The Wider Challenges of Production based Electrification

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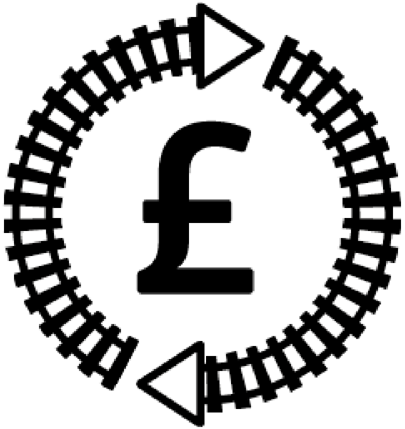
LEEPS
Eliminating high voltage electrical accidents

Iconic Projects



Quotes on those Iconic projects

- “Anyone who has had anything to do with construction knows that things are always late finishing and always cost more, and that’s exactly what we’ve experienced.” - Tottenham Chairman
- “Their investment has fallen 90% in value since the peak, and they blame the British and French governments for encouraging them to invest in what has become a financial horror story.” – Channel Tunnel article in the Guardian 2004
- “This project is facing a serious funding gap and there is uncertainty over how loans will be repaid, MPs have warned. The predicted cost of finishing the project is now close £19bn.” - City AM 2021 article on the funding of Crossrail
- “I’ve been in Network Rail for six years and we’re all scarred by the Great Western electrification – which was the project from hell because it was agreed largely originally over a weekend with no idea what its scope was and no idea of how much it cost. That’s a really bad way of spending billions of pounds of public money. – Sir Peter Hendy

Successful Rolling Programs

Eliminating high voltage electrical accidents

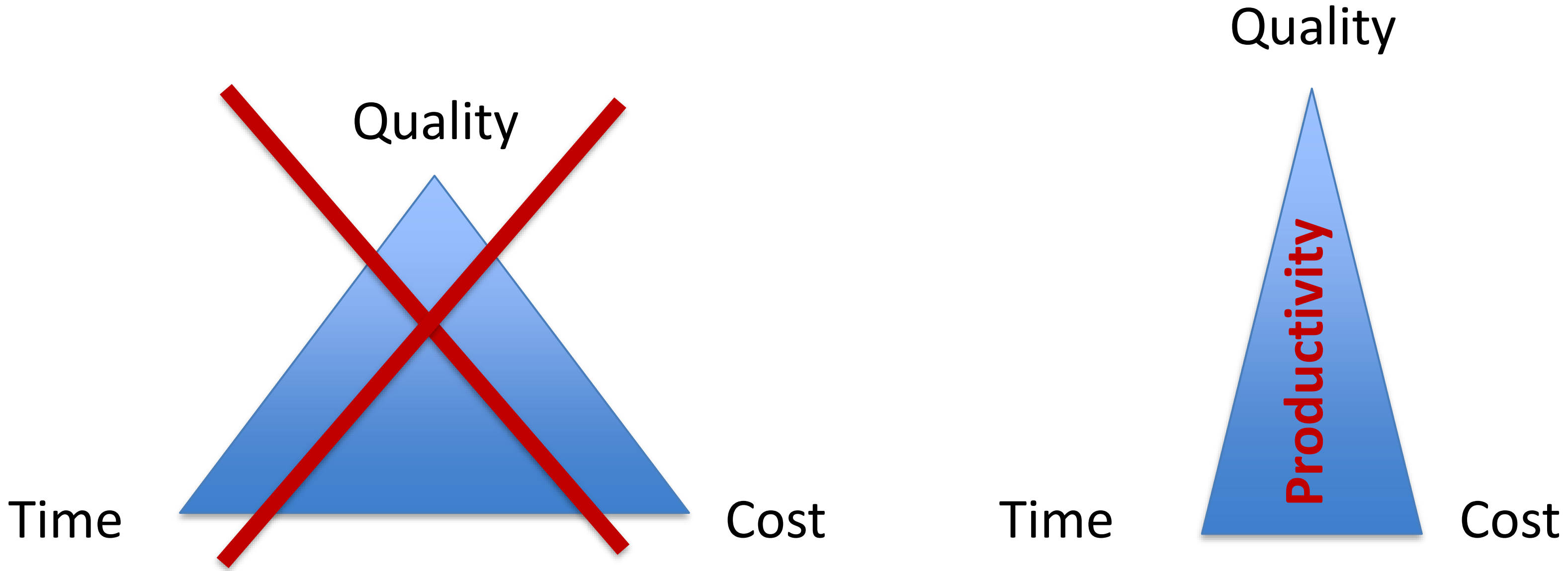
Repetitive Programs

- “Weighted average monthly prices for average mobile use (excluding handset cost) £14.03 (2015) to £10.96 (2020)” - OFCOM
- “The prices are so low that the windfarms could generate electricity more cheaply than existing gas-fired power stations as early as 2023, Carbon Brief analysis suggests. Even last year, renewables had not been expected to reach this tipping point until around 2030” – Carbon Brief 2019
- “It’s already hundreds of pounds cheaper to buy a 3.6 kW charger than it was just a few years ago” – Eco Experts 2022
- “Network Rail Power Supply upgrade to support the Southern Region new trains program was authorised at just under £1Bn and closed out at circa £800m” – NR management reports

Key differences

- Think production - focus on unit costs and repetitive tasks
- Target minimal overheads and prelims, value added activities only
- Multiple packages - competition maintained throughout the program
- Innovation based on avoidance of cost, reduce complexity
- Minimal regulation and focus on service provision date
- Big Picture - Safety focus to include decarbonisation obligations
- No ‘fundamental’ or ‘CSM significant’ risk assessment
- No industry structural inefficiencies
- ‘Pilot’ the changes to bring the doubters with us.

The Iron Triangle Myth



Questions for the Industry

- Will electrification happen irrespective of the unit cost?
- Is the scope more fitting to a production or a project philosophy?
- Is it better for the many to collaborate in a rolling production-based program or for the few to work on the last of the project-based schemes?
- What are the non-value and low-value added activities?
- How do we work with Clients, Regulators and Funders to eliminate the poor value activities/processes?

Key Messages

- Decarbonisation is happening, it will gather pace
- Electrification is currently **unaffordable** in the post-pandemic world despite being the best engineering solution
- The rolling stock and road transport sector engineers will provide affordable but sub-optimal solutions unless we reduce the costs of electrification
- The entire industry needs to pilot a new way of working
- The time to act is now.