

The background features a night-time cityscape with a prominent elevated railway track in the foreground. A train is visible on the tracks. The scene is overlaid with digital graphics, including binary code (0s and 1s) and a network diagram with nodes and connecting lines. A semi-transparent table with data points is also visible in the upper middle section of the image.

SIEMENS

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

Siemens Mobility

Head of Product Sales – Bülent Yilmaz

~Product Line Manager - Alex Moffatt BSC Hon.

~Team Leader EM Eng. - Brandon Fisher CPEng RPEQ NPER

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



Divisions (Revenue in €bn)

Industrial Business									Financial Services
Power and Gas	Wind Power and Renewables	Power Generation Services	Energy Management	Building Technologies	Mobility	Digital Factory	Process Industries and Drives	Healthcare (separately managed)	Assets 25
13.2	5.7	Part of PG and WP	11.9	6.0	7.5	10.0	9.9	12.9	

Portfolio



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

Siemens Mobility: Responding to Today's Challenges

**Aging &
Growing
Population**



**Increasing
Urbanization**



**Growing
Congestion**



**Interconnected
Transportation
Networks**



**SIEMENS
Mobility Division**

**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

Trend







Cities grow by 2 inhabitants per second

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


Challenges

Rail traffic

2014 6 m  German urban rail transport	2030 10 m  German urban rail transport
2012 19.7 bn  US rail cargo transport capacity	2040 28.5 bn  US rail cargo transport capacity

Road traffic


2030 - car density will increase ...



20 km/h


Average speed in big cities will drop further

4 ×



Indonesia


10 ×




China

Focus


Mobility is No.1 on the City / State political agenda – and specifically to ...




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

Unrestricted © Siemens AG 2016.

Page 5

September 2016

Mobility Division

Siemens Mobility: Our portfolio – overview



Regional and high-speed trains

Integrated, intermodal mobility solutions



Rail Automation / Signalling
Conventional and In-Cab



Locomotives
Passenger & Freight

Turnkey Projects



Power / Electrification Solutions



Rolling stock:
Commuter, Regional, Metro, Trams ...



Road traffic management



Services in rail and road transport



Automated fare collection



SIEMENS

Level crossing systems

Radar

Train radio (GSM-R)

ETCS on-board unit

Operations control centre

Point Machine / Turnouts

Signals

Power / Electrification

ETCS & Conventional Signalling

Line side Electronic Unit (LEU)

Electronic interlocking

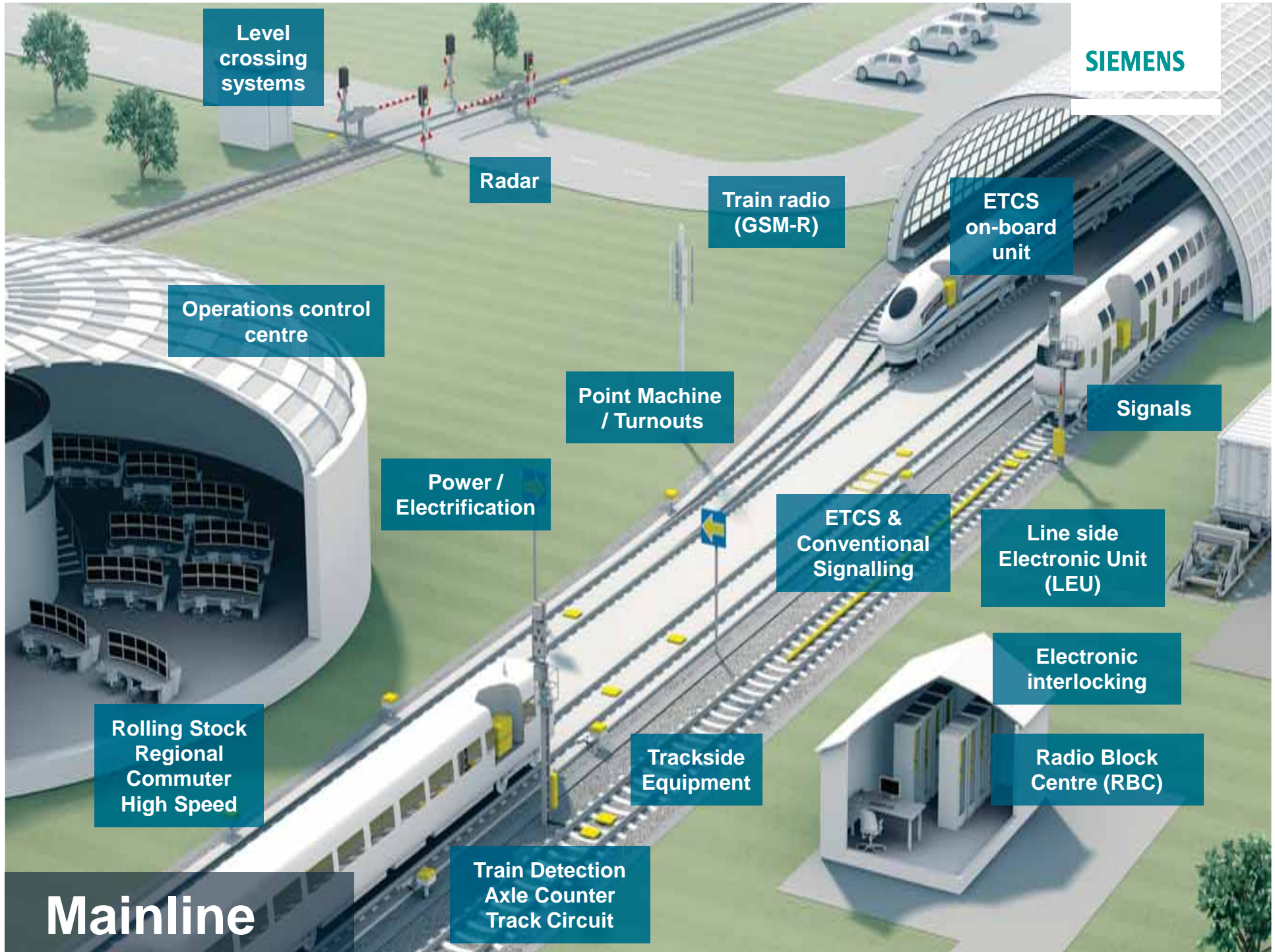
Rolling Stock
Regional
Commuter
High Speed

Trackside Equipment

Radio Block Centre (RBC)

Train Detection
Axle Counter
Track Circuit

Mainline



SIEMENS

Operations control
Centre
SCADA

Intermodal
integration

Trams &
Light Rail

Tolling / Fair
Collection

Power
Distribution &
Electrification

Passenger
information system

CCTV

LED
signal

Train control
system

Passenger
Movement Control

Access
point

Passenger
announcement

CBTC
system

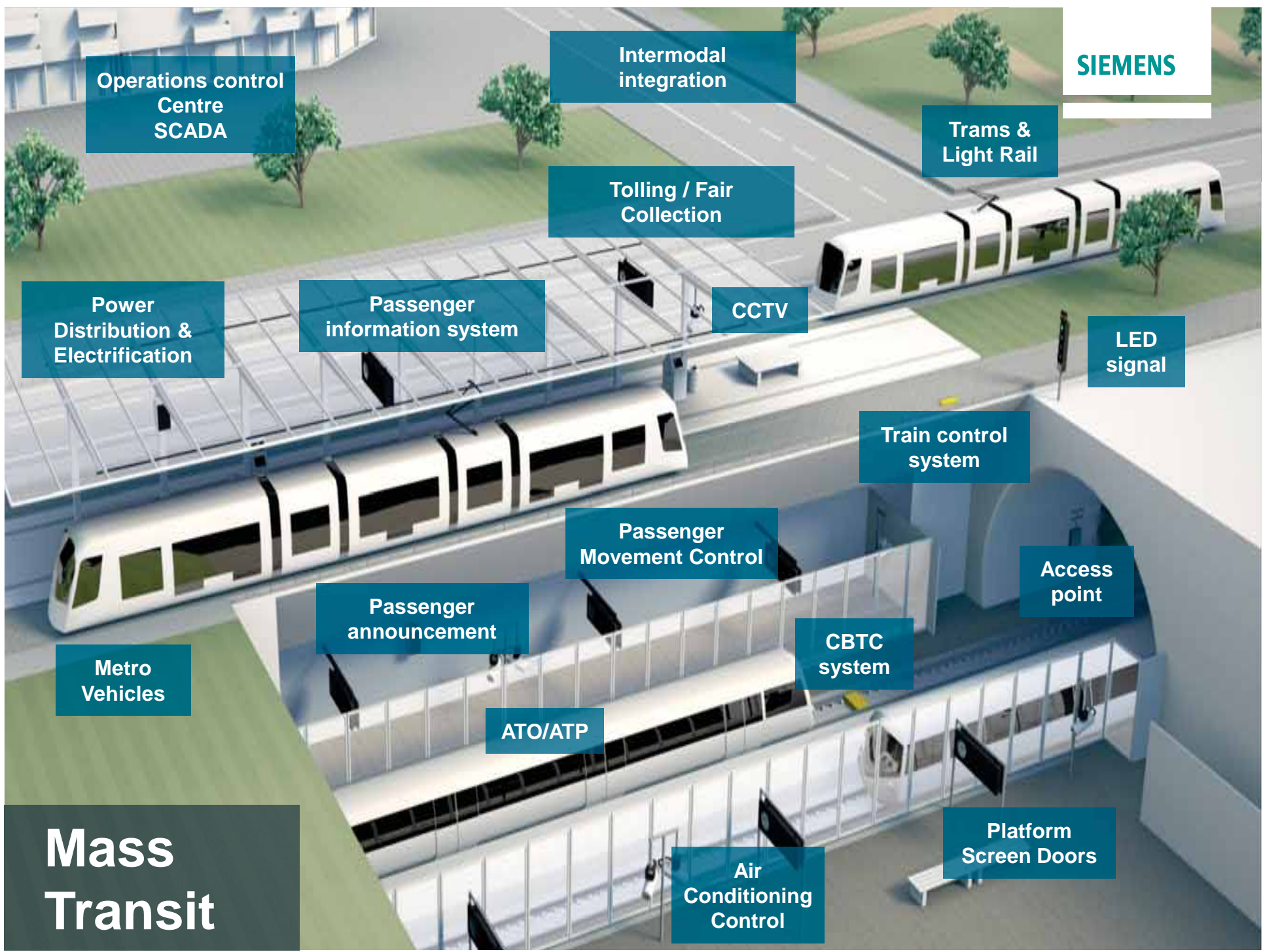
Metro
Vehicles

ATO/ATP

Mass Transit

Air
Conditioning
Control

Platform
Screen Doors



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)*

Unrestricted © Siemens AG 2016.

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.....



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 of 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

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

Siemens ~ Intelligent Infrastructure Vision

*Video
2.2min.*

