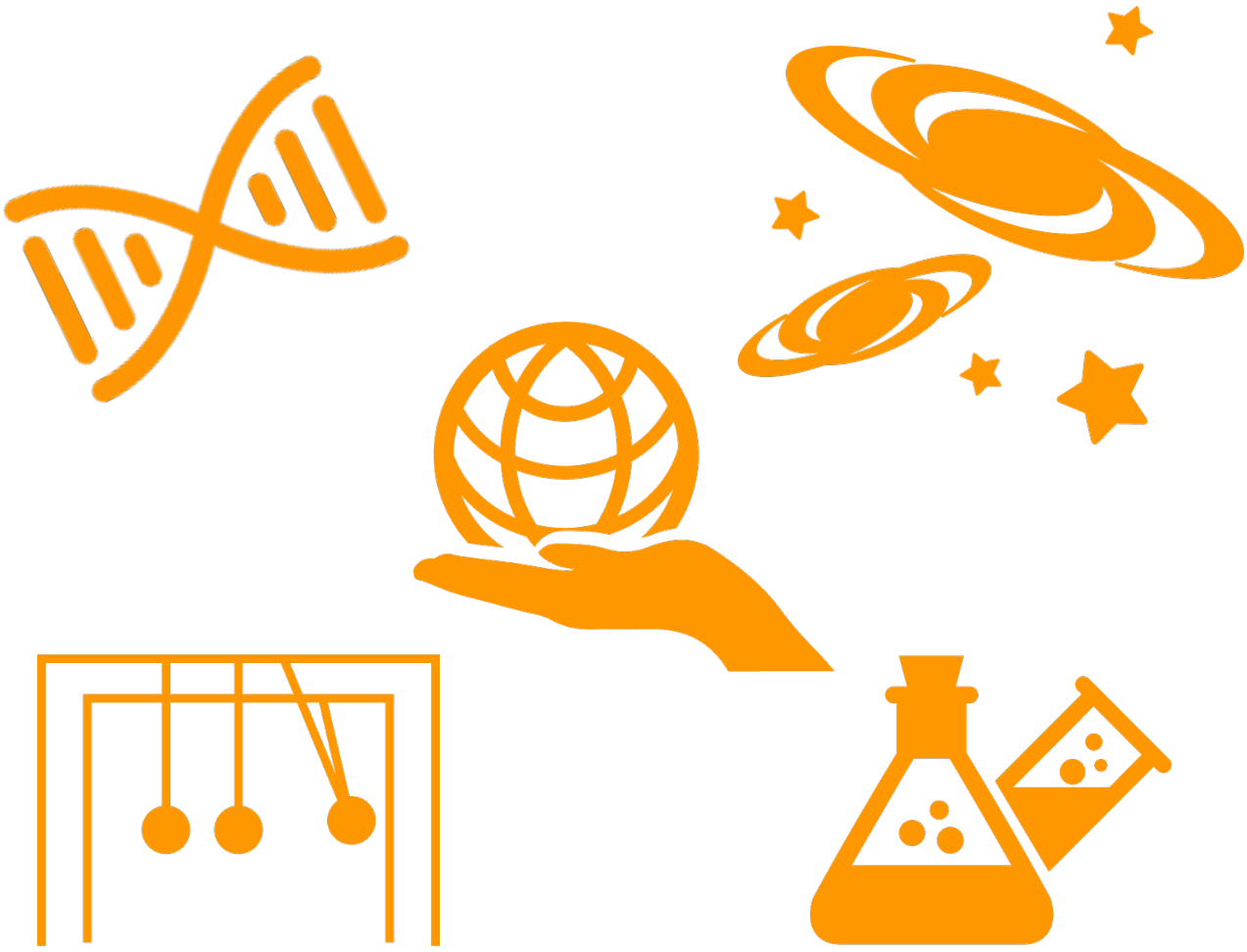
What needs to change?

Situation

Human needs and wants

What is happening?



Phenomenon

Observable events in the real world

What is the design for?

Defining Problems

What is the design for?

Defining Problems

Problem

Criteria

Constraints

Good Designs:

- ☐ Define a **design problem** that can be solved.
- ☐ Identify and describe the **scientific information** necessary for solving the problem.
- ☐ Identify and describe the **criteria** for a successful solution for the problem.
- ☐ Identify and describe the **constraints** of the design solutions.

What might work?

Designing Solutions

Developing and Using Models

Mathematics

Computational Thinking

What might work?

Designing Solutions

Solutions

Criteria

Constraints

Good Solutions:

- ☐ Describe the **problem** to be solved.
- ☐ Design multiple **solutions** for the problem.
- ☐ Identify and describe the **scientific information** used to design the solutions.
- ☐ Describe the **criteria** for the design solutions.
- ☐ Describe the **constraints** of the design solutions.

What works best?

Optimizing the Design Solution

Analyzing and Interpreting Data

Engaging in Argument from Evidence

Obtaining, Evaluating and Communicating Information

What works best?

Optimizing the Design Solution

Optimized Solutions:

- ☐ Describe the **problem** to be solved.
- ☐ Use the **results of tests** to determine how well the solution meets the criteria and constraints.
- ☐ Refine the **design** based on the results of iterative testing.
- ☐ Identify and describe the **best solution** given the criteria and constraints.