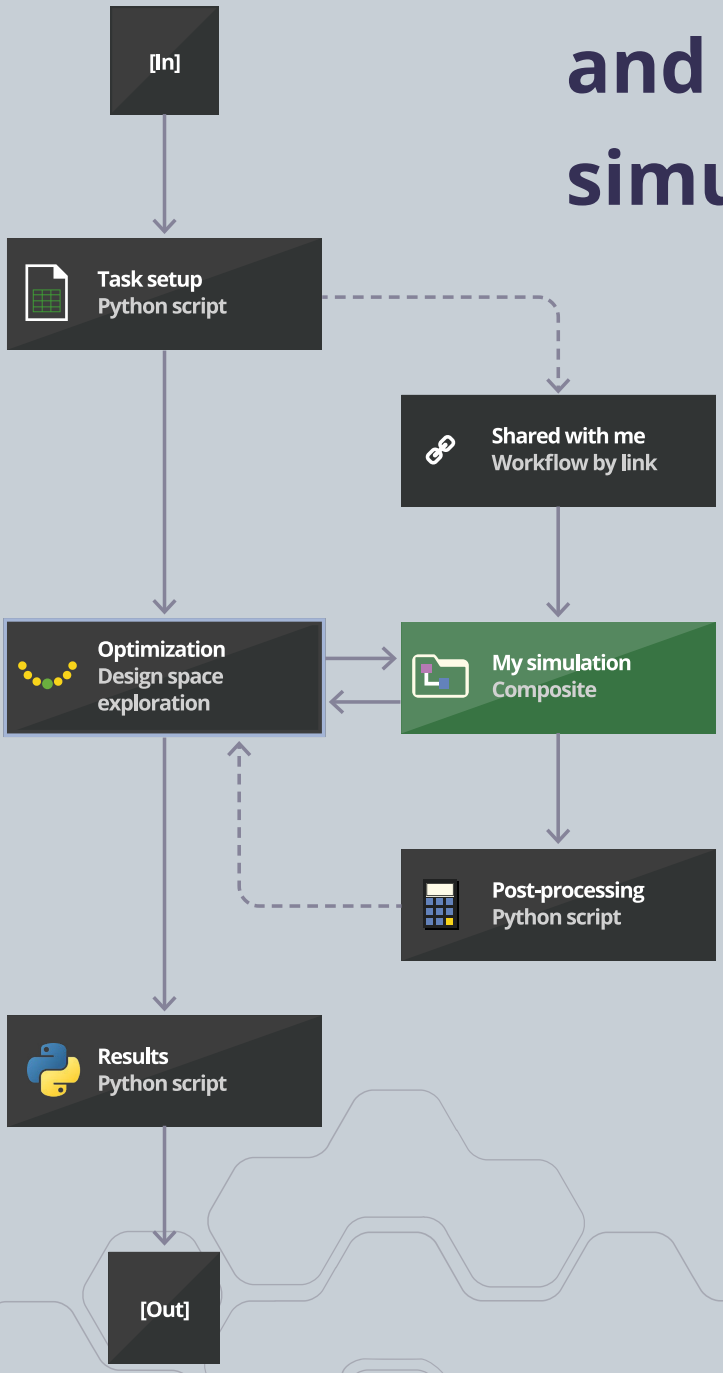
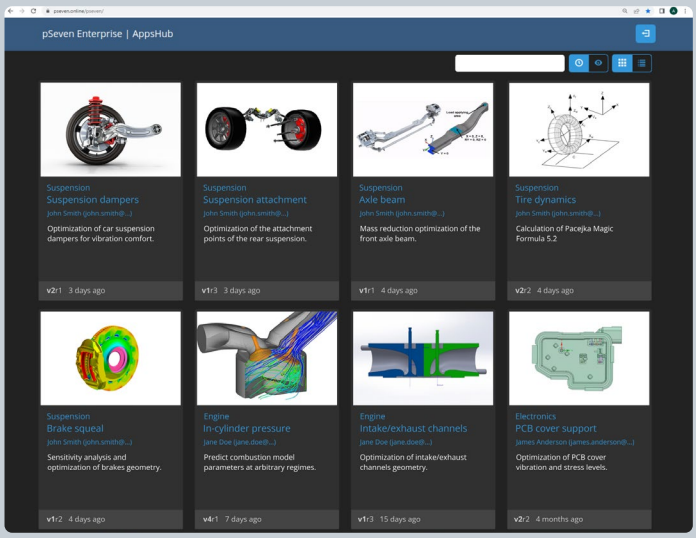
pSeven Enterprise

Cloud-native low-code platform

Automate engineering processes and democratize simulation at scale



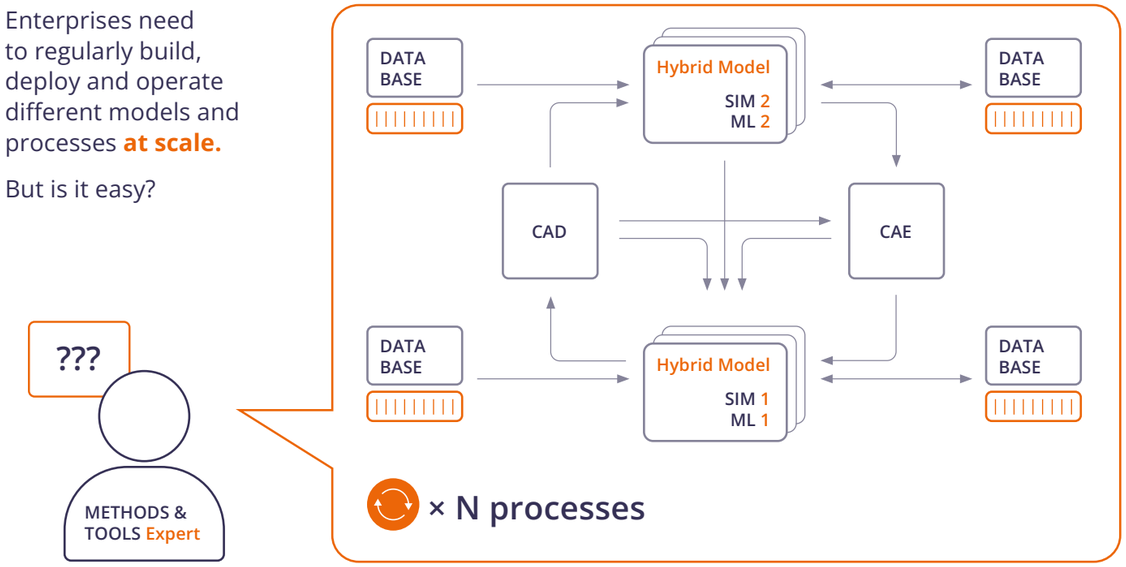


Business challenges

1. How to bring to market a product with the best characteristics and on time?
2. How to reduce costs of design while increasing productivity?

Enterprises need to regularly build, deploy and operate different models and processes **at scale.**

But is it easy?



The software industry has developed various concepts and solutions to these challenges: Simulation-Driven Design, Model-Based Systems Engineering, Digital Twins, Machine Learning and AI. The adoption of these solutions means that companies need not only to digitize key engineering processes but also to automate them as much as possible just to stay cost-effective.

Digitizing such engineering processes at enterprise scale, meaning that there is a variety of products, internal processes and software used, makes the task very complicated even for technologically advanced organizations.

To reach the needed level of automation, enterprises must not only build, deploy and operate hybrid models, which requires integrating and automating a large number of simulation, data and other models developed by different departments. It would also require a growing number of experienced engineers, professional software developers and data scientists, which is also a challenge.

Do enterprises really need to expand their technical staff or is it possible to improve the productivity of the current staff?

Typical engineering population of an enterprise

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Citizen users

The majority of users — experts in their domain but not in methods and tools development.

›60%

Analysts, Designers, Operators...

- Focused on company assets and projects.
- Solve business tasks using domain specific applications and services without developing any code.
- Need efficient tools to solve specific engineering and technical problems in a timely manner.

Advanced users

Involved in methods but not necessarily in tools development.

‹30%

Frequent users of simulation and machine learning.

- Solve problems using visual programming / low-code with minimal code development, but without direct involvement of professional programmers.
- Easily build, deploy and manage ML models.
- Automate problem solution by creating vertical applications and services.

Qualified users or «Superheroes»

The most experienced users specialized in methods and tools development, often with programming skills.

«10%

Experts in simulation, machine learning and programming.

- Create specialized tools tailored to specific domains for citizen and advanced users.
- Ensure enterprise-wide automation principles, i.e. by providing workflow templates
- Define, document and standardize development, deployment and operating principles.

Solution

One of the solutions to all these challenges is a low-code approach to automation of engineering processes. pSeven Enterprise, as a low-code cloud-native platform, enables engineers to build, deploy and operate various models and processes across the whole enterprise. This is enabled by collaboration in the cloud and division of responsibilities:

- Professional developers (in-house or external) and qualified users create fixed components (hard-code).
- Qualified and advanced users develop automated workflows (low-code).
- Other users run them as is or with minor modifications (no-code).

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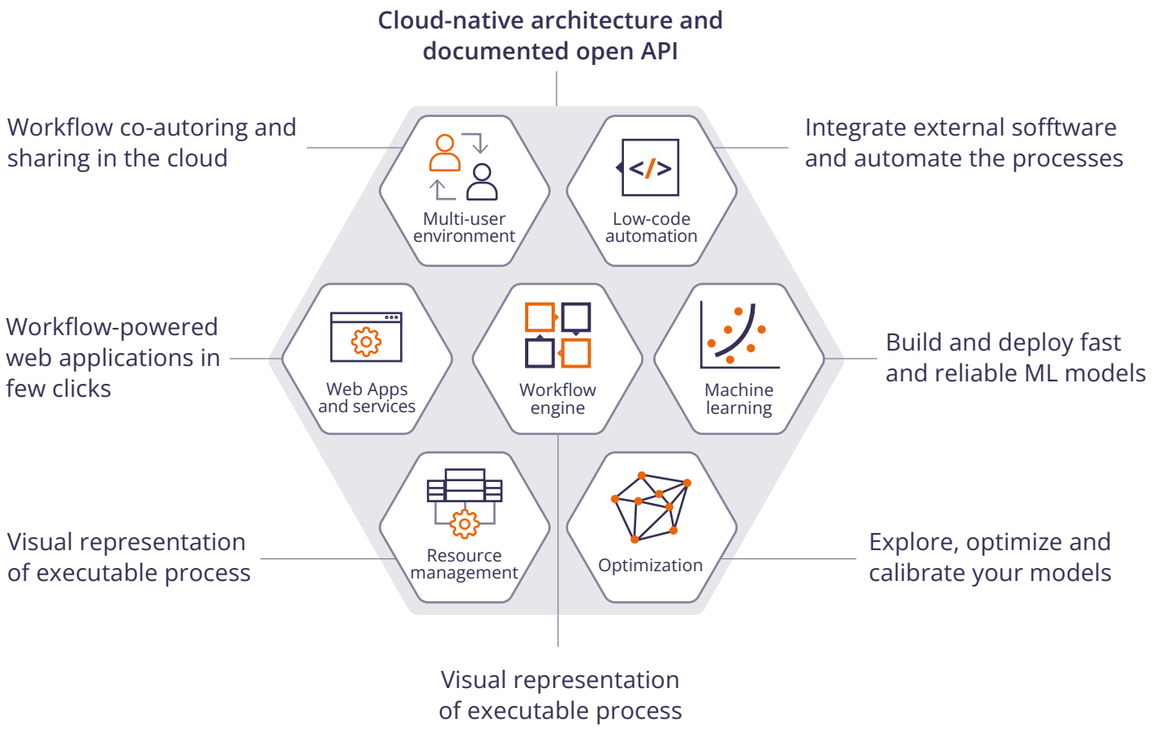
Everything you need to automate engineering processes at scale:



Effects of pSeven Enterprise implementation

1. Reduce product development time and increase productivity by automating routine tasks.
2. Increase flexibility of engineering processes and improve knowledge retention with low-code approach.
3. Improving the quality of developed products and processes through optimization and in the shortest time possible.

Key benefits

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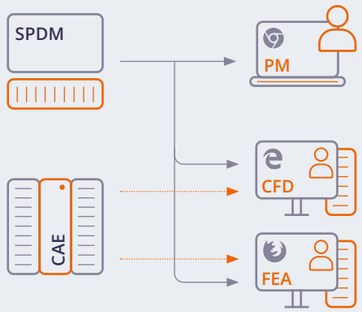
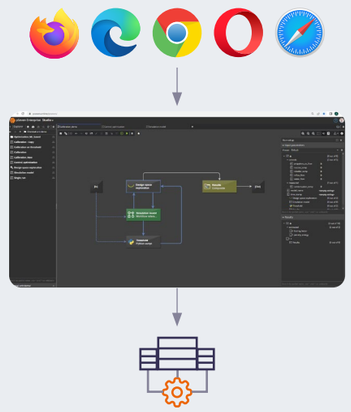


Collaborative engineering and openness

Centralized architecture that enables collaboration:
- Multi-user environment with user roles.
- Real-time co-authoring.
- Centralized library of blocks and web applications.

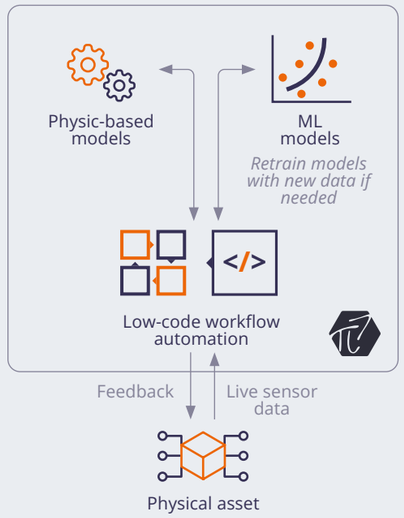
Integration with third-party solutions:
- Open API for block development for direct integration with CAD/CAE software and collaboration platforms (SPDM, PLM, IIoT).



Cloud architecture and accessibility

Cloud architecture:
- Only one installation needs to be supported.
- Access via any browser from any device.
- A thin client is sufficient.

Deployment in a defined and controlled IT environment — on premises or in a private cloud.

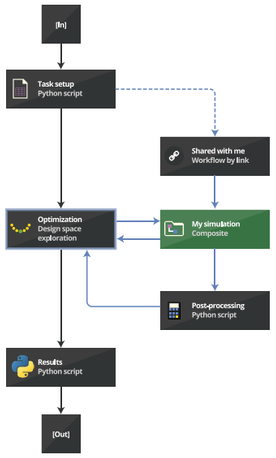


Enable Digital Twin strategy

- The platform is suitable for creating Digital Twins for both design and operational stages.
- Ability to create hybrid Digital Twins that incorporate both simulation and ML models.

Bridge the gap between design and operation and make better and faster operational decisions.

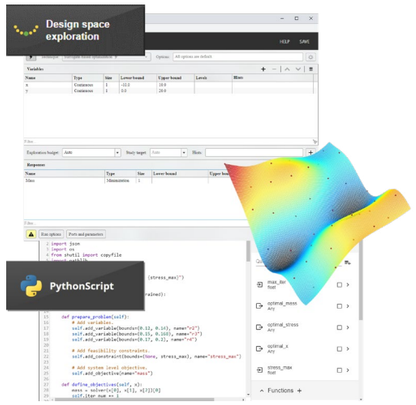
Engineering automation at enterprise scale



Low-code automation platform

Powerful workflows engine:
- Visual representation of executable processes of multidisciplinary engineering simulations, machine learning and optimization.
- Visual programming: branching, loops, nested chains, error handling, parallel execution and more.
- Everything happens in the cloud—No need to move files.

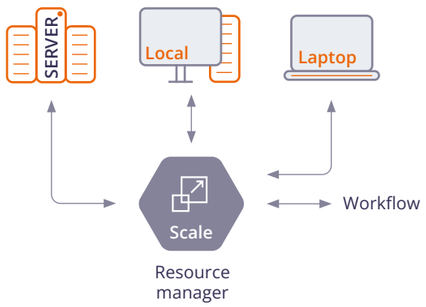
Benefits of low-code approach:
- Fast MVP development and implementation.
- Logic is always open for testing and refinement.
- Controlled depth and order of automation.



Machine learning and design space exploration

- Efficient proprietary machine learning algorithms.
- Advanced algorithms for multi-criteria parametric design optimization and Adaptive Design of Experiments (ADoE).
- Uncertainty Quantification (UQ).
- Model identification, calibration and adaptation.
- Ability to use your own libraries of algorithms.

SmartSelection, a technique based on artificial intelligence, will help you select and tune the most appropriate algorithm for your task.



Resource management

- Multiple users can run many resource-intensive workflows at the same time.
- Full control over workflow runs.
- Support of distributed heterogeneous environments:
  - Running blocks on Linux nodes and external Windows machines.
  - Execution on supercomputers.

Capture and transfer engineering knowledge

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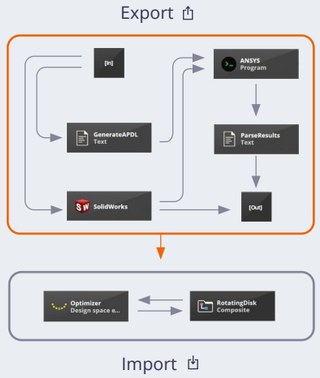
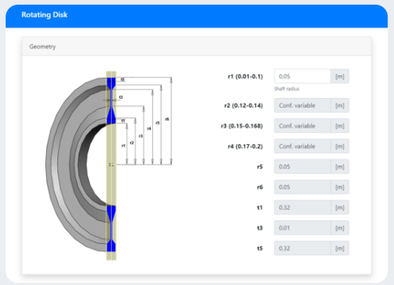


Automation of routine tasks

- Support and formalize engineering processes across the enterprise.
- Sharing and reuse of workflows.

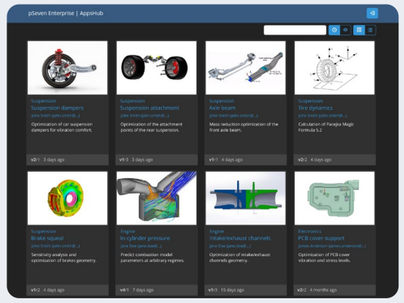
Reduce time-to-market by standardizing and democratizing simulation.



Exchange of workflows in the form of web applications

- Qualified users create workflows and share them with other users in the form of web applications.
- Web applications are created in a couple of clicks and the user interface is generated automatically.
- Web developers can easily customize the interface to meet specific needs.

Create easy-to-use engineering calculators and hide unnecessary complexity!



Gallery of web applications

- Web applications are stored centrally in the AppsHub gallery.
- All web applications are accessible via REST API, which allows them to be used as Digital Twins when operating real assets*.

** Data collection from the physical asset and its exchange with pSeven Enterprise is realized by third-party solutions.*

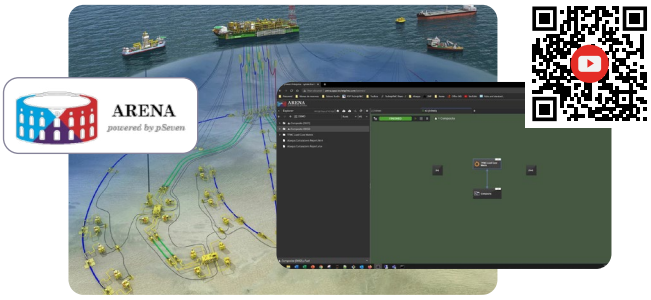
Our customers

trust us

TechnipFMC

Project ARENA

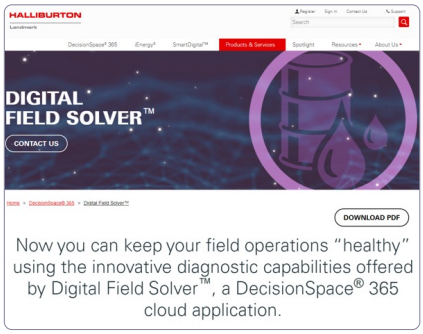
- Subsea equipment design
- 3x time reduction of the project design justification



HALLIBURTON

Digital Field Solver

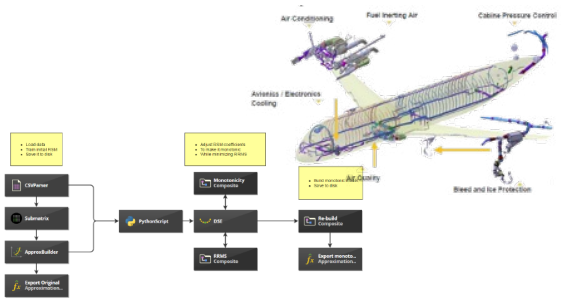
- Platform for integrated physics-based and data-driven models to detect, analyze and resolve production problems
- Large number of external commercial users across the globe



LIEBHERR

Aerospace

- Automation of engineering processes
- Optimization of aircraft components (air management systems and others)
- Reduction of design time



Interested in our solutions?

Contact us to request a free fully functional 60-days trial!

PSEVEN

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