



◀ Clockwork Challenge

◀ [Name]

◀ [Job Title]

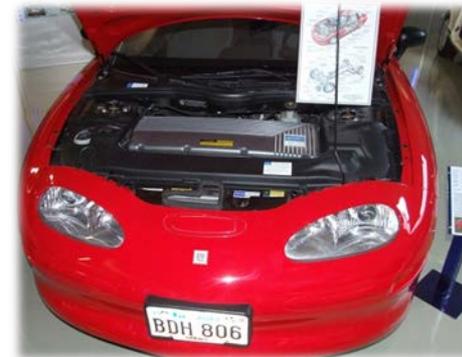
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Who am I?



- ▶ Young Crossrail 'Student Consultant'
 - ◆ American Engineering Student
 - ◆ Helping to develop 'Young Crossrail' activities
- ▶ Education and Job Experience
 - ◆ Current Student (Worcester Polytechnic Institute)
 - ◆ Summer Placements





Who is an engineer?



- ▶ An engineer is...
 - ◆ Engineers work with machines
 - ◆ Play 'Who is an Engineer?'

A



B



C



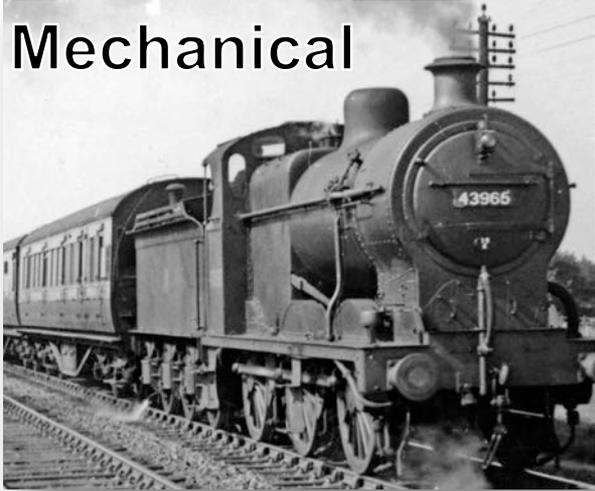
D



What do engineers do?



Mechanical



Railway

Robotics



Biomedical

Food



Chemical

Crossrail: A railway route east to west



Route Map

Showing rail and air connections

- Surface line
- Tunnel
- Portal (tunnel entrance and exit)
- National Rail connection
- Airport connection
- Airports not on the Crossrail route - to travel to these airports passengers will need to travel on other connecting rail services. Stop-free travel is possible but assistance will be required to get on and off some trains. Travel from Luton Airport Parkway Station to Luton Airport is via an accessible bus.





◀ Right Now on Crossrail

◀ Station Construction

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What needs to be done in Crossrail?



- ▶ Tunnelling complete by the end of 2014
- ▶ 40 stations, 10 new
- ▶ Station construction and refurbishment done by 2018





Construction example

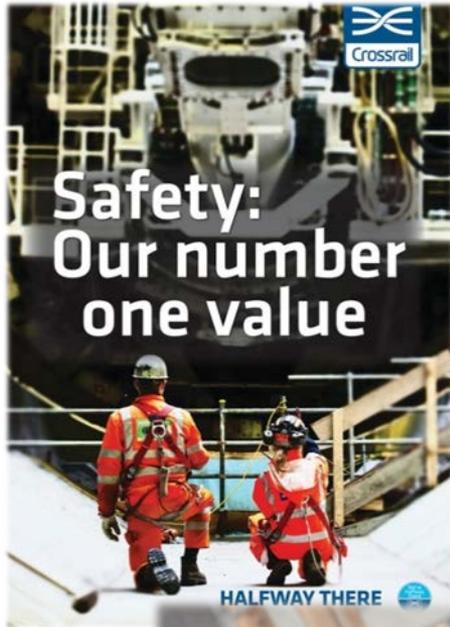


Cutaway View of Crossrail's
Paddington Station

WestonWilliamson



What do Project Managers do?





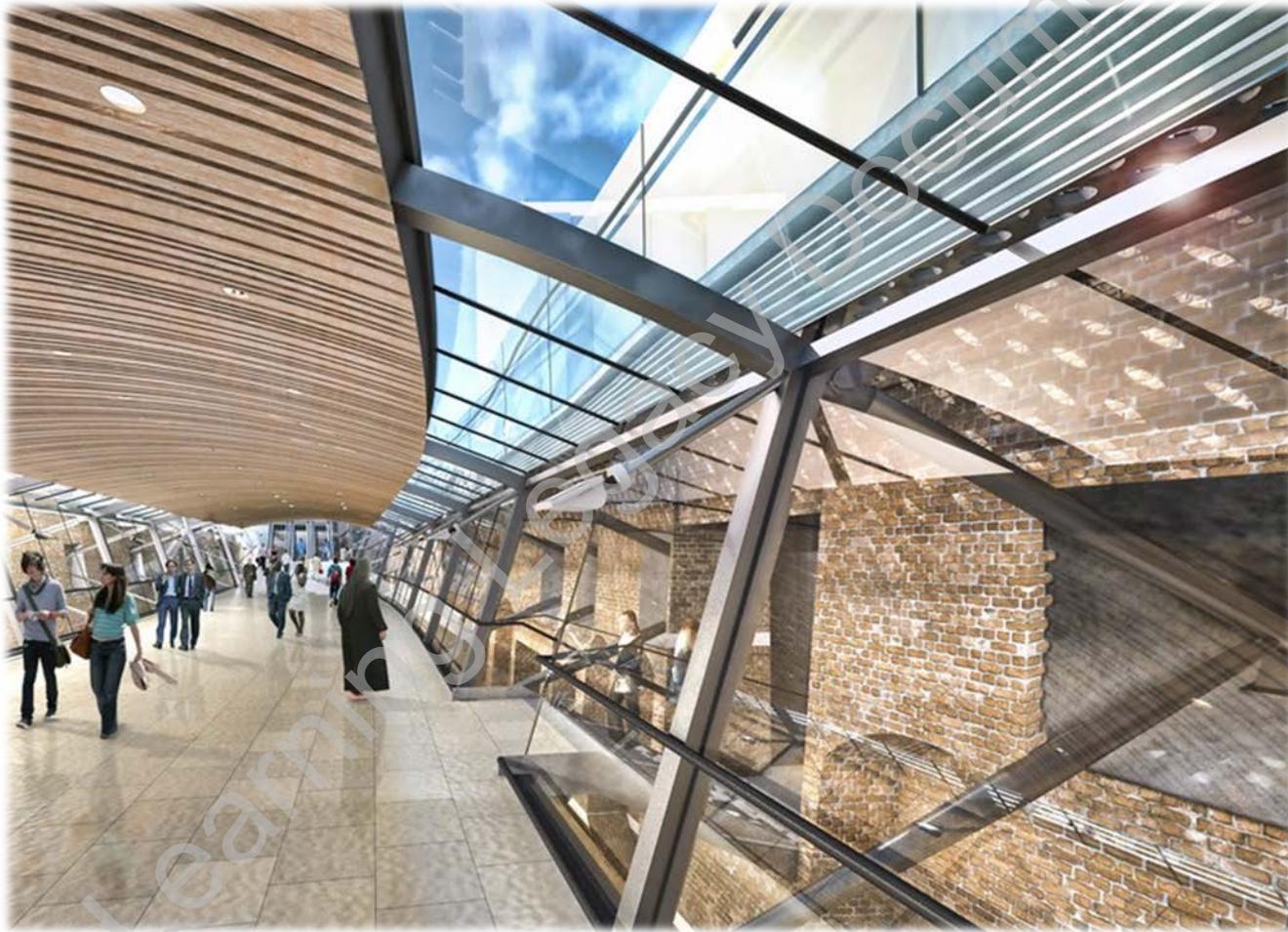
◀ Engineering Challenge: Plan a Station's Construction

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Example: Whitechapel Station





Materials



- ▶ Paper
- ▶ Pens/Pencils
- ▶ LEGO kit





The Challenge



- ▶ Organise all of the subcontractors
 - ◆ Build a station as quickly and as safely as possible
- ▶ Time required for each operation:



Electrics: 40 days



Plumbing: 50 days



Flooring: 35 days



Glass work: 30 days



Heating/Air Con: 65 days



Brick work: 100 days



◀ PRESENTATION & DISCUSSION

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Presentation

- ▶ What did your team come up with?



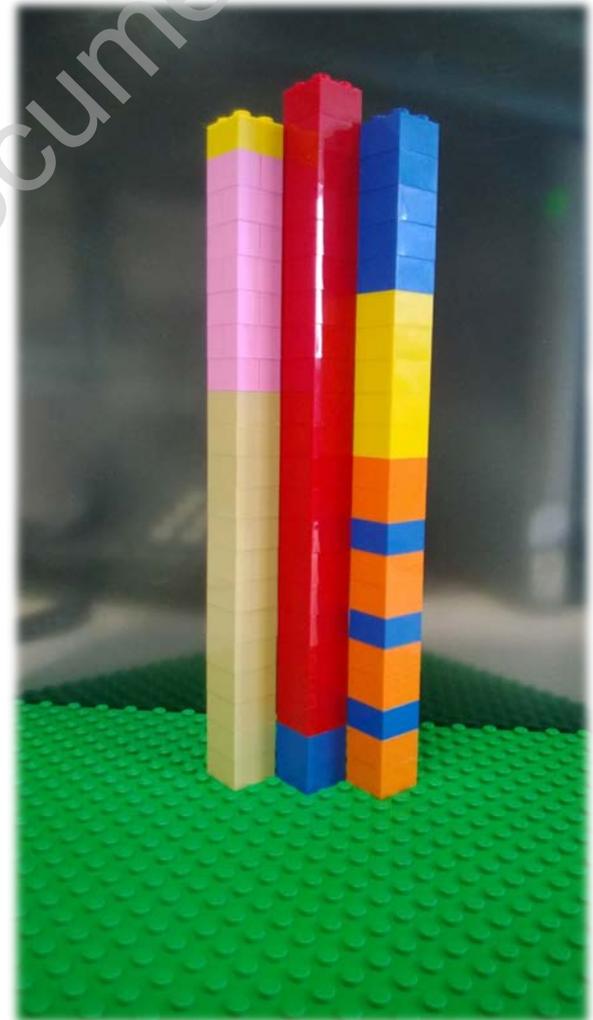
View From West India Quay DLR Platform



Discussion



- ▶ What did you think of the activity?
- ▶ What were some issues your team had?
- ▶ Most importantly, did you have fun?



Thank You





Learning Opportunities



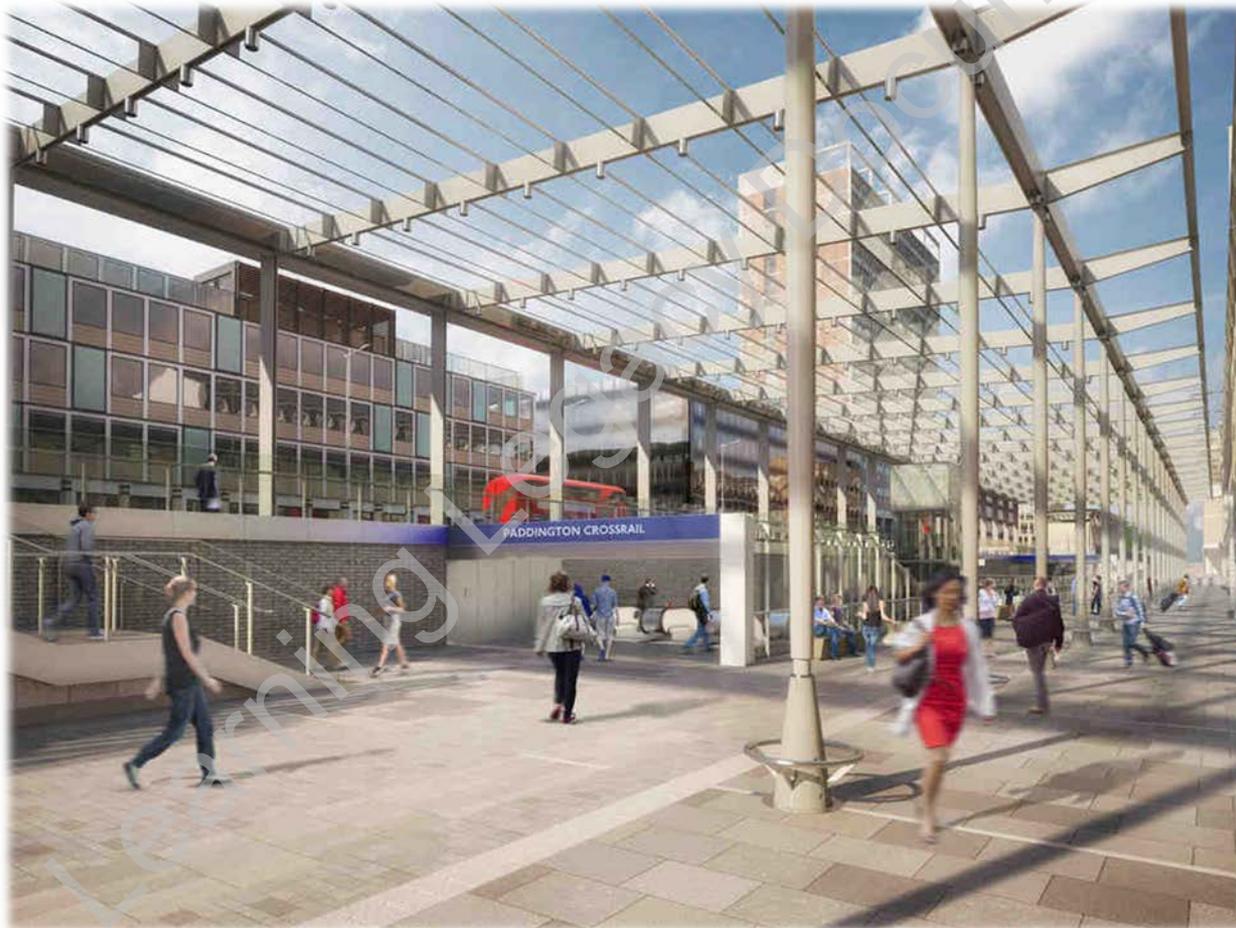
- ▶ Apprenticeships
 - ◆ Provides education and work experience
- ▶ Work Experience
 - ◆ Provides work experience for Year 10/11 Students
- ▶ Tunnelling and Underground Construction Academy
 - ◆ Programme Details

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Paddington Station Construction



▶ Slide 3

- ◆ Left: <http://www.goldrod.com/productdetail.php?cur=58&ID=5>
- ◆ Right: http://upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Motoraum_2_des_General_Motors_EV1.jpg/1280px-Motoraum_2_des_General_Motors_EV1.jpg

▶ Slide 4

- ◆ A: <http://www.motorsport.com/#!/lemans/photo/main-gallery/leena-2/?i=11821&id=1062728&sz=1&s=2>
- ◆ B: http://en.wikipedia.org/wiki/File:Atkinson_Rowan.jpg
- ◆ C: http://commons.wikimedia.org/wiki/File:Possible_Self-Portrait_of_Leonardo_da_Vinci.jpg