



WHY INVEST IN A REVERSIBLE BUILDING DESIGN?

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642384.

Circular economy starts with product design.

A reversibly designed building is easier to transform and disassemble.

This reduces demolition, and facilitates re-use / recycle.



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Very long life cycles

Ownership transfers

Uncertain residual value

No taxation benefits

But...

So why invest in a reversible building?



Quantitative financial analysis based on a **real-life commercial** office building in Belgium.

Why commercial buildings?

- Short service life
- Revenue based valuation





Is a reversible building more expensive to build?

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**YES, but
not much.**

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**YES, but
not much.**

Is a reversible building
more expensive to build?

Are there short term
incentives to invest?



**YES, but
not much.**

Is a reversible building
more expensive to build?

Are there short term
incentives to invest?

**YES,
there can be.**



Is a reversible building more expensive to build?

Reversible roof

Reversible interior walls

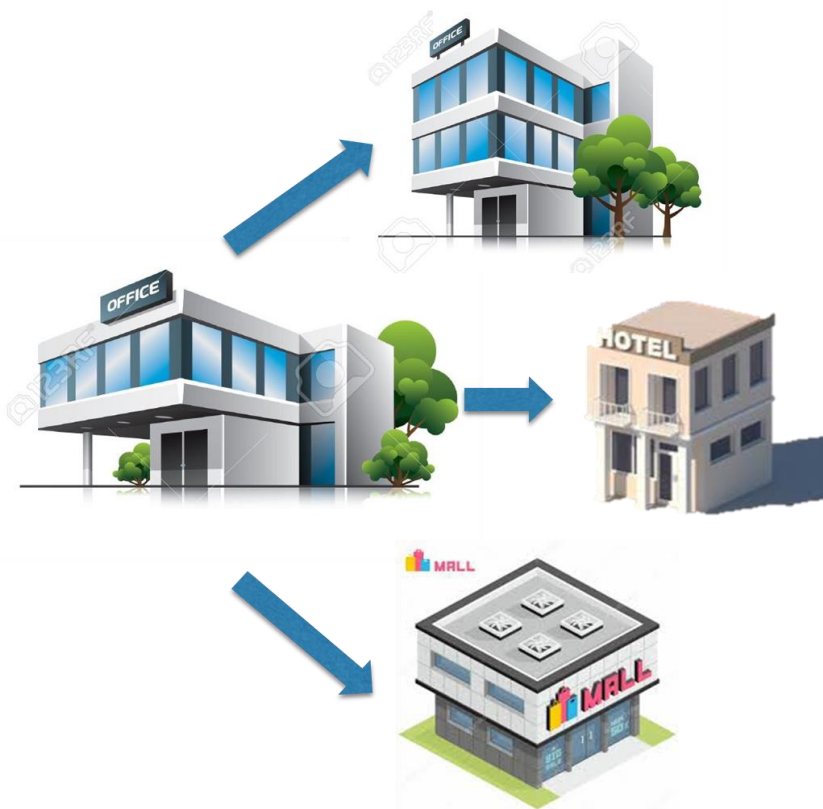
Reversible floor

Over-dimensioned foundation

In this case, initial investment (design & build) would be 5% higher than BAU.

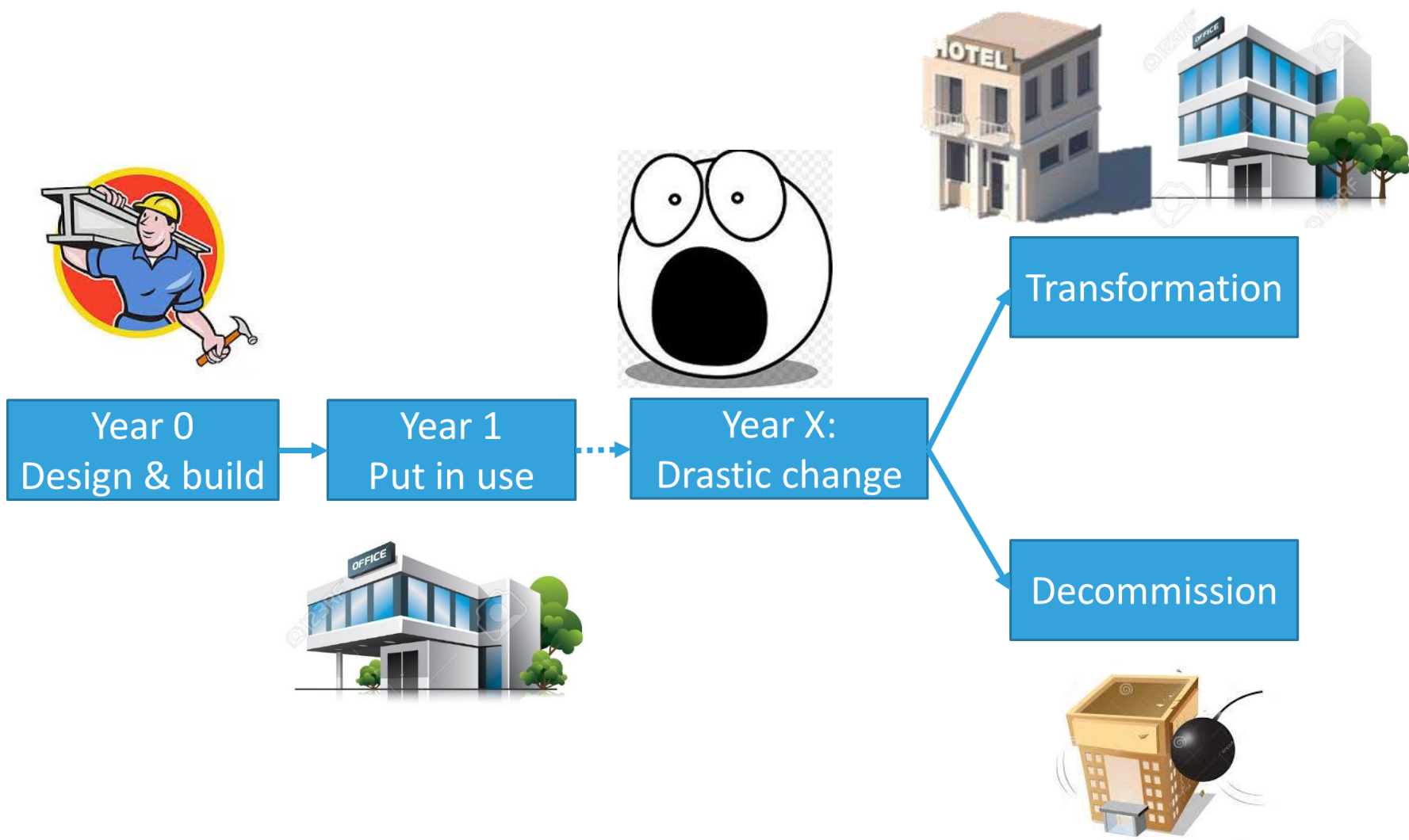


Are there still short term incentives to invest?

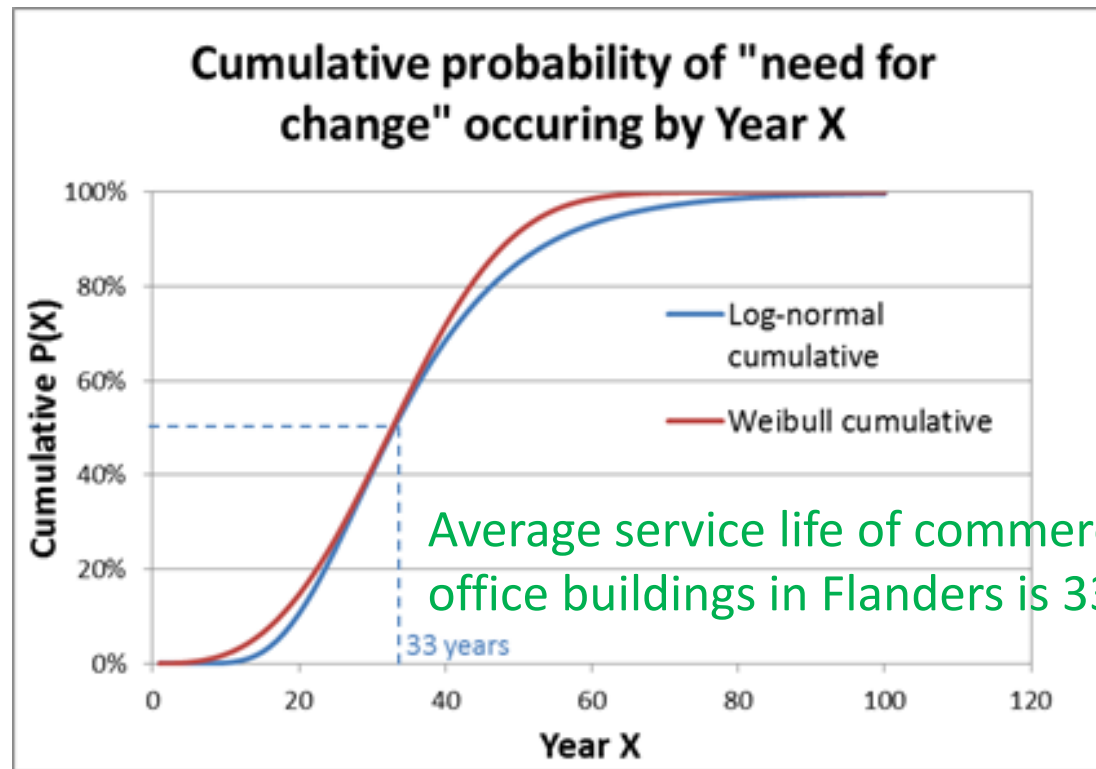
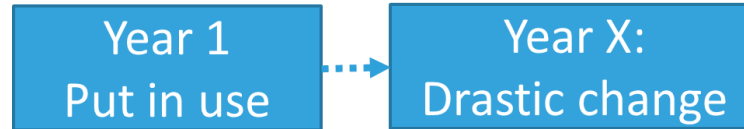


Reversible design can deliver a higher Net Present Value (9% in this case)! → higher market price?

Sequence of events



Probability of need for change



Decision flow – how to react?



Transformation

Year X:
Drastic change

Is there suitable
market need?

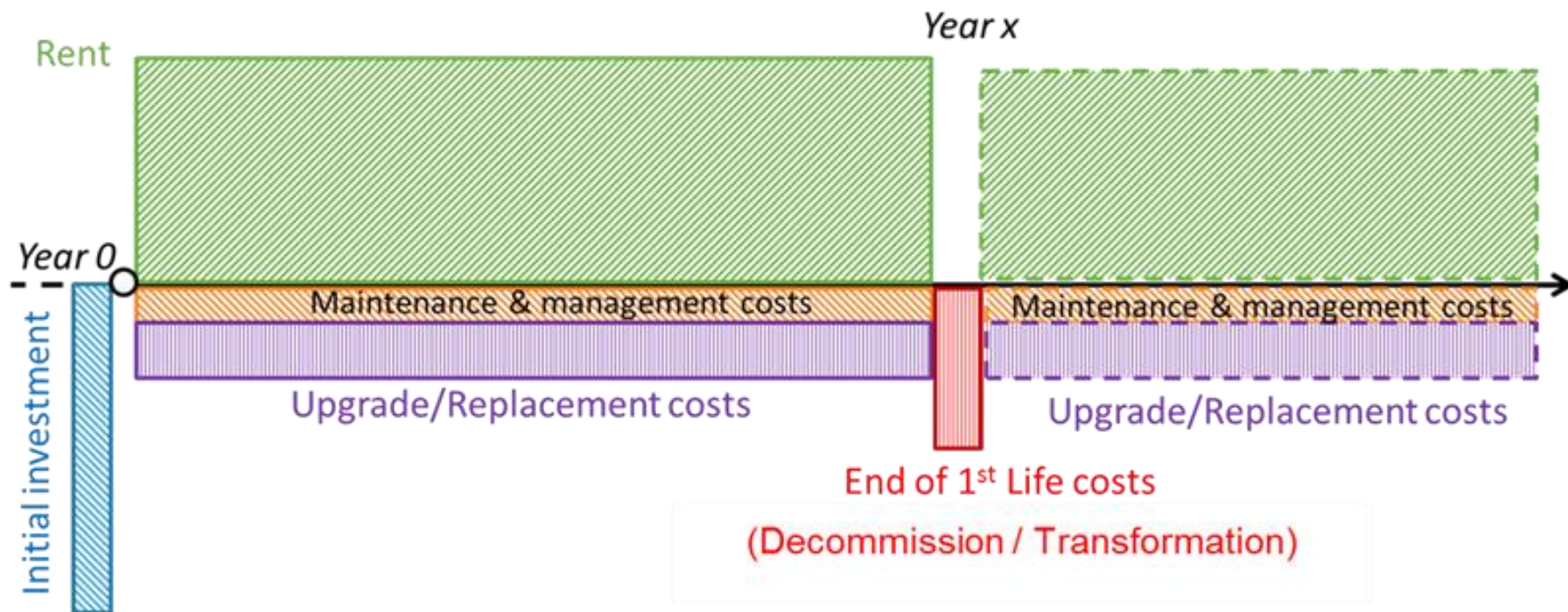
Is it technically
feasible?

Will it pay back
in time?

Decommission

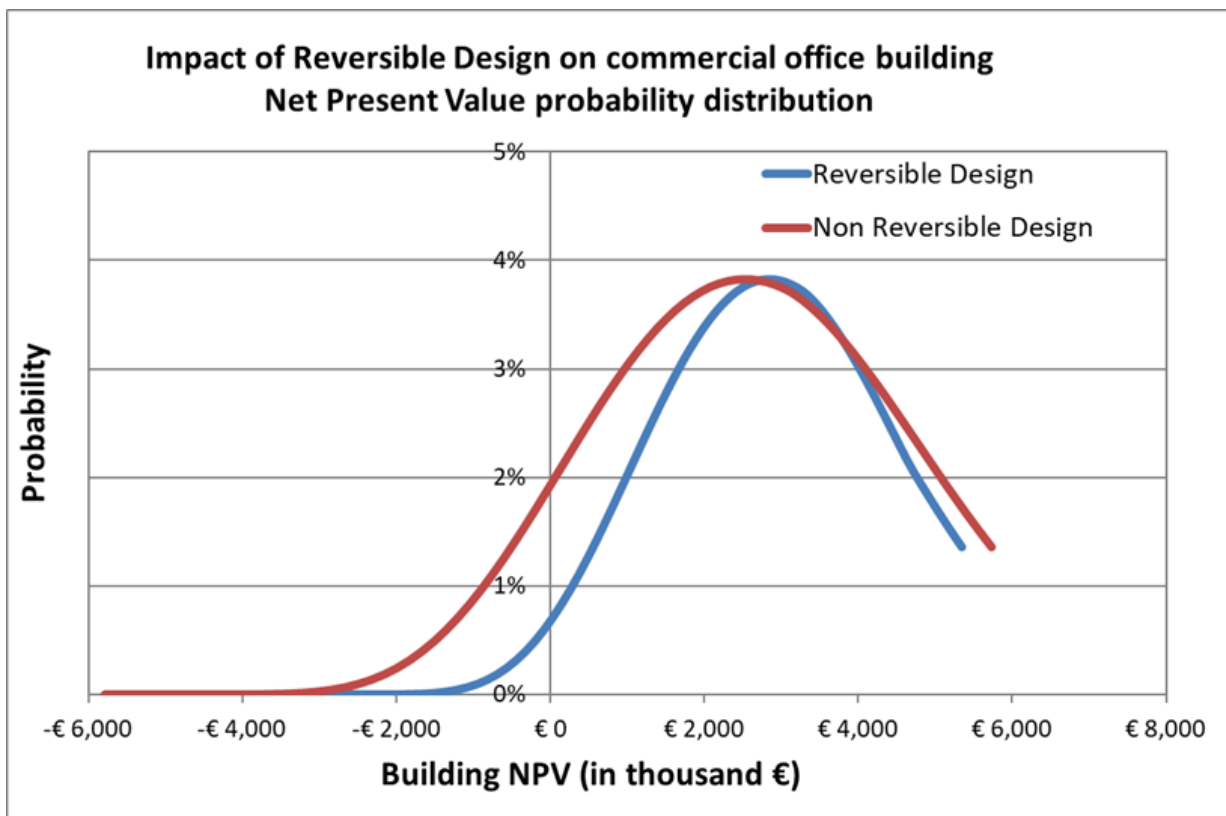


Estimate cash flow



Use discounted cash flow to calculate NPV for a given scenario.

Net Present Value risk profile



Reversible design narrows the spread of NPV and reduces chance of capital loss. Aggregated NPV higher than BAU.

Why invest in a reversible building?



**It lowers investment risk,
increases building market price,
and is also good for the environment!**



How to make it work (better)?

- Introduce the risk reduction aspect in building valuation methods.
- Reduce initial investment (e.g. technical innovation; new business models; economy of scale).
- Create 1st-life use phase benefits (e.g. maintenance cost saving; benefits for tenants).



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