

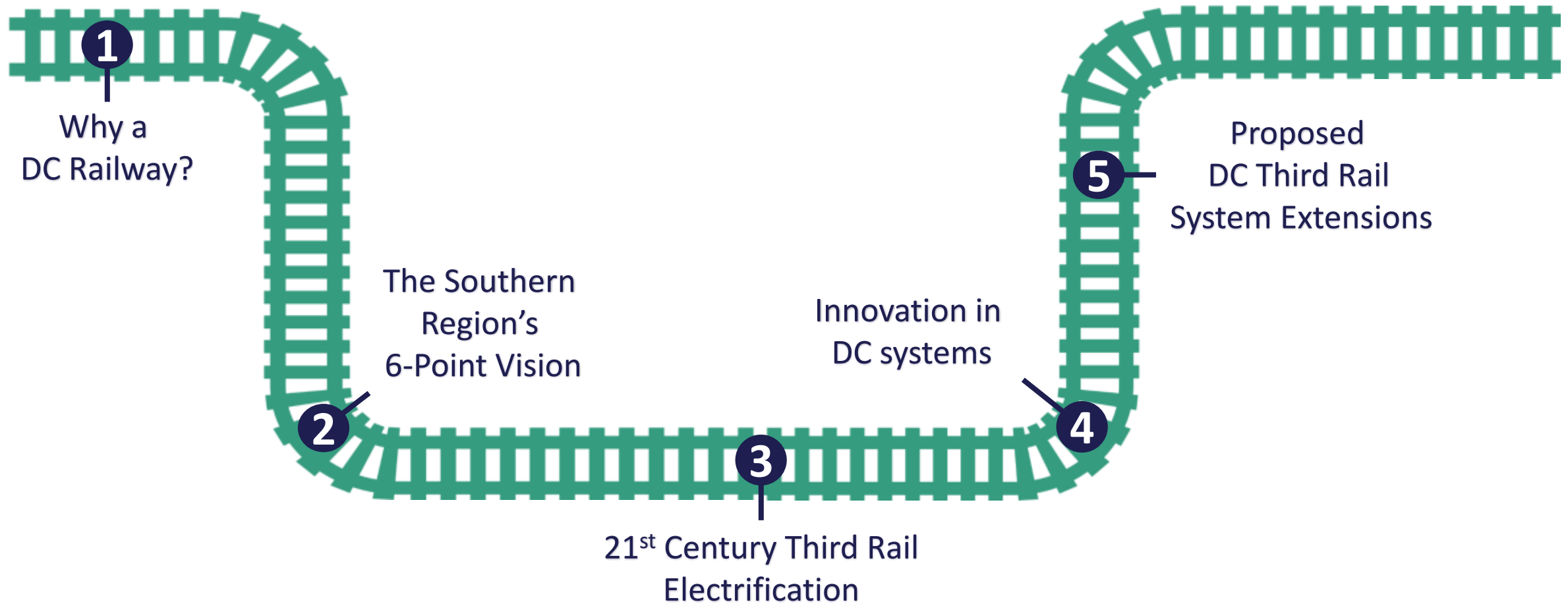
DC Third Rail System Extension



Tom Wong – Assistant EPME – tom.wong2@networkrail.co.uk – 07999 717 735

Who am I?

What are we here to talk about today?



Why a DC Railway?

- **History**

- Trams and light rail.
- Main line DC electrification.

- **Why was DC chosen originally?**

- Simple but capable system supporting requirements of the train service.
- Affordability / Reliability
- Electric traction used DC motors

- **Why is DC still appropriate today?**

- It can economically meet the outputs required.
- Ease of regeneration during braking to reduced peak loads.
- No inductance issues.

DID YOU KNOW?

- The first train powered by an electric motor was DC!
- The first train achieving speeds over 200mph was DC propelled!
- The first European highspeed line was 3kV DC (Direttissima, Italy)

Putting it into perspective



Extensive 3rd Rail
Electrified network.



The Southern Region is
currently 84%
electrified.



The majority of our 3rd
rail electrification is in
the Southern Region.



More than one third of
Britain's rail services.

The Southern Region's E&P 6-Point Vision

Fit for the Future

- Modelling of existing and future electrical capabilities of the network.
- Leading and enabling timely delivery of timetable.
- Embracing new and innovative technologies.
- New/infill 3rd rail D.C. areas.

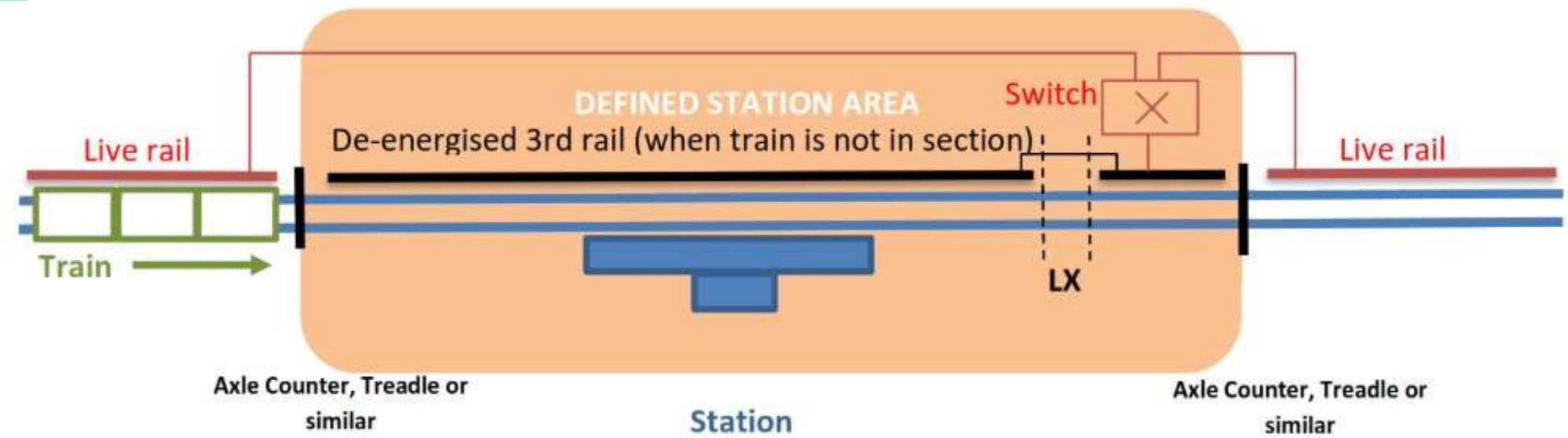
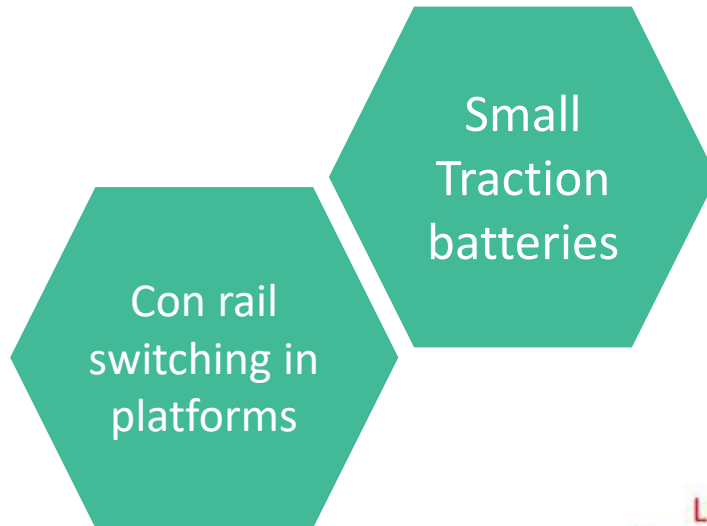
Efficient & Decarbonised System

- Hybrid and battery rolling stock innovations.
- Power generation and energy storage innovations for traction power systems.



21st Century Third Rail Electrification

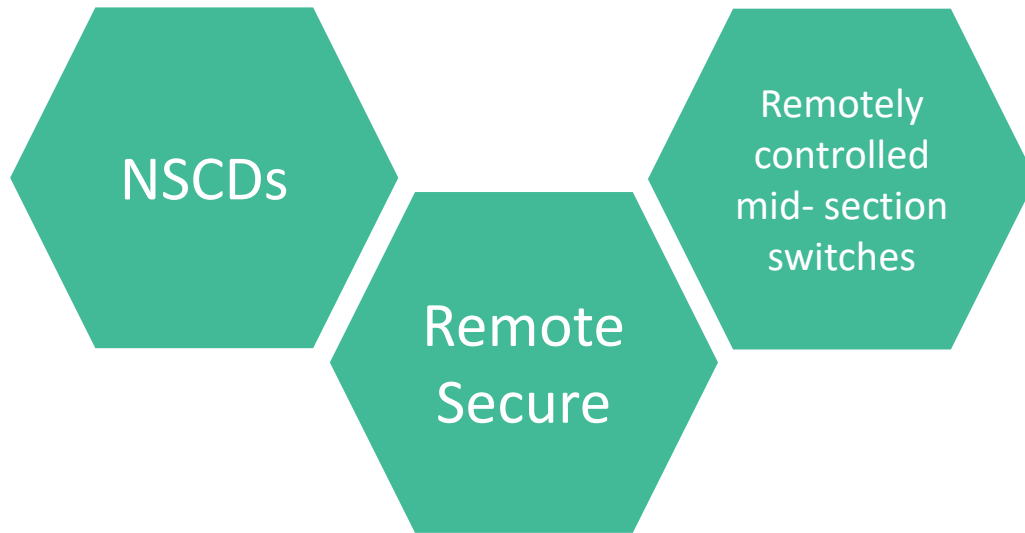
- Protecting Passengers and Public



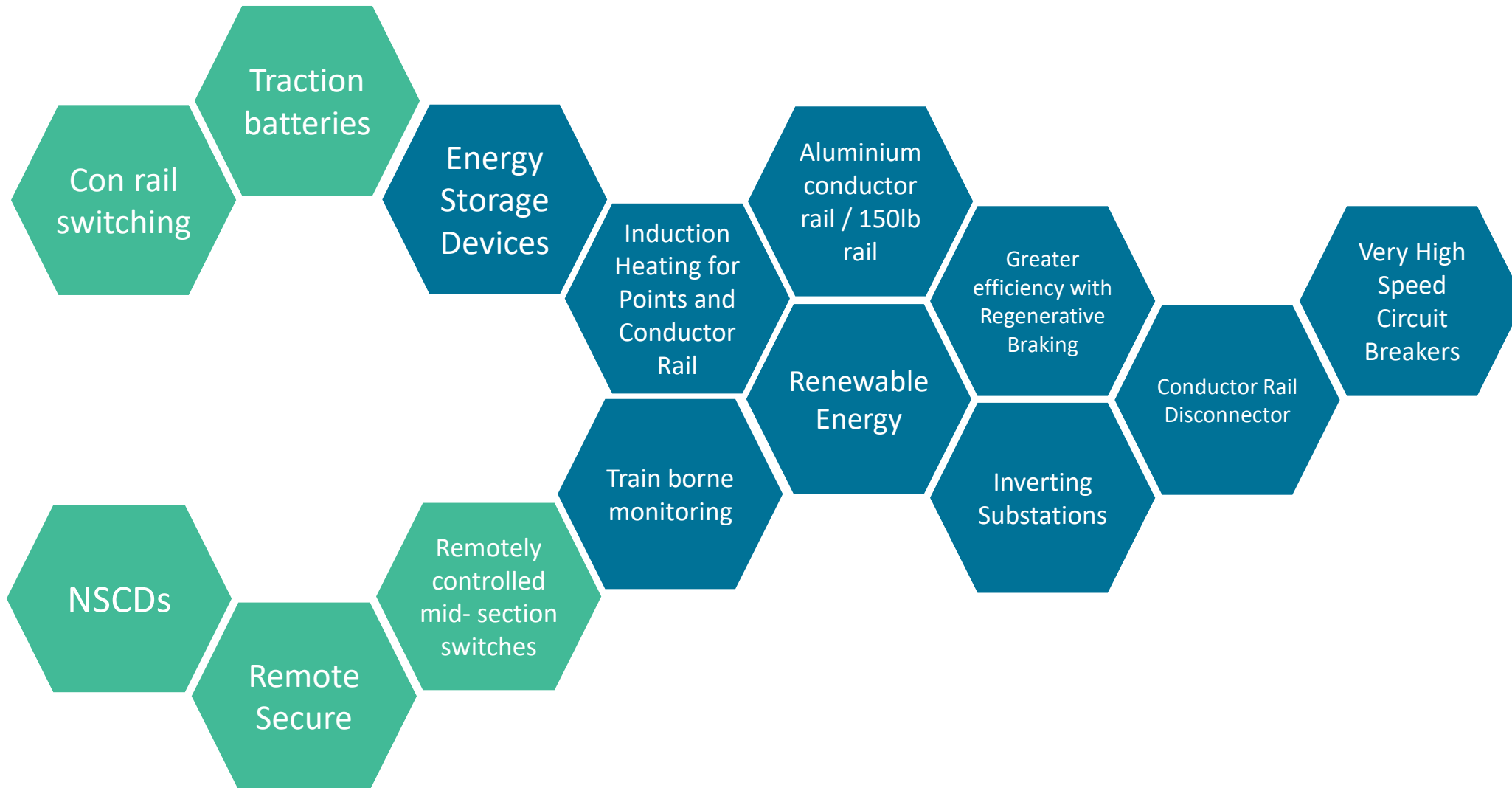
21st Century Third Rail Electrification



- Protecting the workforce



Innovation in DC Third Rail Electrification



Deciding on the most suitable solution

- The decision support tool helps to identify options to electrify and decarbonise our railway.
- A study in 2022 provides greater confidence and understanding the control of risks around development of third rail electrification.
- This includes enhanced third rail solutions incorporating chosen mitigation measures.
- Working with our regulator.

Proposed DC Third Rail System Extensions – under review



Uckfield

12 car service.

Fixed electrification proposal.



West of England

10 or 12 car service to Salisbury.

5 or 6 car service beyond.

Considering converting to battery / third rail hybrid stock



Marsh Link

Fixed electrification.

Or traction batteries.



North Kent

Now looking at 2 or 3 car shuttle service.

“An electrified railway is a better railway,
however you define better.”

Roger Ford, Modern Railways

Thank You!

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