DIPARTIMENTO di INGEGNERIA

LA RICERCA DENTRO UNIME

Digital Transformation in Infrastructure: The Future of Bridge Management Systems

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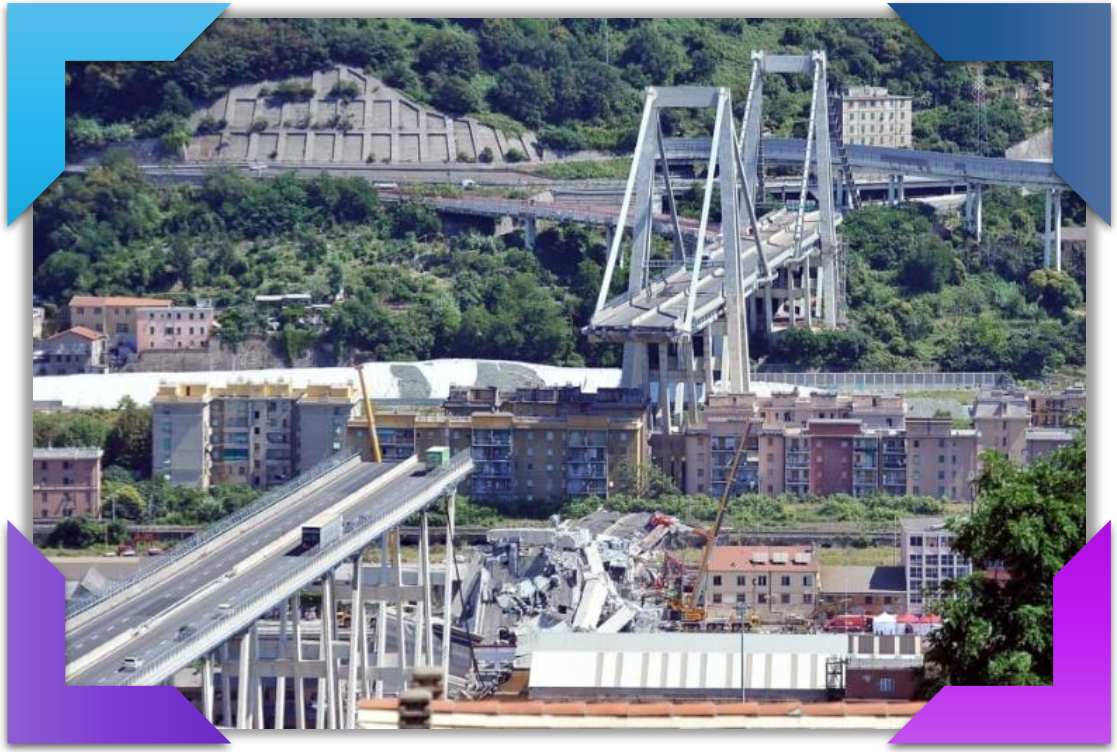
Background and Regulatory Context

BRIDGES

"Constructions with a span greater than 6.0 m, which are designed to allow the crossing of a hollow or an obstacle, whether it is a watercourse, a lake, another channel, or means of communication."

— *Linee guida per la classificazione e gestione del rischio, la valutazione della sicurezza ed il monitoraggio dei ponti esistenti, 2022*

A significant portion of Italy's bridges dates back to the **1970s** construction boom, an era of significant development but characterized by **design criteria and technical regulations that no longer meet today's standards.**



Genova, 14/08/2018

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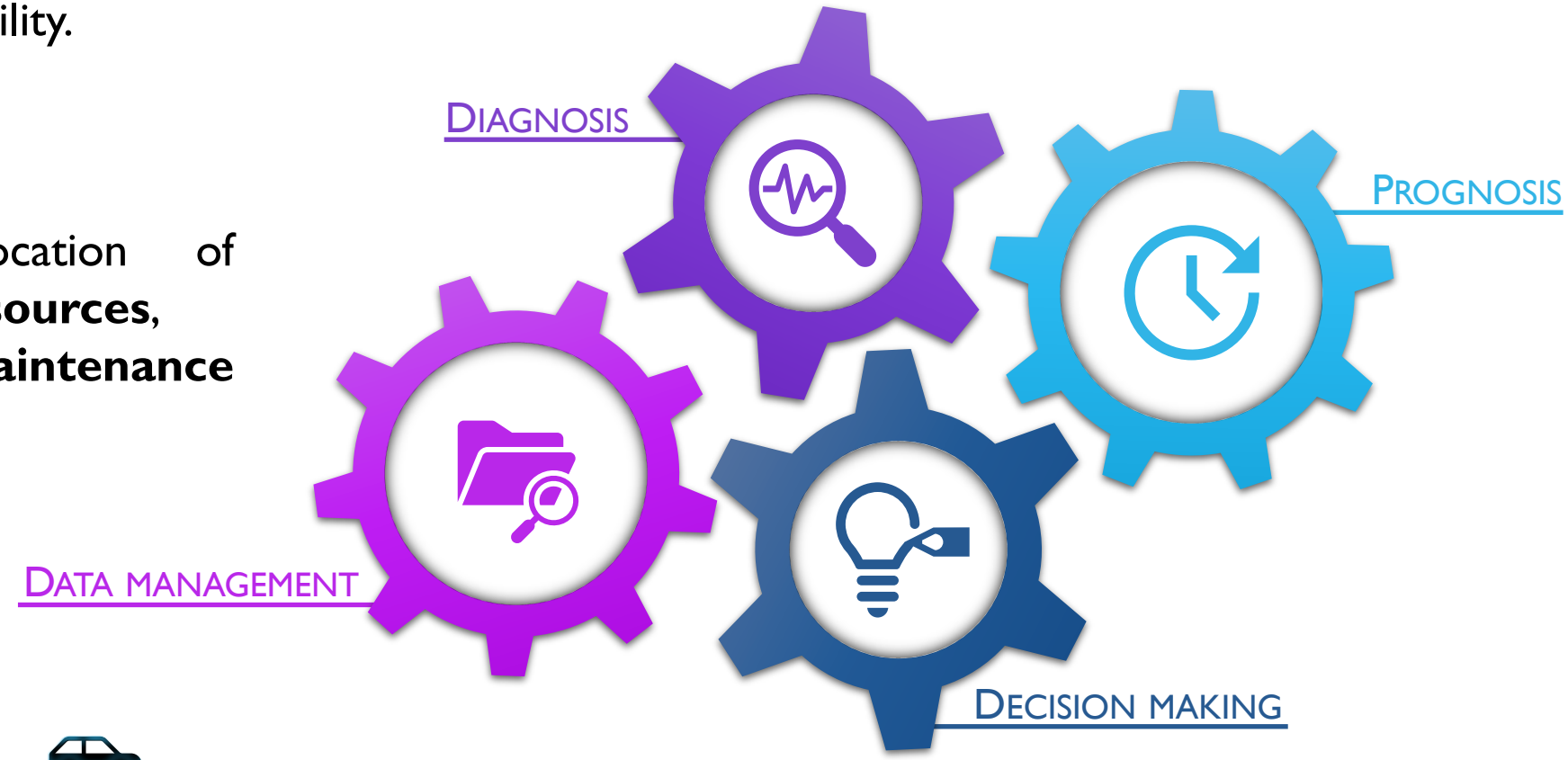
Optimizing Bridges: The Role of BMS

Bridge Management Systems (BMS) have emerged as key tools for **the coordination of inspection, maintenance, and structural health assessment of bridges**, in order to guarantee their safety, functionality, and sustainability.

The goals of BMS:

- ensuring user **safety**,
- optimizing the allocation of financial and human **resources**,
- supporting efficient **maintenance** strategies.



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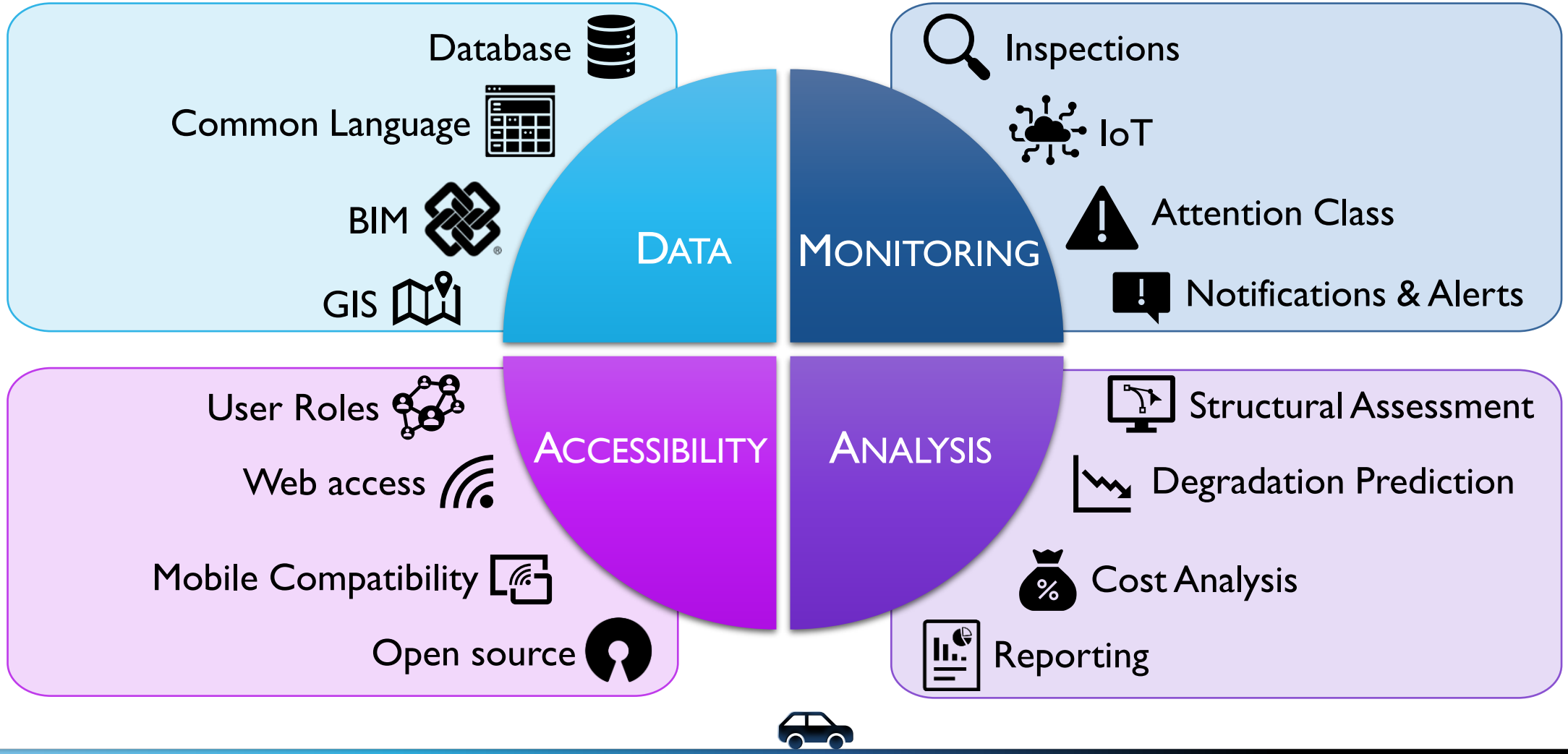
Bridge Management Systems: Key Features



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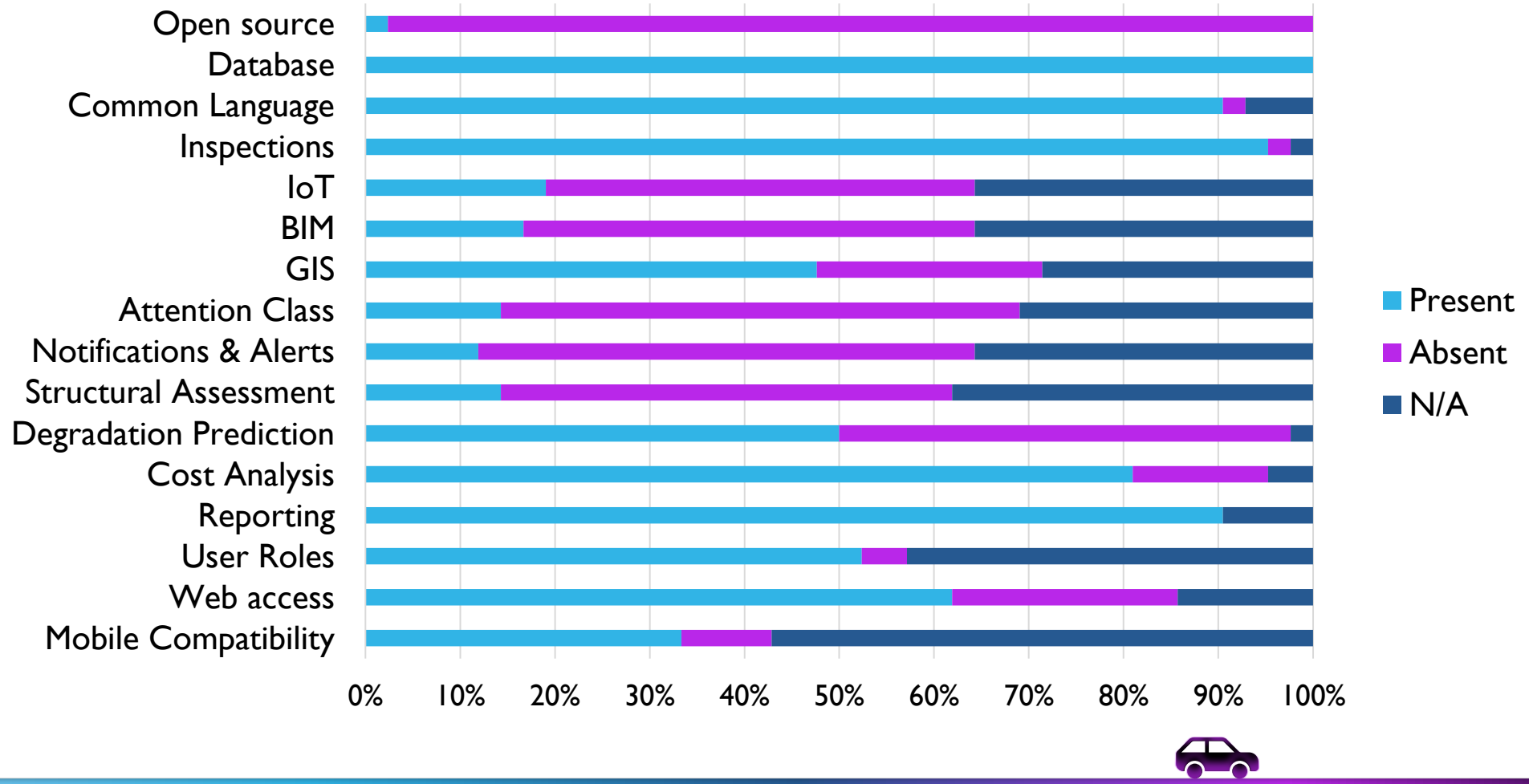
State-of-the-Art Review of BMS

In this study, 42 bridge management systems were examined, analyzed, and compared.



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Current Gap and Future Work

- The current BMS solutions do not fully meet the operational needs of asset managers.
- A gap exists between the potential advantages of BMS and their actual performance.

CURRENT STATE

FUTURE STATE

- A modular architecture allows the gradual introduction of fuctionalities and the progressive enhancement.
- AI is expected to play a key role in bridge management.

Thank you for your kind attention!

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