



Student Pack

Introduction

In today's workshop, you will work as a team to create a new product to be used when travelling by train. You will design, model and present your idea, with the chance of winning investment for your product.

Your product must:

- Solve a problem;
- Be used by train customers or staff;
- Improve the customer experience of travelling by train.

It can be a physical product to be used in real life or a digital product, such as an app or website.

We have created a series of challenges to help you get started. Your team will then have to work on your own to meet the brief.

To complete the challenge you will use the essential skills of teamwork, creativity and speaking.

At the end of the project you will reflect on your learning using a CREST Discovery Passport.

Workshop 1: Setting the Scene

When was the last time that you travelled by train? Complete these challenges to stimulate your thoughts and ideas about train travel, as well as the needs of train customers.

Challenge 1: Packing for a Long Journey

What would you pack for a long train journey? Imagine that you are travelling across the country by train. List the items that you would bring with you and explain why you might need them.

Challenge 2: Customer Experience Map

As you are designing a product to improve the customer experience of people when travelling, you should think about each stage of a customer's experience. A customer experience map lists every part of a customer's journey.

- a) Jan is taking a train from London to Manchester. Number each stage of the journey to create a customer experience map.

	Jan travels by bus to the station.
	Whilst sitting drinking a hot drink, Jan answers some emails using the train Wi-Fi.
	Jan uses the bathroom on the second train.
	Jan uses an app on her smart device to book an advance train ticket.
	Jan uses the platform bathroom.
	Jan finds a seat in the station waiting area and waits for the train platform to be announced and displayed on the passenger information screen.
	Jan buys a snack and a magazine from the station shop.
	Jan packs for the trip.
	The train attendant announces Jan's destination station. Jan departs the train and follows the signs to the exit.
	Jan finds the taxi rank and waits for a taxi.
	Jan arrives at the station and collects her ticket from a ticket machine.
	The platform is announced and Jan passes through the ticket gates.
	Jan changes trains. Jan's next train is on a different platform, which is located across a footbridge. Jan walks up the stairs and down to the other platform.
	Jan's second train arrives. There are no seats available so Jan stands in the hallway.
	Jan waits in the platform waiting room and listens for her train to arrive.
	Jan follows the signs to the taxi rank.
	Jane arrives at the destination.
	Jan buys a hot drink from the train refreshments trolley.
	The train arrives and Jan boards. Jan finds her seat and charges her phone.
	Jan travels by taxi and pays for the journey using cash.

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b) Suggest how Jan's customer experience might be different if she has one of the following:

- Hearing impairment
- Visual impairment
- Mobility impairment and is a wheelchair user.

c) Suggest how Jan's customer experience might be different if she was travelling with a baby or young child?

Workshop 2: Research & Specification

Research is an important part of designing a product. Your research should aim to identify a problem for your product to solve and a user who will benefit from and use your product.

We've also profiled some inspiring technologies that you might want to incorporate into your product.

Challenge 1: Research

Read and discuss the statements from rail customers and rail staff below. Which problems excite you to solve them?

Note that there is no writing necessary for this challenge, but you may sketch or take notes on the plain paper provided.

Rail Customers

These customers all have problems for you to solve. Let's find out more.

Tabatha, 30 - I have been commuting long distance for a decade and I still cannot find the perfect overnight travel case. Most cases have tiny wheels that mean that the case is very close to the floor, picking up dirt and bouncing around. I want a small case or bag that I can put everything in for an overnight business trip.

Vinoo, 78 - I often travel off-peak when trains are less busy. I have health problems and sometimes I worry about what would happen if I fell ill when alone in a train carriage. Not only could I be in danger, but miss my stop and end up very far from home.

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Mariska, 43 - I am a wheel-chair user and require assistance from staff to get on and off of trains. If I have a delay to my journey this can mean that support is lost at my next connection. I need a way to update support staff on my journey in real time, or a device for getting on and off the train more independently.

Joan, 40 - I am visually impaired. Travelling somewhere new can be a challenge; especially if I am travelling through a large station where it is easy to get lost. I cannot see the signs or use a map and have to find someone else who can guide me. I use Braille where it is available.

Hosanna, 67 - I love travelling around the UK to visit my relatives, but lifting or pulling a heavy suitcase is getting harder as I am getting older. Surely today we can solve this issue?

Marty, 33 - I sometimes travel with my three wonderful children. They need to be occupied when travelling or they will make noise that disturbs other passengers. I'm also always worried that I'm going to lose them in a busy station.

Armond, 28 - I have trouble organising myself. I am always losing things when travelling including books, wallets, umbrellas and phone chargers. I wish there was a way that I could be reminded when I leave things behind.

Dara, 28 - I love to have a snooze on the train but when it is busy I can feel self-conscious. I'm also worried that I will miss my stop or that I'll get pickpocketed when I am napping. I want an item of clothing that I can snooze in and that keeps my valuables safe.

Rail Staff

These rail staff have a unique insight into customer's needs. How might your product benefit staff and their customers?

Kwame, 22, Station Attendant - A problem that we have is preventing slips, trips and falls at stations and on trains. In stations this occurs when people are late and running for trains, and on platforms the risk increases during autumn and winter when there could be leaves or ice on the platform. Wet weather can make the surfaces inside trains more slippery, which can also happen if someone has spilt a drink.

Adem, 19, Train Attendant - I serve snacks and drinks from a trolley on the train, but people nowadays like a much greater range of food and they want less packaging. I need a new device to help me prepare and distribute the food to people's seats. Train journeys are also getting shorter, giving me less time to serve food. How can this be solved?

Glenda, 48, Train Attendant - Drinks falling over on trains can cause such a mess and be dangerous if the contents are hot. Somebody needs to design a drinks container that is less likely to fall or be knocked over.

Sonja, 25, Station Attendant - I oversee lost property. You wouldn't believe the things that have been left behind on trains. Many items never find their way back to their owners as there is no way of identifying them easily.

Ali, 32, Customer Experience Designer - Much of the HS2 route is in tunnels or in a cutting. This means that for a lot of the journey passengers won't be able to see the surrounding scenery from the windows. How could we give the customers a more interesting view and experience when travelling?

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Challenge 2: Problem & Specification

- a) In the space below, state the problem that your team will solve. You can choose a problem inspired by the statements from Challenge 1 or come up with your own.

- b) In the space below, state who will benefit from you solving it.

- c) Write a list of five things that your product must do to be successful at solving the problem.

FEATURE FUNCTION

REASON

1)		
2)		
3)		
4)		
5)		

Challenge 3: Inspiring technologies

The digital age is changing the types of products that we create. Read about these inspiring technologies that you could incorporate into your product.

- **Augmented Reality (AR)** creates a digital overlay on the real world which can be seen using smart technologies. A train map could use AR to overlay different languages, for example.
- **Virtual Reality (VR)** immerses the viewer in a totally digital world, in full 3D, using a headset. Imagine wearing one on a moving train!
- **Internet of Things (IoT)** connected devices can speak to each other over the Internet. For example, an Internet of Things train seat could be controlled to change position or heat up via a smartphone.
- **Artificial Intelligence (AI)** is where computers think and make decisions for themselves using sensors. An AI operated luggage vehicle could steer itself to your destination.

a) How might new technologies help your product to solve the problem?

TECHNOLOGY

HOW IT WILL HELP

1)		
2)		
3)		
4)		
5)		

Ideation & Design Development

Ideation is the process of coming up with ideas. In this part of the project, you should produce a series of ideas and then choose a single idea to develop and present. You should decide as a team the best way to do this.

You may want to:

- Work separately on different design ideas for a set period of time, then review all of the ideas together and choose one idea to develop and improve;
- Create a mind-map of ideas or features to be combined together.

Once you have reached this stage you must then work towards producing:

- A detailed, annotated presentation drawing of your product;
- A model of the product;
- A marketing plan.

Your teacher will supply you with the materials for your presentation drawing and model. If your product is a digital product, such as an app, you must draw the user interface and show how the app will work.

Your marketing plan will be a written document and must explain:

- The target audience of your product;
- How you plan to advertise your product;
- How and where you plan to sell your product;
- The benefits that your customers will get from using the product;
- The unique features of your product compared to other products on the market.

Top tip

- Use your essential skill of **creativity** by sharing ideas and innovating as a group.
- Use your essential skill of **teamwork** by being organised to complete all parts of the activity.

Preparing to Present

In this part of the project you and your team must get ready to present your idea. You may also add the finishing touches to your model, drawing or marketing plan.

- You will be presenting to a group of investors who are looking to finance a new product related to train travel.
- You will have five minutes to present your idea, including your drawing, model and marketing plan. Everyone in your group must speak.
- You should explain:
 - The problem that your product aims to solve, as well as how the product does this;
 - The intended audience for your product and your marketing strategy to reach them;
 - Why the product is worth investing in.

Top tip

Use your essential skill of **speaking**. Think about how you can adapt your language, tone and gestures to engage the audience.