Shaping the Future of Railway Industry – Student Engagement Event
20th September 2016

Siemens Mobility
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Agenda

- Overview of Siemens
- Our View on the challenges we all face today
- Siemens and Projects within the railway sector
- How is Siemens placed to support the huge growth projections in the passenger railway within the next 3-5 years?
Siemens at a glance – overview

$\text{€82.3bn} \text{ Orders}

$348,000 \text{ Employees}

$\text{€75.6bn} \text{ Revenue}

* From Dr. Roland Bush, member of the Managing Board of Siemens AG Melbourne, September 1, 2016

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Siemens Mobility: Responding to Today’s Challenges

- **Aging & Growing Population**
- **Interconnected Transportation Networks**
- **Increasing Urbanization**
- **Growing Congestion**
- **Increasing Global Mobility**
- **Smart Data / Big Data Cloud / Mobile Services**
- **Behavioral Changes / Disruptive Technology** e.g. “Shareconomy”
Rail and road transport networks - crucial for mobility in cities

More and more people and goods need to be moved predominantly by rail and road

**Rail traffic**
- German urban rail transport: 6 m (2014) vs 10 m (2030)
- US rail cargo transport capacity: 19.7 bn (2012) vs 28.5 bn (2040)

**Road traffic**
- Average speed in big cities will drop further
- Car density will increase
  - Indonesia: 4 x
  - China: 10 x

**Focus**
- Increase capacity
- Preserve environment
- Ensure safety
- Cope with tightened budgets

Source: U.S. Department of Transportation – ops.fhwa.dot.gov/FREIGHT/freight_analysis/faf/index.htm
Siemens Mobility: Our portfolio – overview

- Integrated, intermodal mobility solutions
- Rail Automation / Signalling
  Conventional and In-Cab
- Locomotives
  Passenger & Freight
- Regional and high-speed trains
- Turnkey Projects
- Road traffic management
- Services in rail and road transport
- Power / Electrification Solutions
- Rolling stock:
  Commuter, Regional, Metro, Trams ...
- Automated fare collection
- Mobility Division
Level crossing systems

Train radio (GSM-R)

ETCS on-board unit

Operations control centre

Power / Electrification

Point Machine / Turnouts

ETCS & Conventional Signalling

Line side Electronic Unit (LEU)

Rolling Stock Regional Commuter High Speed

Trackside Equipment

Radio Block Centre (RBC)

Train Detection Axle Counter Track Circuit

Mainline
Mass Transit

- Operations control Centre SCADA
- Power Distribution & Electrification
- Passenger information system
- CCTV
- Train control system
- ATO/ATP
- Passenger Movement Control
- CBTC system
- Tolling / Fair Collection
- Metro Vehicles
- Platform Screen Doors
- Access point
- Air Conditioning Control
- LED signal
- Intermodal integration
- Trams & Light Rail
Siemens Mobility (MO) – Projects

1. Cranbourne Pakenham Line Signalling Upgrade (CPLSU): VIC
   • 67 km of track revitalisation of existing section
   • Signalling infrastructure upgrade – will remove level crossing (9 - head way) and add New CBI (Westrace MKII)
   • Expected performance gains by the removal of existing crossing - up to 24 per hr.

2. North West Rail Link: NSW
   • Major project in electrification

3. ASPECT 3 Alliance (5 years): Queensland
   • Signalling / level crossing

4. Level Crossing Projects: WA
   • Signalling and Crossing Projects

5. Complete Re-Signalling & Electrification of Adelaide Metro System: SA

6. Future Rail Projects: Vic & Qld
   • Metro Tunnel to deliver up to $1 billion worth of signalling and communications systems as part of the largest public transport project in Victoria’s history
   • Blackwater / Goonyella

* Computer Based Interlocking (CBI)
Siemens Mobility (MO) – Projects (O/S)

1. **NZ - ETCS L1 Auckland**: First deployment in Australasia of its kind

2. **Malaysia**: Batu Caves Re-Signalling CBI

3. **Singapore**: Down town line CBTC System

4. **Indonesia**: Signalling of South Line double track 250km of track and CBI Westrace MKI

*European Train Control System (ETCS)*
Finding Our Place in a competitive market....

- Where do we fit in the global supply chain?
- Leverage our strengths in
  - Food and beverages
  - Medical sciences
  - Oil & Gas
  - Mining
  - Advanced manufacturing
- The Prime Minister’s Industry 4.0 Taskforce’ to support Australia’s Industry 4.0 efforts
  - Siemens
  - SAP Australia and New Zealand
  - Australian Advanced Manufacturing Council
  - CEO Engineers Australia
  - Swinburne University of Technology
  - CSIRO
Siemens – Investing in the future……..

Digitalization Forum
A Siemens and Engineers Australia initiative

Event

The digital advantage

Do you understand the full potential of digital technologies, and the impact on your industry? Do you want to learn more about the opportunities offered by digitalization and gain a competitive edge?

On 1 September 2016, the inaugural Digitalization Forum was held by Siemens in conjunction with Engineers Australia.

Software, sensors, data analytics and network technologies are the means through which Australian companies can increase efficiency and productivity, and reduce costs. Early adopters across diverse industries are using ingenuity to gain a competitive advantage by adapting intelligent tools.

The Digitalization Forum brought together business, universities and industry stakeholders to explore the trends and technology that will underpin Australia’s transition to intelligent infrastructure and the future of manufacturing.

“The Digitalization Forum is a timely reflection on how Australian companies can embrace ingenuity and intelligent technology to grow their local footprint and access global supply chains.” Jeff Connolly, CEO Siemens Australia
Siemens Mobility within the Australian Rail Market…

In summary, Siemens Mobility is well placed to support the huge growth projections in the passenger railway within the next 3-5 years……..

Today’s megatrends affect engineering competencies:
– Disruptive, new technologies
– Software and digitalization
– New business models

Innovation, agility and education are success factors in a globalized economy with fast changing and volatile markets

Siemens is a global and diverse engineering powerhouse, that is for more than 140 years active in Australia – we continue to help mastering the country’s challenges

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