Completed
55	Newspaper	News on SIRMA	https://rum.pt/news/uminho-estuda-impacto-dos-riscos-naturais-nos-	General information about the project	30-jul.-19	Media, Public in general		Press Release	UMINHO	Completed
56	Newspaper	News on SIRMA	https://www.dn.pt/usa/verbas-do-programa-transnacional-europeu-ate-	General information about the project	20-mar.-19	Media, Public in general		Press Release	UMINHO	Completed
57	Newspaper	News on SIRMA	https://www.tsf.pt/usa/verbas-do-programa-transnacional-europeu-ate-	General information about the project	20-mar.-19	Media, Public in general		Press Release	UMINHO	Completed
58	Social media	Grupo AZVI Sharepoint Communication Site: Azvi participa en la	https://grupoavzi.sharepoint.com/sites/COMUNICACION/SitePages/Azvi-	General information about the project	27-sep.-22	Media, Public in general	34 views	Social media	AZVI	Completed
59	Social media	Grupo AZVI website: Azvi participa en el desarrollo de tecnologías	https://www.avzi.es/sin-categoria/5606	General information about the project	27-sep.-22	Media, Public in general	78 views	Social media	AZVI	Completed
60	Social media	Grupo AZVI LinkedIn: Azvi participa en el desarrollo de tecnologías	https://www.linkedin.com/posts/avzi_avzi-participa-en-el-desarrollo-de-	General information about the project	27-sep.-22	Media, Public in general	4457 views	Social media	AZVI	Completed