28 February – 1 March
Sydney

Increasing Throughput, Safety and Network Responsiveness through Automation

Draft Agenda
(Subject to Change)

By employing Communications Based Train Control (CBTC) the London Underground was able to increase its capacity from 24 trains per hour to 36. As Australian cities grow in both size and density, train throughput is becoming increasingly important to commuter and freight rail during peak hours. To meet this increasing demand, the rail industry is moving away from traditional blind-side signaling and paper-graph scheduling and towards automation and digitization.

This year’s event looked at leveraging new technologies to optimise existing networks. Next year, IQPC’s Train Control Management Systems 2017 will focus on increasing train throughput without compromising safety, integrating new CBTC into current infrastructure, and managing change from manual into automated systems with as little friction as possible for employees.

New This Year
- International Speakers from Spain, India, and Hong Kong
- Exploring the future capabilities of ETCS-L2 in an Australian Context
- Q+A Sessions with an international panel using live polling
- 7 Case Studies from Sydney Trains, Melbourne Trains, Metro de Madrid, Hong Kong MTR and Indian Railways

Who Will You Meet?
- Heads, Managers and Superintendents of
  - Operations
  - Signaling
  - Train Control
  - Rail Maintenance and Construction
  - Rail Communications
  - Rail Upgrade

- Organisations
  - Rail Operators
  - Transport Authorities
  - Track Owners
  - Mining and Freight
  - Consulting Engineers
Confirmed Speakers

Tony Eid, Executive Director of Future Networks, Sydney Trains
Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong
Gavin Nicholls, Cross River Rail Project Director, Queensland Department of Infrastructure, Local Government and Planning
Yogendra Sharma, President of Rail, Adani Power and Mines India
Rodrigo Alvarez, Titan ICT, working for Public Transport Authority WA
Dr Tony Lee, Chief of Operations Engineering, Hong Kong MTR
Pascal Labouze, Executive Director of Operational Systems, Transport for NSW
Trevor Moore, Signalling Standards Engineer, Australian Rail Track Corporation
Carlos Esquiroz, Director of Engineering and Maintenance, Metro de Madrid
Dr. Frank Heibel, CBTC /ETCS Expert, Doc Frank Consulting
Andrew Constantinou, Rail Operations Centre Infrastructure business Manager, Sydney Trains
Warwick Talbot, General Manager Engineering & System Integrity, Sydney Trains
Oliver Fried, Director, Transport for NSW
George Stodge, Director Operations, Sydney Trains

Invited Speakers

Joel Trouchet, Service Delivery Manager, Brookfield Rail
Richard Jones, Head of Network Operations and Resilience, London Underground Rail
Bjarne Birkrem Senior Advisor, Jernbaneverket Norway
Dr. Christian Wullems, Radionavigation Engineer (Systems), European Space Agency
Glenn Hardie, Team Leader Data Processing, Monash University
Simon Foster, Executive Director of Technical, Office of National Rail and Safety Regulators
Alex Wardrop, Principal Engineer Rail Operations, Worley Parsons
Simon Ayres, Principal Project Engineer, Perth Transport Authority
Max Littleford, Manager of Signaling Systems, Queensland Rail
Wendy McMillan, CEO, Rolling Stock Development Division, Department of Economic Development, Jobs, Transport and Resources
Pre-Conference Workshop Sessions

27 February

**Workshop A: Strategies for Integrating ETCS into Existing Networks**

8:30-11:00

This workshop is appropriate for any rail operator and track owner that is considering or currently in the process of installing, operating or maintaining automatic train-control within their network. It will also provide key strategies for operating, maintaining and auditing these networks once they’ve been upgraded.

It will include, but not be limited to:

- Troubleshooting the main barriers and challenges to upgrading networks to decrease the likelihood of occurring
- Utilising predictive data to schedule maintenance and save on operating costs
- Installing new systems using the Zero Closures methodology to reduce interruptions to passenger lines
- How ETCS fits into a broader system of train operations that can be integrated into a single Operations Centre

**Carlos Esquiroz**, Director of Engineering and Maintenance, Metro de Madrid

**Workshop B: Change Management Strategies for Employers to Improve Acceptance of Automation among Employees**

11:30 –2:00

Resistance to change from both Control Centre operators and train drivers is a huge challenge when implementing new train control operational systems. By providing opportunities for staff re-education and listening to their concerns, Operations managers can ensure that their transition to automation is not only welcomed but also effectively adopted by employees.

It will include, but not be limited to:

- Reviewing the types of culture changes that should take place before the organization even begins to undergo these projects
- Encouraging staff buy-in by creating platforms to communicate queries and concerns
- Encouraging early adoption by providing incentives to staff who are successful at transitioning
- Providing opportunities to improve operating skills through classroom training

**Dr. Frank Heibel**, CBTC /ETCS Expert, Doc Frank Consulting
Sessions

28 February
Day One

8:30 Conference Registration and Arrival Coffee

9:00 Opening Remarks by IQPC Australia and the Conference Chair
Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong

9:10 CASE STUDY Learning from Metro de Madrid to Efficiently Automate Rail Operations
Metro de Madrid is one of the fastest growing networks in the world. Throughout Madrid, it spans 294 kilometers and 300 stations. The Centralized Traffic Control (CTC) command post is the nerve center of the Metro’s network. It is responsible security, train regulation, emergency response, energy management and passenger information. This session will discuss:

- Integrating multiple aspects of train operations into one cohesive system
- Using automation to coordinate rail diversions, and monitor and respond to incidents
- How the Metro de Madrid plans to use control measures to approach increasing congestion due to population growth

Carlos Esquiroz, Director of Engineering and Maintenance, Metro de Madrid

9:50 CASE STUDY Sydney Metro North-West Rail Link: Australia’s First Automated Rail System
The Sydney Metro North-West rail link is being built to service a predicted population of 60000 between Rouse Hill and Chatswood. During peak hours, trains are expected to run every four minutes thereby removing the need for timetable scheduling. This will require a very sophisticated system of CBTC. This session will:

- Provide an overview of the rail-links construction so far as well as key learning points
- How the CBTC system has been tailor-made to suit the needs of the line
- Discuss how the metro plans to integrate the train controls of a high-throughput line into Sydney’s rail network

10:30 Solution Provider Thought Leader Session - please contact Haseef.Ahmed@iqpc.com.au

11:00 SPEED NETWORKING
11:20 MORNING TEA & NETWORKING BREAK

11:50 General Trend Analysis of Telecoms for Train Control and its Potential to be an Integrated System
Currently, Train Control systems typically use purpose-built dedicated Telecommunications infrastructure. However, as the industry moves more towards automation, we can expect different approach to be more appropriate. Just as smart phones don’t require its users to change networks to make different apps work, nor should rail operators focus too much on specifying the networks for Train Control. This general trend analysis will review:

• How future train control systems could be more integrated into telecommunications infrastructure with other rail operations.
• The risks and benefits of operating on such an integrated system
• The key aspects to keep in mind when designing new train control systems and their interfaces with telecommunications networks

Rodrigo Alvarez, Titan ICT, working for PublicTransport Authority WA

12:30 Live-Polling Q+A International Panel Discussion: The Process of Automating Train Control
This session will give attendees the opportunity to vote on questions that they feel are the most pertinent to our overseas speaker panel. This will be done through a live-polling tool available on smartphones..
These questions will revolve around:

• Common mistakes that are made during long-term automation projects
• Preparing for trouble-shooting issues with signaling and communications
• Benchmark indicators of improvement or areas that may require it

Facilitator: Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong
Panelists: Carlos Esquiroz, Director of Engineering and Maintenance, Metro de Madrid
Dr Tony Lee, Chief of Operations Engineering, Hong Kong MTR
Yogendra Sharma, President of Rail, Adani Power and Mines India

13:10 Networking Lunch Break

14:10 Strategies for Effectively Removing Paper-Graphs in Order to Improve Throughput Through Efficient Scheduling
One of the biggest challenges to digitizing train scheduling is resistance to the removal of paper network maps and pencil-drawn routes. However, Electronic Train Graphs (ETGs) arguably hold the most potential in updated train control centres. This sessions will discuss ETG’s potential to:

• Update scheduling changes quickly and more accurately with real-time data
• Minimize delay times by resolving network scheduling conflicts quickly, or even avoiding them altogether
• Using digital platforms to relay train delays and updates to customers

14:50 CASE STUDY Sydney Trains’ new Rail Operations Centre
The NSW Government has invested $276 million into Sydney Trains’ new Rail Operations Centre. While it isn’t set to be completed until 2018, this session will provide an overview of the types of technologies and processes that are going to be implemented in order to ensure network operations are more responsive and safer for Sydney Trains. This will include:
• Integrating track monitoring and incident response into the one localized Control Centre
• Leveraging new technologies to improve existing network operations for signalers and train controllers
• How it plans to use real-time data to keep both stations and customers informed of network changes

Tony Eid, Executive Director of Future Networks, Sydney Trains

15:30 Afternoon Tea and Networking Break

16:00 CASE STUDY Strategies for Co-Coordinating and Updating India’s Vast Rail Network
Indian Railways is one of the largest rail networks in the world. It consists of 91,000 km of track, 1.4 million employees, and carries 22.55 million passengers and 1.1 billion tonnes of freight daily. For the past three decades Indian railways has invested in a significant level of automation to alleviate congestion and improve throughput. This session will discuss:
• The implementation of Passenger Trains Operations Systems
• Strategies for using real-time data to co-ordinate freight and commuter trains
• The challenges of coordinating train control and optimizing infrastructure with such a vast rail network

Yogendra Sharma, President of Rail, Adani Power and Mines India

16:40 Interactive Solutions Clinic for Change Management during Digital Transformation
Each table will spend 10 minutes generating solutions to a key issue with a moderator, who will record the main points of discussion. Each table will focus on a separate issue related to change management during digital transformation. As the groups rotate, the table moderator will give a brief summary of the points raised so far, allowing the new group to pick up where the previous group left off. Following three rounds of discussions, the key points from each table will be updated to the main screen on-stage so that everyone can see the solutions that have been generated. Attendees will then be able to access the solutions collected on the TCMS 2017 App.

Facilitator: Andrew Constantinou
Doc Frank Heibel

17:20 End of Day One & Networking Drinks for all Attendees
1 March
Day Two

8:30 Conference Registration and Arrival Coffee

9:00 Opening Remarks by IQPC Australia and the Conference Chair
Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong

9:10 CASE STUDY Cross River Rail: Transforming South East Queensland
The Queensland Government’s number one infrastructure priority is Cross River Rail, the natural and necessary next step to transform south east Queensland. Cross River Rail will deliver a new 10.2 kilometer rail line between Dutton Park and Bowen Hills, with 5.9 kilometers in tunnel under the Brisbane River and the CBD. This session will discuss:

- How this project will prepare for south-east Queensland’s future
- How it is implementing ETCS level2 into current infrastructure
- How the current project will ease congestion and add capacity

Gavin Nicholls, Project Director, Cross River Rail, Queensland Department of Transport and Main Roads

9:50 CASE STUDY Melbourne Metro Rail Project: Planning for Melbourne’s Future
Melbourne’s new Metro Rail project involves the creation of two new nine km tunnels, as well as five underground stations, which stretch from the East to the West sides of the city’s CBD. The projects aim is to prepare for the predicted population growth, which is expected to reach 6 million by 2031. This session will explore:

- Integrating the new services into the existing network with as little disruption as possible
- Using high-capacity signaling to increase train through-put and co-ordinate complex train networks
- Using multiple control-centers spread through-out the city to manage the city’s network

10:30 Solution Provider Thought Leader Session - please contact
Haseef.Ahmed@iqpc.com.au

10:50 SPEED NETWORKING
11:20 MORNING TEA & NETWORKING BREAK

11:50 Panel Discussion: Assessing the Different Varieties of Railway Communications in Complex Networks
The key challenge of transferring Network operations to Communication-Based Train Control is ensuring that the connectivity between Control Centers, Stations, Trains and Track is highly reliable. While there are many options to choose from, this panel discussion will provide an in-depth analysis of:

- The benefits and challenges of using GSM-R, Broadband Wireless, MSTP or other communications systems
- Troubleshooting strategies for resolving communications failures
- Scheduling and logistical solutions for routine maintenance

Facilitator: Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong

12:30 Networking Lunch Break

13:30 Using Customer Data as a Metric to Discern the Effectiveness of Train Operations
Transit cards, such as the Opal Card, myki and Go Cards can all provide important insights into commuter traffic. Tap-On/Tap-Off systems not only indicate what stations customers are departing from, they also indicate the stations they're arriving at. This will allow:

- The collection of important metrics that will assist in predicting heavy-points of Network demand during peak hour, special events and holidays
- Agile scheduling according to real-time data
- Using real-time data to inform commuters of which stations are busiest

Pascal Labouze, Executive Director of Operational Systems, Transport for NSW

14:10 CASE STUDY Hong Kong MTR: Updating the Signaling System of the East Rail Line in 2 Hour Nightly Intervals
Hong Kong’s MTR serves nine lines which intersect Hong Kong Island, Kowloon and the New Territories. It’s most recent upgrades to the East Rail Line involve laying approximately 2000km of cable. In doing so, this signaling upgrade should ensure greater train throughput than it is currently capable of. Moreover, it is achieving this task in only nightly intervals of two hours. This session will discuss:
• A review of the reasons behind why it chose to upgrade the signals along the East Rail Line
• How it is coordinating the upgrades with rail operations
• Strategies for time management and task prioritization to ensure the most can be completed in a two-hour interval

Dr Tony Lee, Chief of Operations Engineering, Hong Kong MTR

14:50 Defining Operations Requirements to Optimise Network Performance

The performance of Signalling and Train Control Systems are judged after implementation on how well they manage the safety, performance and reliability of train operations. In the live run context these criteria will vary day to day. A rigorous and detailed approach to documenting operations requirements is required to ensure that the correct design is being implemented.

• Mini case studies will be provided of situations where the underlying operations requirements were not evaluated leading to limits on performance and safety.
• A Guide to issues to be considered will be discussed to demonstrate the breadth of requirements to be evaluated.

Trevor Moore, Signalling Standards Engineer, Australian Rail Track Corporation

15:30 Afternoon Tea and Networking Break

16:00 Using Automation as a Maintenance Solution by Co-Coordinating Rail Diversions During Break-Downs and Scheduling Services

Train automation gives greater power to control centers. Ideally, as real-time data is integrated into technical routing functions, operators in control centers should be able to resolve routing issues more quickly. This session will discuss:

• Using live-feeds to monitor and respond to incidents
• Re-routing networks with minimal delay during breakdowns
• Finding the quickest available routes for technical maintenance

Dr Frank Heibel

16:40 Panel Discussion: The Future of Train Controls in Australia
To conclude TCMS 2017, this panel will discuss how Australian commuter and freight rail as a whole should prepare for its growing –and centralizing- population. Moreover, how train controls can be utilized to meet these demands. Such topics will include but not be limited to:

- The feasibility of an Australian Digital Train Control System to unify the countries separate, state networks in order to allow greater inter-state operability
- The current state of freight’s driverless trains and how they have the potential improve network operations
- What Australian train controls can learn from current European and Asian systems in order to predict the future of TCMS

Facilitator: Andrew McCusker, Director Rail Logistics, SMART Facility University of Wollongong

17:20 End of Day Two
## TCMS 2017 - Pricing and Discounts

- Main Conference: 28 Feb - 1 Mar 2017
- Workshops: 28 Feb 2017
- Venue: Sydney

### How to Register
To reserve your place at TCMS 2017 call IQPC on 02 9229 1000 or email registration@iqpc.com.au. For more information email enquire@iqpc.com.au

### Team Discounts (Can be combined with early bird rate)
IQPC recognises the value of learning in teams. Take advantage of one of these special rates.

- Register a team of 2 to the conference at the same time from the same organisation and receive 5% off the total cost
- Register a team of 3 to the conference at the same time from the same organisation and receive 10% off the total cost
- Register a team of 4 or more to the conference at the same time from the same organisation and receive 15% off the total cost
- Register a team of 6 or more to the conference at the same time from the same organisation and receive 20% off the total cost
- Register a team of 10 or more to the conference at the same time from the same organisation and receive 25% off the total cost

### Please note:
- All 'Early Bird' discounts are subject to availability and require payment at time of registration and before the cut-off date in order to receive any discount.
- Discounts do not apply to vendors/solution providers. IQPC reserves the right to determine who is a vendor.
- Any discounts offered (including early bird and team discounts) are subject to availability and require payment at the time of registration.
- Please view our registration policy for full information about payment, cancellation, postponement, substitution and discounts.

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<td>Save $250 AUD $5,249 + 10% GST = $5,773.90</td>
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