

# Energy efficiency: Engineering smart cities of the future

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# Universal challenges

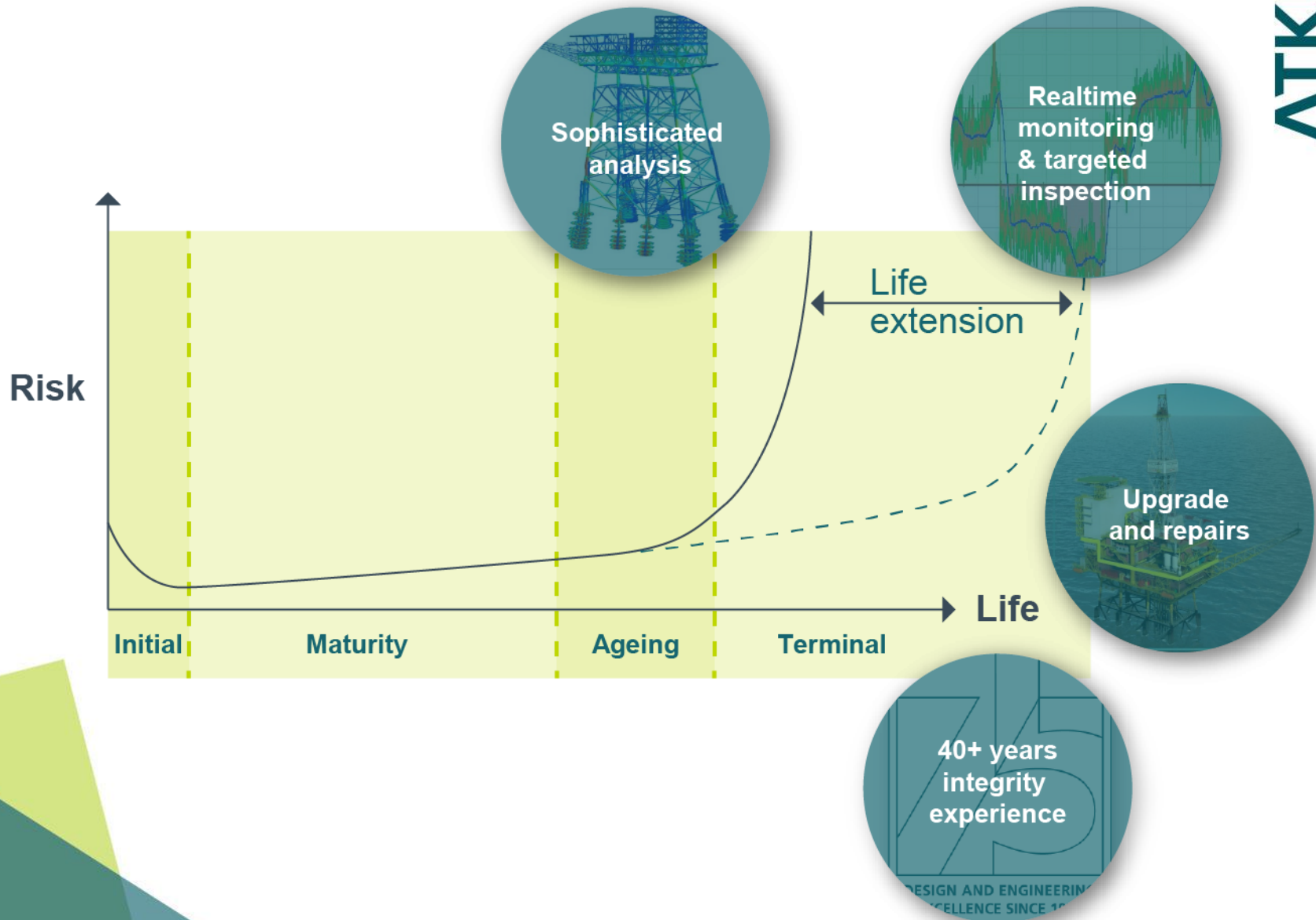


# The grand challenge

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# Efficiency through life extension





# Building performance

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**Cooling and ventilation** – Upgrade or replace chillers, replace pumps fans motors and drives: 20-30% saving on existing systems

**Boilers** - Replace and install or update controls: 30% saving compared to existing systems

**Lighting and controls:**

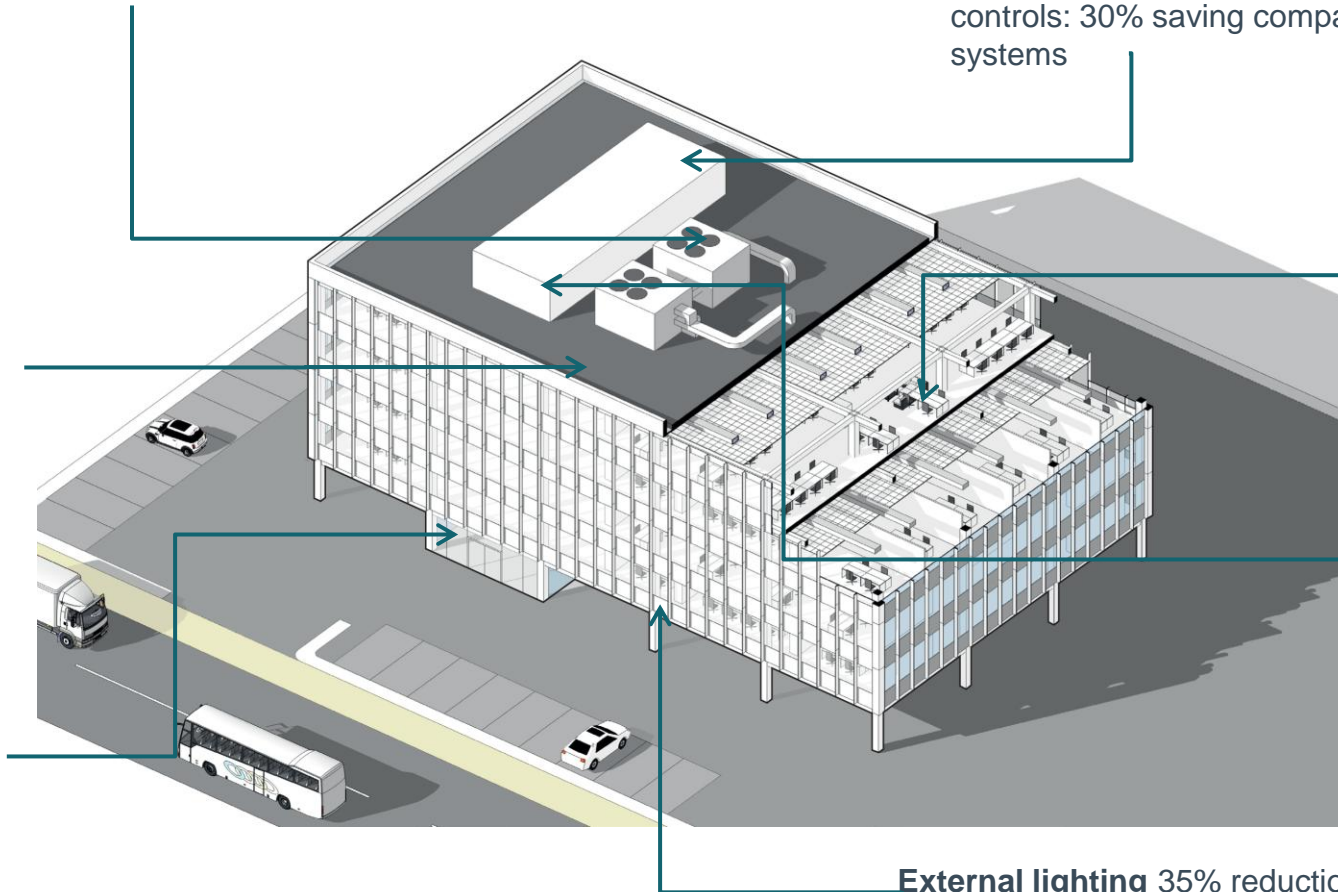
Replacement  
40% saving on existing systems

Options on  
**Building fabric** and improved insulation

**BMS:**  
Install new or upgrade and recommission

**AMR** – Use to verify savings and identify new issues or opportunities quickly

**External lighting** 35% reduction on existing systems



# Vision



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# Partnerships

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# Technology, tools and techniques





# The journey towards smart cities...

Vision

Partnerships

Technology.

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