TECHNICAL MEETING

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Making and Mending the Underground

Presented by
Iain Duncan, Byron De Lange

Thursday 9 October 2025

Venue: 10th Floor, Palestra, 197 Blackfriars Road, SE1 8NJ

Commencing at 5:30pm BST

Talk synopsis

The long and rich history of the London Underground has resulted in a fascinating mix of technologies that keep trains running safely and reliably. This technological diversity makes Transport for London (TfL) a rewarding place to work as an engineer, but it also brings unique challenges when equipment fails or becomes obsolete. These challenges create opportunities for innovation, particularly in developing bespoke solutions to maintain legacy systems and improve operational efficiency. That's where the Equipment Engineering Services team comes in.

In this talk, you'll discover how this in-house team of specialist electronics and mechanical engineers tackles a wide range of technical problems across TfL's complex network. From troubleshooting legacy systems to pioneering sustainable innovations, the team plays a vital role in keeping London moving. The presentation will feature a case study on the redesign of glass-enclosed relays, explaining the process behind the solution, as well as highlighting other examples of the team's work beyond the realm of London Underground signalling.

Speaker biography

Iain Duncan is a Principal Engineering Leader in TfL. He studied Electronics with Music at Glasgow University and has spent the last 14 years working on the London Underground. Over this time he has gained extensive experience in signalling upgrade projects on the Jubilee and Northern lines, including Transmission Based Train Control reliability, and legacy system modification and replacement. He then made the move from major projects to lead the Equipment Engineering Services team, which primarily supports the signals maintenance directorate. Since taking on the role, he has overseen the introduction of a new points machine to London Underground, and expanded the modes and areas of TfL that the team supports, including several new innovations now in operational use.

Byron de Lange is a Senior Engineer in Transport for London. He studied Electronic Engineering at the University of KwaZulu Natal. After completing his studies he worked for Transnet, the South African freight train operator, for 9 years. During his time at Transnet, he worked on multiple legacy signalling systems. This included Design, Installation, Testing and Commissioning and Project Engineering for the entire lifecycle of Signalling Projects. Since moving to Transport for London he has been involved with the

installation of monitoring equipment for failing signalling equipment, technical investigations for signalling equipment failures, the support for testing and validation of unsupported legacy relays for use on the railway, and the redesign of all variants of Glass Enclosed relays. During the last 3 years, he has contributed to the marked reliability improvement seen with the new points machine that was introduced to the railway as well as winning the Dell Award in his second year at Transport for London.

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