PROCON SYSTEMS

OPTIMIZING CONTROL: ENGINEERING LIFECYCLE

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ICALEPCS 2023 - PLC BASED CONTROL SYSTEMS

PROCON SYSTEMS

QUESTION

What do the following installations have in common?

WE DON’T MIND

Founded in 1995

Staff of 70 people (80% engineers and technicians).

Head office in Badalona, Barcelona (Spain), 2.500 m^2

Engineering specialized in Process Automation, Industrial Control, Software Development and Digital Transformation.

International Projects

GERMANY
Eisenach
Rüsselsheim
Bochum
Kaiserslautern
Wolfsburg

ARGENTINA
Pacheco

CHILE
Atacama Desert

CHINA
Shanghai

SLOVAKIA
Bratislava

FINLAND
Tampere

FRANCE
Cadarache
Prévessin

HUNGARY
Györ

MEXICO
Puebla

POLOND
Gliwice
Poznań

PORTUGAL
Palmela

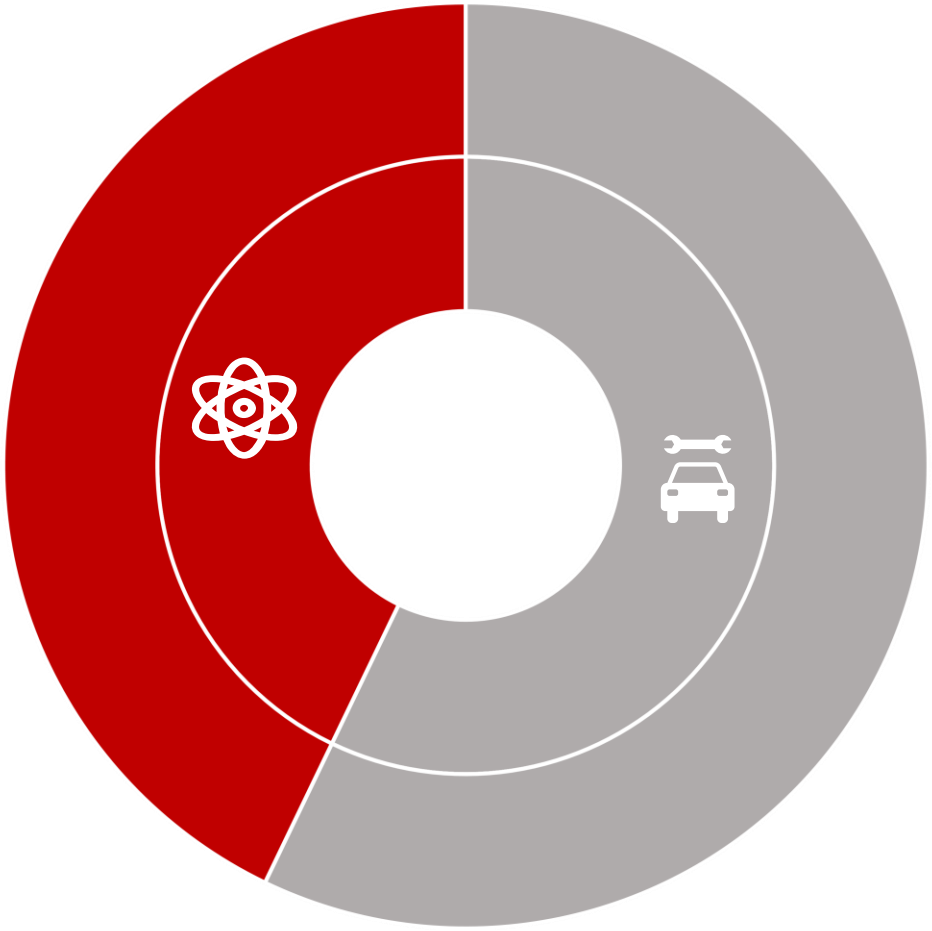
UNITED KINGDOM
Crewe
Ellesmere Port
Luton

CZECH REPUBLIC
Kvasiny
Mlada Bodeslav

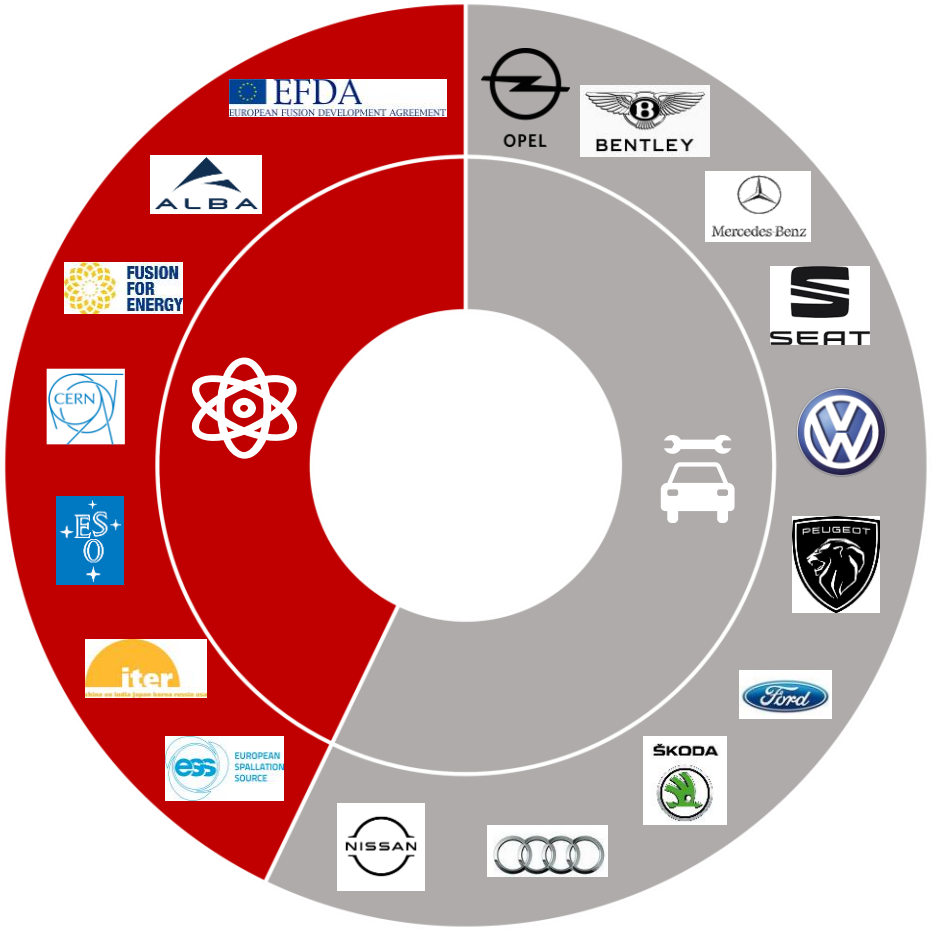
SWITZERLAND
Geneva

PROCON SYSTEMS

MARKETS AND CUSTOMERS



MARKETS AND CUSTOMERS



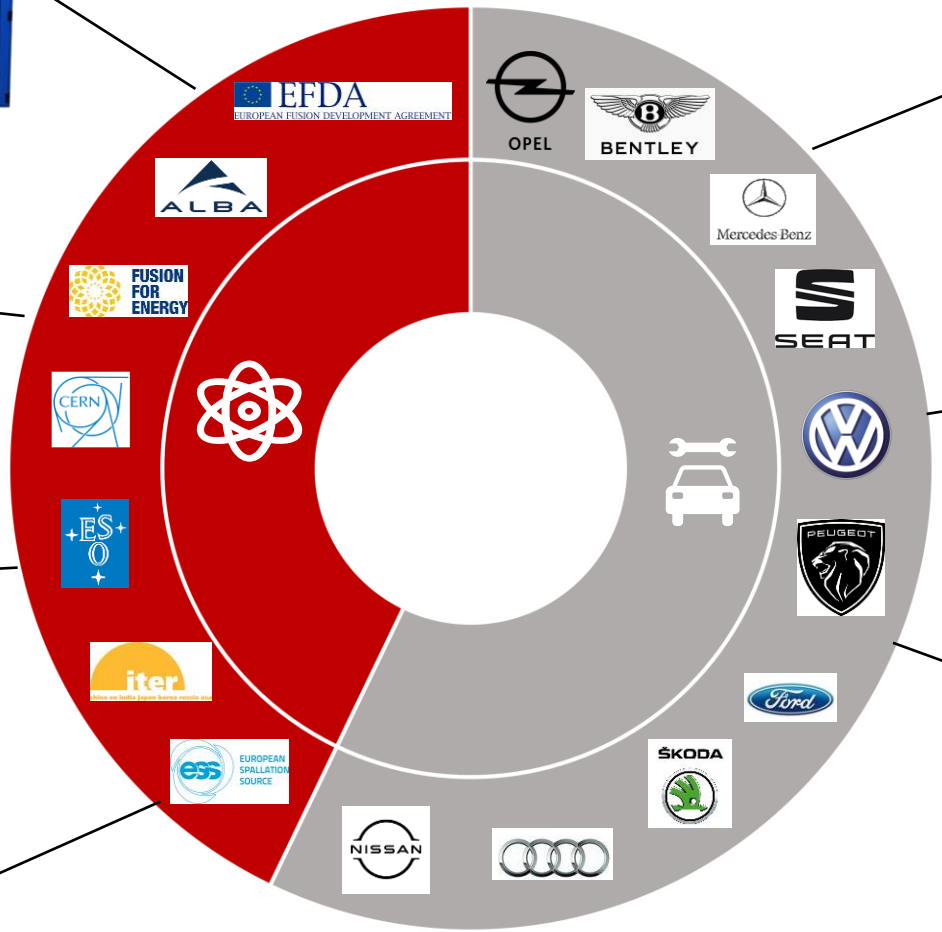
TYPE OF PROJECTS

Engineering, design and manufacture of I&C cabinets

Functional Safety Solutions

Engineering and Software Services

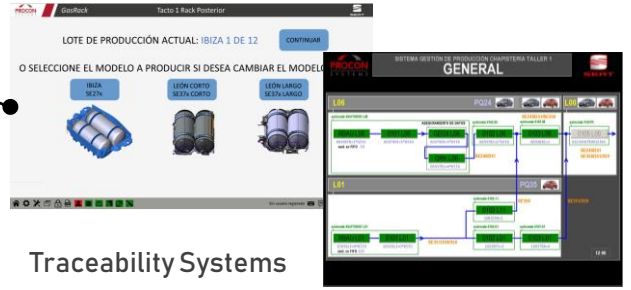
Instrumentation and Control turnkey projects



Welding and Assembly Lines (Body in white)

Collaborative robotics (Cobots)

PVC Sealing Lines (GAD and FAD Applications)



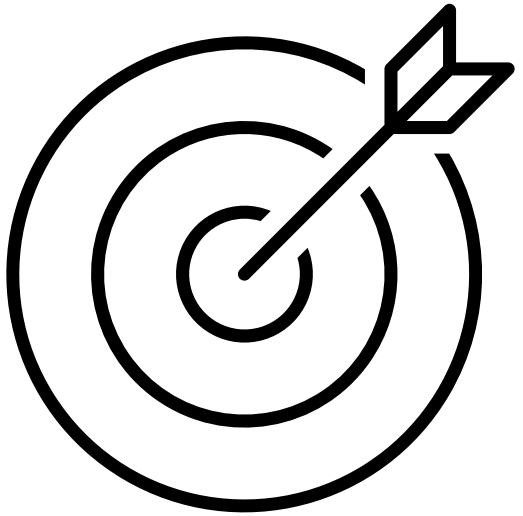
Traceability Systems

Predictive Maintenance

Large Monitoring Projects

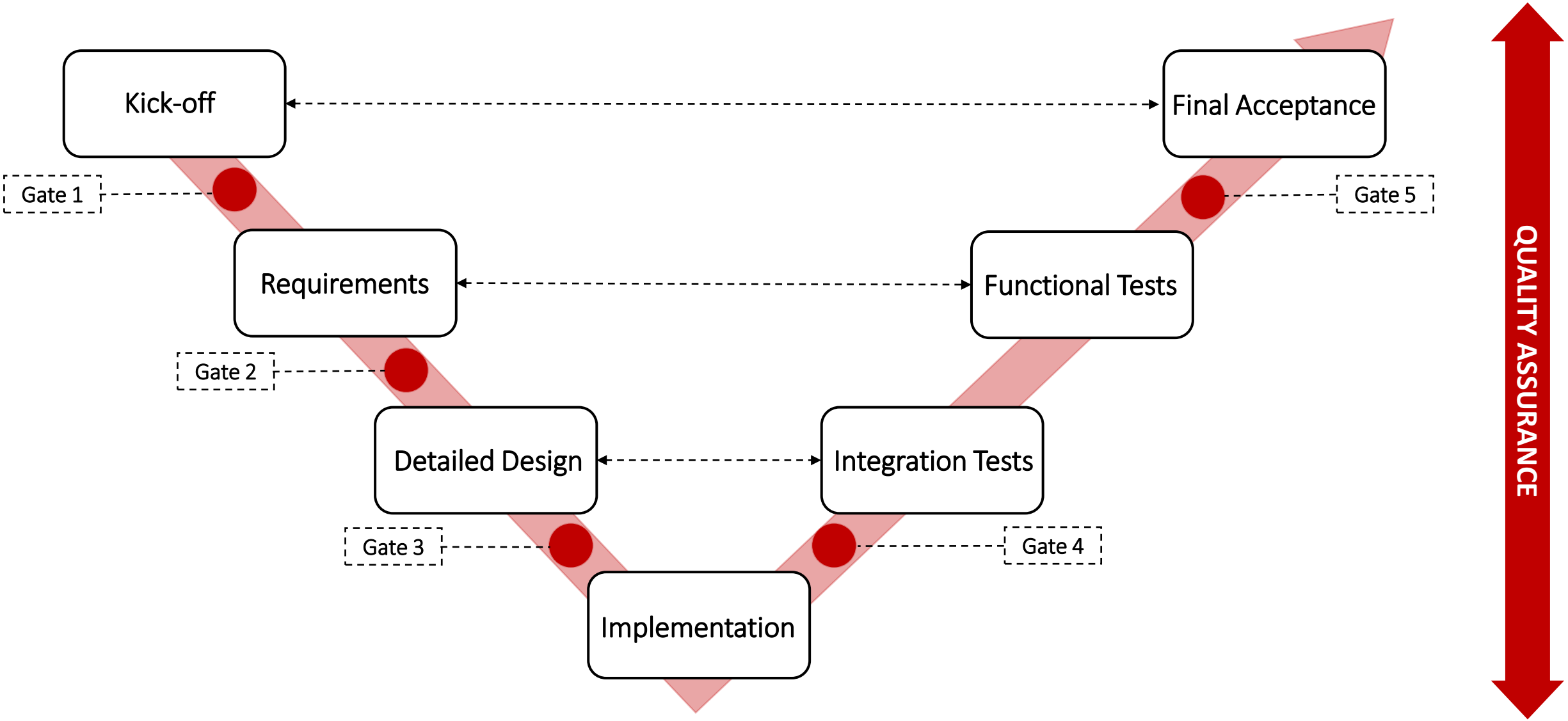
METHODOLOGY

- Facilities
- Organizational Culture
- Norms & Standards
- Technologies



Project Methodology

METHODOLOGY



KICK OFF

PROJECT SCOPE

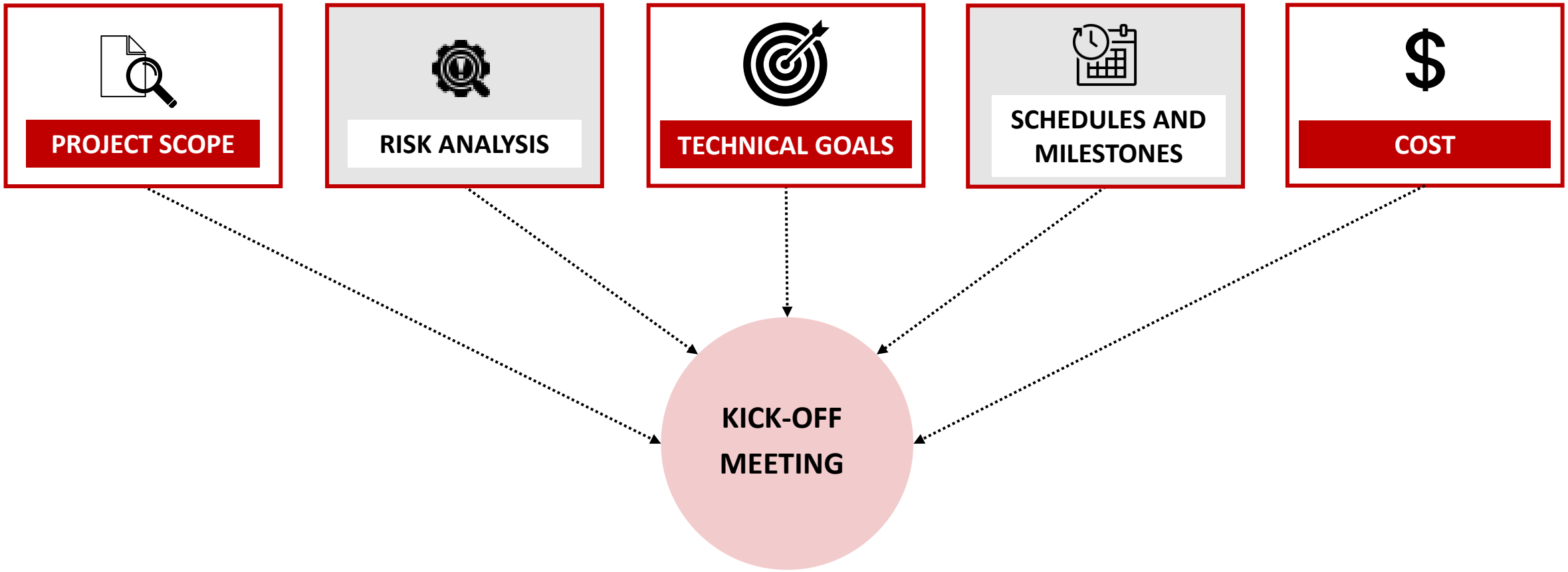
RISK ANALYSIS

TECHNICAL GOALS

SCHEDULES AND MILESTONES

COST

KICK OFF


PROJECT SCOPE
RISK ANALYSIS
TECHNICAL GOALS
SCHEDULES AND MILESTONES
COST
KICK-OFF MEETING

KICK OFF

- Development and maintenance of industrial controls and safety systems on the CERN site, including access control and personnel safety, cooling and ventilation, electrical networks and power supply control as well as monitoring systems
- Schedule: July 2023 – June 2028.
- Customer: CERN.

LESSONS LEARNED: COMMUNICATION

- Highly important in cross-functional projects.
- Focus on vertical and horizontal communication.
- Clear and aligned objectives for all stakeholders.
- The framework includes various small projects from different teams which increases the communication complexity.
- Effective communication is essential for the success of each sub-project.

REQUIREMENTS

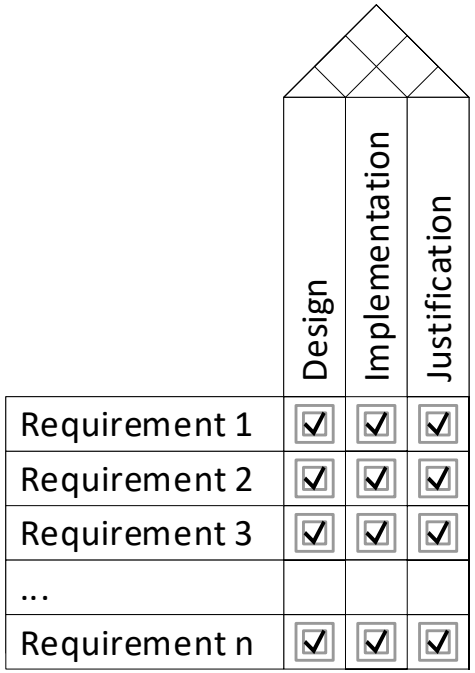
GOALS

Clarity of purpose
Scope Control
Risk Mitigation
Communication

CHALLENGES

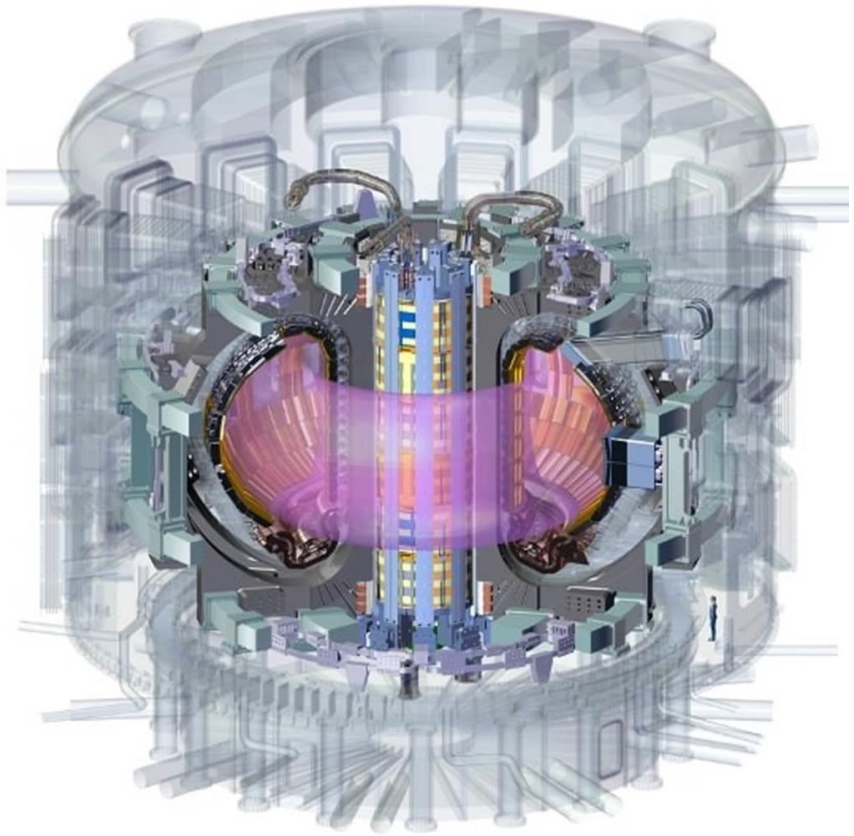
Changing Priorities
Incomplete information
Conflicting Stakeholder Interests
Scope Uncertainty

DESIGN COMPLIANCE MATRIX



REQUIREMENTS

- Design and implementation of the Central Safety System for Occupational Safety (CSS-OS) for the execution of the Occupational Safety I&C functions in order to protect people and the environment against non-radiological hazards.
- Schedule: January 2020 – September 2024.
- Customer: ITER.



LESSONS LEARNED: REQUIREMENT MANAGEMENT

- Requirements are the foundation upon which the entire project is built.
- Ensure all stakeholders are on the same page regarding goals, deliverables, and constraints.
- A well-defined project in terms of requirements is more likely to be successful.
- For scientific facilities in which project may not be fully defined due their FOAK (First Of A Kind) nature, requirements are a key point.
- The more requirement are defined the better the alignment with the client and the project quality will be

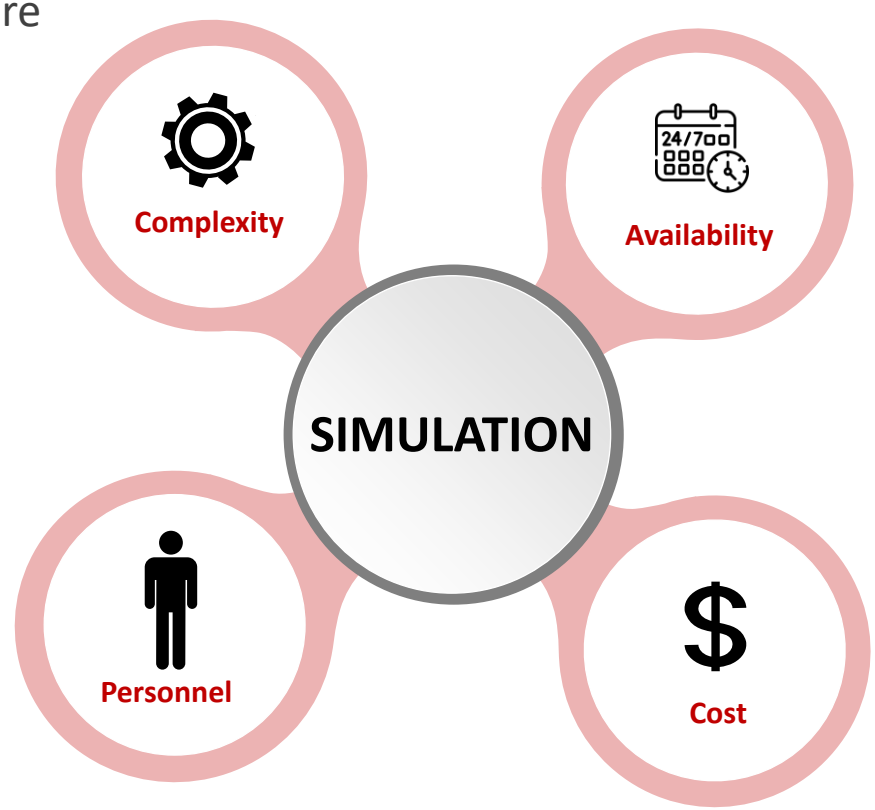
FUNCTIONAL TESTS

Complexity

Functional and Dysfunctional test are critical for project success, even more with complex processes

Availability

On-site infrastructure for testing used by several teams and requires complex schedule



Personnel

Personnel management for on-site tests increase risks in terms of project management

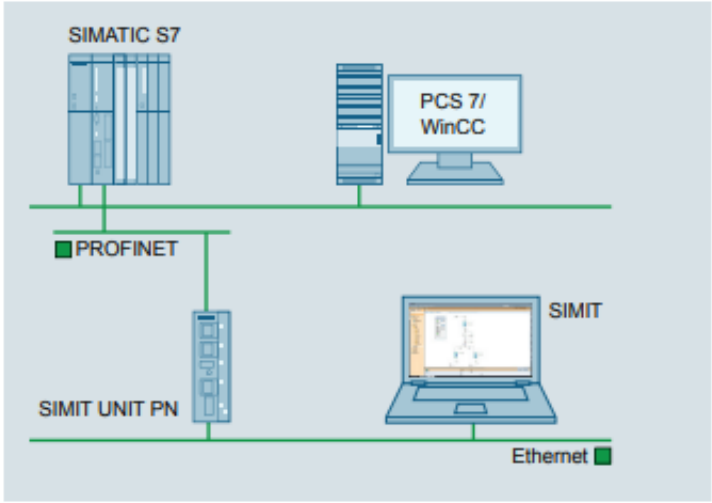
Cost

On-site tests have major impact on the cost of the project

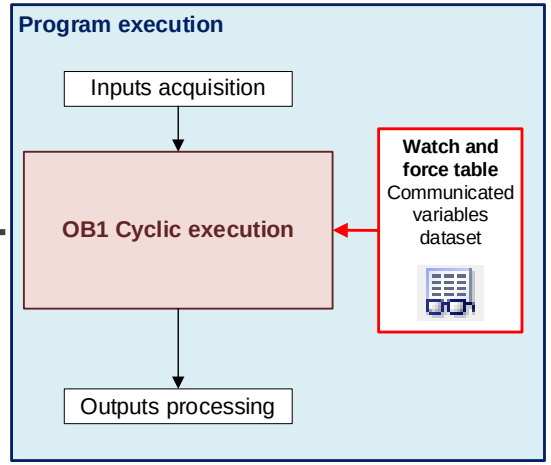
FUNCTIONAL TESTS

SIMULATION

- Market solutions



- Custom simulation



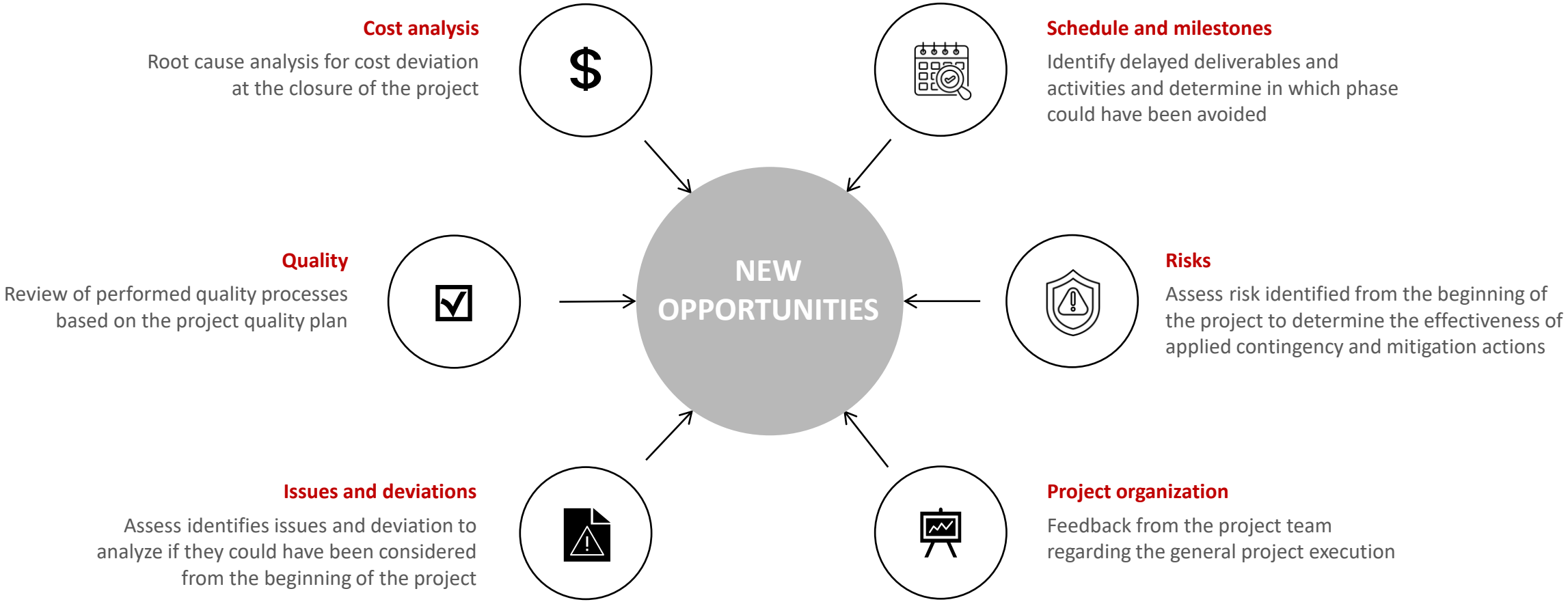
FUNCTIONAL TESTS

- Renewal of the Personnel Protection System (PPS) of the Super Proton Synchrotron Complex (SPS)
- Schedule: December 2017 – May 2024.
- Customer: CERN.

LESSONS LEARNED: SIMULATION

- Test platform developed for functional testing within the project.
- Test platform included aspect for simulation software (SIMIT) and hardware
- Reduced commissioning time within the project
- To be used as laboratory infrastructure for future modifications.

FINAL ACCEPTANCE



FINAL ACCEPTANCE

- Procurement of parts, Assembly, Integration and Verification of Electronics Cabinets for the ELT M1 Cell.
- Schedule: December 2020 – July 2022.
- Customer: ESO (European Southern Observatory).

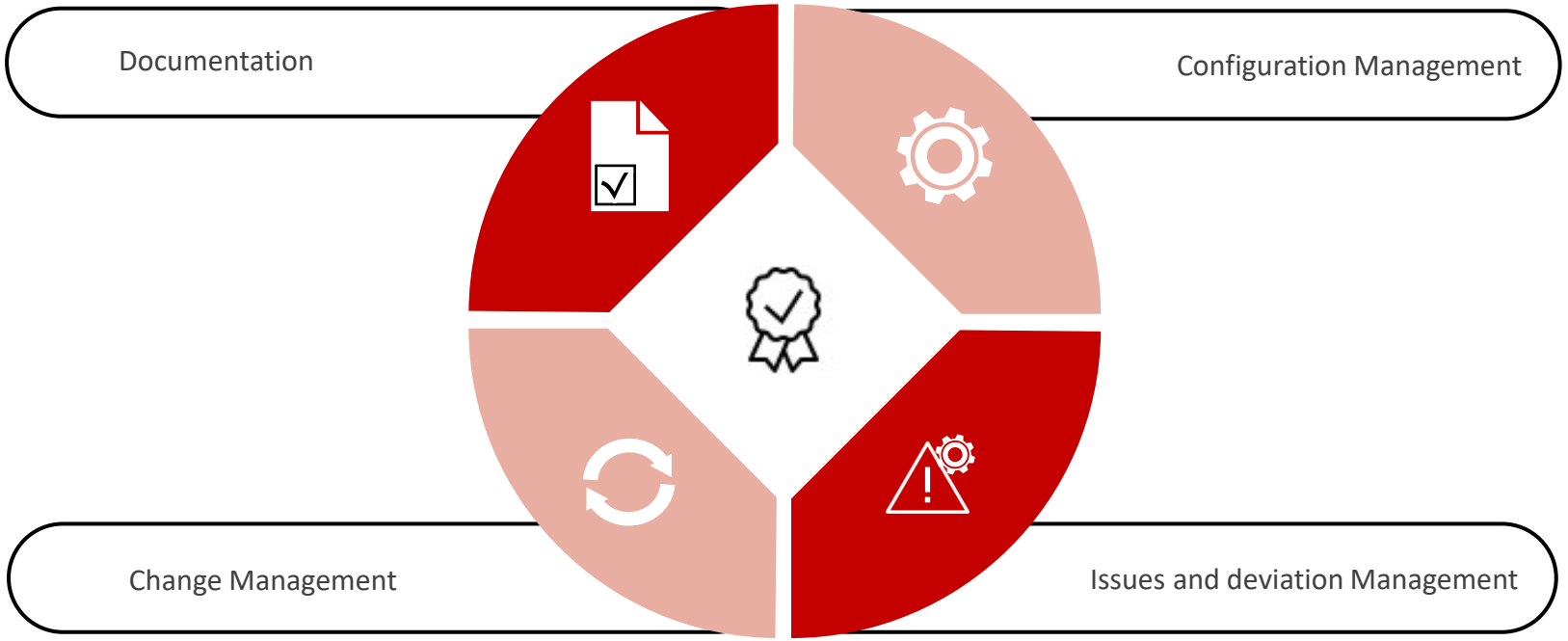
LESSONS LEARNED: NEW MARKET OPPORTUNITIES

- Feedback from project team and project indicators set a general view of the overall project
- Identification of technical need for personnel
- New business area of projects

QUALITY ASSURANCE

- ✓ Independent reviewer and approver
- ✓ Use of templates

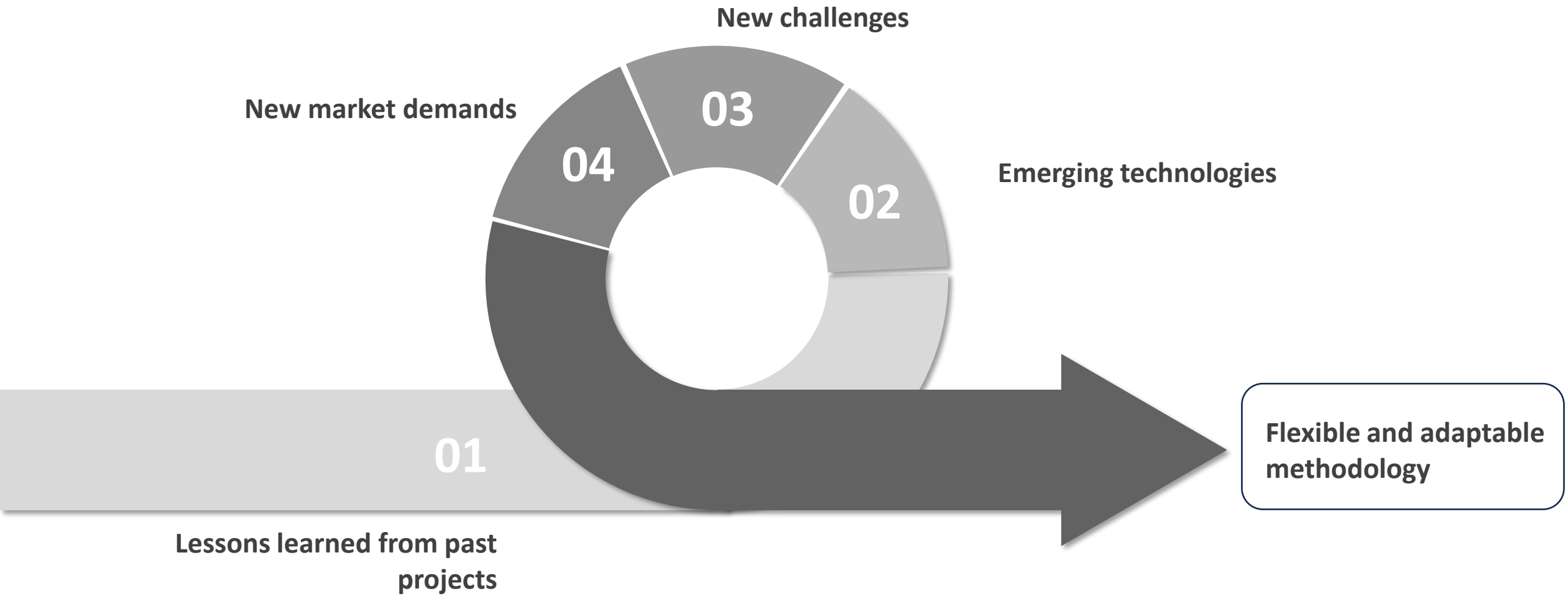
- ✓ Use configuration management tools for versioning (internal or client's)



- ✓ Impact analysis by all affected departments
- ✓ Approval by all affected department leaders
- ✓ Follow-up of additional tasks needed to apply the change

- ✓ Communication
- ✓ Use of ticketing tools (internal or client's)

WHAT'S NEXT?


New challenges
New market demands
03
04
02
Emerging technologies
01
Lessons learned from past projects
Flexible and adaptable methodology

PROCON
SYSTEMS

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