



OIL & GAS

Doctoral student innovation placements

DNV GL

01 October 2019

Innovation placement projects at DNV GL

- Opportunities

- We have a number of projects available in our technical safety and integrity management teams within the Oil & Gas business in Loughborough, Leicestershire. These teams provide technical and risk advisory services to energy industry clients
- All projects will give students the opportunity to work within a consultancy team as a scientist or engineer and to experience first hand projects aimed at solving client challenges

- Location

- Projects will be based in Loughborough, Leicestershire
- The opportunity for occasional travel may be available but is not a key part of these projects

- Accommodation

- Loughborough has a large student population and is close to the cities of Nottingham and Leicester, and so accommodation is readily available

Project opportunities

Project 1: Evaluating the performance of process gas filters

Description

- Filters and strainers are regularly used on gas network assets to remove debris from the process gas and protect the downstream equipment. Over time these can become clogged/fouled, which can lead to process issues and in some cases cause damage to the filter.
- Development of a model to better understand the effects of fouling on key design factors would support understanding and decision making related to their usage.

Learning and skill development opportunities

- Research into a real industrial problem
- Knowledge of gas asset engineering

Essential requirements:

- Mechanical engineering, chemical engineering, or physics background
- Knowledge of fluid/gas dynamics would be an advantage

Duration:

- 3 months
- 100% full time preferred, but other arrangements will be considered

Location:

- DNV GL's offices in Loughborough, Leicestershire



Project 2: Computational fluid dynamics (CFD) analysis of gas regulator station pipework

Description

- Gas regulator stations are used on a network to control the flow and pressure through the system, and can experience high vibration levels and control system problems under certain process conditions.
- Investigation of the significant factors in terms of pipework configuration, process conditions, and valve selection would provide real benefits in reducing the occurrence of major issues.

Learning and skill development opportunities

- Application of computational fluid dynamics (CFD) for analysis of turbulent and high velocity fluids

Essential requirements:

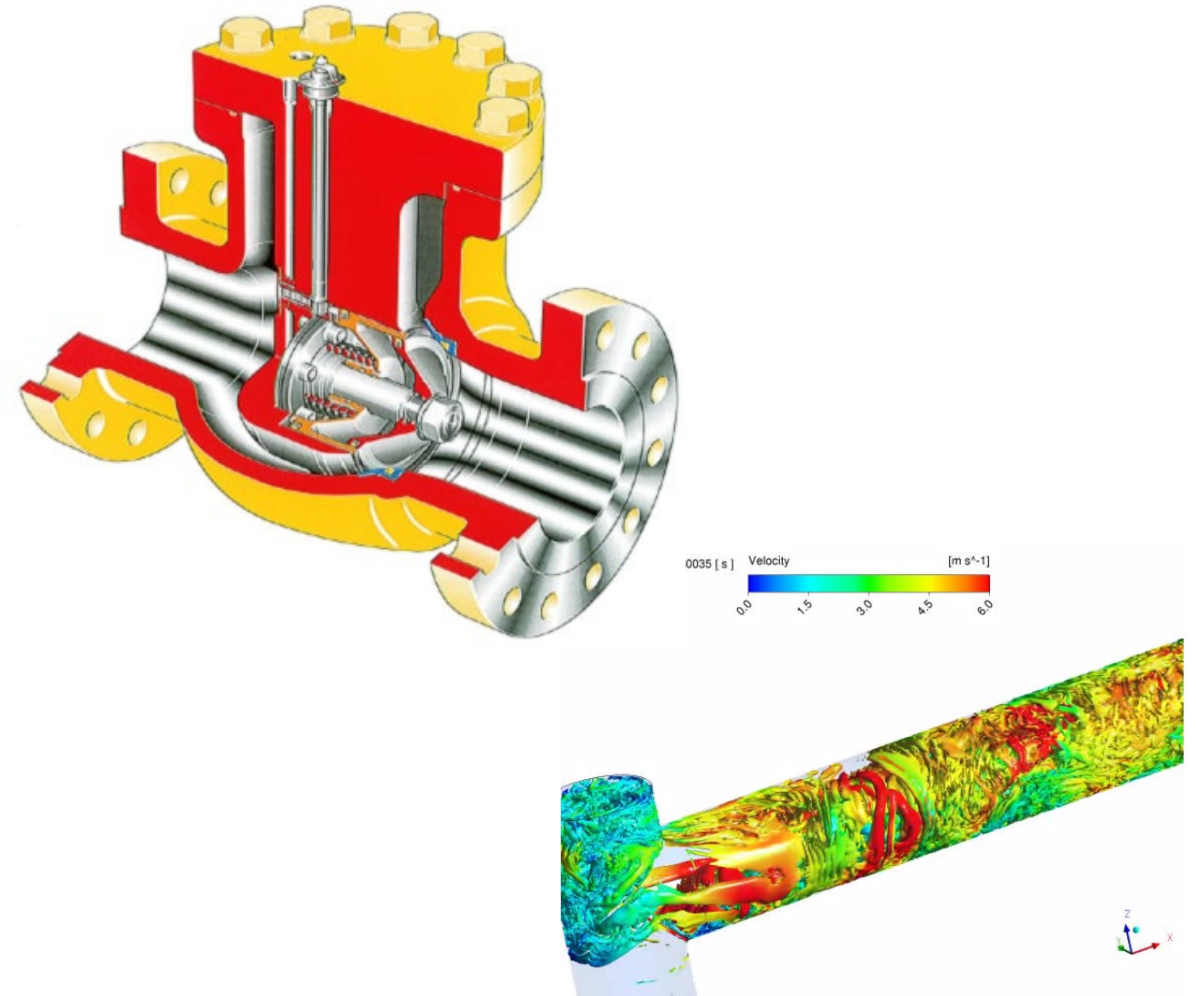
- Experienced in use of CFD codes
- Access to facilities for running this software

Duration:

- 3 months
- 100% full time preferred, but other arrangements will be considered

Location:

- DNV GL's offices in Loughborough, Leicestershire and/or university facilities with access to CFD software



Project 3: Analysis of noise generation by pressure relief valves

Description

- Pressure relief valves are used to protect process equipment by ensuring that they do not experience excessive pressure due to the contained fluid. When they operate, high levels of noise can be generated inside the pipework, which in turn can apply high levels of dynamic stress to the mechanical structure.
- Development of a method for fatigue life prediction would enable valve and pipework design and operation to be accurately evaluated in relation to possible integrity risks.

Learning and skill development opportunities

- Research into real industrial problem
- Knowledge of gas asset engineering

Essential requirements:

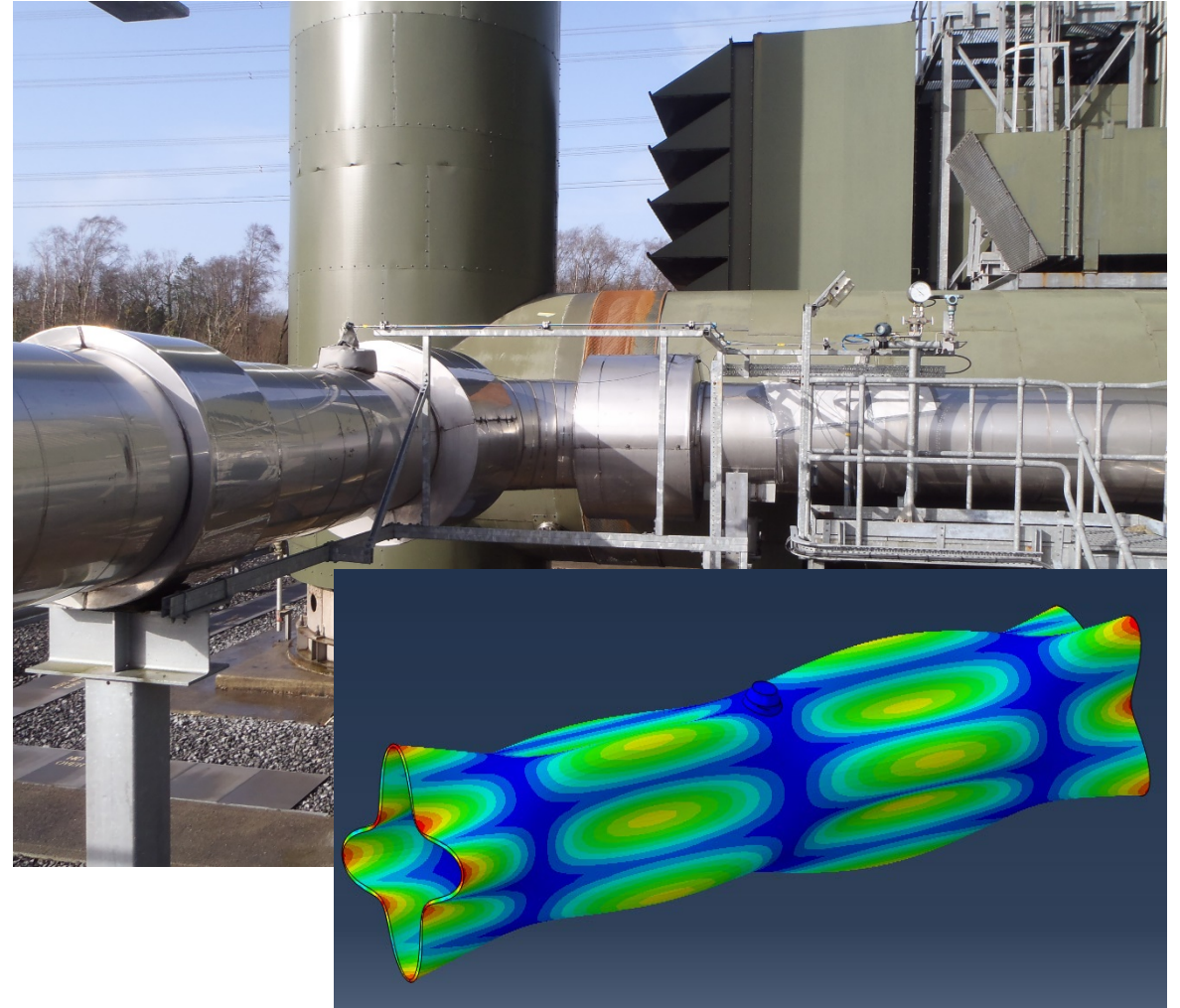
- Experienced in use of finite element analysis (FEA) codes
- Knowledge of vibration and/or acoustics would be an advantage

Duration:

- 3 months
- 100% full time preferred, but other arrangements will be considered

Location:

- DNV GL's offices in Loughborough, Leicestershire



Project 4: Real time quantitative risk assessment (QRA)

Description

- The aim of the project is to establish a method of carrying out quantitative risk assessments (QRAs) of onshore oil and gas industry sites in a rapid manner (i.e. up to a few minutes to run the model rather than a few days). The set up of the model should also be simple relative to a typical assessment. This would enable many questions related to safe operations on hazardous sites to be answered quickly.

Learning and Skill Development Opportunities

- The role would be helping to develop methodology and processes, and possibly software, at the forefront on current engineering practice, in a world class team of scientists and engineers

Essential Requirements

- Any discipline of scientist or engineer considered. Interest in the subject, attention to detail and ability to work with the existing team is important

Duration

- Expected to be full time for 3 months, but to be agreed

Location

- DNV GL's offices in Loughborough, Leicestershire



Project 5: Gas velocities in pipelines

Description

- The aim of the project is to understand the background to the maximum pipeline velocities allowed for natural gas and whether these are applicable/suitable for hydrogen pipelines

Learning and Skill Development Opportunities

- Research into a fundamental issue relating to the reuse of existing pipeline infrastructure for hydrogen
- Understanding existing codes and how these were derived
- Contributing to the decarbonisation of energy

Essential Requirements

- Any discipline of scientist or engineer with strong mathematics skills. Interest in the subject, attention to detail and ability to work independently

Duration

- Expected to be full time for 3 months, but to be agreed

Location

- DNV GL's offices in Loughborough, Leicestershire



Project 6: Ventilation and rain in covered pits

Description

- As part of an on-going project, there is a challenge to design a cover for a pit that both keeps the rain out and provides adequate ventilation.
- Investigate novel designs of ventilated pit covers and develop models to calculate air changes within the pit.

Learning and Skill Development Opportunities

- The role would be to understand current calculations and methods
- An understanding of hazardous area calculations

Essential Requirements

- Any discipline of scientist or engineer considered. Interest in the subject, attention to detail and ability to work independently

Duration

- Expected to be full time for 3 months, but to be agreed

Location

- DNV GL's offices in Loughborough, Leicestershire



About DNV GL



Our purpose

Protecting life, property and the environment

Our values

We build trust and confidence

We never compromise on quality or integrity

We are committed to teamwork and innovation

We care for our customers and each other

We embrace change and deliver results

DNV GL - A global quality assurance and risk management company

12,000

employees

150+

years

100+

countries

100,000+

customers

5% R&D

of annual revenue

MARITIME



OIL & GAS



ENERGY



**BUSINESS
ASSURANCE**



**DIGITAL
SOLUTIONS**



Technology & Research

Global Shared Services

Enhancing safety, increasing reliability, managing risks

Broad service portfolio

From project initiation to decommissioning, we support customers in managing risks and solving complex technical issues.

Technology foresight

We provide a neutral ground for industry collaboration; creating competence, sharing knowledge and setting standards.

Experts dedicated to technological progress

Our independent services enable companies to make the right choices for a safer, smarter and greener future.



Setting the benchmark in oil and gas

50+

years ago, we helped pioneer the marine warranty market

65%

of offshore pipelines designed and installed to DNV GL standards

170

industry standards and recommended practises. 30 joint industry projects ongoing at any time

18

laboratories and test centres across three continents

Broad oil and gas expertise

Risk management advisory

Technical advice to identify, assess and mitigate risk

Inspection

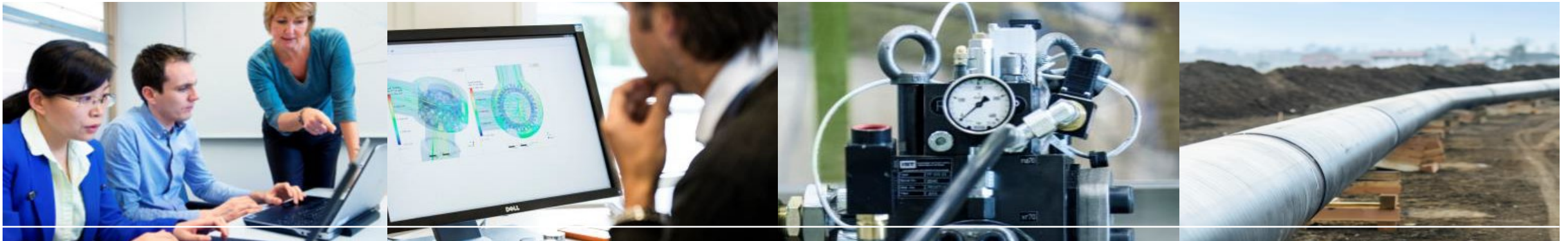
Specialized inspection, monitoring and testing services throughout all phases of the asset lifecycle

Technical advisory

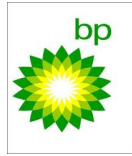
Technical qualification, assessment and operational integrity services to ensure products and operations are safe and fit for service

Certification & verification

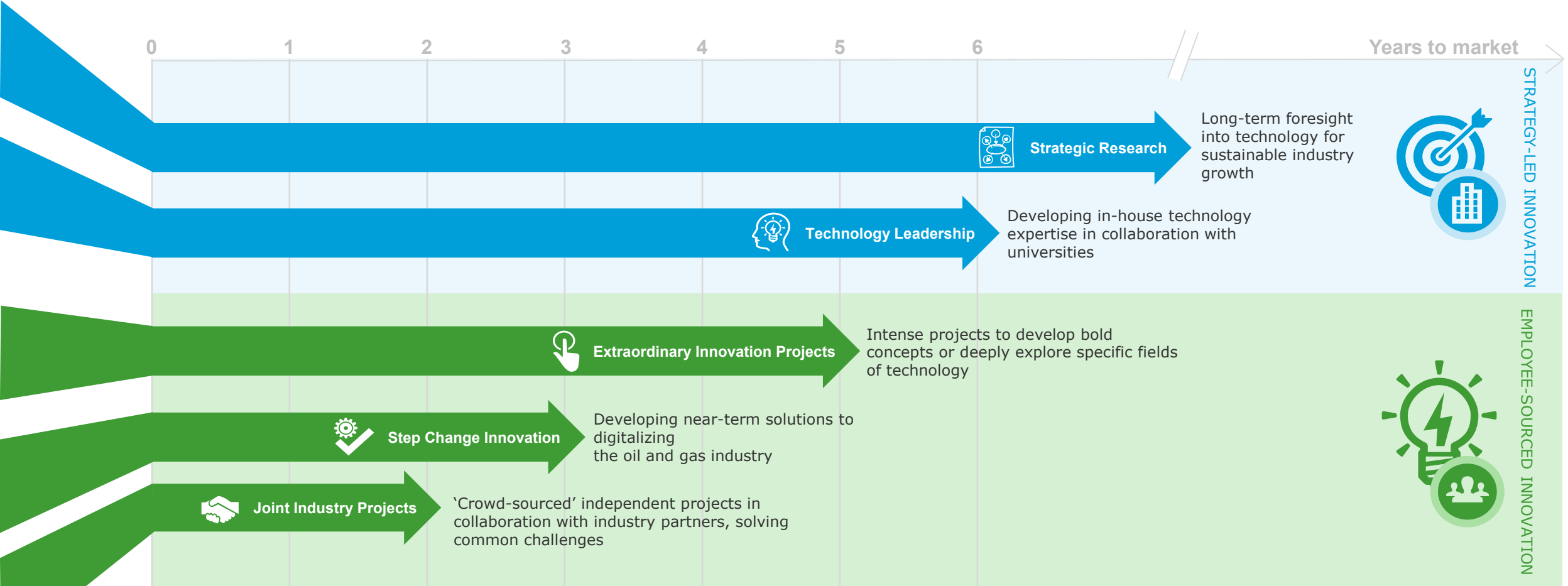
Verification of field developments and facilities, and certification of materials and components to reduce risk and create cost efficiency



Some of our customers



Our innovation initiatives: Near-term solutions and long-term foresight



Global impact for a safe and sustainable future

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SAFER, SMARTER, GREENER

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