

Challenge Statement

The goal of this exercise is to assess your product development skills, thinking, and process with a fluid greenfield problem.

Please choose either of the following products and build a short (4-6 pages) Product Requirements Document (PRD) that defines the customer, the value proposition of this product, the technical challenges of building this at Toyota Scale, and a roadmap that includes your estimated resources required to achieve your vision. You may use and reference any public resources to justify your approach and assumptions.

You may assume engineering teams work using 2-week Sprints in an Agile methodology (e.g., SCRUM).

This exercise should take less than four-five hours.

Please choose one of the following products:

Interesting Events Collector

Autonomous vehicles ([cars](#), [buses](#), [trucks](#), [ships](#), [delivery bots](#), [air travel](#)) improve with higher-quality data. Imagine a large vehicle manufacturer places a forward-facing camera that can record video and LTE modem on 10 million new vehicles. This large vehicle manufacturer would like to collect data to fuel its machine learning (ML) development efforts. However, streaming all of this data back to a data center is cost prohibitive and most driving is boring anyway. The head of the ML team has asked you to build an interesting event detector that leverages in-vehicle sensors to find interesting events and filter out most of the boring driving but she is busy and relies on your to figure out how to do this.

Currently the ML team has no way to look through interesting events other than the time of day and vehicle ID. Anything is better than what they have now but in an ideal world, they'd like to be able to do things like "show me all speed values when there is a red traffic light and it's raining in Tokyo".

You may assume the following:

- The ML team works through a Continuous Deployment pipeline and anything deployed in the vehicle or the cloud must be traced back to their code and datasets used to build their deployed artifacts.
 - The pipeline securely deploys new code to the vehicle on demand.

- The vehicle to cloud communications is already in place and managed by another team.
- The vehicle's clock is recorded.
- The vehicle's raw video of the camera is recorded.
- The vehicle's telemetry data is recorded (such as GPS, acceleration, speed, steering etc.)
- Map data can be obtained through an external API (e.g., [OpenStreetMap](#)).
- Weather data can be obtained through an external API (e.g., [AccuWeather](#)).
- There is a small in-vehicle GPU.

Usability Testing Toolchain for Vehicle Interaction

Imagine a vehicle designed with [this user experience system](#). The vehicle interaction stack (indoor and outdoor) is built using a combination of UI frameworks, speech, environment controls (lighting, A/C), and AI models.

There are 10 million vehicles on the road and the Vehicle Chief Engineer wants developer tools that enable her teams to safely test changes to this system and collect usability data from user interactions to make improvements or deploy new features. However, she is too busy and relies on you to figure out how to do this.

Developers don't currently have that ability. The more the teams can understand how the users behave the faster they can innovate, however care has to be taken to make sure that a UI change doesn't lead to a dangerous situation on the road.

You may assume the following:

- Developers can develop their UIs fully in software (e.g., [React.js](#)) that can be version-controlled together with graphical assets.
- The vehicle is equipped with sensors, telemetry and map information that can be processed by the vehicle in real-time.
- There is a Continuous Deployment pipeline that securely deploys new code to the vehicle on demand.
- Data can be transferred from the vehicle to the cloud through a link that may have intermittent connectivity.

What to return back to us

For the product you choose please complete and return a Product Requirements Document (PRD) that includes (at a minimum):

1. A customer introduction to the finished product (think of your customer seeing this for the first time. How would they understand your product?).
2. A 6-month high-level roadmap.
3. An ordered backlog of tasks for the team's first Sprint.
4. The reasoning and assumptions behind your choices on all of the above.
5. In your email response please let us know roughly how many hours it took for you to complete the challenge.

The PRD must be **less than six pages**, including appendices using a reasonable font size (11 pt). Please submit everything using a single PDF document named **first-lastname-triad-product-challenge.pdf**