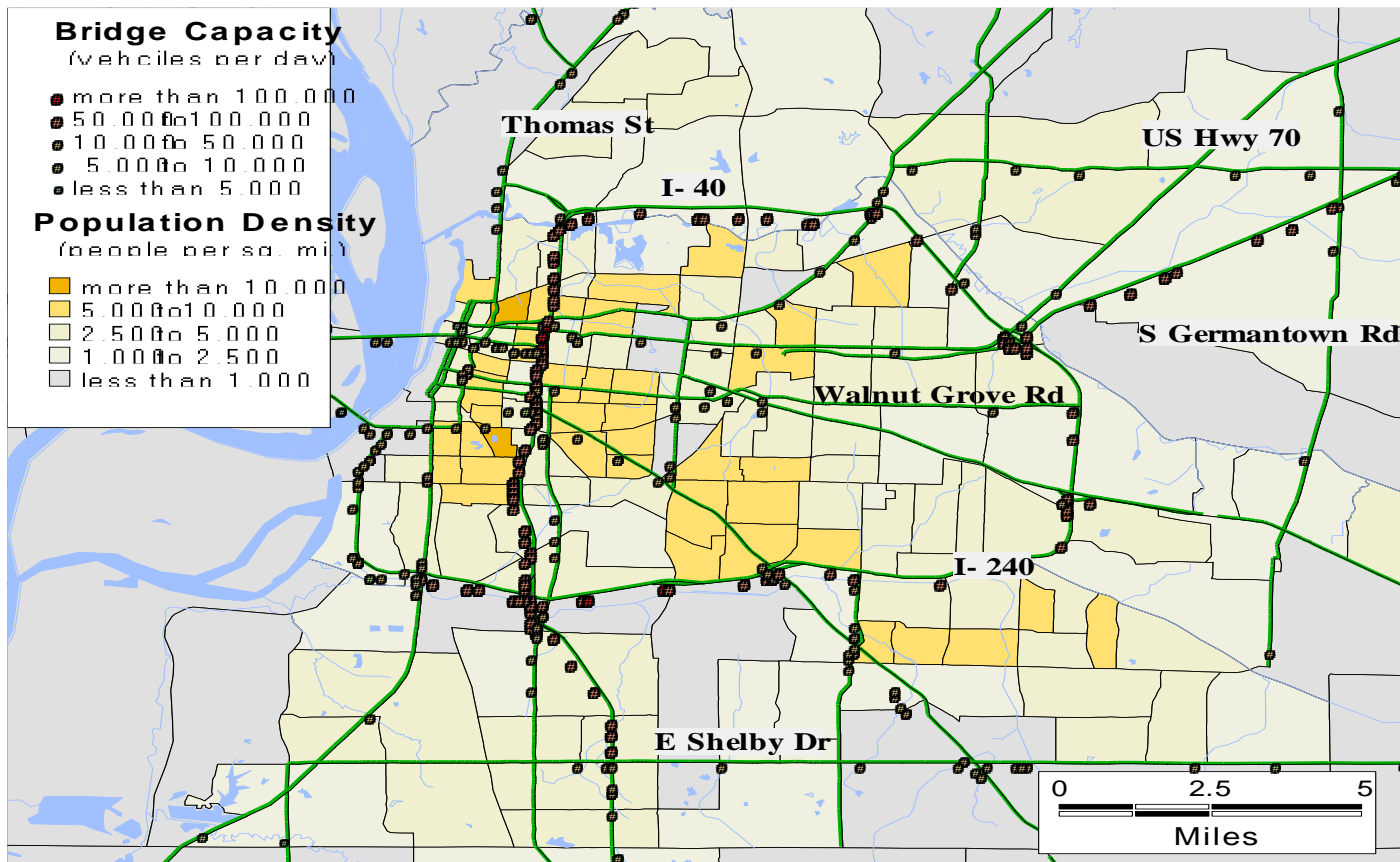


# Introduction - Bridge management

Bridges allow us, to reach our workplaces, services, schools, to transport goods to their various sale points or to make the most of our free time



# Introduction - Bridge management

Roadway **bridges** are the **most critical** components of road infrastructures.



# Introduction - Bridge management

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Roadway **bridges** are the **most critical** components of road infrastructures.



# Introduction - Bridge management

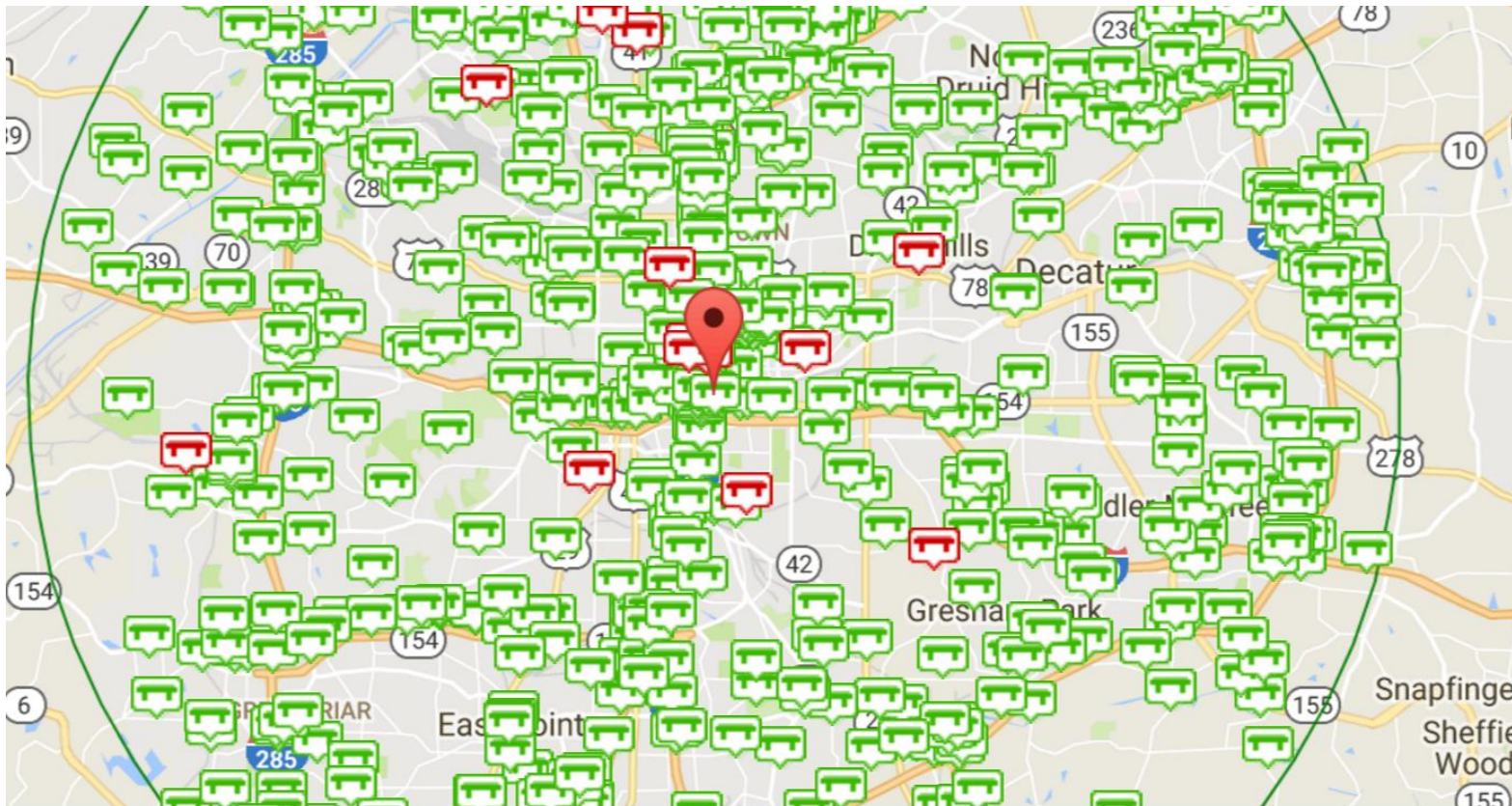
Bridge management is a task of great responsibility





# Bridge management – The challenge

- Large number of bridges and road structures



# Bridge management – The challenge

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- Aging structures





# Bridge management – The challenge

- New structures within a complex and dense network



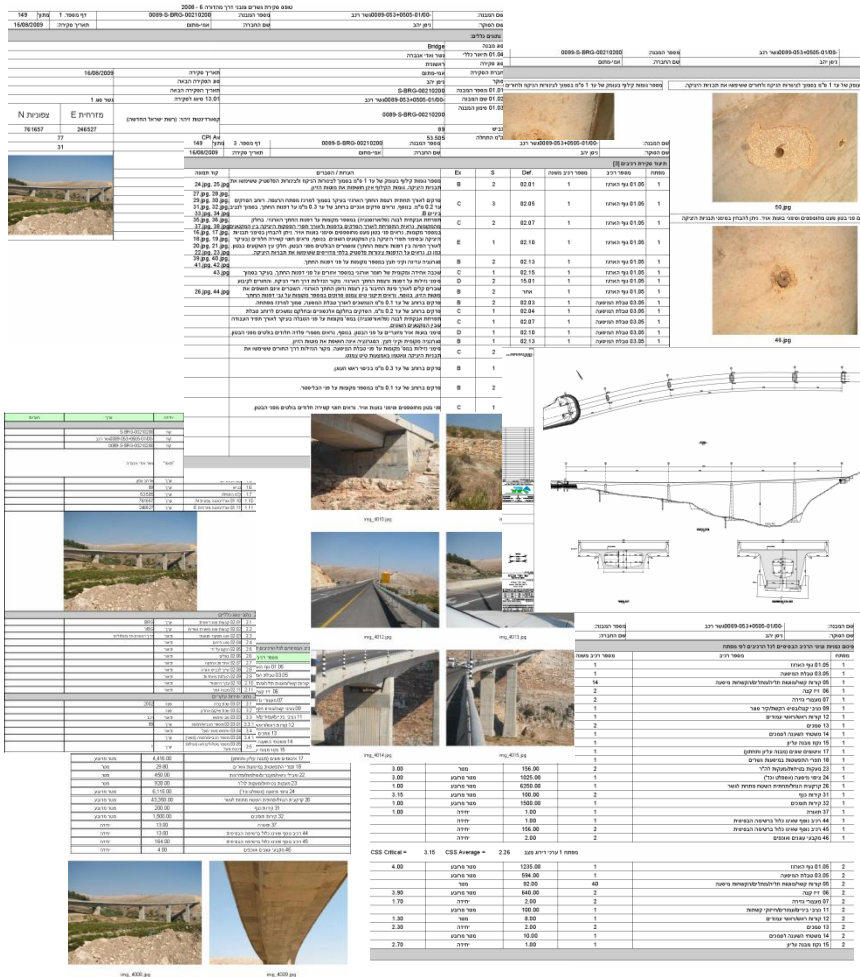
© SIPA Asia via REX/Shutterstock

# Bridge management – The challenge

**A lot of data**

**Or**

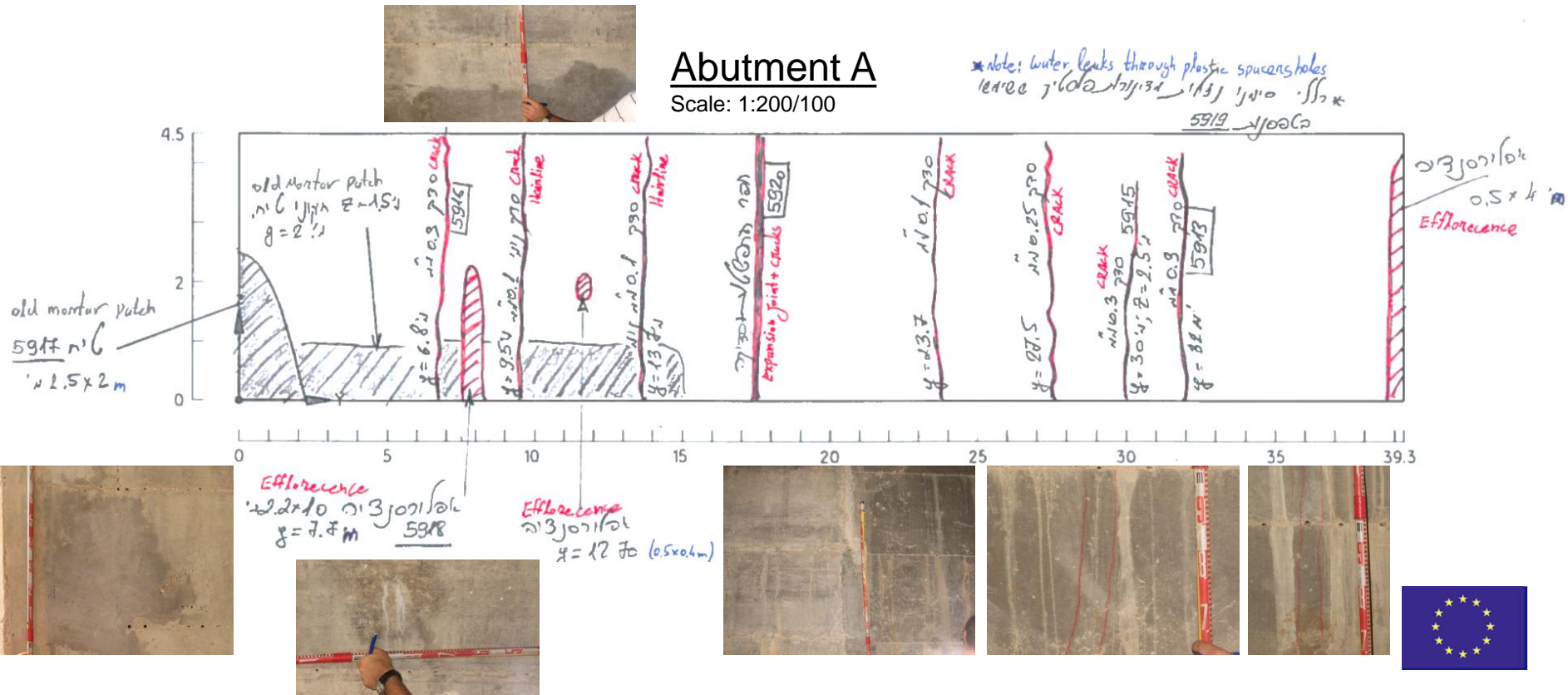
**No data**





# Bridge management – The challenge

- Constant need for detailed, updated data throughout the bridge's lifetime
- New data should be comparable with old



# Bridge management – The challenge

- Accessibility problem - we impact on the road user





# Bridge management – The challenge

- Minimize Cost  
vs.  
Maximize service level



# Bridge management – The challenge

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1. Large number of bridges and road structures
2. Aging structures
3. New structures within a complex network
4. A lot of data or no data
5. Constant need for detailed updated data
6. Accessibility problem – we impact on the road user
7. Minimize Cost vs. Maximize service level

**How can we improve the process ?**

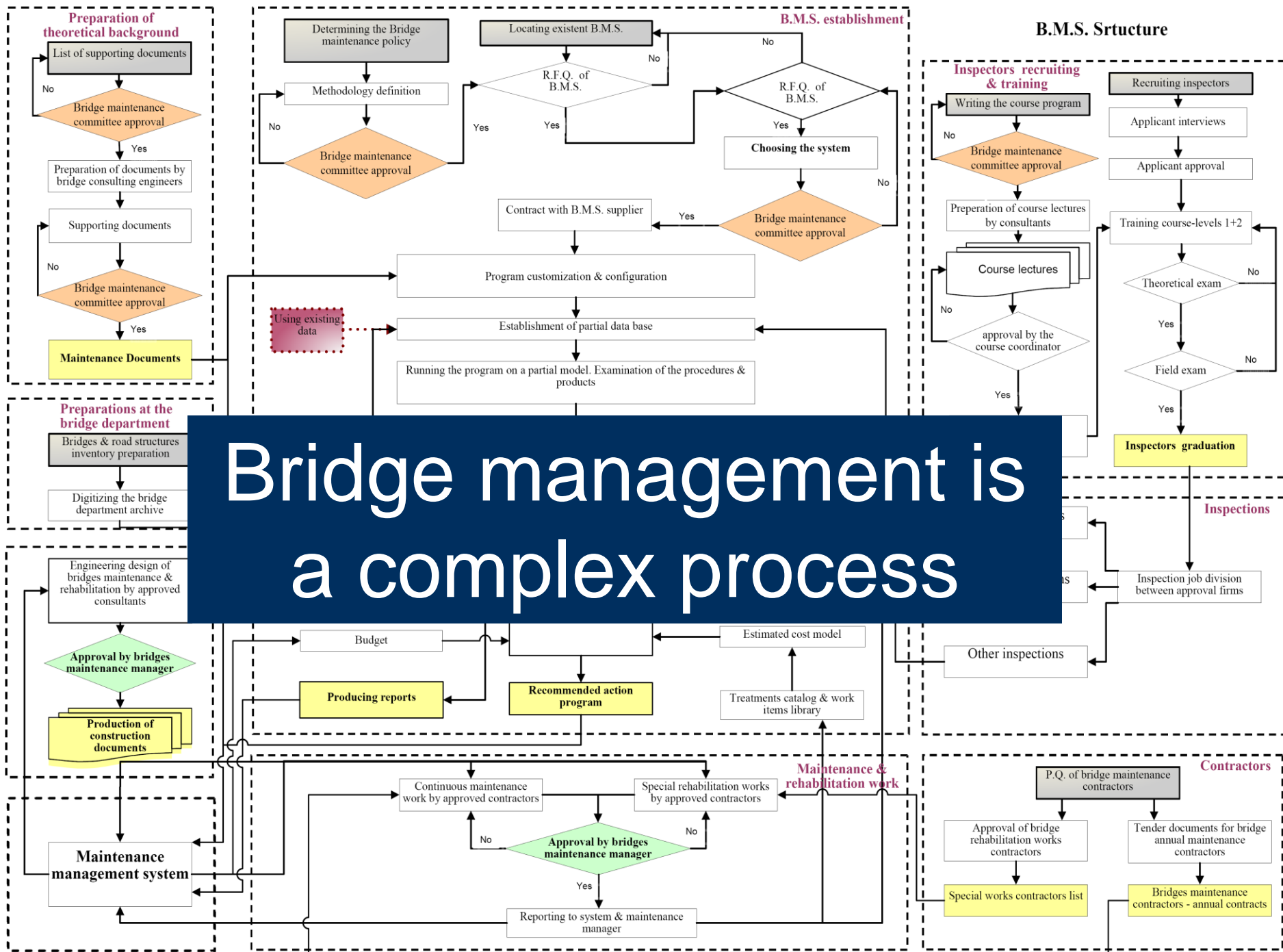




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# Bridge management is a complex process

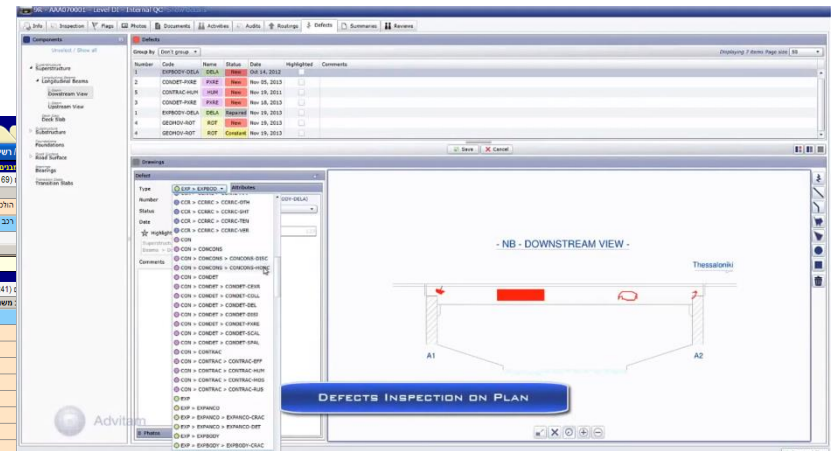
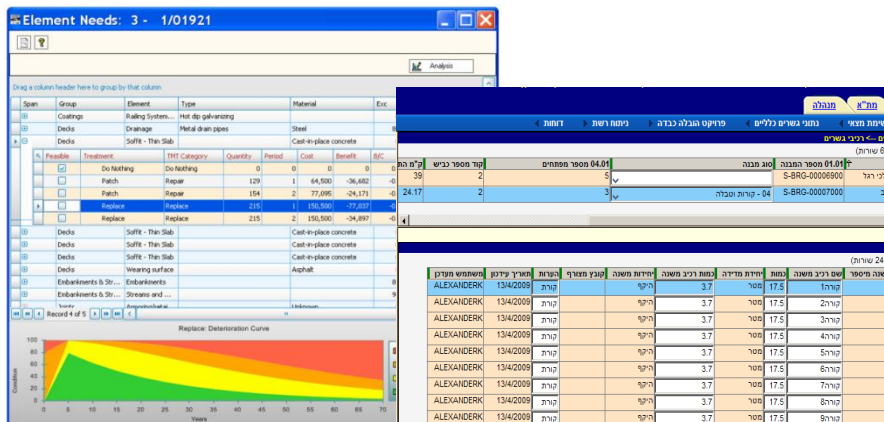




# Bridge management – The challenge



- Different countries/organization have different methodologies
- Different levels of data mostly depend on inventory size, organization type and country regulations
- Almost all BMS are tabular based and hard to manage. Most of them present a similar architectural framework. Some have better bridge visualization.



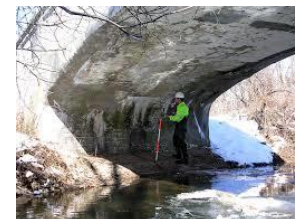
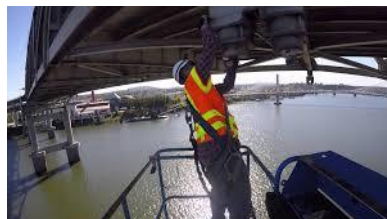
```
graph TD; TB[Theoretical background] --> BMS_Est[BMS establishment]; HD[Historical data archiving] --> BMS_Proc[BMS processing]; PMS[PMS, SMS output] -.-> BMS_Proc; BMS_Est --> BMS_Proc; BMS_Proc --> MMS[Maintenance management System]; MMS --> Design[Designing bridge Rehab. and Maint. works]; Design --> Project[Maint./rerahb. Project]; Project --> Contractors[Bridge Maint./Rehab. contractors]; Contractors --> Project; InsRec[Inspectors recruiting and training] --> PerfIns((Performing Inspections)); PerfIns --> AddStudy[Additional study NDT/Monitoring]; AddStudy -.-> BMS_Proc; PerfIns --> BMS_Proc; subgraph DashedBox [ ]; AddStudy; PerfIns; end
```

The flowchart illustrates the Bridge Management System (BMS) process. It begins with 'Theoretical background' leading to 'BMS establishment'. 'Historical data archiving' and 'PMS, SMS output' (via a dotted line) feed into 'BMS processing'. 'BMS establishment' also leads to 'BMS processing'. 'BMS processing' leads to the 'Maintenance management System', which then leads to 'Designing bridge Rehab. and Maint. works'. This design phase leads to the 'Maint./rerahb. Project', which involves 'Bridge Maint./Rehab. contractors'. A feedback loop exists from the project back to the design phase. On the right, 'Inspectors recruiting and training' leads to 'Performing Inspections' (highlighted with a red oval). 'Performing Inspections' leads to 'Additional study (NDT/Monitoring)', which has a dashed feedback loop to 'BMS processing'. 'Performing Inspections' also has a direct dashed feedback loop to 'BMS processing'. A dashed box encloses 'Performing Inspections' and 'Additional study (NDT/Monitoring)'.

# Weaknesses of present practice

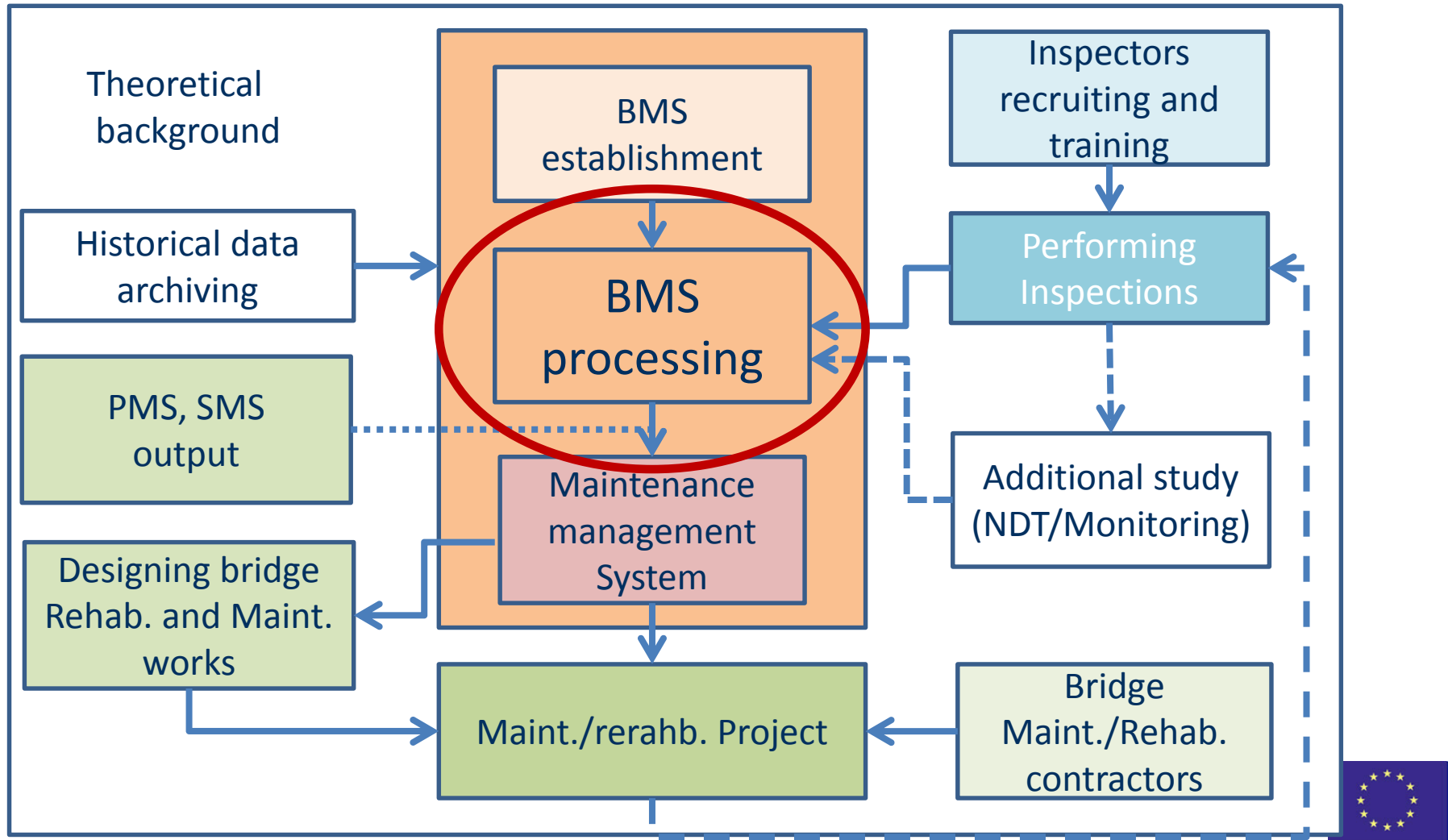
## On Inspection level:

- Full manual inspection work
- Highly subjective assessments
- Retrieval of previous inspections data is not easy, you need to download high volume of data and try to find the relevant items.
- Extensive use of non digital forms with very limited sketch ability (except for hand sketching)





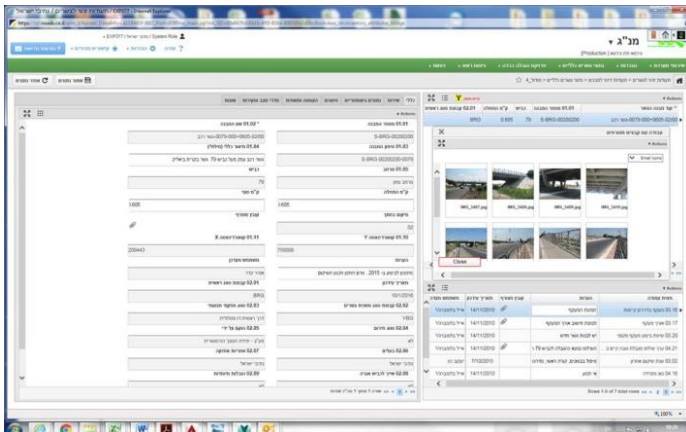
# Simplified Bridge management process



# Weaknesses of present practice

## On the management level:

- Data is managed through database tables without real structure visualization
- Hard to create a complete view of a whole bridge performance with quick drill down into details and causes
- Complicated data stream from site to processing and decision making stages
- Non transferable data from one system to other





**What are the problems that  
SeeBridge seeks to solve**

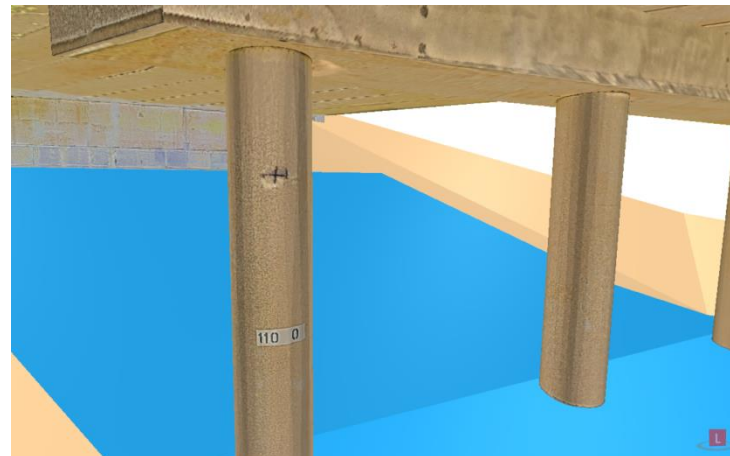
**?**





## What are the problems that SeeBridge seeks to solve?

- Improve inspection process, more efficient and quality data
- Reduce site subjective processes to minimum
- Connect inspection data directly to bridge BIM model
- Reduce data loss to minimum





## What are the problems that SeeBridge seeks to solve?

Reduce the gap between the **quality of data available** in BMS and the **information needed for reliable decision-making** and subsequent design and construction work by:

- Enable 3D BIM bridge data management through bridge life
- Make all data comparable throughout time (4D)
- Enable bridge experts to view results in a fast, reliable manner and use it for design
- Enable data export with unified process