





Organised by: Division of Operation and Maintenance Engineering, Process IT Innovations

### **Organizers:**

Prof. Uday Kumar, General chair Dr. Ramin Karim, Scientific chair Dr. Aditya Parida, International chair Mr. Anders OE Johansson, Local chair Dr. Alireza Ahmadi, Programme chair Dr. Philip Tretten Mr. Anders Jonsson

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The northernmost University of Technology in Scandinavia **World-class research and education** 

## Programme

The 2<sup>nd</sup> international workshop and congress on eMaintenance

### Dec 12-14 Luleå, Sweden **eMaintenance**

Trends in technologies & methodologies challenges, possibilites and applications





# gramme:

### Day I - 12th December 2012 Day II - 13th December 2012

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08:30-10:00	Registration	07:30-08:30	Reg
10:00-12:00	Workshop I - eMaintenance Challenges for	09:00-09:30	Оре
	Railway		Roc
	Room: Olga Bardh	09:00-09:10	Wel
	Chaired by: Christian Eriksson, The Swedish		Roc
	Transport Administration		Uda
	Data Harvesting Dan Larsson, Damill AB	09:10-09:30	Kar
	Data Presentation		Joh
	Ramin Karim, Luleå University of Technology		Vice
	Data to Decision	09:30-10:00	Key
	Thomas Nordmark, MTAB		Mar
10:00-12:00	Workshop II - eMaintenance in Process		Roc
10.00 12.00	Industry		Mic
	Room: VIP rum	10:00-10:30	Key
	Chaired by: Anders OE Johansson, ProcessIT		Roc
	Innovations		Chr
	eMaintenance and automation at LKAB		Adr
	Carina Persson, LKAB	10:30-10:45	Cof
	KPI for Mining Industry	10:45-11:15	Key
	Aditya Parida, Luleå University of Technology		iativ
	eMaintenance Challenges for Process		Roc
	Industry		Chr
	Robert Karlsson, SSAB EMEA	11:15-11:45	Key
	Production reliability at SCA:s Paper Mill in Ortviken		Dev
	Nicklas Holfeldt, SCA Ortviken.		Roc
10.00 10.00	Lunch break		Tom
		11:45-13:00	Lun
13:00-16:00	Visit to the Railway way-side research station Visit to LTU and eMaintenance LAB	13:00-14:20	Ses
10.00.10.00			Roc
18:00-19:30	Outdoor winter activities at Brändön		Cha
10.00.00	(no extra clothing needed)	13:00-13:20	The
19:30-22:00	Traditional swedish christmas dinner "julbord"		wa
	followed by Lucia celebrations		Mai

ed by (dress casual)



07:30-08:30	Registration			
09:00-09:30	Opening ceremony			
	Rooms: Lilla salen			
09:00-09:10	Welcome			
	Room: Lilla salen			
	Uday Kumar, Luleå University of Technology			
09:10-09:30	Karl Petersen, Municipal Governer			
	Johan Sterte, Luleå University of Technology			
	Vice Chancellor			
09:30-10:00	Keynote - Prognostics and Systems Health			
	Management for Sustainability			
	Room: Lilla salen			
	Michael Pecht, University of Maryland			
10:00-10:30	Keynote - eMaintenance in Transport System			
	Room: Lilla salen			
	Christian Eriksson, The Swedish Transport			
	Administration			
10:30-10:45	Coffee break			
10:45-11:15	Keynote - Health Monitoring and Ongoing Init-			
	iatives to Prepare Future Aircraft Maintenance			
	Room: Lilla salen			
	Christophe Bordry, Airbus industries			
11:15-11:45	Keynote - Evolution of Aircraft Maintenance			
	Development			
	Room: Lilla salen			
	Tomas Lagerberg, ABB			
11:45-13:00	Lunch			
13:00-14:20	Session I (eMaintenance Railway I)			
	Room: Lilla salen			
10.00.10.00	Chaired by: Peter Söderholm, Trafikverket			
13:00-13:20	The Use of Laser Based Trolley for Rail- way Switch and Crossing Inspection			
	Marius Rusu, Clive Roberts and Stephen Kent			
13:20-13:40	Data to Decision through Contextual			
10.20 10.40	Presentation of Railway Infrastructure			
	Performance			
	Christer Stenström, Karina Wandt and			
	Aditya Parida			
13:40-14:00	Prognostic and Health Management of			
	Wheel Condition: Integration of Wheel			
	Defect Detection and Wheel Profile			
	Monitoring data			
	Matthias Asplund, Stephen M. Famurewa and			
	Matti Rantatalo			
14:00-14:20	Improvement of Configuration Manage-			
	ment in Railway Signalling System Amparo Morant, Phillip Tretten, Ramin Karim			
13:00-14:20	and Diego Galar			
13.00-14:20	Session II (eMaintenance Aviation) Room: Olga Bardh			
	Chaired by: Dr Christian Delmas, Airbus Industries			
13:00-13:20	Handheld Maintenance Workstation, the			
	mechanic's key to the aircraft			
	Torbjörn Fransson and Olov Candell			
13:20-13:40	Simulation as Support for PBL Contract			
	Design			
	Olle Wijk and Patric Andersson			

Engineering Approach within Aviation eMaintenance Timothy Tinney and Olov Candell         14:00-14:20       Augmented Reality as a New Level for maintenance Efficiency Rúben Oliveira, José Torres Farinha, Inácio Fonseca, Luis Andrade Ferreira and Fátima Armas         13:00-14:20       Session III (eMaintenance I) Room: VIP rum Chaired by: Prof PS. Heyns, University of Pretoria         13:00-13:20       Current and Prospective Information and Communication Technologies for the E-maintenance Applications Jaime Campos         13:20-13:40       Case-Based Reasoning Supports Fault Diagnosis Using Sensor Information Ning Xiong, Tomas Olsson and Peter Funk         13:40-14:00       Framework for Design and Petformance Evaluation of Effective Condition Moni- toring and Maintenance Management Systems Rezsa Farahani and Michael G. Lipsett         14:00-14:20       Usability Aspects of eMaintenance Solutions Karina Wandt, Phillip Tretten and Ramin Karim         14:20-14:40       Coffee break         14:40-16:30       Workshop III - eMaintenance in civil and military aviation - challenges and possibilities Room: Lilla salen Chaired by: Dr Olov Candell, Saab Technologies and Luéé University of Technology         Matching eMaintenance and cost effectiveness K.M. Ali, Boeing eMaintenance based services - improving customer and supplier collaboration? Christian Delmas, Airbus Industries         14:40-16:20       Session IV (eMaintenance II) Room: Olga Bardh Chaired by: Prof Torse Farinha, University of Coimbra Jakob Krause and Klaus Kabitzsch         15:00-15:20       Condition monintoring of oil and gas sub- sea electrical equ	13:40-14:00	
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S.Gopinath and Abdul Razak b. Jamin		
		S.Gopinath and Abdul Razak b. Jamin

16:00-16:20	Machine Health Monitoring: An Inte-	13:20-13:40	Information logistics for continuous
	grated Maintenance Approach		dependability improvement
	Mahantesh Nadakatti, Sarbjeet Singh, Aditya		Per Norrbin and Peter Söderholm
	Parida and Uday Kumar	13:40-14:00	Holistic Maintenance Information wi
14:40-16:20	Session V (eMaintenance III)		Multi-layers of Contractors
	Room: VIP rum		Mikael Palo, Isabelle Lindsund and Per-O
	Chaired by: Prof Peter Funk, Mälardalen University		Larsson-Kråik
14:40-15:00	Numerical Simulations of Effects of	14:00-14:20	E-Monitoring of Operation and
	Faults in a Vertical Axis Wind Turbine's		Maintenance Task under Difficult Vis
	Performance		Work Environment
	Atif Shahzad, Suman Pradhan, Taimoor Asim,		Ravdeep Kour and Ramin Karim
	Rakesh Mishra and Kyoo-Seon Park	14:20-14:40	•
15:00-15:20	Computational Fluid Dynamics based		Converters: Using the IEEE Std 762
	Performance Optimisation of Vertical		Yasser Mahmood, Alireza Ahmadi and
	Axis Marine Current Turbines		Ramin Karim
	Kyoo-Seon Park, Taimoor Asim, Rakesh	13:00-14:40	Session VII (eMaintenance IV)
	Mishra, Atif Shahzad and	10.00 14.40	Room: Lilla salen
	Gilbert Mirangwanda		Chaired by: Dr Jaime Campos, Linnaeus Univ
15:20-15:40	Application of Particle Swarm Optimiza-	13:00-13:20	
	tion Approach in the Inflationary Inven	10100 10120	Failure Probability with quantitative
	tory Model under Stochastic Conditions		Methods for Critical Applications
	Seyed Mostafa Orand, Abolfazl Mirzazadeh		Ossmane Krini and Josef Börcsök
	and Farzaneh Ahmadzadeh	13:20-13:40	
15:40-16:00	Multi-objective reliability allocation	10.20 10.10	prediction of Electronic Components
	problem		Adithya Thaduri, A K Verma, Gopika Vino
	Jalal Safari and Farzaneh Ahmadzadeh		Rajesh Gopinath and Uday Kumar
16:00-16:20	On the Integration of Wear Model into	13:40-14:00	
	Dynamic Analysis for Rolling Element		Mustafa Aljumaili, Karina Wandt and
	Bearing		Ramin Karim
	Idriss El-Thalji and Erkki Jantunen	14:00-14:20	
16:30-18:00	Sightseeing - Gammelstad Church		a study of SCADA Security
	Town and Luleå		Yamur K. Al-Douri, Mustafa Al-Jumaili an
19:30-22:30	Congress Banquet and entertainment		Ramin Karim
	(dress casual)	13:00-14:20	
		10.00-14.20	Room: Lilla salen
Day III	- 14th December 2012		Chaired by: Prof Tore Markeset, University of
			Stavanger
09:00-09:30	Keynote - Integrated Logistic Support with	13:00-13:20	e-Monitoring for haul road maintena
	eMaintenance		in mining applications
	Room: Lilla salen		PS Heyns, HM Ngwangwa, T Heyns and
	Laurence Earl, Saab Technologies		van der Westhuizen
09:30-10:00	Keynote -Status and outlook of eMaintenance	13:20-13:40	CMMS Benchmarking Development
	in aviation		Mining industries
	Room: Lilla salen		Yonas Lemma, Stephen M. Famurewa, D
	K. M. Ali, Boeing		Galar, Håkan Schunnesson and Jonas Fj
10:00-10:30	Coffee break	13:40-14:00	
10:30-11:00	Keynote - Evolution of Aircraft maintenance		supported in HMM
	development		António Simões, José Torres Farinha, Iná
	Room: Lilla salen		Fonseca and Fernando Maciel Barbosa
	Christian Delmas, Airbus Industries	14:00-14:20	
11:00-11:30	Keynote - eMaintenance makes Businesss		maintenance state

11:30-13:00 Lunch

Sense: A State-of-the-Art Review

Raj B. K. N. Rao , COMADEM International

Chaired by: Vivianne Karlsson, Banverket

Bjarne Bergguist and Peter Söderholm

asset condition using both temporal and

13:00-13:20 Control charts for assessment of linear

15:00

Room: Lilla salen

Room: Lilla salen

13:00-14:40 Session VI (eMaintenance Railway II)

spatial information

lependability improvement Per Norrbin and Peter Söderholm Iolistic Maintenance Information with Aulti-layers of Contractors Aikael Palo, Isabelle Lindsund and Per-Olof arsson-Kråik -Monitoring of Operation and Maintenance Task under Difficult Visual Nork Environment Ravdeep Kour and Ramin Karim Evaluation of Data for Traction Frequency Converters: Using the IEEE Std 762 asser Mahmood, Alireza Ahmadi and Ramin Karim Session VII (eMaintenance IV) Room: Lilla salen Chaired by: Dr Jaime Campos, Linnaeus University New Idea to Estimate the Reliability and ailure Probability with quantitative Methods for Critical Applications Ossmane Krini and Josef Börcsök Modified Physics of Failure approach for prediction of Electronic Components Adithya Thaduri, A K Verma, Gopika Vinod, Raiesh Gopinath and Udav Kumar Maintenance Related Ontologies Justafa Aljumaili, Karina Wandt and Ramin Karim nformation Security in eMaintenance study of SCADA Security amur K. Al-Douri, Mustafa Al-Jumaili and Ramin Karim Session 8 (eMaintenance V) Room: Lilla salen Chaired by: Prof Tore Markeset, University of Stavander -Monitoring for haul road maintenance n mining applications PS Heyns, HM Ngwangwa, T Heyns and SF an der Westhuizen MMS Benchmarking Development in Vining industries ronas Lemma, Stephen M. Famurewa, Diego alar, Håkan Schunnesson and Jonas Fjellner Jrban Road Transports E-maintenance. supported in HMM António Simões, José Torres Farinha, Inácio Fonseca and Fernando Maciel Barbosa new approach for the diagnosis of maintenance state Hugo Raposo, José Torres Farinha, Inácio Fonseca and Luís Andrade Ferreira 14:20-14:40 Lean versus Kanban -An Actual Paradigm Pedro Dias, José Torres Farinha, Inácio Fonseca and Luís Andrade Ferreira **Closing Session** Coffee break