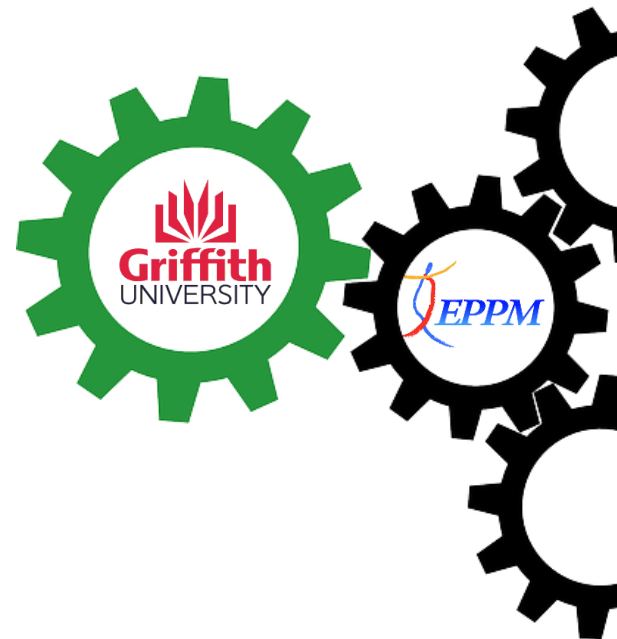


# EPPM2015

The 6<sup>th</sup> International Conference on  
Engineering, Project, and Production Management

## CONFERENCE PROCEEDINGS



Hosted by:  
Griffith School of Engineering, Griffith University  
Association of Engineering, Project, and Production Management

2-4 September 2015  
Surfers Paradise Marriott Resort and Spa, Gold Coast, Australia

# **THE 6TH INTERNATIONAL CONFERENCE ON ENGINEERING, PROJECT, AND PRODUCTION MANAGEMENT (EPPM2015)**

# **CONFERENCE PROCEEDINGS**

Edited by:

Joanna Ejdys, Bialystok University of Technology, Poland

David Chua, National University of Singapore, Singapore

John Smallwood, Nelson Mandela Metropolitan University, South Africa

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2-4 September 2015

Surfers Paradise Marriott Resort and Spa, Gold Coast, Australia

# FOREWORD

On behalf of the Organising Committee, we are delighted to welcome you to the 6<sup>th</sup> International Conference on Engineering, Project, and Production Management (EPPM2015). This conference is proudly hosted by Griffith School of Engineering, Griffith University in conjunction with the Association of Engineering, Project, and Production Management (EPPM Association).

The EPPM2015 conference continues the strong tradition that reflects the founding principle of the EPPM Association, which is to foster the exchange of knowledge and promote research within the multidisciplinary areas of engineering, project, and production management. The EPPM2015 conference also aims to share unique knowledge from the nexus between social sciences and engineering, highlighting the need to embrace interdisciplinarity by crossing the boundaries between disciplines, recognising problems and ways of solving them, in a manner that is often unconventional and non-monophonic. The conference hosts theoretical discussions, data analysis, case studies, and industrial practices in the form of research papers, which provide a great opportunity for researchers, engineers, managers, students, and practitioners to present and discuss current and emerging research issues, problems, questions, findings, and new developments.

The conference would not be possible without the strong support of the Organising Committee, Scientific Chairs, International Scientific Committee, Keynote Speakers, and international authors and delegates. We would also like to thank Bo Xiong from Queensland University of Technology and Warit Wipulanusat from Griffith University for their assistance in compiling this conference proceedings.

We hope you enjoy your time at our conference, and that you have the opportunities to exchange ideas and share knowledge, as well as participate in productive discussions with the like-minded researchers and practitioners from diverse fields.



Professor Sherif Mohamed



Dr. Kriengsak Panuwatwanich

EPPM2015 Conference Chairs

# EDITORIAL

*“Science and everyday life cannot and should not be separated”*

Rosalind Franklin (1920–1958)

A challenge for science as a whole is the interdisciplinarity, which is part of the paradigm of research in all fields. Interdisciplinarity means crossing the boundaries between disciplines, recognizing problems and ways of solving them, in a manner that is often unconventional, different from the monophonic approach. Thus, in multidisciplinary research, the subject under study is approached from different angles, using different disciplinary perspectives and integration which is not accomplished. Interdisciplinary research leads to the creation of a theoretical, conceptual, and methodological identity, so more coherent and integrated results are obtained. An excellent example of interdisciplinarity is scientific research and its practical applications in areas such as engineering management, project management and production management.

The main objective of this year's The 6th International Conference on Engineering, Project, and Production Management (EPPM2015) was to share unique knowledge from the border between social sciences and engineering. The knowledge the value of which is manifested in interdisciplinarity. The conference gives both the researchers and the practitioners with the opportunity to exchange theoretical knowledge, experience and good practices in the areas of broadly understood project management and production management. The process approach used in these management concepts allowed for a broad focus of the conference issues at different stages of the project life cycle or production process - from the planning process, through implementation, monitoring and process improvement. The conference was addressed to both the representatives of the world of science, representing various scientific disciplines, as well as the practitioners of management and production engineering, and young researchers and students.

The results of the conference this year include 58 papers that have been carefully selected through a double-blind review process. The articles in the field of engineering management, project management and production management present both the theoretical and practical examples of solving the problems that often are of an interdisciplinary nature. The subject matter of the articles is varied due to the interest in management processes (construction industry, production process, public transport), the sector of activity (public and private), and the subject of research. Important problems from the perspective of the concept of sustainable development were not overlooked by the authors of this year's conference. The concern for the environment, quality processes, public involvement are just some of the issues that are crucial to the management of each project.

The Editors wish to express sincere thanks to all the authors, members of the international scientific committees, members of the international advisory board and the local organizing committee for their effort and support. Their involvement in the project, which was the organization of conferences, is an excellent example of working in an interdisciplinary team, which ensured the success of this year's conference.

Joanna Ejdys, David Chua, and John Smallwood  
Scientific Chairs

Kassim Gidado  
President of EPPM-Association

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# **ORGANISING COMMITTEE'S DECLARATION**

All the papers in these conference proceedings were double-blind reviewed by members of the International Scientific Committee. This process entailed detailed reading of the papers, reporting of comments to authors, modification of papers by authors, and re-evaluation of revised papers to ensure quality of the content.

## PEER REVIEW PROCESS

A rigorous two-stage peer review process was applied to this conference to maintain and assure the quality of the conference proceedings. In the first stage, submitted abstracts were evaluated by Scientific Chairs in terms of:

- Relevance to conference theme and objectives;
- Originality of material;
- Academic rigour;
- Contribution to knowledge, and
- Research methodology.

Authors, whose abstracts were tentatively accepted in the first stage, were requested to submit full papers for further review. Each paper was reviewed by no less than two acknowledged experts in the field with unidentified reviewers' comments. Authors were requested to submit their revised papers noting and addressing reviewers' comments. Evidence was required relative to the action taken by authors regarding the comments received. These resubmitted and revised papers were re-reviewed again in terms of:

- Relevance to conference theme and objectives;
- Originality of material;
- Academic rigour;
- Contribution to knowledge;
- Research methodology and robustness of analysis of findings;
- Empirical research findings, and
- Critical current literature review.

In the second review stage, authors were provided with additional comments and requested to submit their revisions. The final accepted decision was rendered when Scientific Chairs confirmed that all reviewers' comments were appropriately responded to, having been double peer-reviewed for publication. At no stage was any member of the Scientific Chairs and International Scientific Committee involved in the review process related to their own authored or co-authored papers.

The role of the Scientific Chairs was to ensure that the final accepted papers incorporated the reviewers' comments and arrange the papers into the final sequence as captured in the electronic proceedings. Of the 88 abstracts originally received, 59 papers were finally accepted for presentation at the conference and inclusion in these proceedings, representing a rejection rate of 33%.

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## KEYNOTE SPEAKERS

### **Professor Ali Jaafari**

*Director and Principal, JCS Consultants; Founder of Asia Pacific International College*



Professor Jaafari is the founder and Past President (2004-2015) of Asia Pacific International College. APIC is a recognised degree-granting Australian Higher Education Institution with undergraduate and postgraduate programs in project management, business and information systems. From 1982 to 2004 Professor Jaafari held numerous academic positions at the University of Sydney, including Chair Professor of Project Management. Professor Jaafari has been an active contributor to the literature, including journals and international conferences. He has authored over 190 publications, and presented numerous keynote or plenary lectures in the past 20 years. He is on the editorial board and a reviewer for a number of journals, including the International Journal of Project Management, the International Journal of Information Technology Project Management, etc. Professor Jaafari has also presented seminars and executive training programs in project and strategic management to over 6,000 executives and managers in Europe, Middle East and Asia. He has acted as an expert consultant to a number of Australian organisations, the European Commission and numerous government agencies in Asia and the Middle East.

### **Chris Lawson**

*Former Head of Integrated Project Delivery Systems, Aurecon*



Chris Lawson has over 15 years as a consulting engineer, 23 years in local government and 2 years in applied research. In June 2015, he retired from his role as global Head of Integrated Project Delivery Systems with Aurecon Group Pty Ltd, one of the largest Australian based consulting firms where he previously managed the South Queensland business for 6 years. During his time at Aurecon he has been involved in projects such as the \$1.8B Trackstar Alliance which completed 4 mainline passenger rail upgrades in the Brisbane region from 2006 to 2014, Moreton Bay Rail, Eastern Busway, the replacement of the Brisbane Ferry terminals, CLEM7, Airport Link and Legacy Way tunnels, and Trackpower Alliance which completed mainline electrification upgrades on the Blackwater and Goonyella coal rail lines for Aurizon. He has also been involved in the establishment of systems integration and document control for the design phases of Northconnex tunnels in Sydney, Melbourne Metro and Torrens to Torrens Alliance in Adelaide. Chris was also a principal author of the Queensland Urban Drainage Manual which since 1992 has been the principal design reference for urban drainage design in Queensland and in many other jurisdictions. He currently serves on the Transport Advisory Board for Mackay Regional Council and provides advice to various contractors on their transition to BIM.



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# EPPM-Journal

## Journal of Engineering, Project, and Production Management

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## Call for Papers

### Aims and Scope:

Solving current industrial problems requires cross-disciplinary knowledge and approaches. The Journal of Engineering, Project, and Production Management (EPPM-Journal) is an international research journal publishing original research papers. EPPM-Journal is multidisciplinary in nature, considering all topics related to engineering management, project management, and production management. The journal aims to advance the cross-disciplinary sciences in these three fields. This unique platform is intended to inspire new thinking by merging and/or combining different approaches from diverse fields.

### Submission:

Submissions should be made at the online submission system at  
<https://cmt.research.microsoft.com/EPPM/>

All submitted papers are subject to double blind review.

It is free to publish papers in the EPPM-Journal. EPPM-Journal is an Open Access journal, which uses a funding model that does not charge readers or their institutions for access. The Journal is operated by a group of volunteers with the same goal advancing the cross-disciplinary sciences in engineering management, project management, and production management.





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