

**LCM** 2019  
WORKSHOP  
— iaLcCe —



*"Discussing views and ideas on  
Life Cycle Cost,  
Life Cycle Risks and  
Life Cycle Performance"*

# ***IALCCE Workshop on Life Cycle Management***

***October 27<sup>th</sup> / 28<sup>th</sup> / 29<sup>th</sup> 2019  
Rotterdam***



# Sunday 27<sup>th</sup> October

17:30	Registration	Ocean Bar
18:00	Welcome Reception	Ocean Bar
20:00		

# Monday 28<sup>th</sup> October

08:00	Registration	La Fontaine			
08:30	<b>Introduction</b> <i>1. Welcome and General introduction to Life Cycle Management – Jaap Bakker</i> <i>2. Maintenance is the new development – Wiebe Oosterhoff</i> <i>3. LCM of civil infrastructure integrating risk, resilience and sustainability – Dan Frangopol</i> <i>4. Digital transformation in Asset Life Cycle Management – Erik Deuring</i>	La Fontaine			
10:30	Coffee break				
11:00	<b>Theme session 1</b> <table><tr><td>La Fontaine Data &amp; Visualizations 1</td><td>Trinidad Main Deck Durability</td><td>Breakout Room Water Infrastructure &amp; Resilience</td></tr></table>	La Fontaine Data & Visualizations 1	Trinidad Main Deck Durability	Breakout Room Water Infrastructure & Resilience	
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13:00	Lunch				
14:00	<b>Theme session 2</b> <table><tr><td>La Fontaine Structural Reliability: Modelling</td><td>Trinidad Main Deck Sustainability &amp; Circularity</td><td>Breakout Room Systems &amp; Networks</td></tr></table>	La Fontaine Structural Reliability: Modelling	Trinidad Main Deck Sustainability & Circularity	Breakout Room Systems & Networks	
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16:00	Coffee break				
16:30	<b>Theme session 3</b> <table><tr><td>La Fontaine Data &amp; Visualizations 2</td><td>Trinidad Main Deck Interactive Simulation Asset Dynamics for predictive LCM - Case Study 'Integrated Bridges and Circularity Model'</td><td>Breakout Room Bridge Game "So you think you can manage your bridge?"</td></tr></table>	La Fontaine Data & Visualizations 2	Trinidad Main Deck Interactive Simulation Asset Dynamics for predictive LCM - Case Study 'Integrated Bridges and Circularity Model'	Breakout Room Bridge Game "So you think you can manage your bridge?"	
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18:00	Wrap up	La Fontaine			
18:10					
19:00	Diner (Hotel New York - Bals Room ) Transport by Boat Cab				
22:30					

# Tuesday 29<sup>th</sup> October

08:30	Registration	La Fontaine
09:00	Life cycle aspects SS-Rotterdam	La Fontaine
09:30		
10:00	Coffee break	
	<b>Theme session 4</b>	
	<b>La Fontaine</b> Structural Reliability: Monitoring	<b>Trinidad Main Deck</b> Organizations & Processes
		<b>Breakout Room</b> Roads
12:00	Lunch	
13:00		
15:00	Discussion + Closing session	La Fontaine
15:30		
17:30	Mini - Workshop Safe-10-T	La Fontaine

## Theme Session 1 – Monday 28<sup>th</sup> October 11:00 -13:00

<b>1.1 Data and Visualizations for the support of Life Cycle Management I</b> ( <i>La Fontaine</i> )		
1.	Use of remote sensing for optimising the maintenance strategy of road transition zones: a data-driven solution	Ana Teixeira
2.	A data-driven approach to probabilistic budget forecasting	Martine van den Boomen
3.	3D Linked Data and BIM for Life Cycle Information Management	Jaap Bakker
4.	Leveraging Big Data platforms for data and information management	Mohammed Idrees
5.	The CEDR-INTERLINK approach towards Asset Information Management	Bart Luiten
<b>1.2 Life Cycle Management and Durability</b> ( <i>Trinidad Main Deck</i> )		
1.	Service life prediction of reinforced concrete structures through modelling: A lucrative numbers game	Bart Hendrix
2.	Structural response estimation with hybrid data-driven physics-based sub modeling	Shamim Pakzad
3.	Study on Effect of Arc Crack on Fatigue Properties of Orthotropic Steel Bridge Deck under Complex Stress States	Qiang Guo
4.	Mix designs targeting sustainable concretes require sufficient clinker content to ensure durability performance over the intended constructions service life	Henk Jonkers
5.	A new precursor for bacteria-based self-healing concrete derived from organic waste streams	Emanuele Rossi
<b>1.3 Water infrastructure &amp; resilience</b> ( <i>Breakout Room</i> )		
1.	Can a pipe safely cross a dike without huge costs? A life cycle analysis based on probabilities and consequences	Babette Lassing
2.	Challenges and opportunities in Life Cycle Management for water infrastructure	Wouter Jan Klerk
3.	Stretching the boundaries of Infrastructure Asset Management – experience in large scale flood infrastructure asset management	Mohanasundar Radhakrishnan
4.	Scheduling for replacement and renovation of infrastructure; an optimisation method	Ferdinand Diermanse
5.	Practical approach for sustainability to achieve long-term value for money on (renovation) projects	Olga Brommet
6.	Developing a resilient maintenance strategy for assets subject to changing conditions	Martijn de Jong

## Theme Session 2 – Monday 28<sup>th</sup> October 14:00 – 16:00

<b>2.1 Structural reliability: Modelling</b> ( <i>La Fontaine</i> )		
1.	Reliability based life cycle management scenarios for the Suurhoff bridge	Irina Stipanovic
2.	Incorporation of time-dependent and spatially distributed degradation in a pre-posterior decision making framework	Eline Vereecken
3.	Do nowadays Civil Engineers in Structural Reliability really have to know more about Maths than how to do Monte Carlo Experiments?	Karl Wilhelm Breitung
4.	Performance evaluation of containment structure under local prestressing tendon rupture conditions	Jin Song
5.	Advances on Life-Cycle Design, Assessment and Maintenance of Structures and Infrastructure Systems	Fabio Biondini
6.	Modelling dependencies between multiple bridge deterioration mechanisms	Gareth Calvert
<b>2.2 Sustainability &amp; Circularity</b> ( <i>Trinidad Main Deck</i> )		
1.	Towards a classification of adaptability strategies for the sustainability transition of critical infrastructures	Ingrid Bolier
2.	A circularity assessment framework for bridge and viaduct designs	Tom Coenen
3.	A review of circular economy of key construction materials in transport infrastructure projects	Xinyu Liu
4.	Creating uniform rules for calculating environmental impact of asphalt in the Netherlands	Anna Schwarz
5.	Towards greener asphalt: sustainability assessment for roads and road components in Europe	Diana Godoi Bizarro
6.	Monetary evaluation of environmental impacts of buildings	Patricia Schneider-Marin
7.	Existing Structures As Material Stock for Circular Structures	Siska Valcke
<b>2.3 Life Cycle Management of Systems &amp; Networks</b> ( <i>Breakout Room</i> )		
1.	The actual use of LCC in maintenance decision making on network level	Rob Treiture
2.	The use of some simple LCC rules when prioritizing maintenance measures for complete	Rob Treiture

	infrastructure networks	
3.	Challenges of life cycle management in the smart grid: Case Smart Otaniemi	Helena Kortelainen
4.	Life Cycle Engineering in a System of Systems - Lessons to be learnt from and for the Railways	Judit Sandor
5.	A research about future investment cost of road bridge network in South Korea	Jaehoon Lim
6.	Modular design for renewable cross-passage walls incl. fire doors in railway tunnels	Thomas Thaller

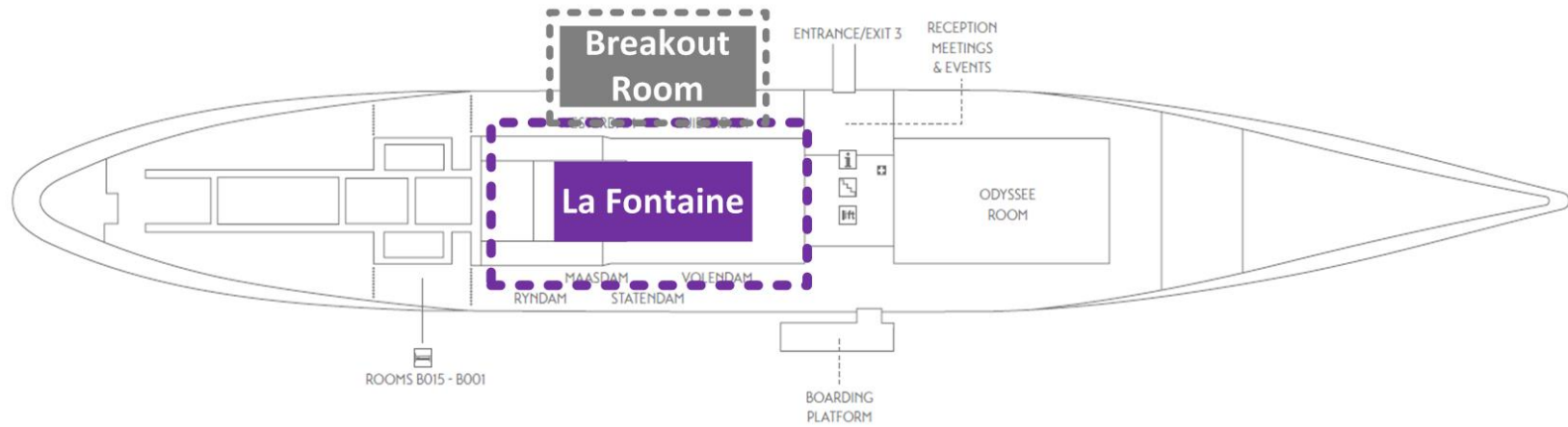
### Theme Session 3 – Monday 28<sup>th</sup> October 16:30 -18:00

<b>3.1 Data and Visualizations for the support of Life Cycle Management II</b> ( <i>La Fontaine</i> )		
1.	Strain Estimation from Acceleration Data by Using Deep Learning	Shamim Pakzad
2.	Optimal bridge maintenance cost calculation algorithms considering members correlation using genetic algorithms	Sungyeol Jin
3.	Application of Recurrent Neural Network on Structural Health Monitoring	Chih-Hao Chou
4.	Rotating machinery health diagnosis using discrete wavelet transform and denoising auto encoder networks	Chiang Yen-Han
5.	Predictive maintenance planning of road bridges using entity embedding deep neural networks	Zahara Allah Bukhsh
<b>3.2 Interactive Simulation: Asset Dynamics for Predictive Life Cycle Management – Case Study 'Integrated Bridges and Circularity Model'</b> ( <i>Trinidad Main Deck</i> )		
<b>3.3 Bridge Game: "So you think you can manage your bridge?"</b> ( <i>Breakout Room</i> )		

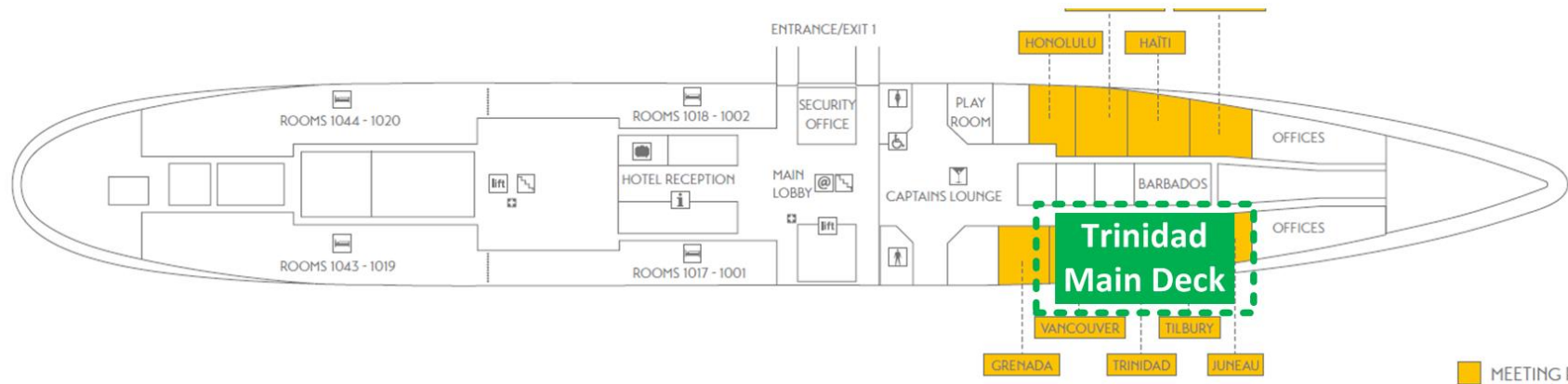
### Theme Session 4 – Tuesday 29<sup>th</sup> October 10:00 -12:00

<b>4.1 Structural reliability: Monitoring</b> ( <i>La Fontaine</i> )		
1.	Quantifying the effect of foundation stiffness on offshore wind turbine dynamic response	Emily Anderson
2.	Determining the Remaining Life of an Immersed Tube Tunnel in the Netherlands	Kenneth Gavin
3.	Damage detection in bridges by means of structural monitoring: problems and possibilities	Andrea Benedetti
4.	Effective risk management of embankments along transport networks using InSAR monitoring	Julie Ann Clarke
5.	Life cycle model for railway tunnel Brajdica in Croatia	Irina Stipanovic
<b>4.2 Life Cycle Management and Organizations &amp; Processes</b> ( <i>Trinidad Main Deck</i> )		
1.	Towards an Systems Engineering based framework for interoperable Asset Life Cycle Management processes	Michael J.H. Baggen
2.	Implementing an ISO 55.000 series based generic management system for governmental asset managers	Jos Wessels
3.	Guidelines for a Common Approach to Life Cycle Cost Analysis in the Dutch Construction Sector	Kewei Pan
4.	Performance age - A method to decide on the remaining functional life of bridges	Andreas Hartmann
5.	Risk visualisation approaches for risk-based maintenance planning for bridges and tunnels	Farizha Aulia Martakusuma
6.	Life Cycle and Asset Management; two of a kind?	Jan Swier
<b>4.3 Life Cycle Management of Roads</b> ( <i>Breakout Room</i> )		
1.	Policies to extend the life of road assets - Presenting LCC aspects of the 2018 research report of the International Transport Forum / OECD	Franziska Schmidt
2.	A life cycle cost analysis of adaptation measures in the State of Virginia, United States, in response to the impacts of climate change on asphalt road pavement construction and maintenance	João Santos
3.	Involving user delays resulting from infrastructure failure and maintenance in Life Cycle Cost analysis	Marieke van der Tuin
4.	Improving durability of asphalt pavement by means of Hydronic Pavement	Arsel Inestroza
5.	The use of statistical inference to estimate the life span of pavement types before reaching end of life	Léon Schouten

**B** B DECK



**1** MAIN DECK



**Wifi**  
Name: IALCCE  
Password: LCM2019

