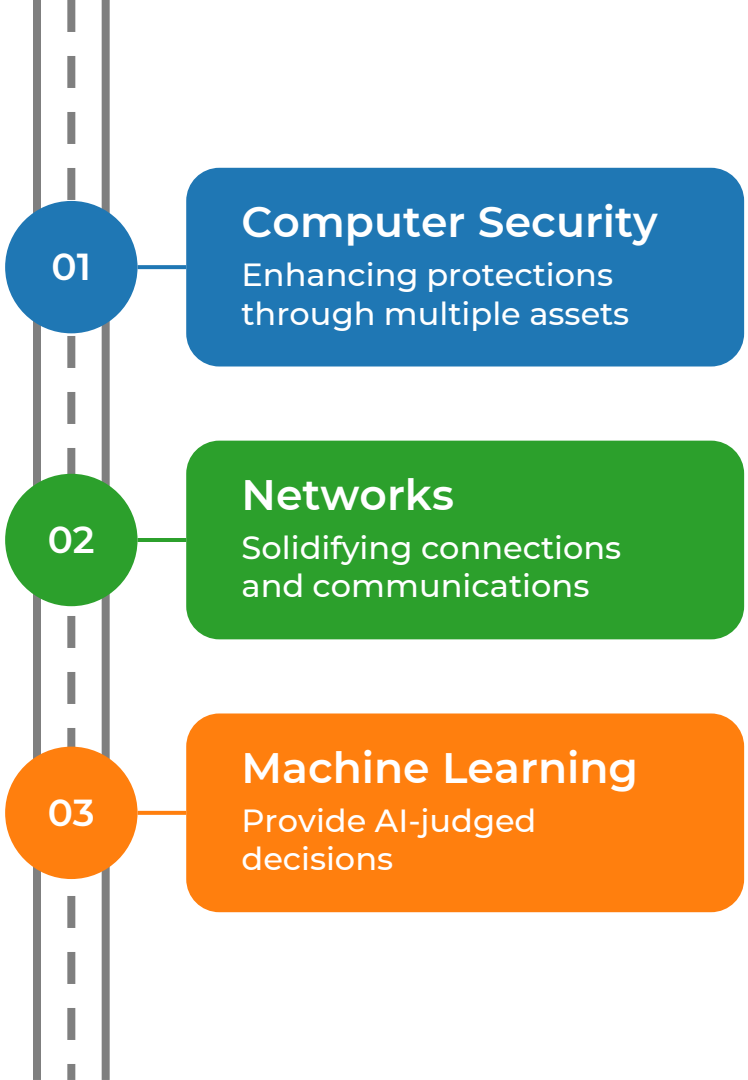

V2X Message Misbehavior Detections: Novel Methods

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Supervisor: Dr. Jiaqi Huang, University of Central Missouri

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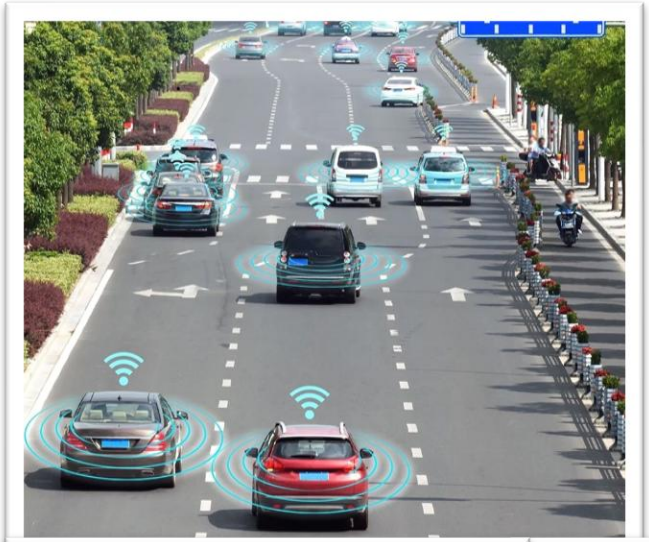
Section 1 - Background

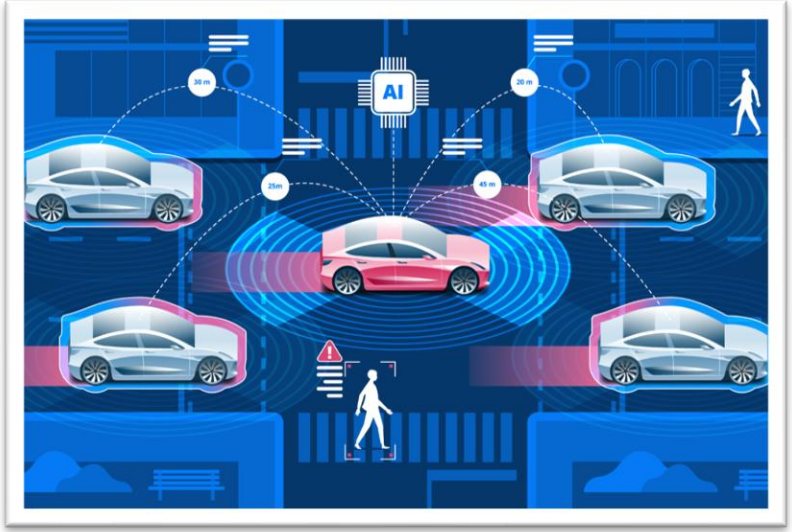


1. Autonomous driving overview.
2. V2X network communications.
3. AV security environments, assets, and threats.
4. AI applications under (**MDS**) Misbehavior Detection System

Autonomous Vehicles (AVs) Overview

Autonomous Vehicles (AVs) is an emergent research field, allowing the vehicle's autonomous driving with partial or without human involvement.

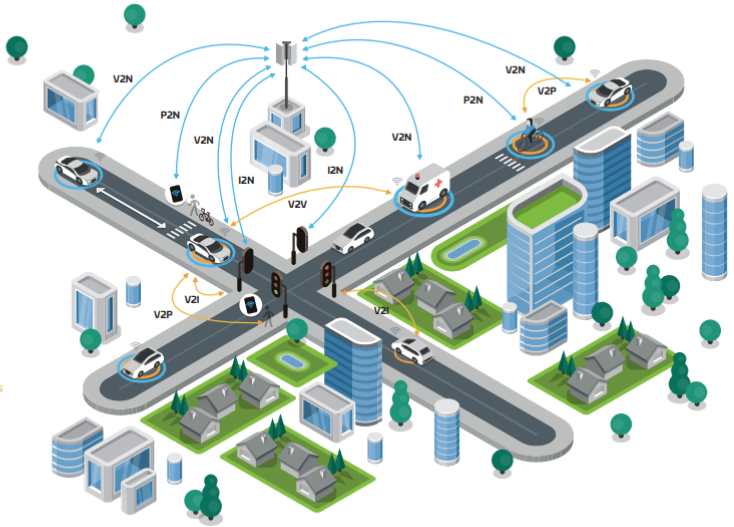
Several **benefits** involves:
1. Enable driving without drivers
2. Increase driving efficiency
3. Reduction of traffic congestions
4. Replacing of partial driving duties, triggering drivers' concentrations on other driving duties



Communications of AVs

Vehicle networks enable high-quality communications and reliable controlling between different vehicles and the infrastructure.

New emergence of 5G/6G networks, triggering the communication revolutions In the autonomous driving system.



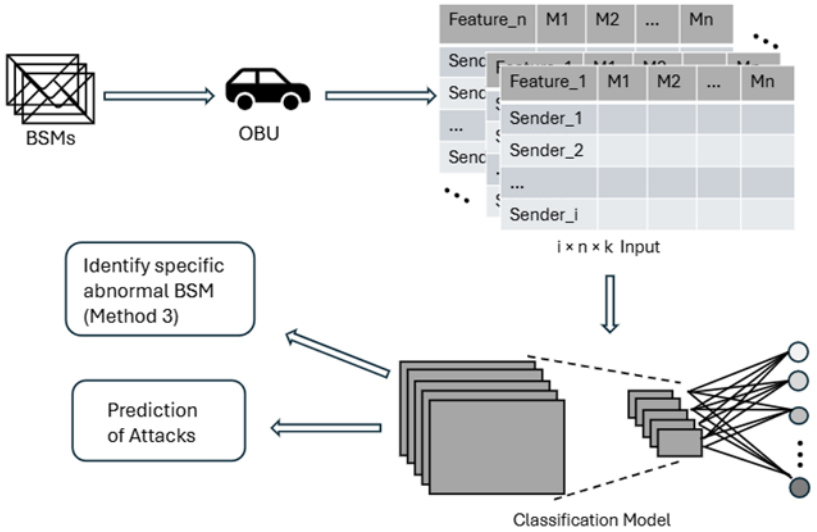
Security Environment of AVs

Autonomous Driving System have these security assets:
1. Normal executions of network activities, including network connections and normal activities' reliable executions.
2.
3.

The Security CIA triangle defines three traditional security goals:
1.
2.
3.

Security Threats (Attacks) of AVs

Misbehavior Detection Systems (MDSs) of AVs



AI Applications on MDS with Challenges

Section 2 – The Target Research Problem

Section 3 – Methodology (Research Methods)

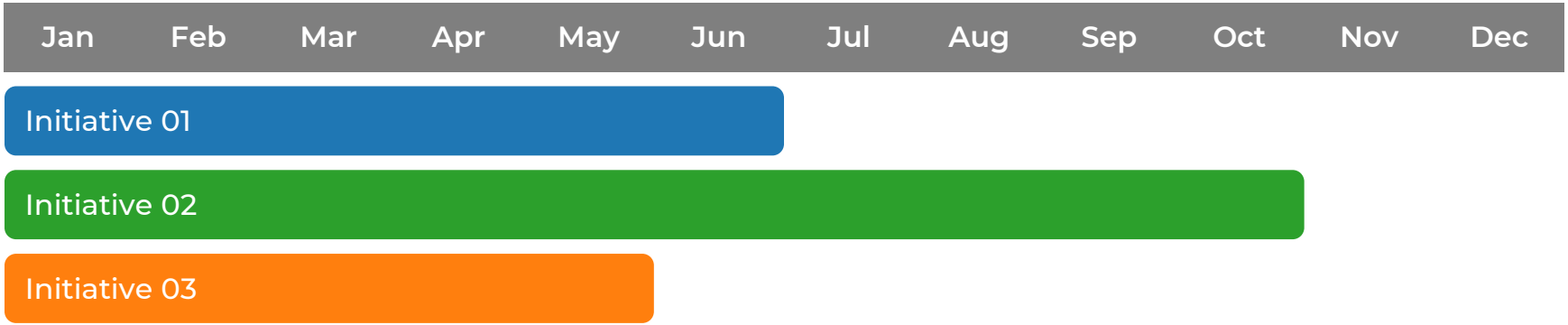
Section 4 – Analysis

Section 5 – Conclusions

Roadmap Infographics

Jupiter is a gas giant and the biggest planet in the Solar System. It was named after the god

Venus has a beautiful name and is terribly hot, even hotter than Mercury



Initiative 01

Earth is the third planet from the Sun and the only one that harbors life in the Solar System

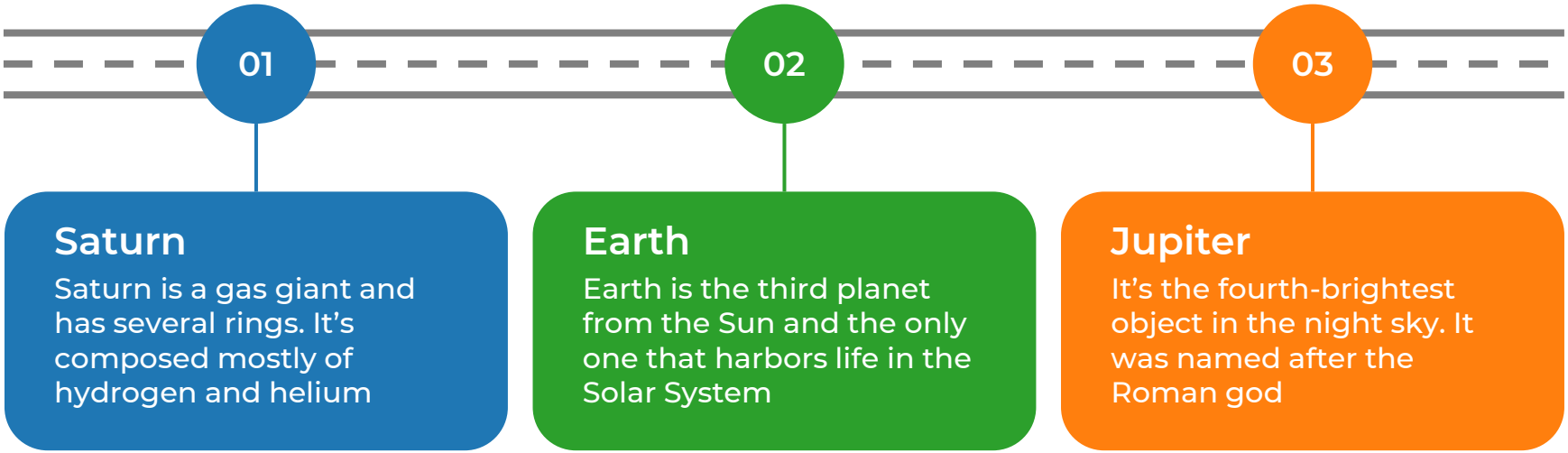
Initiative 02

Saturn is a gas giant and has several rings. It’s composed mostly of hydrogen and helium

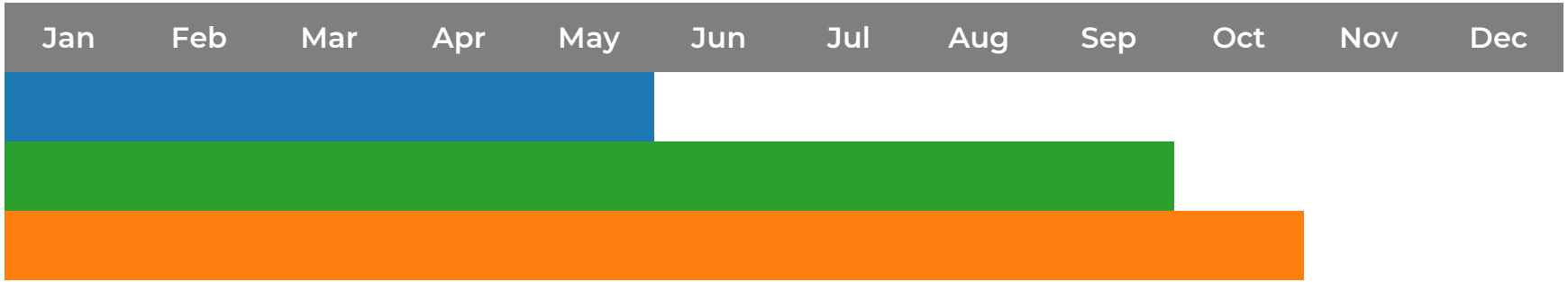
Initiative 03

Despite being red, Mars is actually a cold place. It’s full of iron oxide dust

Roadmap Infographics



Roadmap Infographics



00th
Venus is the second planet from the Sun

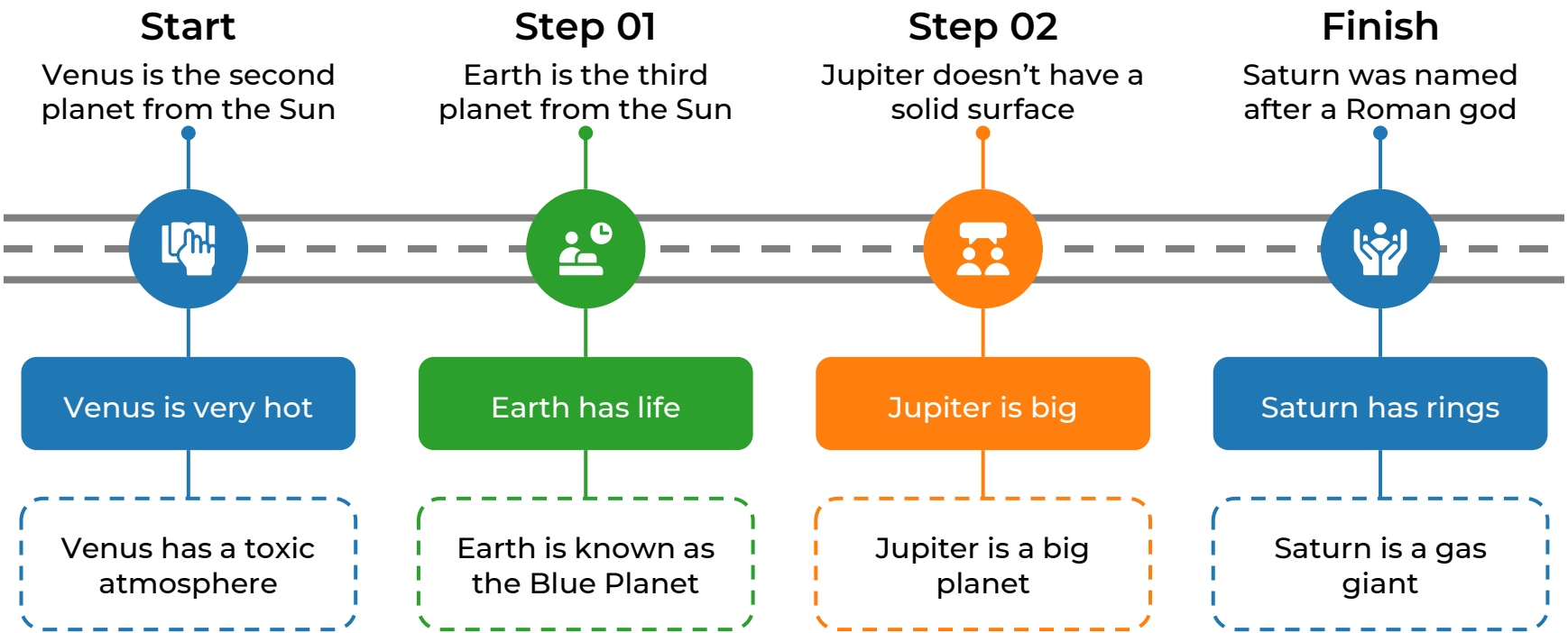
00th
Earth is the third planet from the Sun

00th
Jupiter doesn't have a solid surface

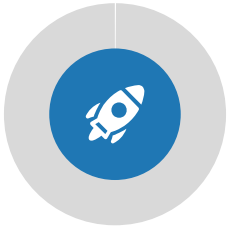
- Initiative 01
- Initiative 02
- Initiative 03

- Jupiter is a gas giant and the biggest planet in the Solar System
- Venus has a beautiful name and is terribly hot, even hotter than Mercury

Roadmap Infographics



Roadmap Infographics



100%
Initiative 01

25%
Initiative 02

75%
Initiative 03

Planning progress

Do you know what helps you make your point clear? Lists like this one:

- They’re simple
- You can organize your ideas clearly
- You’ll never forget to buy milk!

The audience won’t miss the point of your presentation ever again

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

Roadmap Infographics

01

Saturn

Saturn is a gas giant and has several rings

Mercury

Mercury is the closest planet to the Sun

02

Venus

Venus is the second planet from the Sun

Earth

Earth is the planet on which we all live

03

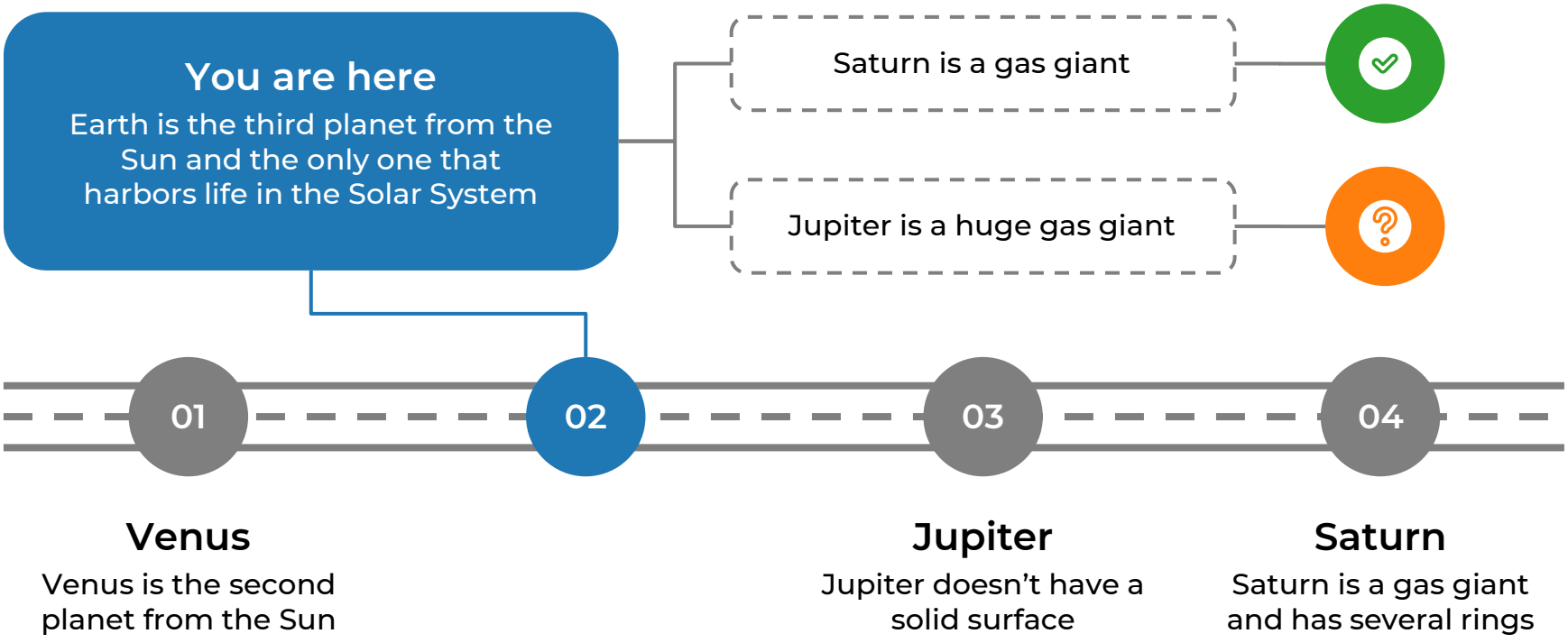
Mars

Despite being red, Mars is actually a cold place

Saturn

Saturn has a high number of moons, like Jupiter

Roadmap Infographics



Roadmap Infographics

Saturn

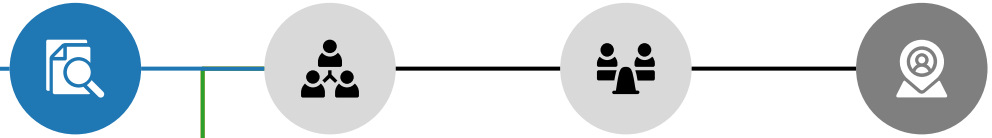
Saturn is a gas giant and has several rings. It's composed mostly of hydrogen

Venus

Venus has a beautiful name and is the second planet from the Sun. It's terribly hot

Earth

Earth is the third planet from the Sun and the only one that harbors life in the Solar System



Step 01 Step 02 Finish

Step 01

Jupiter is a gas giant and the biggest planet in the Solar System

Step 02

Saturn is the second-largest planet in the Solar System

Roadmap Infographics