



first open

# GENERATIVE ENGINEERING SOFTWARE PLATFORM

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for better & faster product design



# ELISE

Engineering *will* change – we will be one of the reasons

**Founded 2018**  
with a ~15 years  
experience in bionic  
research and design

**Alfred Wegener  
Institute**  
Spin-off

**Winner of EXIST  
funding program of  
BMW**

(German Ministry of Economics  
and Energy)

**~25**  
enthusiastic staff

**VC funded**  
by UVC, Cherry, Venture  
Stars, and BMW i Ventures



# Vision & Mission

The future of engineering will be driven by intelligent algorithms – we will be one of the reasons



The way we develop technical products today **will change** fundamentally.

Engineers will **no longer** design and compute parts **by hand** in the future.



ELISE

We enable them to develop solutions for **automated designs** in close collaboration with computers and **intelligent algorithms**.

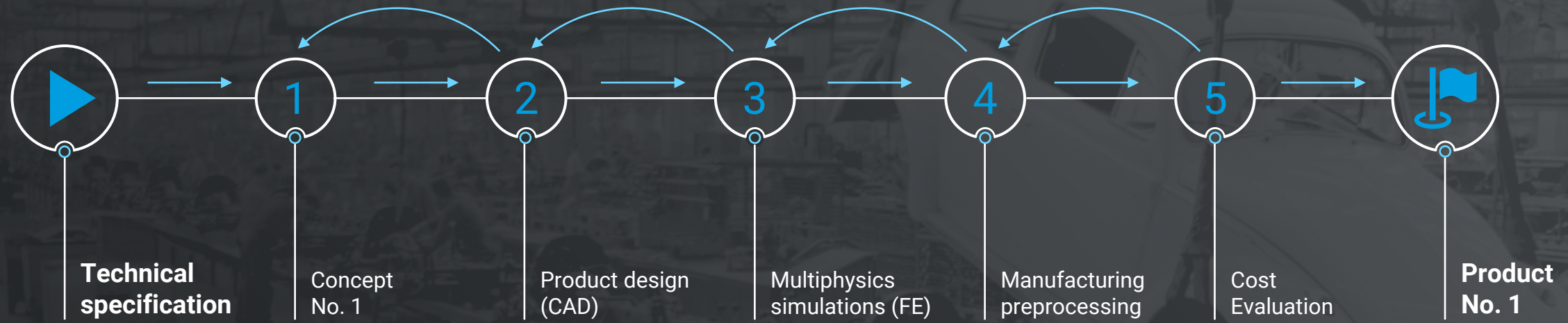
**Better**  
Products

**Faster**  
Development



# The Product development process today

A long **serial process** with manual iterations and interfaces between isolated departments



few manual  
iterations



time  
intensive



Isolated expert  
knowledge

# Ingenuity of Nature

Rules to generate perfectly adapted products

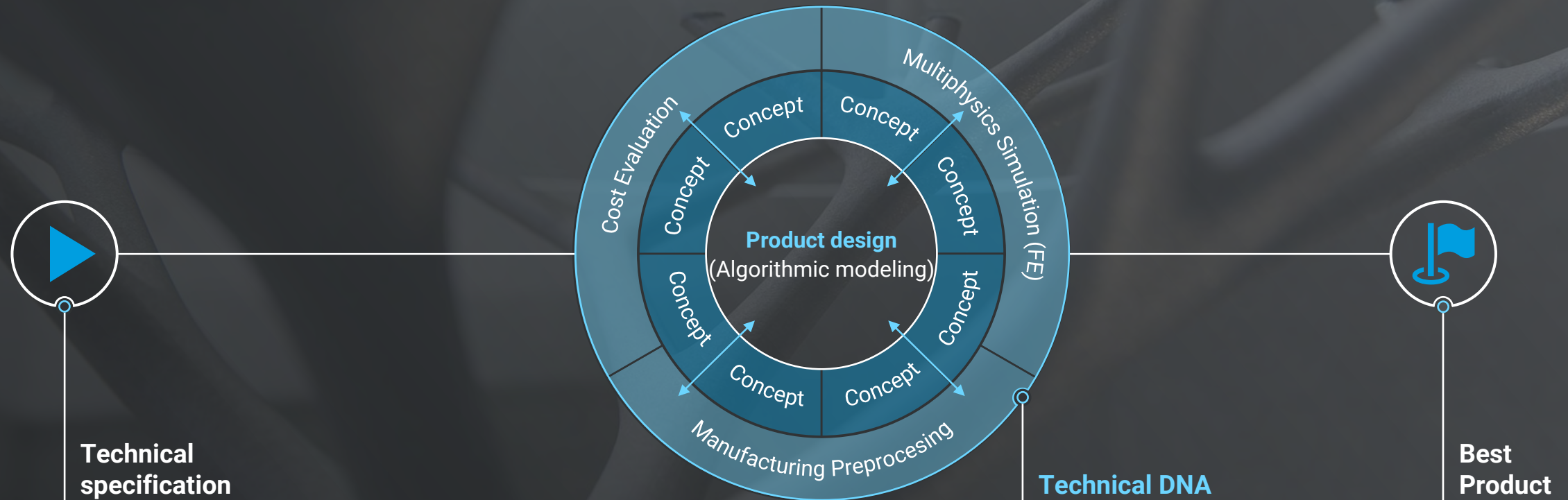
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# A highly automated and simultaneous approach

One technical DNA defining the entire engineering process combining multiple domains



Many automated iterations



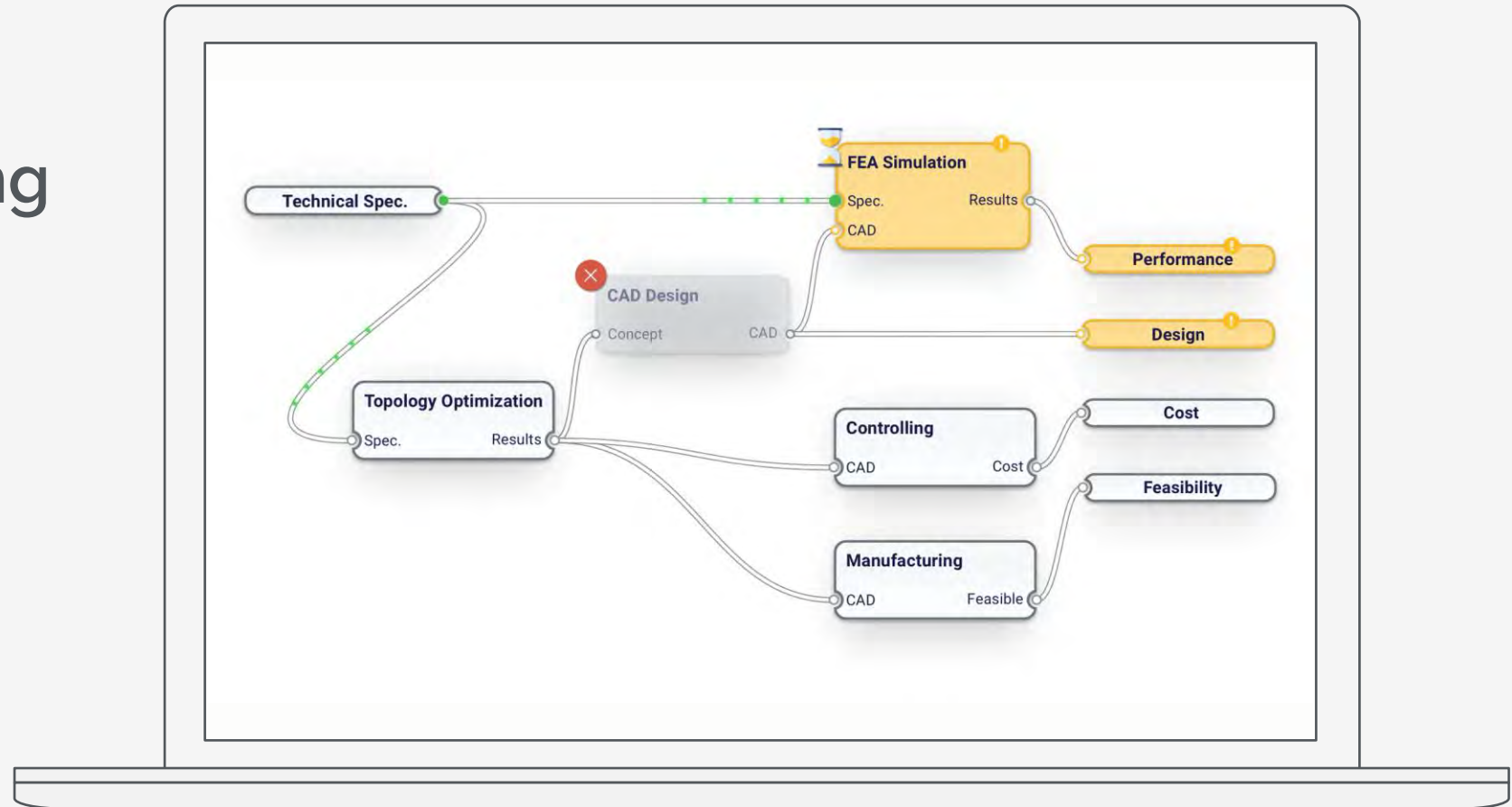
Very fast (overnight)



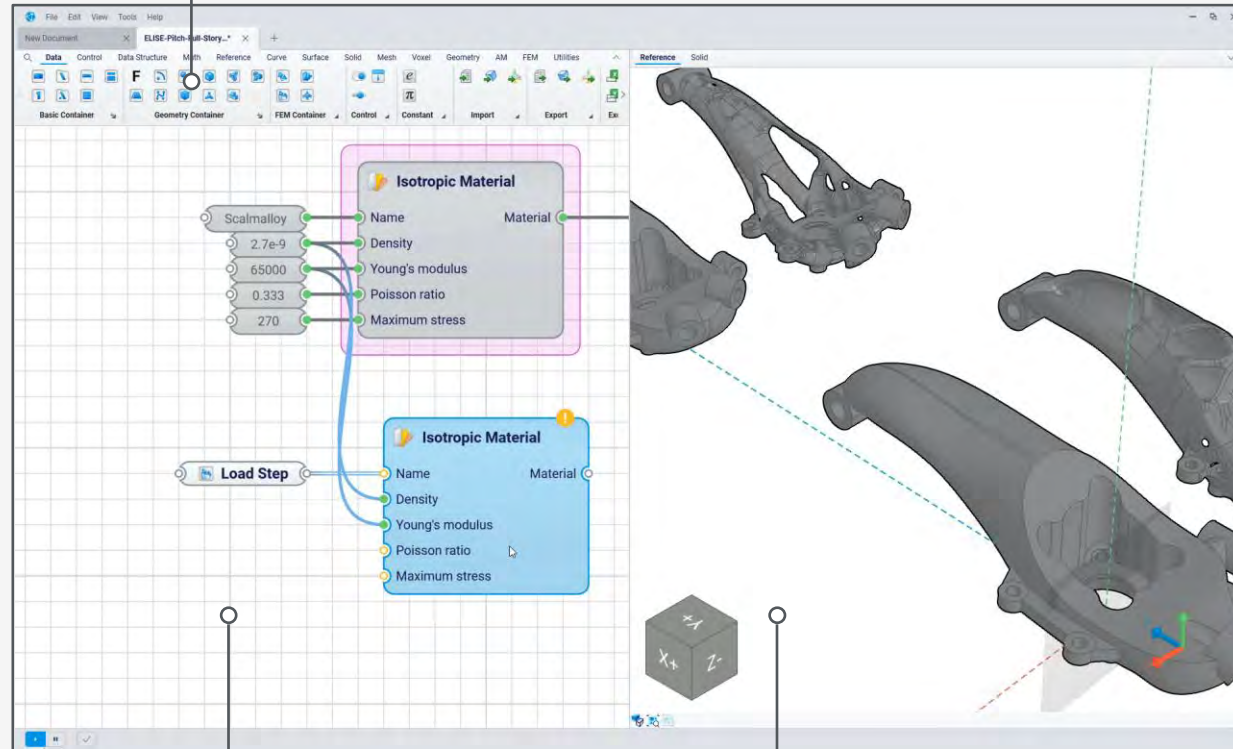
Integrated expert knowledge

# Algorithmic modeling

We are developing a **technical DNA** instead of the part itself



DNA editor tools



DNA editor

Geometry viewer

# ELISE User Interface

An easy-to-use [visual node flow editor](#) connected to a powerful [geometry engine](#)



# The challenge

Manual iterations, subjective interpretations and non-automated software tools lead to a time-consuming and expensive product development.

Airbus uses state-of-the-art design processes and software tools to develop components for additive manufacturing.

# Our solution |

"With ELISE, we've been able to shorten the development of AM parts from 2 months to 5 days and additionally save more than 40% in weight."

Metal Additive Design Technology, Premium AEROTEC

Same product developed by Premium AEROTEC using our Generative Engineering solution.





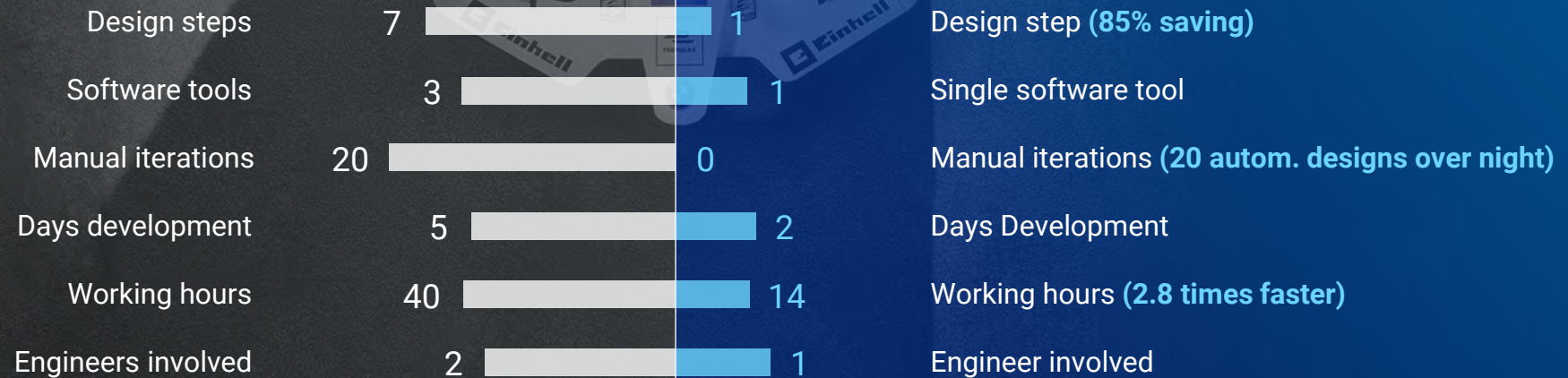
# The challenge

BMW has been using conventional manual and iterative design processes and tools for additive manufacturing parts.



# Our solution

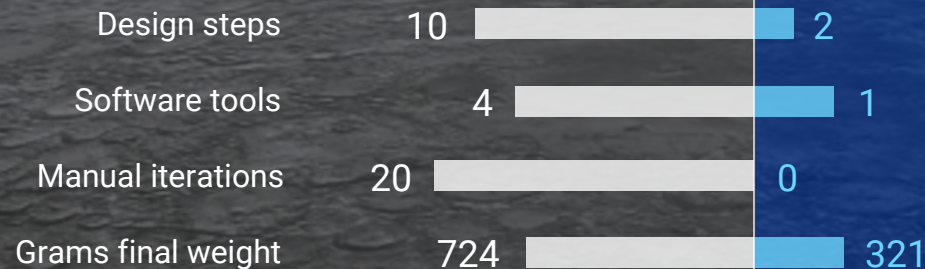
After an initial setup in ELISE, BMW only needs 1.5 working hours for a new development, saving over 90% of work load, cost and time





# The challenge

Ariane Group uses state-of-the-art design processes and software tools to develop components for additive manufacturing.



# Our solution

With ELISE we've been able to shorten the development time significantly while in addition achieving a more lightweight design – the next level of design and validation

Design step **(80% saving)**

Single software tool

Manual iterations **(100% automated)**

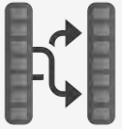
Grams final weight **(56% more performance)**



# Capabilities of ELISE

A [smart computational foundation](#) and lots of kernels and integrations to work with

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## Algorithmic Logic and Math

Technical DNA is created by the logical connection of components to form algorithms.

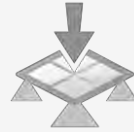
ELISE therefore requires no knowledge of programming or scripting, but still allows engineers to build algorithms from the simple to the awe-inspiring.



## Fully featured CAD Modeling

Our 3D design capabilities are those of an adult CAD system with extremely powerful features.

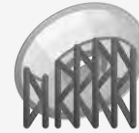
In addition to classic nurbs features, you can create organic shapes and complex surfaces in no time at all with our voxel and sub-division modelling features.



## Engineering-grade Meshing and FEA

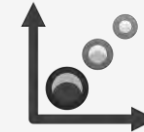
ELISE integrates existing FEA software like e.g. Altair Hypermesh® to build comprehensive FE models.

The integration of FE solvers like e.g. OptiStruct® enable the simulation of complex models at industry standard as well as topology optimization.



## Additive Manufacturing

ELISE offers mature Design for Additive Manufacturing (DfAM) capabilities with support structure generation, optimization of build direction, warping analysis, slicing, etc. In addition we enable the integration of software tools like Materialise® or Amphyon®.



## Design Study and Optimization

Our exploration and optimization capabilities can be used for Design of Experiments (DoE), sensitivity analyses, meta models and optimization tasks. ELISE is suitable for problems with up to thousands of variables and hundreds of objectives.

# Benefits of Generative Engineering

The added-value of ELISE

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1

## Holistic Approach

End-to-end development workflows in a single software environment

2

## Speeding up development

Design with algorithms and explore multiple design variants over night.

3

## Higher product performance at lower costs

Better products with minimized costs due to simulation-driven optimization.

4

## Reuse of workflow logics

Copy & Paste your DNA snippets from project A to project B

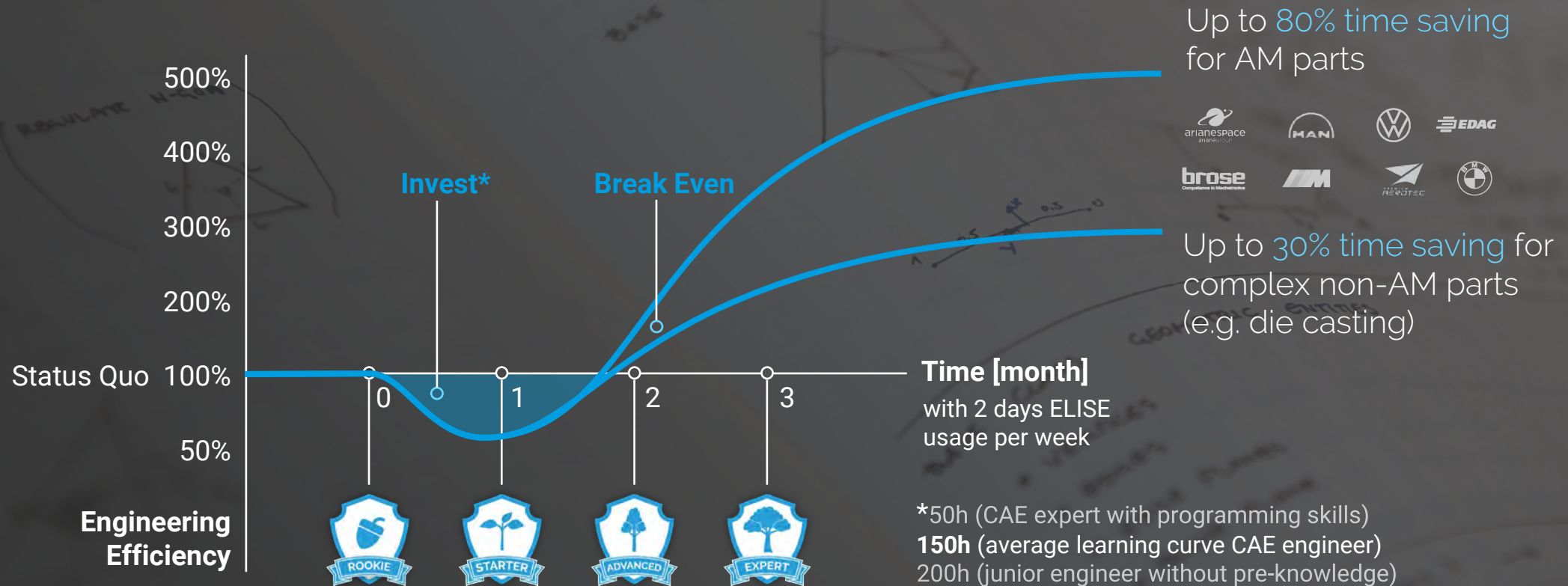
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## Open Platform

ELISE consistently offers the possibility to integrate existing software.

# Return on Invest

What do I have to invest in **Generative Engineering** before I can achieve added value?





“

## That's what our customers say

A new, interesting development methodology that also promises great potential for components with conventional manufacturing processes.

Jan-Wolfgang Gruca



With ELISE, we've been able to shorten the development of AM parts from 2 months to 5 days and additionally save more than 40% in weight.

Sebastian Lück



The parametric structure of a model with topology optimization and parameter study offers a good opportunity to investigate and evaluate a variety of concepts.

Tatjana Klitzing



The ELISE software makes it possible to obtain a comprehensive overview of conceivable component designs in the shortest possible time and to compare them with each other on the basis of certain criteria.

Bastian Dannemann



Used properly, ELISE can greatly accelerate my daily work and is extremely versatile!

Benedikt Steiger



Awesome software and team with great potential!

Andreas Schneider



The next level of design and validation.

Marco Gosch





Konsul-Smidt- Str. 8u  
28217 Bremen  
GERMANY

T +49 (0)421 221 597 00  
M [info@elise.de](mailto:info@elise.de)

[www.elise.de](http://www.elise.de)