RIMA

Robotics for Inspection and Maintenance

ROAD, RAIL AND CIVIL INFRASTRUCTURE

EUROVIA VINCI

Bertrand Pouteau, Eurovia Research Center

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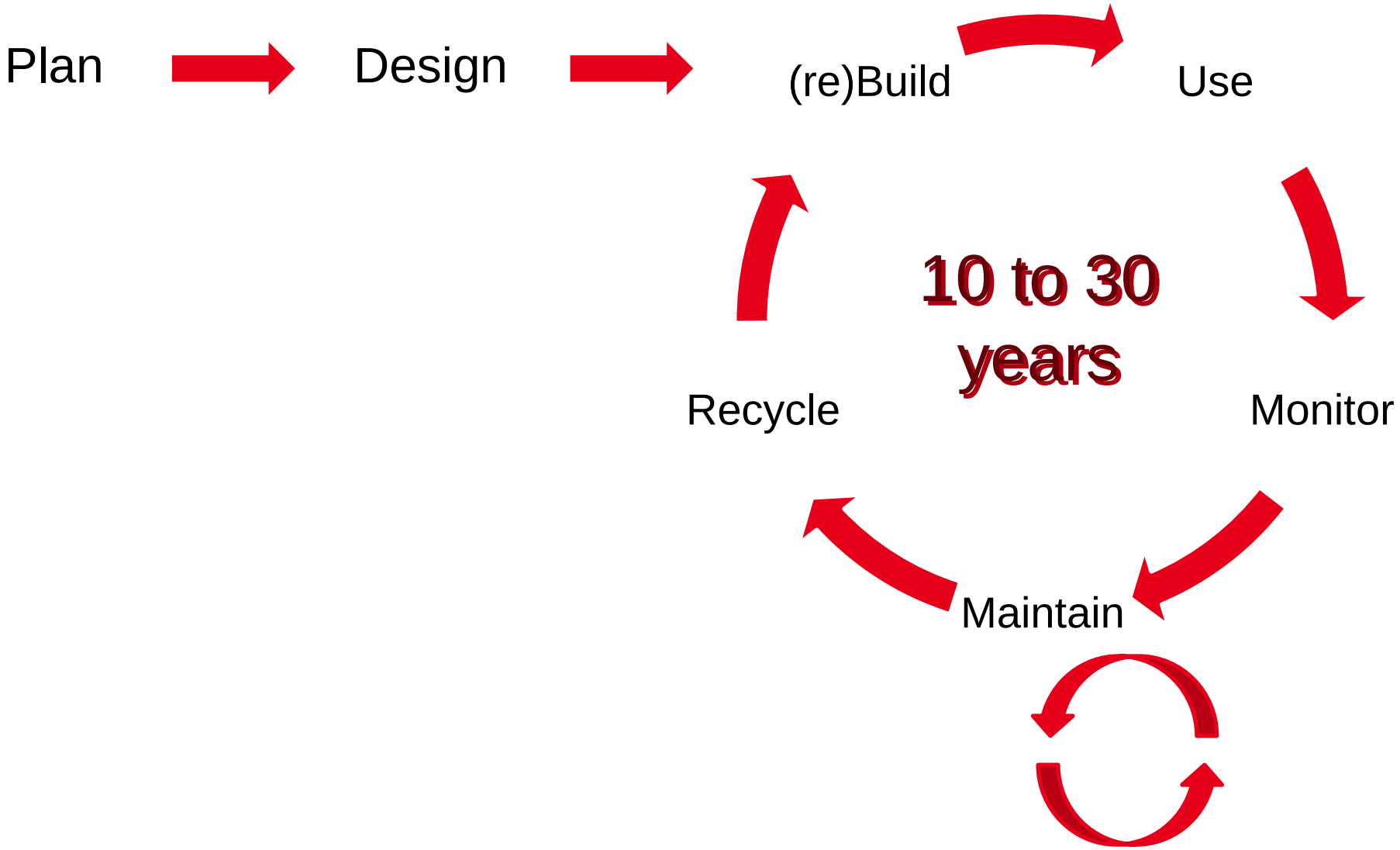
STATEMENTS

ASPHALT CONCRETE ROADS

18 MILLIONS KM WORLDWIDE.

STATEMENTS

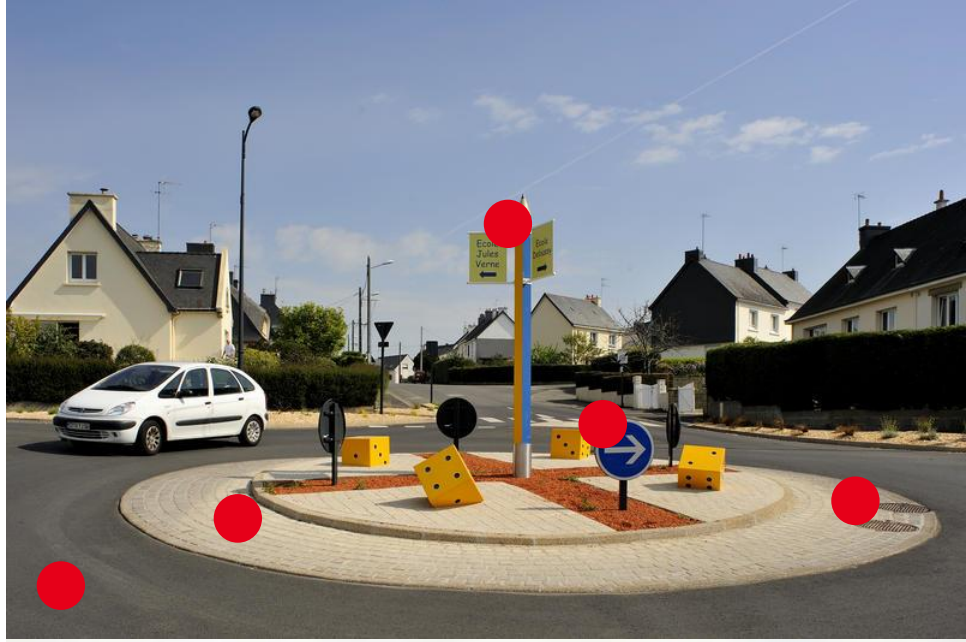

Plan
Design
(re)Build
Use
Monitor
Maintain
Recycle
10 to 30 years

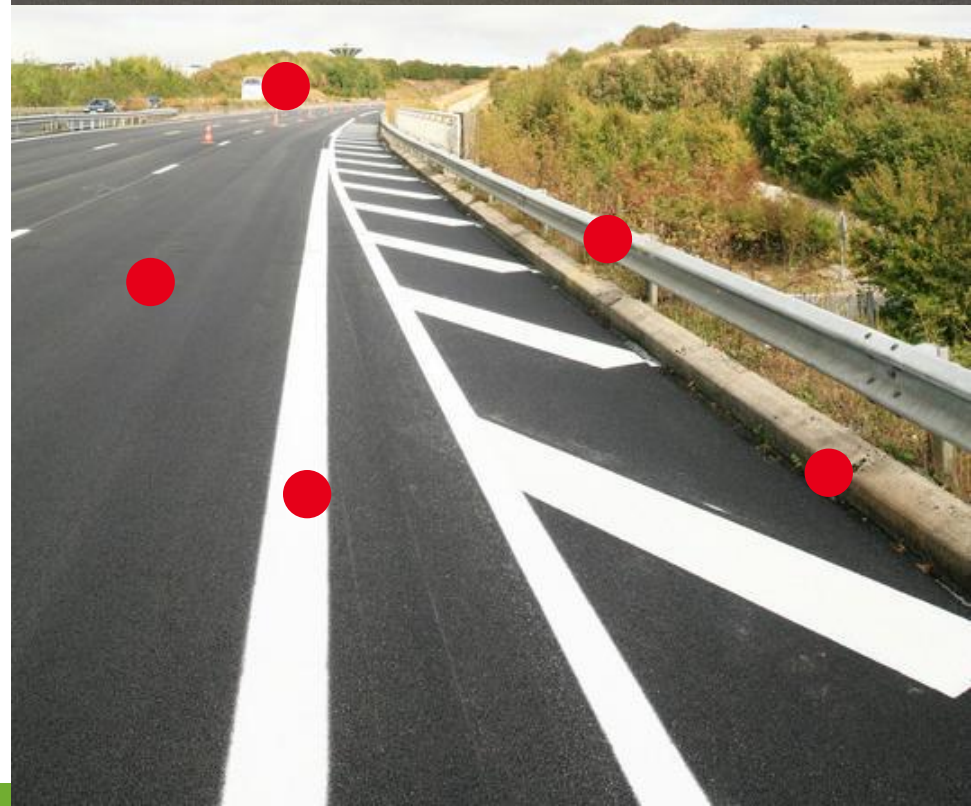
ROAD, RAIL AND CIVIL INFRASTRUCTURE

- Road, Rail and Civil infrastructure involve all the **road-related** and rail-related components that exist inside and outside the cities, as well as any other civil infrastructure within a city

- The transportation hubs such as stations, transportation warehouses, ports, airports etc. are not included

- The **peripheral infrastructure** is also included, such as traffic-lights, tolls, tunnels, bridges, lane separation structures, road lights, traffic lights, tunnel fans, power cables, signals and signs.





CHALLENGE 1:
INCREASE EFFICIENCY IN THE I&M ACTIVITIES OF CIVIL INFRASTRUCTURE

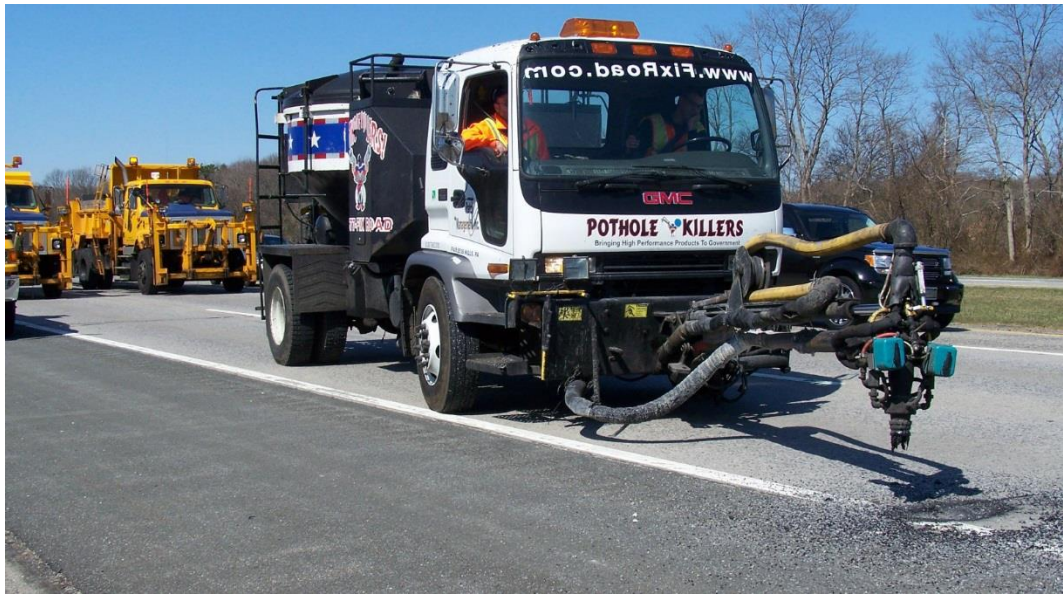
- On a motorway, the infrastructure is not 100% available to citizens – it is essential to reduce the time inspectors need to do the respective I&M operations.
- I&M activities must be stealthy, especially in urban areas – without negative environmental impact, noises, odours, dust, etc.
- Manual I&M activities, after an 8-hour shift, lead to low quality results
- Minimize the time that facilities are not available due to I&M activities
- Increase cost-efficiency in the accomplishment of I&M activities.
- Use multi-sensing inspection robots in order to detect defects in different infrastructures (rails, tunnels, etc.).

CHALLENGE 2:
REDUCE RISK FOR WORKERS DURING I&M ACTIVITIES ON CIVIL INFRASTRUCTURES

- During I&M operations, operators need to access and work in high-risk areas such as motorways where vehicles pass-by at high-speed.
- In some cases, coring or sampling unknown material(s) onsite implies a specific method of sampling to preserve the health and safety (H&S) for the operators.
- This challenge is expected to be addressed by introducing innovative robotic […] while the operators control them remotely and in safety, such as aerial robots. More specifically
- Increase supporting tools that will assist the operators during the execution of I&M activities.
- Introduce safety resources that will supervise the operators' activity.
- Safety approved devices and methods that will increase the operators' safety during the execution of I&M activities.

CHALLENGE 4:
WORKER – MACHINE ON JOBSITE COOPERATION

- As technology evolves, people are using more and more heavy machinery and automation systems to perform I&M activities on job sites. For this reason, a high level of autonomy should be reached by each resource in order to cooperate efficiently. This challenge aims to be addressed by the following technologies:
- Efficient autonomous navigation and motion planning on jobsites with obstacle avoidance capabilities.
- Automation tools, such as product pouring machines that follow a predefined path or jobsite cleaning machines that automate repetitive tasks.
- Task planning, scheduling, and job organization algorithms that can help operators and their supervisors to track any open issues in time



ROADS: INFINITE OPPORTUNITIES FOR INNOVATION

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