Smart Traffic Lights Activity 2

Lesson 19

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Objectives

- Apply your understanding, computational thinking and programming skills to achieve a goal

- Design and create a smart traffic light system that will communicate with human and robot drivers

- Use **radio** to send traffic signals to the self-driving car

- Design and develop additional features that will be useful for drivers, pedestrians and city authorities

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Smart Traffic Lights

- Smart traffic lights are already in use:

  - Carnegie Mellon University is piloting smart traffic lights to reduce vehicle emissions in Pittsburgh. The traffic light timings are changed dynamically by communicating with the different lights in the city and adapting for changing driving conditions in order to reduce or avoid congestion

  - In the UK, traffic lights that monitor vehicle speed and change to red when cars are travelling too fast are already in place – this helps reduce accidents by encourage drivers to slow down to avoid red traffic lights

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Autonomy

- The future rise in **autonomous** and self-driving cars means that we will have to consider how we apply traffic rules so they can be 'seen' and obeyed by human drivers as well as self-driving vehicles

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Radio

- We have already looked at how we can use Radio to communicate between to computer devices

- By applying this technology to traffic lights we could command self-driving cars to stop on red lights while a human driver stops on seeing the red signal

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Traffic Lights

- What is the **sequence** of a set of traffic lights?

- Are each light on for the same amount of time?

- Consider how we could use NeoPixels or standard LEDs to create the different colours

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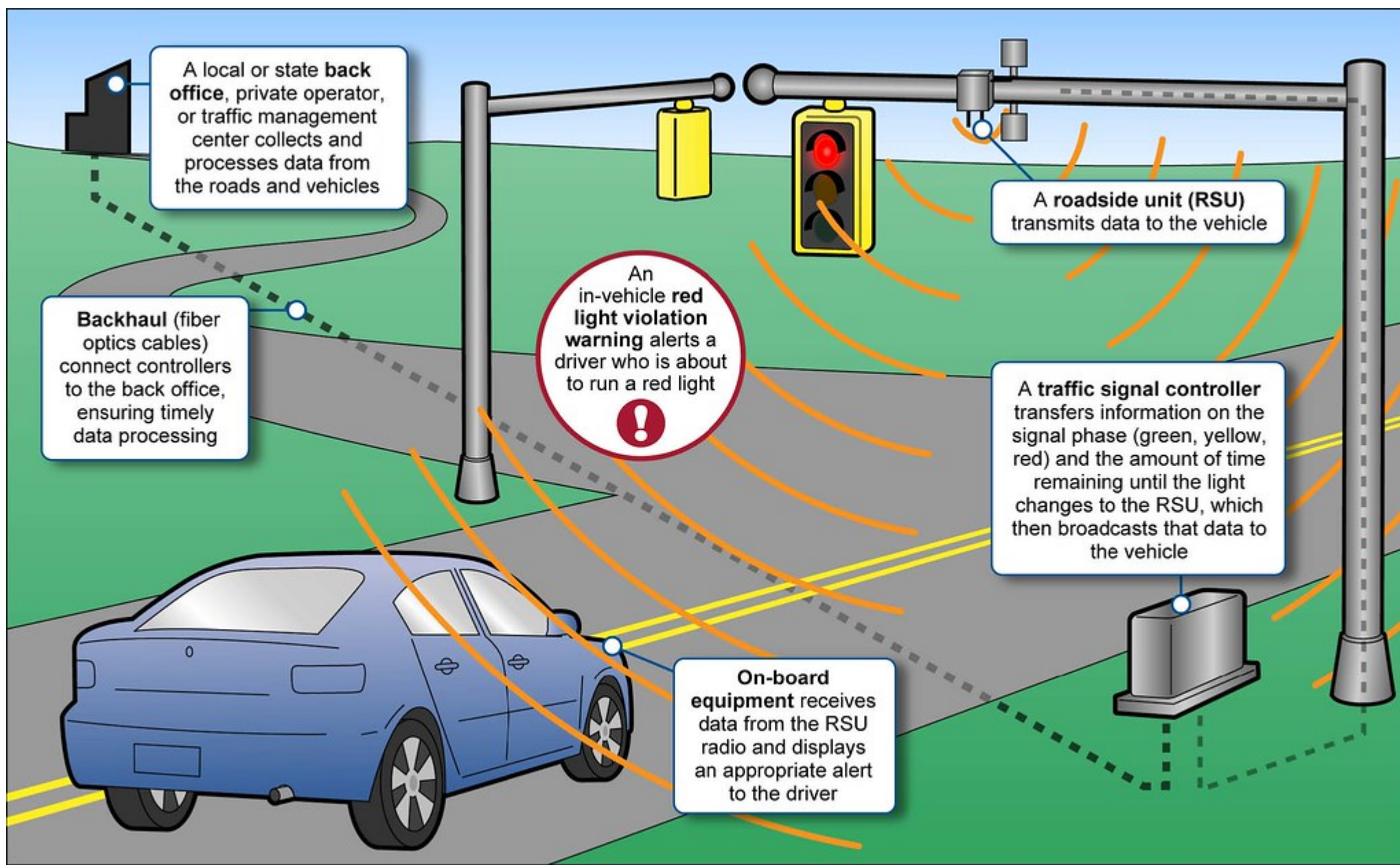
Source: GAO analysis of Department of Transportation documents. | GAO-15-775

Re-visiting the design

- Update your design worksheet from last lesson to include the new autonomous and smart features required

- Complete an IPO table for the smart lights

Input	Process	Output

Smart Traffic Lights PBL

Success Criteria

- Apply your understanding computational thinking and programming skills to achieve a goal

- Design and create a smart traffic light system that will communicate with human and robot drivers

- Use **radio** to send traffic signals to the self-driving car

- Try incorporating a line sensor to ensure the car stops are the right place if the traffic light is on stop or could the ultrasonic **sensor** be employed here also?

- Design and develop additional features that will be useful for drivers, pedestrians and city authorities

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Thank You
Danke
Merci
谢谢
ありがとう
Gracias
Kiitos
감사합니다
धन्यवाद
תודה

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