GIGALA

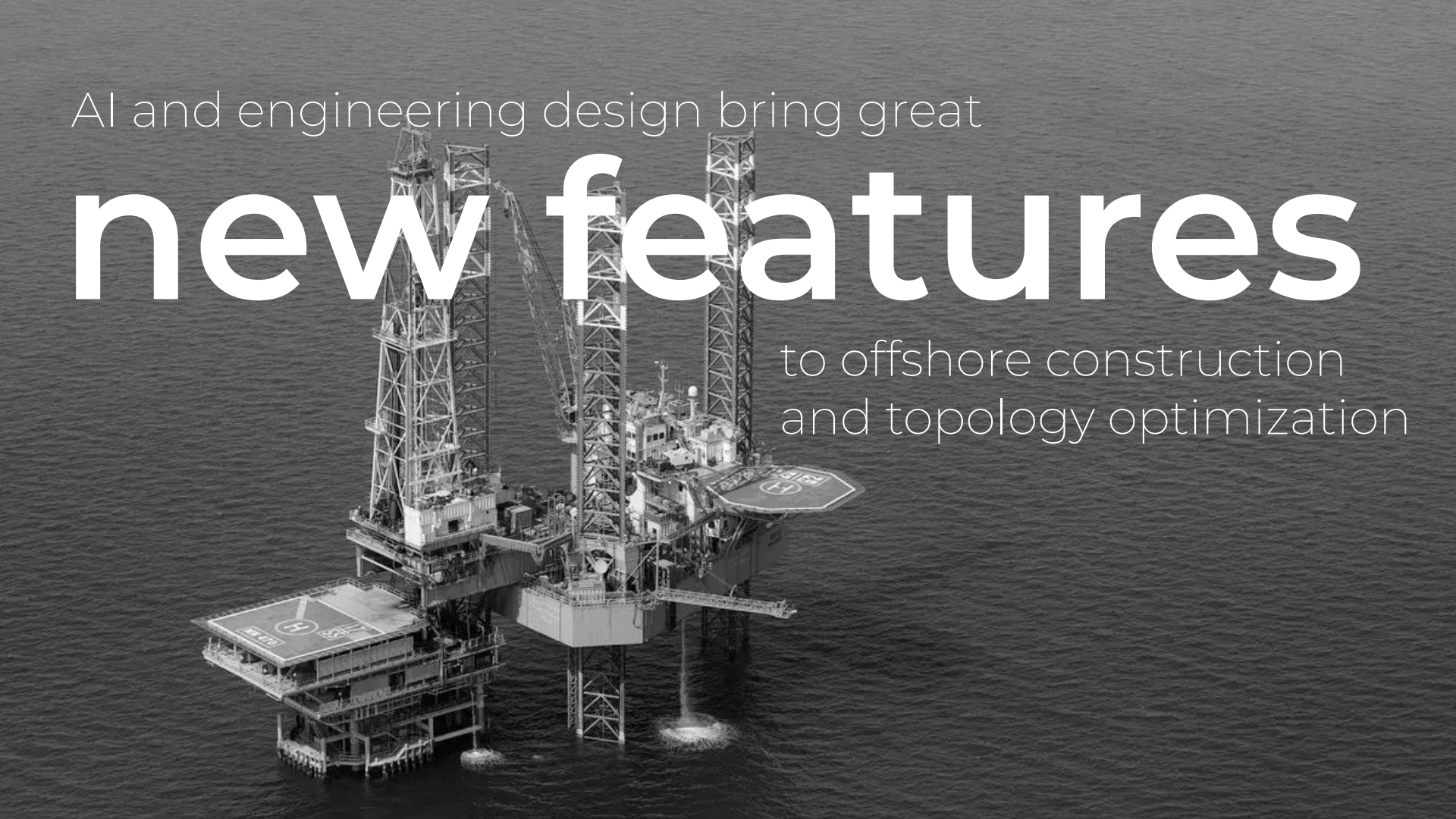
Engineering Design by
Artificial Intelligence

Giorgi Tskhondia

Hello. I am Giorgi, ex subsea pipeline installation engineer, data science professional & founder at Gigala. I combine structural engineering and artificial intelligence to optimize designs for mechanical elements and components.

Mission

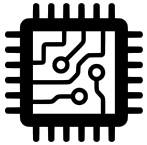
- Unlocking the fabric of reality.
- Utilizing finite element methods and reinforcement learning.


AI and engineering design bring great
new features
to offshore construction
and topology optimization

Our expertise

OFFSHORE DYNAMICS

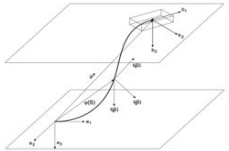
- Subsea pipelines installation
- Pipelay automation with AI



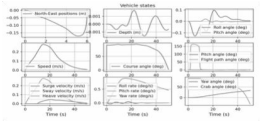
TOPOLOGY OPTIMIZATION

- Offshore elements and structures
- Spools
- Pipelay profiles

OFFSHORE DYNAMICS



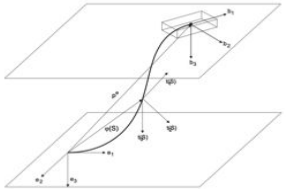
Pipelay dynamic simulation
Bending, stress and strains during pipeline installation. Design criteria in accord with DNV-OS-F101 standard.



Vessel motion and pipelay automation
As input to offshore dynamics simulation.

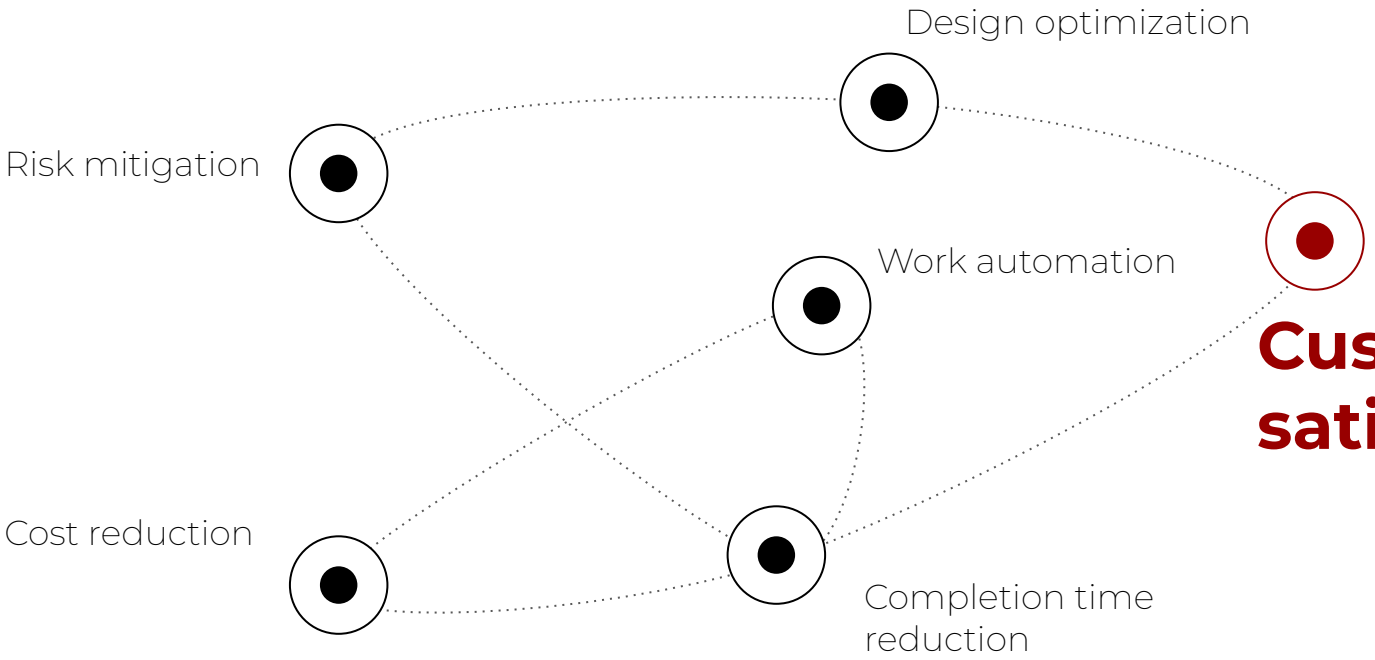
Subsea pipeline installation **EXPERTISE**

Certificat
Installation calculation for subsea pipelines



Software
Modelling offshore dynamics during construction phase

in each project we work on

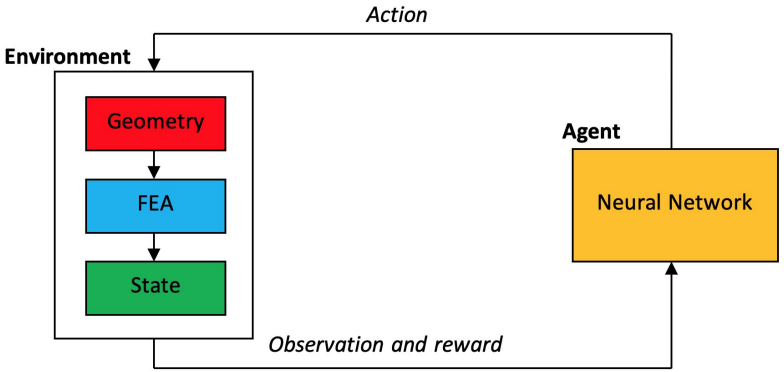


OFFSHORE DYNAMICS

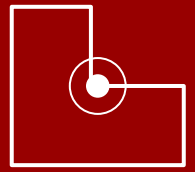
demo

You can find and try our solutions at

GitHub follow the link or QR-code



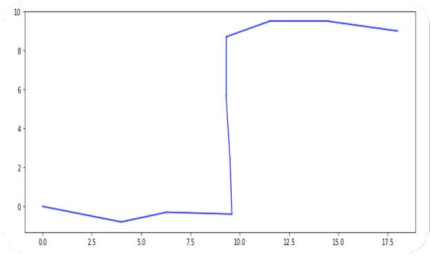
Engineering design automation *can be formulated as Markov decision process (MDP). where an engineer provides initial geometry of a structure, sets loads and allowed actions to alter the geometry, specifies the optimization objective (e.g. minimize weight, maximize stiffness), and starts training the model. After the training, in inference stage, the engineer gets her final design. This process can be augmented by recent developments in Generative AI.*



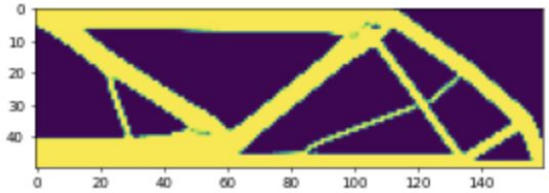
TOPOLOGY OPTIMIZATION

- Mechanical elements
- Offshore structures
- Spools
- Pipelay profiles

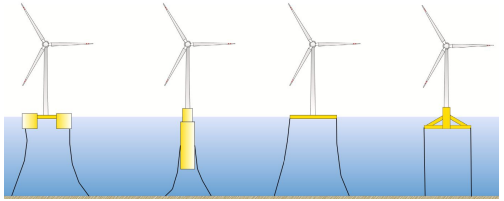
Spools



a Bridge



Renewables parts



Software

for topology optimization and sizing

TOPOLOGY OPTIMIZATION

demo

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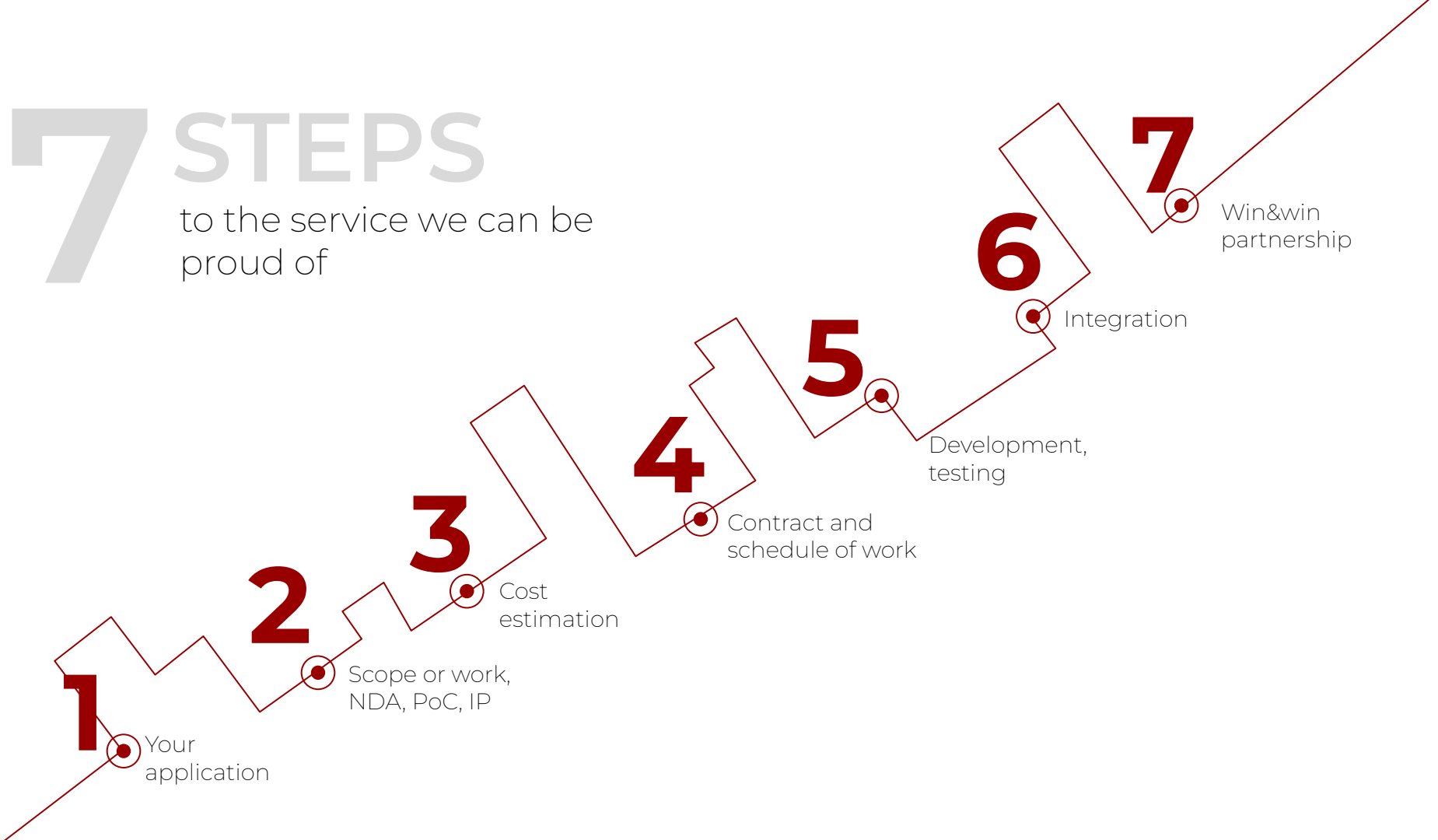
7 STEPS

to the service we can be proud of



What we do and work with

Pipelay dynamics: J-lay, S-lay

Risers, moorings, pipelines

Pipelay automation

Hardware-in-the-loop (HIL) testing for vessel control systems

Offshore operations

Offshore dynamics

Ship control

Vessel motion

Topology optimization

Pipelay profile optimization

Pricing on

development

- PoC cost to be discussed individually
- Project tailoring cost to be discussed individually

free

demo and sample code testing

Experience

8 years

PhD MAI'12, and offshore engineering

8 years

in data science

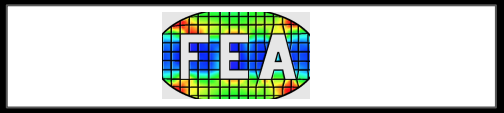
Technologies

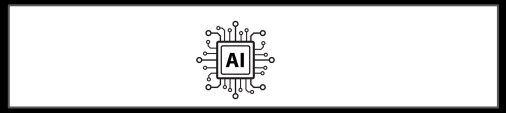
Writing high quality
CODE

State-of-the-art
TECHNOLOGIES

No/low
DATA

Verified
SIMULATION





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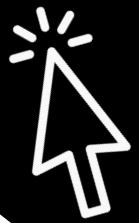
gigatskhondia@gmail.com



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