



## Institution of Railway Signal Engineers

### Local Joint Meeting - ADELAIDE

Thursday 6 September 2018

**Time:** 5:45pm for a 6:00pm start

**Venue:** Fedora's Restaurant  
Hilton Hotel, Corner South Road & Sir Donald Bradman Drive, Hilton SA 5033

#### Programme

- 6:00pm Meeting Opening**
- 6:05pm "Train Detection – Track Circuits & Axle Counters Advantages & Disadvantages"**  
**Trevor Moore HonFIRSE**  
Signalling Standards Engineer, Australian Rail Track Corporation
- 6:45pm Train Detection and Asset Monitoring – using acoustic detection**  
**Mark Foster AMIRSE**  
Country Manager Asia Pacific, Wavetrain Systems Pty Ltd
- 7:30pm Meeting Conclusion**
- 7:40pm Cocktail Meal & Refreshments**
- 8:45pm Close**

#### Joint Meeting

**IRSE** SA Division

**RTSA** SA Chapter

**PWI** SA Section



#### REGISTRATION

To assist with venue setup and catering, please **REGISTER** using the Eventbrite link below:

<https://www.eventbrite.com.au/e/irsertsapwi-sa-local-joint-meeting-tickets-49081407812>

General Enquiries & Special Dietary Requirements to Malcolm Menadue.

Contacts: Email: [sa@irse.org.au](mailto:sa@irse.org.au) Mobile/SMS: **0418 827 126**

#### Cost – Free for Members and Visitors

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### Trevor Moore HonFIRSE



Trevor commenced his career in 1972 and after graduation was appointed as a signal engineer in the then Public Transport Commission of NSW. He worked in various Signal Branch technical sections and was instrumental in the implementation of the first computer based interlocking in NSW. In 1996 Trevor became Director and Principal Engineer for Endeavour Management & Engineering Pty Ltd working on a diverse range of projects before joining the Australian Rail Track Corporation (ARTC) in 2004 as the Signalling Standards Engineer. Trevor has led a team that has drafted 80 signalling standards that apply to the whole ARTC network and is continuing to update state based legacy standards. Trevor chaired the Rail Industry Safety & Standards Board – Train Control Systems Standing Committee from 2012 until 2018 and has been involved in Development Groups drafting 15 signalling and train control system standards. This year Trevor has been awarded the Engineers Australia Electrical College National Professional Electrical Engineer of the Year 2018 and the Australasian Railway Awards 2018 Systems Engineering Award.

### “Train Detection – Track Circuits and Axle Counters – Advantages and Disadvantages”

Train detection is important for signalling systems and is relied upon when signal control centres manage track and signalling thousands of kilometres from the control centre. Track circuits have been in use for over 100 years and axle counters for over 40 years. Both have advantages and disadvantages.

Track circuits rely upon the wheel rail interface and a reasonable performance for ballast. When this is not available or for fast light diesel multiple unit trains then performance issues arise. The axle counter is based on events and not the status of the track occupancy. The events are counted at the limits of the axle counter section. When actions occur mid-section then special actions are required to bring the system back into balance (reset).

The presentation will address the following issues:

- Track circuit performance under light DMUs
- The advantages of Track Circuit Assisters
- What causes problems with wheel-rail interface
- Road Rail Vehicles and train detection
- Level Crossings and Train Detection
- Axle counters and reset issues
- New reset processes for axle counters- supervisory reset
- The track circuit and broken rail detection

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### Mark Foster AMIRSE

Wavetrain Systems Country Manager Asia Pacific

Mark is a qualified Ground Engineer “Aircraft & Electronics” with experience in Rail Management, Sales and Technical areas across the Infrastructure, Permanent Way and Rolling Stock sectors.

His professional life has provided him with valuable experience in Telecommunications, IT, Avionics, Process Control, Materials Handling, Industrial Electronic / Electrical, Security, Instrumentation, with recognised Mechanical and Electronic/Electrical qualifications. His favourite assignment, commissioning the Earth Satellite Station on Lord Howe Island providing valuable communication services to the locals and tourists.

### Train Detection and Asset Monitoring – using acoustic detection

Mark’s presentation will focus on:

- Train Detection
  - Level Crossings
  - Overlay installation with existing detection e.g. Axle Counter + Acoustic Detection (Hybrid) to provide additional detection back-up and regain broken rail detection
  - Rollingstock speed dependant detection
- Asset Monitoring
  - Broken Rail Detection (Predictive)
  - Wheel Flat Detection
  - Dragging Equipment Detection
  - Compression & Tension in Rail
  - Metro Network Solution Overview
    - Self-powered sensors / wireless connectivity / real-time alarming
- Passive Location Case Cooling
  - Phase Change Material Technology
  - No power required
  - Location Case kit retro-fitting
- Technology Uptake to date (Global References)

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