

SEMINAR ON CAREERS AND OPPORTUNITIES IN RAILWAYS

How to build an international career?

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AGENDA

1 INTRODUCTION – WHO AM I?

2 WHO DO I WORK FOR?

3 WHAT DO I DO?

4 WHAT DID I DO?

5 WHY DO I DO IT?

WHO AM I?

Personal

- Alexander Malik Kleist
- 29 years
- Live in Solrød Strand

Background

- Electrical Engineering at DTU
- Specialized in programming (embedded software and algorithms)

Career

- Application Engineer, 2012-2015
- Test Engineer, 2015-?
- Currently working for Bombardier in Stockholm

WHO DO I WORK FOR? - BOMBARDIER



Aerospace

+34,100 employees

Transportation

+39,700 employees

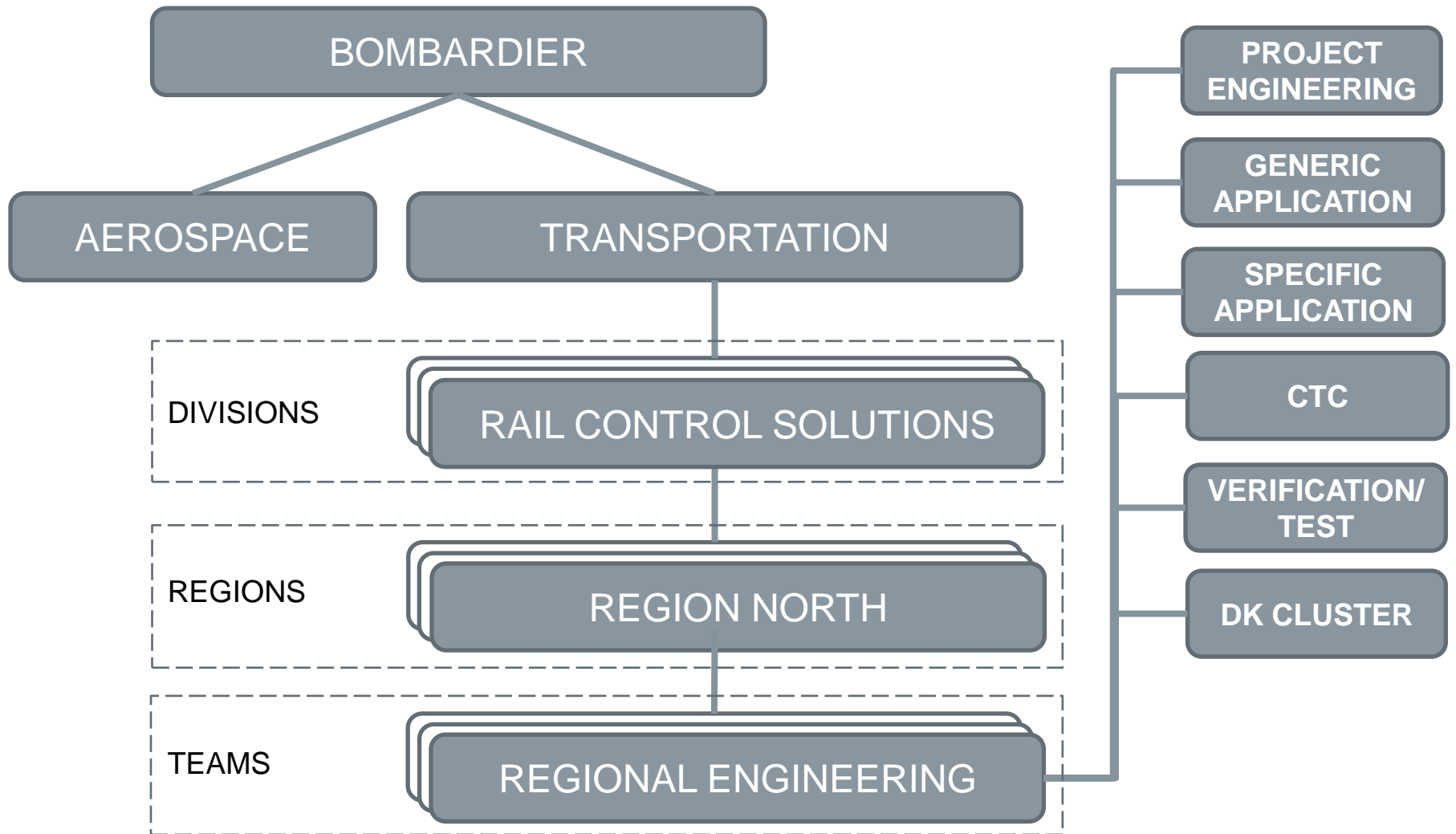
26 countries

63 sites (production, engineering, etc.)

6 divisions (Vehicles, Rail control solutions, Finance etc.)

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WHO DO I WORK FOR? - BOMBARDIER



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WHAT DO I DO? - EXPECTATIONS



What my family thinks I do



What the costumer thinks I do



What my boss thinks I do



What I think I do

WHAT DO I REALLY DO? – TEST ENGINEER

Testing data. Period

What kind of data?

- Interlocking Site Data

What is an Interlocking?

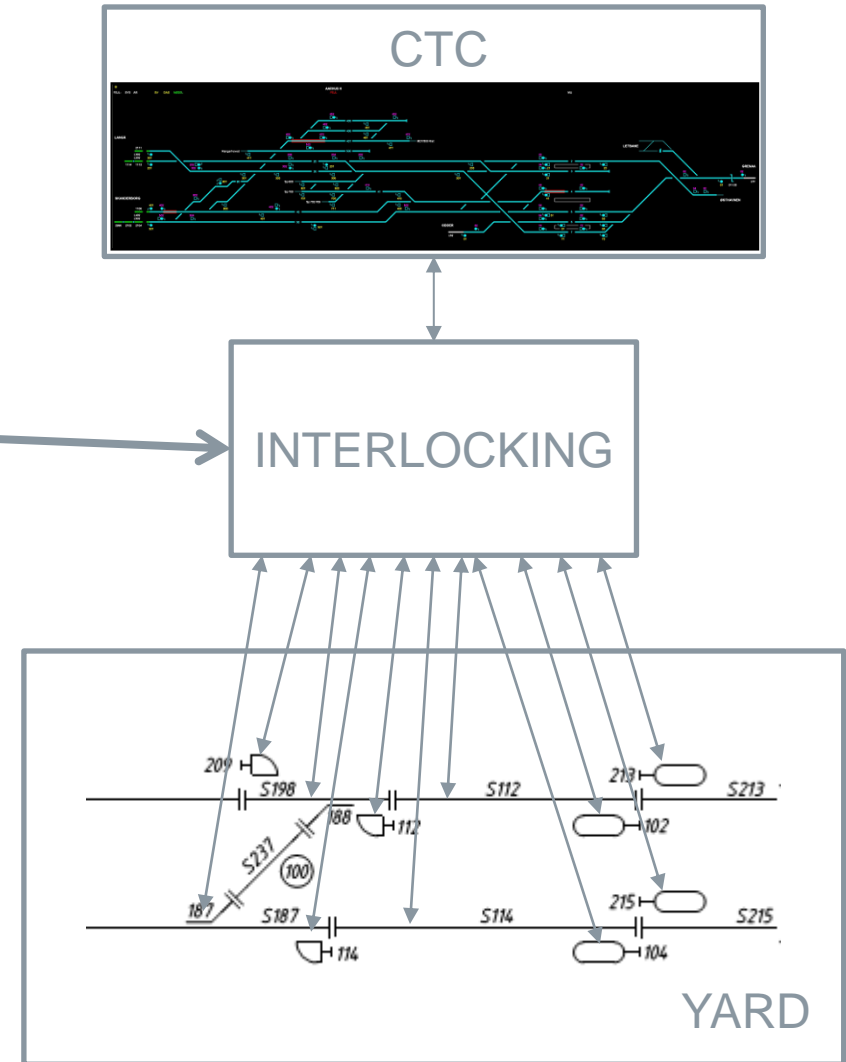
- This is an Interlocking

What does it do?

- Prevent conflicting movements in the yard

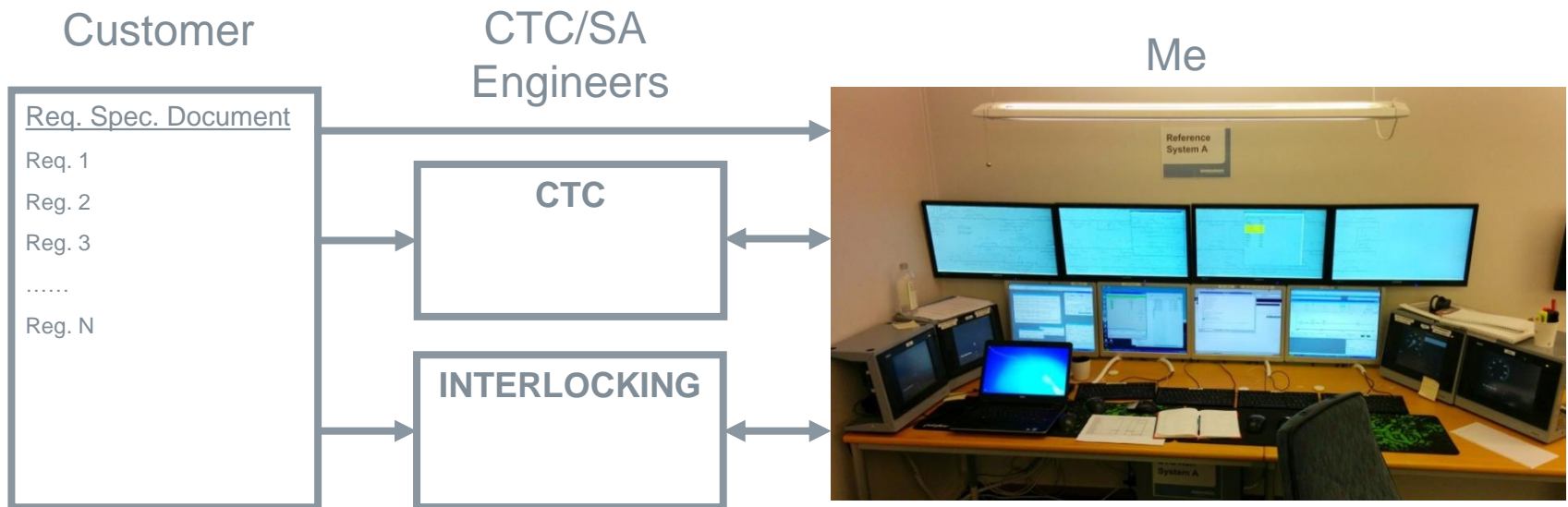
How do you test it?

- Manually
- Automatically (by coding)



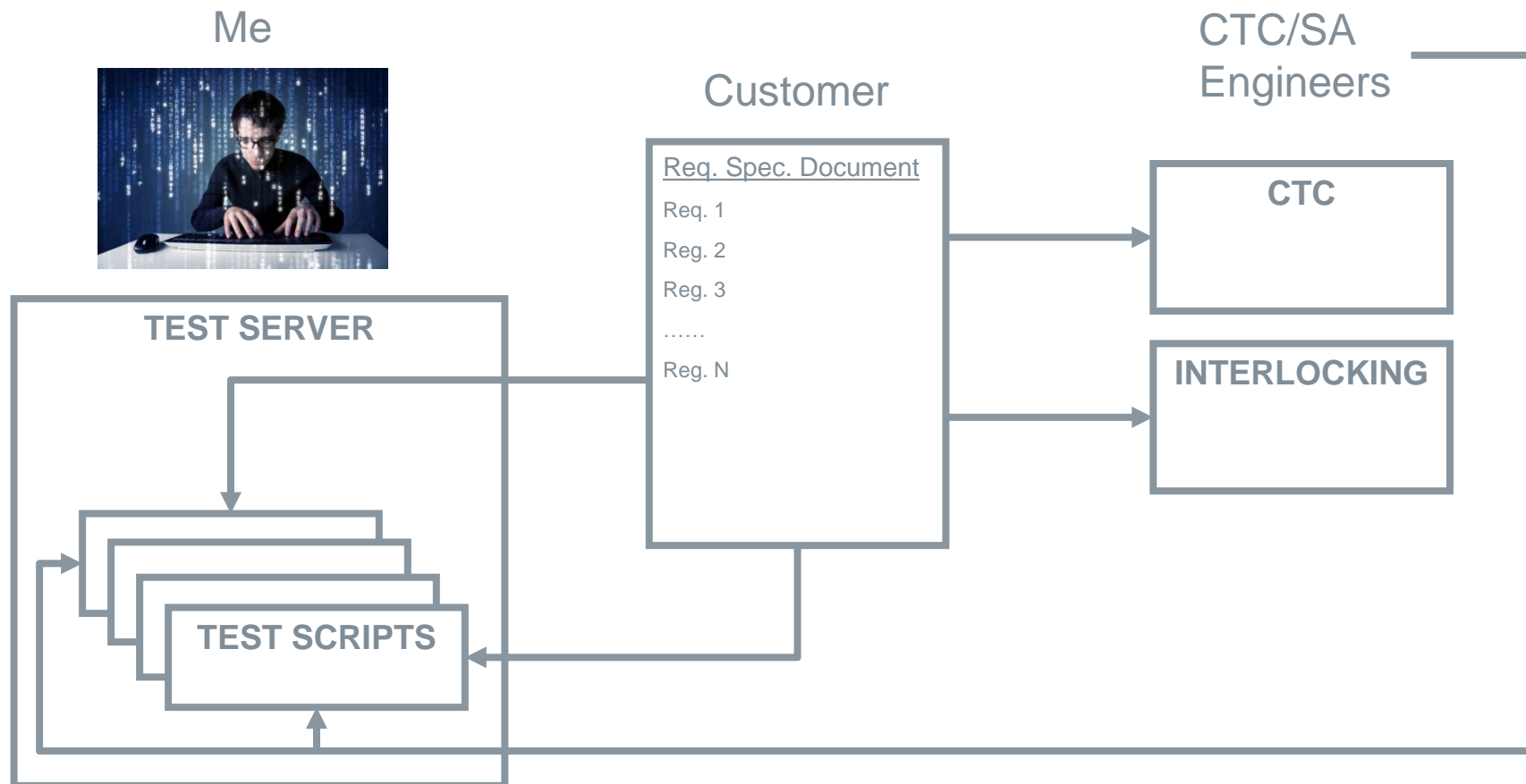
WHAT DO I REALLY DO? – TEST ENGINEER

Manually



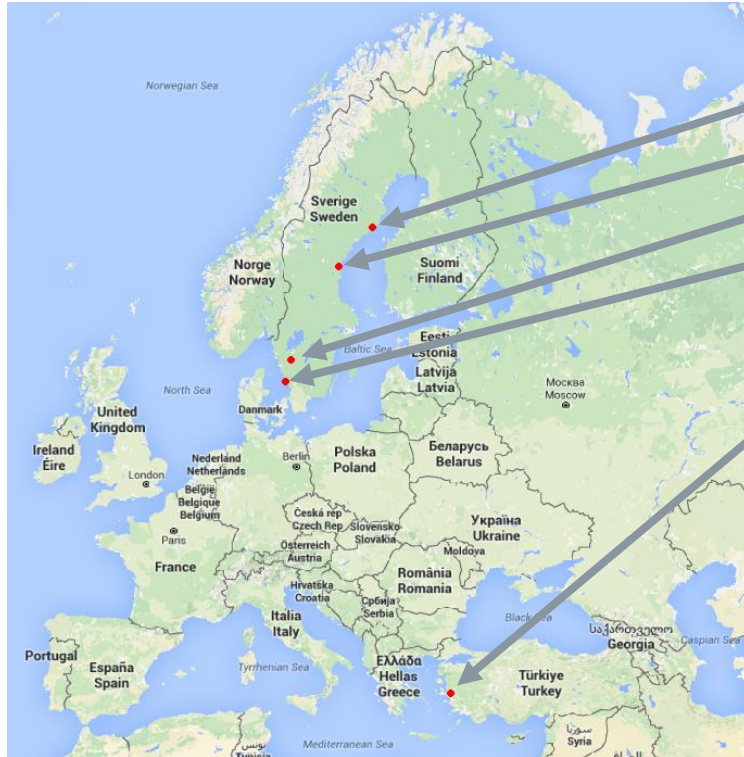
WHAT DO I REALLY DO? – TEST ENGINEER

Automatically



WHAT DO I REALLY DO? – TEST ENGINEER

Current projects



Botniabanan
Ådalsbanan
Västra Stambanan
Falkenberg
Izmir

Contributions:

- Find errors as early as possible
- Reduce time of manually testing
- On-time delivery
 - increase profit

WHAT DID I DO?

Application Engineer

When people asks *What do you do?*

- I'm an application engineer.

Ah..cool so you make smartphone apps! What kind of apps do you make?

- Eh..I'm in the railway industry.

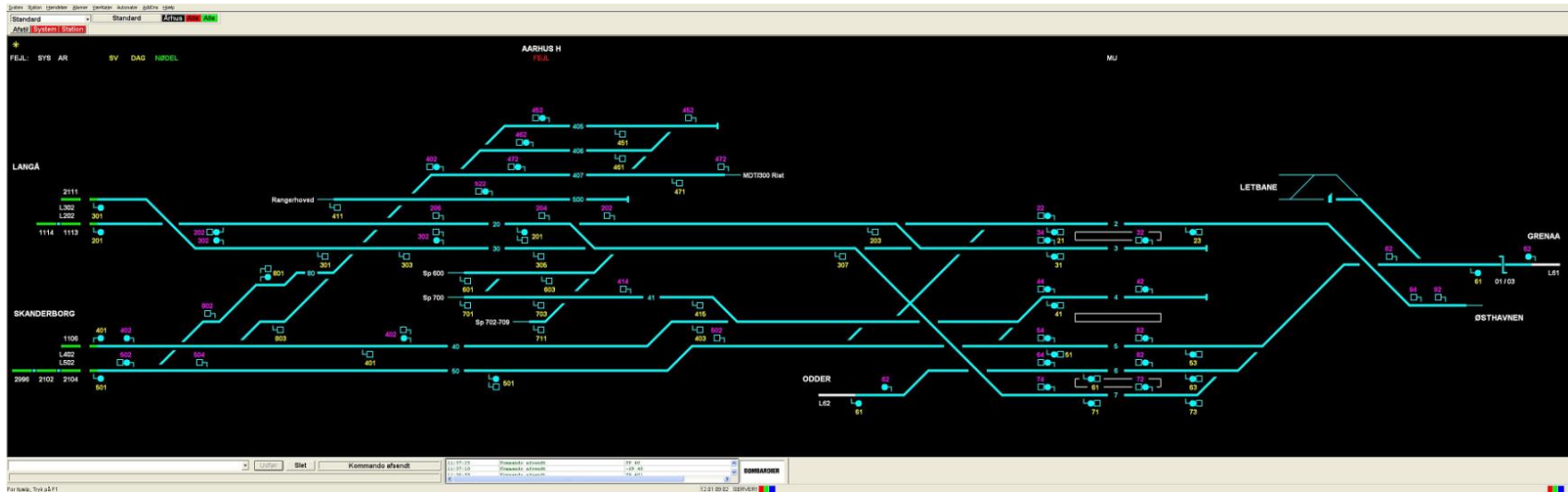
I'm making specific applications by configuring generic applications from requirement and design specifications, used for signaling railways with the purpose to optimize the flow of trains.



....never heard of that app!

WHAT DID I REALLY DO? – APPLICATION ENGINEER

Aarhus central station



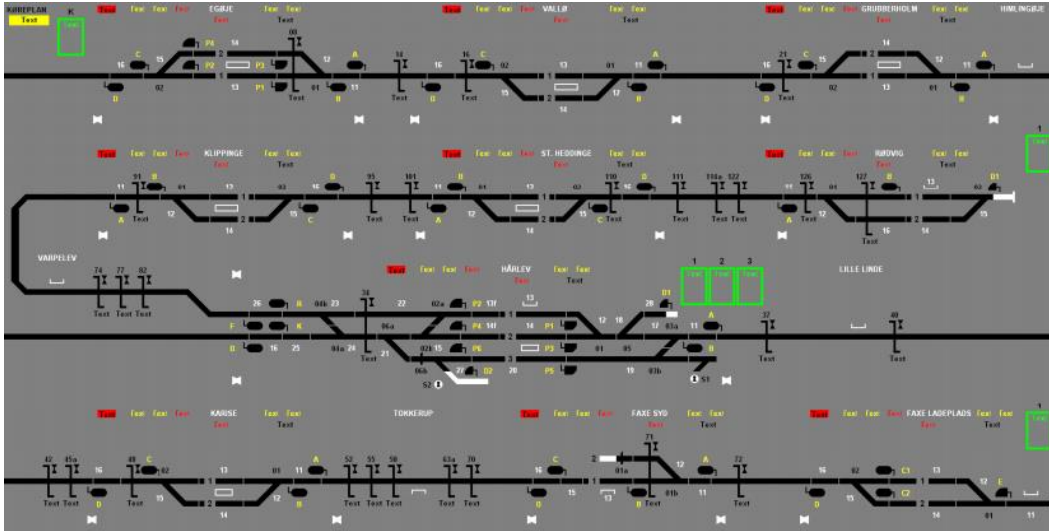
Project

- Create scripts to import data from customer req. specifications used for
 - data generation
 - data for tests
- System testing



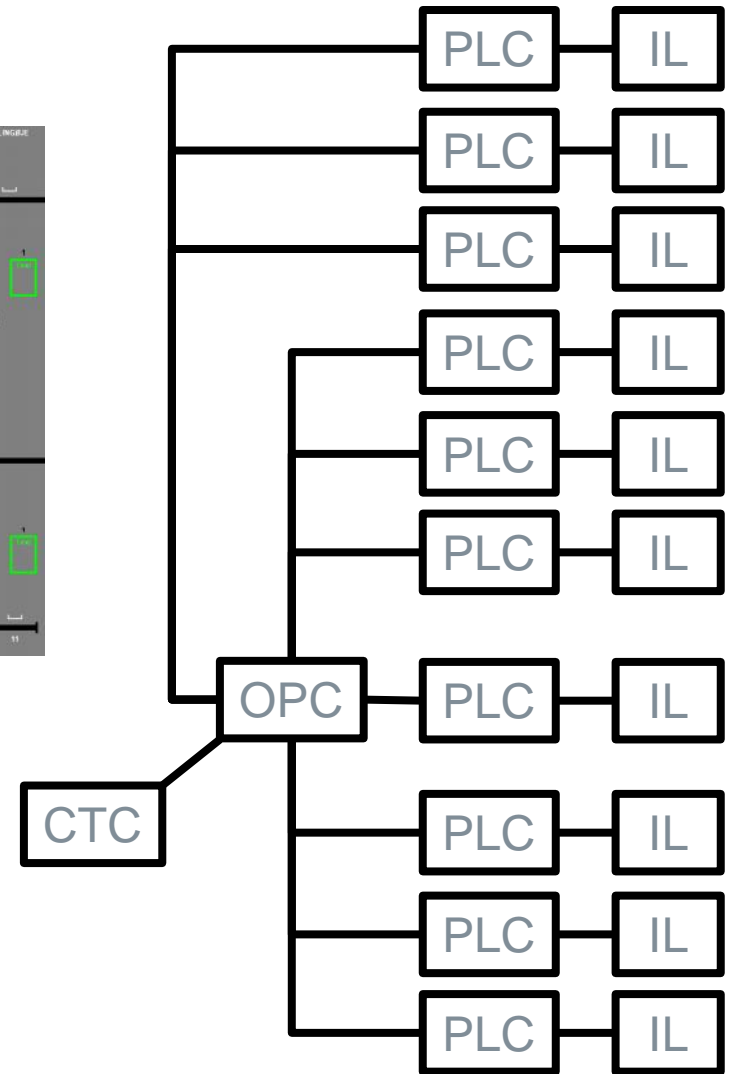
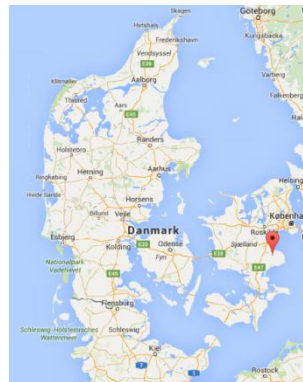
WHAT DID I REALLY DO? – APPLICATION ENGINEER

Østbanen



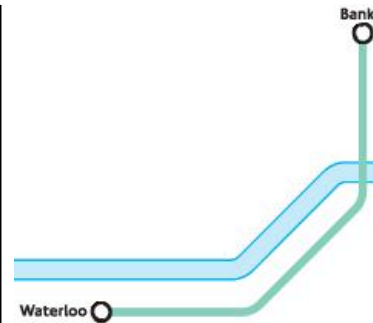
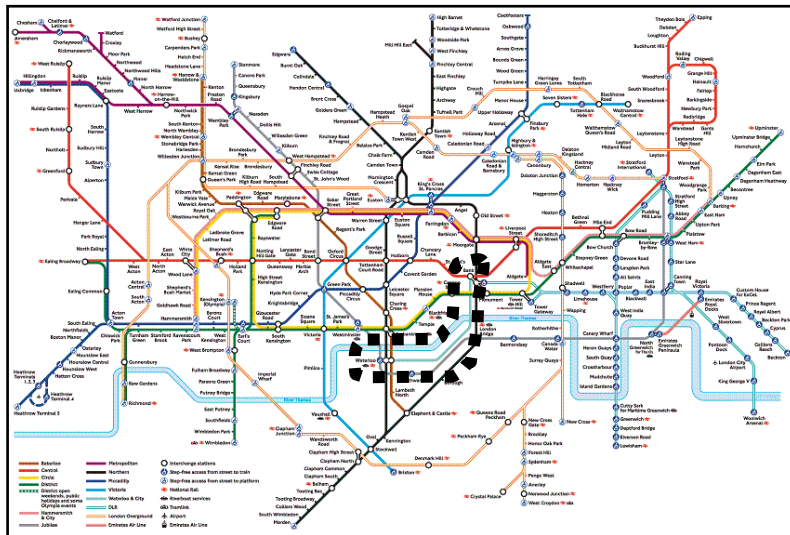
Project

- 10 stations
- 10 relay based interlocking
- 10 PLCs for controlling
- 1 OPC Server
- Development of CTC
- System testing



WHAT DID I REALLY DO? – APPLICATION ENGINEER

London Underground – City Line



Facts:

- The shortest line
- 2.37 km
- 4 minutes
- 2nd most intensively-used line



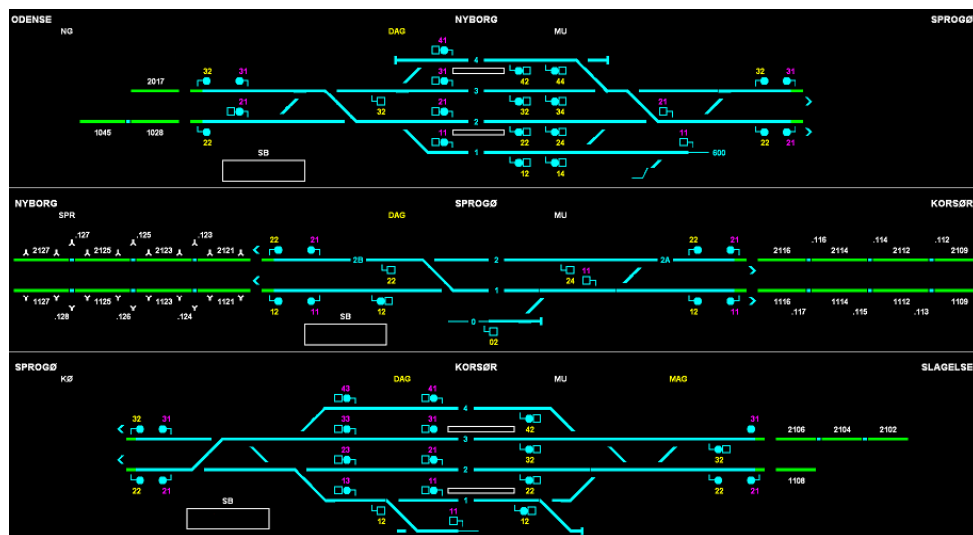
Project

- Timetable with ms precision (technically)
- Operation mode to catch up time if trains are delayed
- Implement subsystem that controls the train by using algorithms
- Development of tool to optimize the operation mode
- System testing



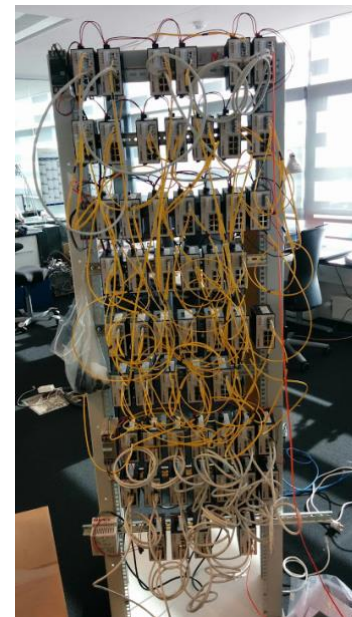
WHAT DID I REALLY DO? – APPLICATION ENGINEER

Storebælt



Project

- Update software on fiber modems
- 56 fiber modems
- 10 minutes to update each modem
- Script used for updating fiber modems
- Replaced hours of work in the field with 15 minutes on a laptop



WHAT DID I REALLY DO? – APPLICATION

TRAIN SIMULATOR

VIRTUAL TEST ENVIRONMENT

DOCUMENTATION

MAINTENANCE/SERVICE

MEETINGS WITH CUSTOMERS

DEPLOYMENTS

WHY DO I DO IT?

PROGRAMMING IS FUN

HANDS-ON EXPERIENCE

PART OF SOMETHING BIG

WORLDWIDE BUSINESS

TRAVELLING

WORK ENVIRONMENT

BOMBARDIER

the evolution of mobility