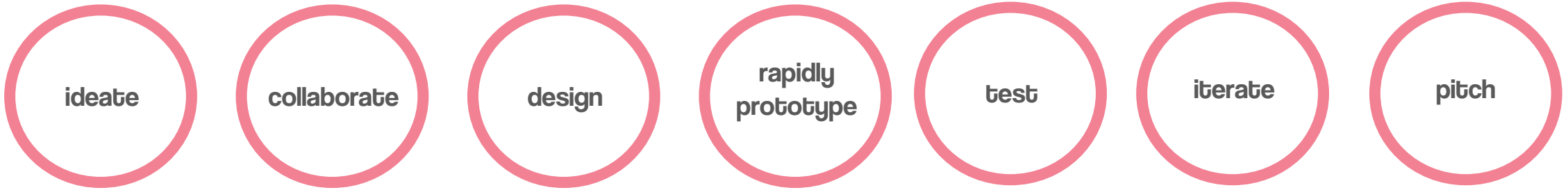
mastering the hackathon.

hackathon

hackathon

What is a hackathon?

A hackathon is an event with the element of a competition, where participants work in teams over a set and short period of time to:



They are time-limited events and best fit the earliest stages of the innovation process

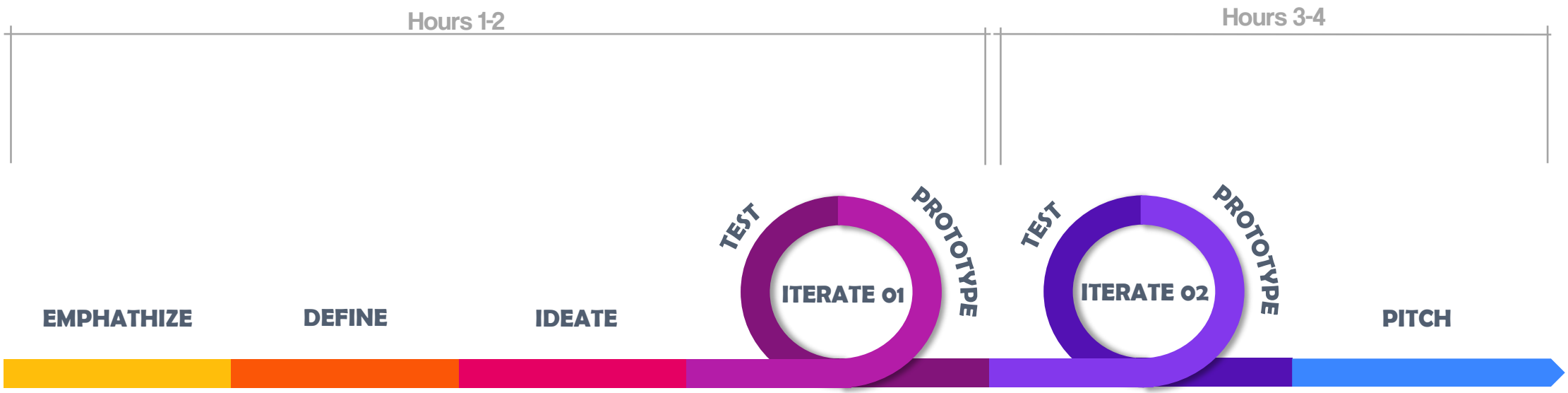
You don't need to be "hacker" to participate in a hackathon

Hackathon goal: create something new, solve a problem in a unique and inventive manner

It can be an app, a robot or a new business model

Design thinking

*" **Design thinking** refers to creative strategies designers use to solve complex problems in a collaborative manner. The design thinking process is structured into five-phases: Empathize, Define, Ideate, Prototype, and Test."*



Hackathon Design Process

EMPATHIZE

Participants conduct a preliminary research on the topic and engage with end-users and other stakeholders through interviews

Determining your stakeholders

Identify the stakeholders

- People who have commissioned the project
- People affected by the final product

Project Commissioners

- An external agency
- Governmental Organization
- Your boss

Consumers

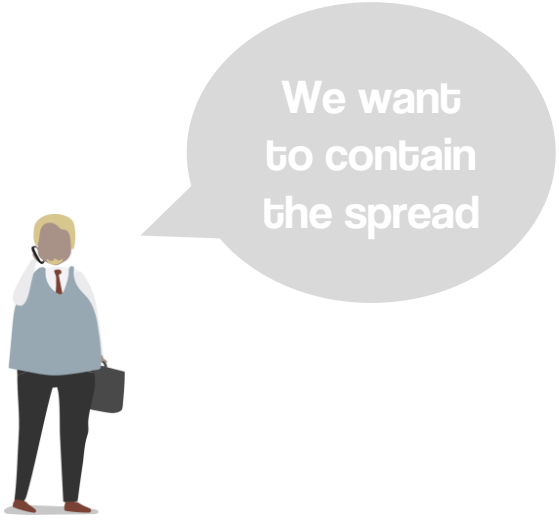
- Individuals purchasing the product
- Individuals using the product

Understand the problem

Take note on the stakeholder comments on the issue

Consider bias from consumers, project commissioners and other economic, social and environmental effects on your product

For the upcoming hackathon, we will provide you with necessary information to solve the problem.



Sample Problem

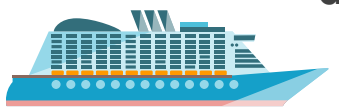
Problem Statement →

You are contacted by a cruise liner to develop a technology to assist with the contact tracing of passengers and staff during a pandemic.

Contact Tracing

Project Commissioner

You are contacted by a **cruise liner** to develop a technology to assist with the contact tracing of **passengers and staff** during a pandemic.



Consumers

Skills used in a Hackathon

- Software Design Principles
- System Design
- End to End Development
- Full Stack Development
- Cloud Services
- Databases
- Virtualization
- User Interface & User Experience
- Multiplatform Support

What if I don't have any of these skills?

don't worry, hackathons are designed for newcomers with very little experience in these domains

Find what interests you, and start by utilizing online resources to learn these concepts

Read documentation, watch tutorials and attend workshops to learn these skills

Your team doesn't need to have all the skills

Create your product based on your team's skill sets

For our example, the team is missing key hardware skills which would inhibit them from creating a physical solution

Not all skills are required to have a successful product

DEFINE
THE PROBLEM

- Teams understand the expectation and begin their main research
- They must define the problem they are going to address
- Although hackathons can provide a challenge, the underlying problem is identified through the analysis of data collected in the empathize phase

Research stakeholder data

Generally, you must research relevant data based off the proposal of the stakeholders

This includes developing the constraints by taking in consideration of client and consumers

Contact Tracing

Take a look at the following constraints and requirements:

Project Commissioners

- Technology needs to accommodate the 500 passengers on the ship
- The technology needs to be able to accurately track contacts within a small area
- Identify passengers who should be tested, given a limited number of tests available

Consumers

- Individual privacy needs to be maintained
- Quickly understand when contact is probable and when to begin self-isolation
- Allow passengers to feel safe during the duration of the cruise

Constraints

For the problem during the hackathon, many of the constraints have been provided.

Brainstorm other constraints and rank them on importance


Ideate

- Teams brainstorm potential ideas that could solve the problem and continue by ranking these ideas
- This stage is not so much about the quality but rather the quantity of ideas
- This is where teams should explore anything from conventional to entirely blue-sky options

Narrow down your ideas

Choose 1 idea through group consensus that is feasible in the given time limit and resources

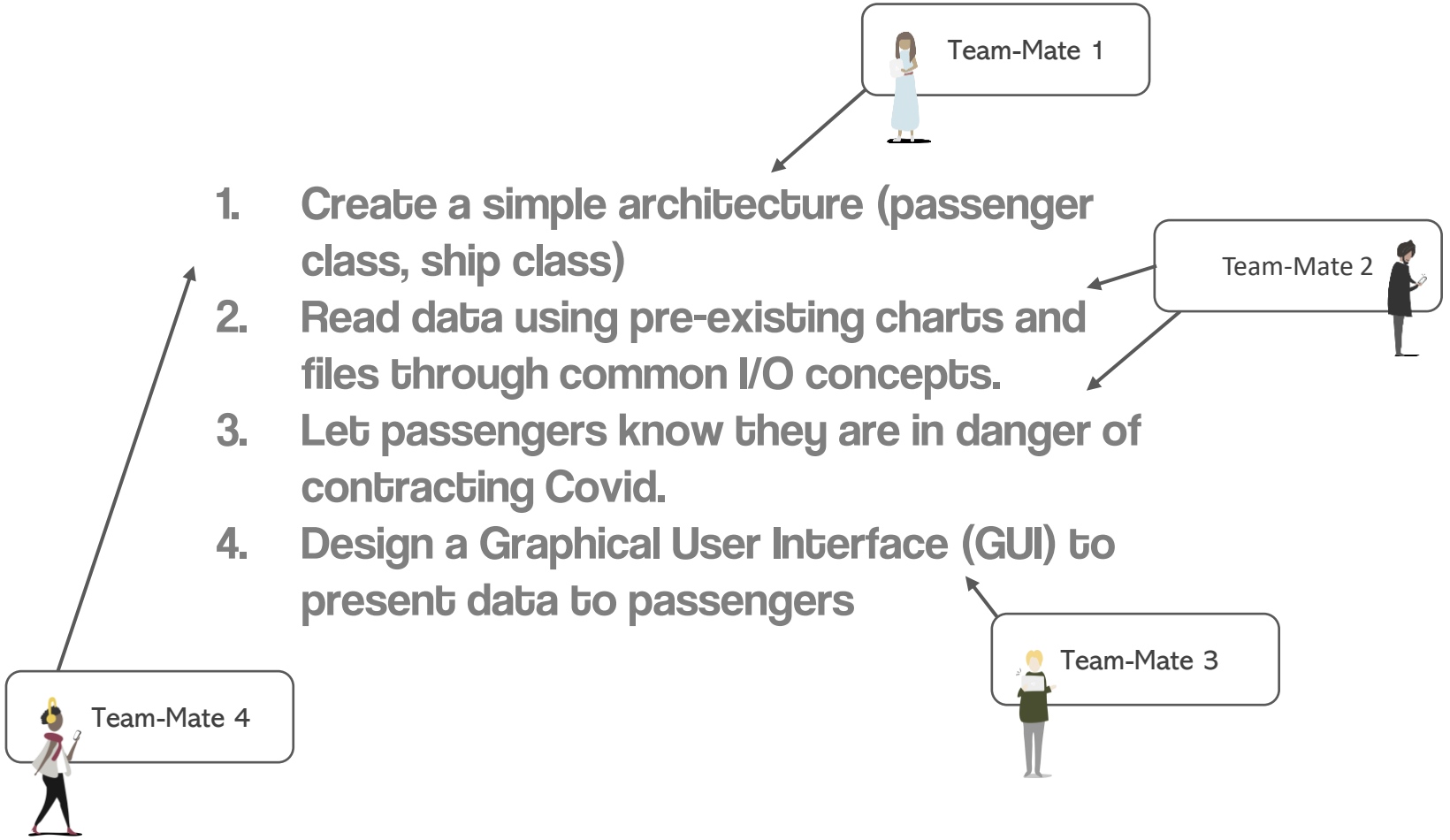
Using your constraints, order which problems you will address and how you will address them

Contact Tracing

Developing an application which collects and displays data regarding Contact Tracing.

- Read data using pre-existing charts and files through common I/O concepts.
- Design a Graphical User Interface (GUI) to present data to passengers
- Let passengers know they are in danger of contracting Covid.
- Create a simple architecture (passenger class, ship class)

Contact Tracing



1. Create a simple architecture (passenger class, ship class)
2. Read data using pre-existing charts and files through common I/O concepts.
3. Let passengers know they are in danger of contracting Covid.
4. Design a Graphical User Interface (GUI) to present data to passengers

ITERATE & PROTOTYPE

- Teams develops prototypes through iterations
- The test and provide modifications

Development

Start with the idea you chose in the ideate phase, develop your idea

Don't worry about developing the final product at this point, just develop the critical parts mentioned in the ideate phase

Collaborate

We recommend setting up your GitHub repository seconds after the challenge has started.

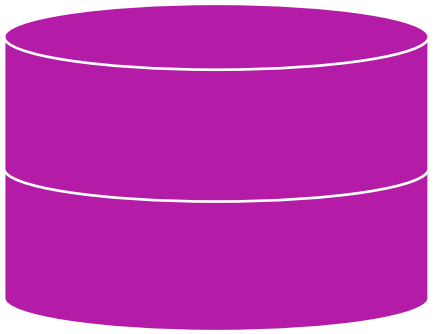
Use git to continuously collaborate throughout your hackathon.

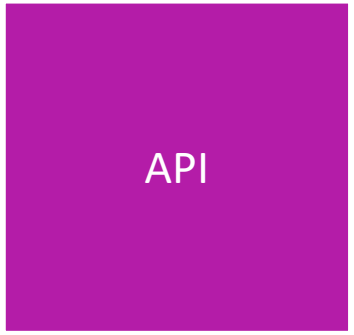
Plan out your Program

Create a diagram to plan out your program. For example, a UML Diagram.

Your designs may change throughout the hackathon, but its an important way to communicate with your teammates during the development phase.

API Application Programming Interface





API Application Programming Interface

APIs allow information to be communicated between devices

- Most APIs will send or receive information in JSON or XML formats
- For the purposes of today's session and in the context of the hackathon we will focus on JSON

JSON - JavaScript Object Notation is a data format that is based on a JavaScript Object

- JSON values can be either a boolean, number, string, object, array, or null
- Quick overview of some of these types in json

API Application Programming Interface

Number

A number is defined using a parameter followed by the number without quotes “number”: 123
Numbers shouldn’t contain leading zeroes

String

A string is defined using a parameter followed by the string with double quotations. “string”: “Hello World”

Array

An array is defined using a parameter followed by an array in square brackets. ”array”: []

Object

An object is defined using a parameter followed by a object in curly brackets. “object”: {}

To learn more about APIs check out the Start Wars API https://swapi.dev/

JSON

```
{
    "event": "June Code Retreat",
    "location": "Zoom",
    "date": {
        "month": 6,
        "day": 29,
        "year": 2021
    },
    "presenters": [
        {
            "name": "Mohammad Moshirpour",
            "email": "mmmoshirp@ucalgary.ca"
        },{
            "name": "Risat Haque",
            "email": "risat.haque@ucalgary.ca"
        },{
            "name": "Robert Brown",
            "email": "robert.brown1@ucalgary.ca"
        }
    ]
}
```

Strings

Parameters

Numbers

Objects { ... }

Arrays [...]

Legend

Test

Test you basic prototype

Identify what needs to be added, modified, changed, or removed

PITCH
THE SOLUTION

- Presentation of final prototype to the judges
- Explain your ideas and process

Submit your code

We recommend adding additional comments to your program

This is to ensure judges can provide effective feedback and understand the program better

Add a readme file to describe all constraints and the solutions to those specific problems. Include your UML Diagram or other planning documents as well.

Comments on our next hackathon challenge.

- We recommend spending 10-20 minutes with your team to undergo the empathize, define and ideate phase
- Most of the empathize phase has been provided for you, take a minute to find those clues in the problem statement and Identify them for the define and ideate phase
- We encourage you to develop your own constraints in addition to the requirements
- Be creative and set your group apart from others
- Work proactively, utilize mentor support and other resources provided
- For your hackathon, you will have most if not all of the knowledge to solve the problem from your previous course.

Credit

- Mathias Guttzmann
  - https://www.linkedin.com/in/matthiasgutzmann/

  For further information, please look at the following: https://www.linkedin.com/pulse/using-hackathons-accelerate-procurements-digital-matthias-gutzmann/
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