



CPQP

CONSTRUCTION PRODUCT
QUALITY PLANNING

Exploring how we will create
a future built on quality

#FutureQuality

Inside CPQP

The CPQP Framework has been developed to ensure consistency of quality and safety across the future of UK construction manufacturing.

Through this 5-part series 'Inside CPQP' we will explore some of the key technical tools that are at the core of the CPQP Framework and how they can benefit enterprises that design, manufacture and use construction products through manufacturing-led approaches.

Explore CPQP

#1. Quality Function Deployment (QFD)

#2. Failure Mode Effect Analysis (FMEA)

#3. Control Plan

#4. 8 Disciplines of Problem Solving (8D)

#5. Verification & Validation Guide (VV)

#2

FAILURE MODE EFFECT ANALYSIS (FMEA)

What is it?

FMEA is a structured approach enabling the identification of potential failures in both the design and process phases of creating a new product.

1. QFD

2. FMEA

3. Control Plan

4. 8D

5. VV

Why do we need it?

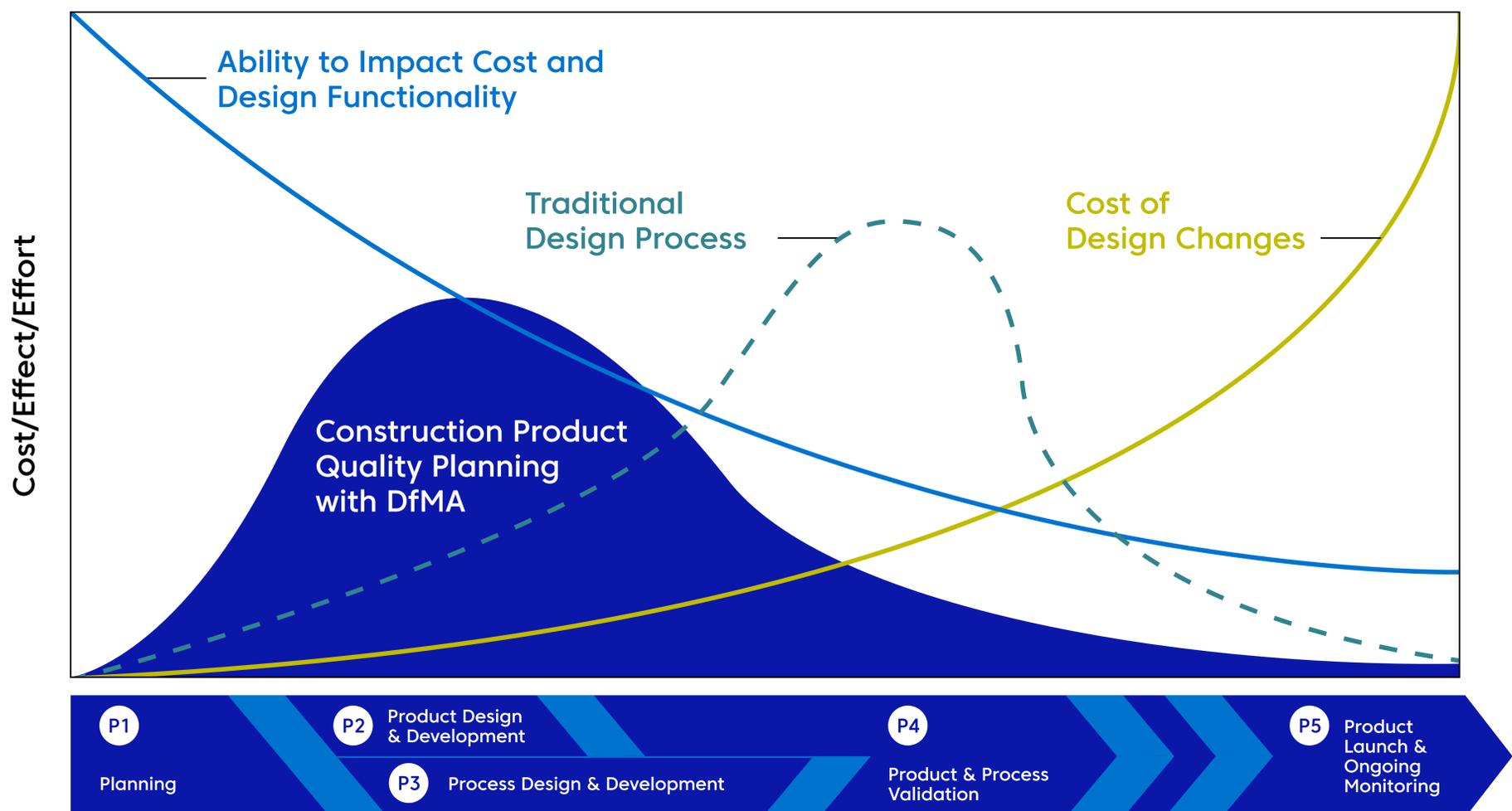
Having the ability to identify potential risk within product development is crucial for the future of off-site construction manufacturing.

Potential risks are detected early, enabling the elimination or prevention of failures further down the line.

Transforming to a defect prevention culture improves overall efficiency and sustainability in construction.

Why do we need it?

FMEAs enable the transition from a costly defect checking approach to an efficient defect prevention culture.



1. QFD

2. FMEA

3. Control Plan

4. 8D

5. VV

The benefits of FMEA

1

Enhances risk management

2

Enables risk-based prioritisation

3

Increases overall efficiency

4

Reduces re-work costs

5

Acts as a Continuous Improvement Reference

6

Provides in-depth analysis of design

7

Enables the designing out of failures

8

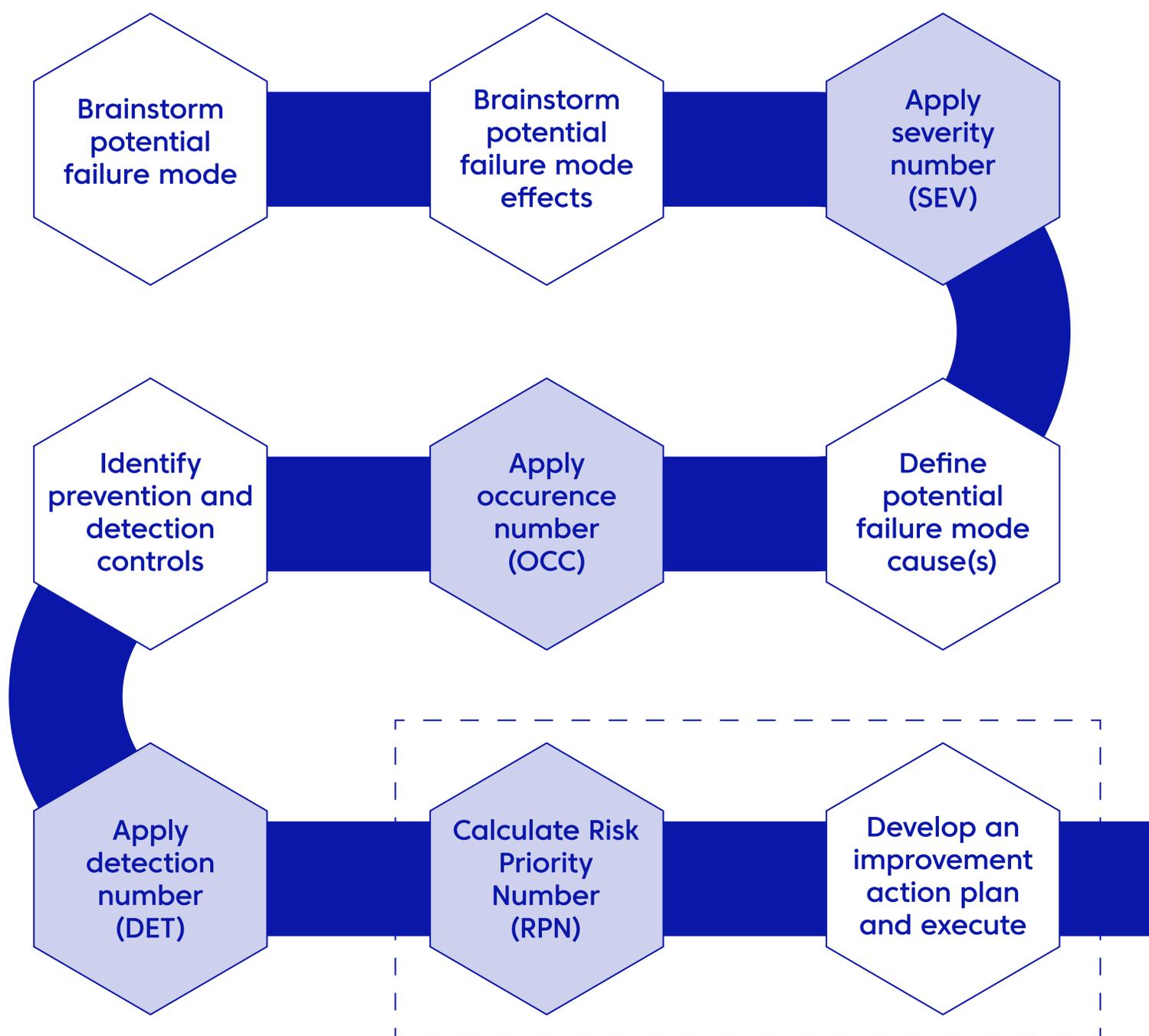
Increases customer satisfaction

9

Reduces the non-conformity of a product

How does it work?

The FMEA methodology enables live tracking of risk analysis findings within the product development process.



FMEAs will enable the definition of improvement plans based on a risk-based priority approach.

How are the tools applied?

The FMEA introduces two approaches that should be carried out during a product development project. Both approaches should involve cross-functional teams to ensure the most successful outcome.

The CPQP provides guideline documents for both approaches and how to apply them within the wider CPQP Framework.

Approach

#1

Design Failure Mode and Effects Analysis (DFMEA)

Approach

#2

Process Failure Mode and Effects Analysis (PFMEA)

How are the tools applied?

DFMEA is designed to reduce the risk of a design failure.

A DFMEA is a live document that captures the key functions in a **design** and analyses the potential causes of failure modes and their associated risk. **It defines what could go wrong with the design**, how bad the effect might be, and how to prevent or control it.

DFMEA is applied when:

- Designing a new product;
- Modifying or updating a product design; and
- Using a current product design in a new environment.

How are the tools applied?

PFMEA is designed to reduce the risk of a manufacturing process failure.

A PFMEA is a live document that captures the key functions of a **manufacturing** process and analyses the potential causes of failure modes and associated risk. **It defines what could go wrong with the process**, how bad the effect might be, and how to prevent or control it.

A PFMEA should be completed or reviewed:

- As part of the New Product Introduction (NPI) process;
- If a new application of a currently existing process is developed (source of lessons learnt);
- As part of a regular process improvement/risk reduction workshops;
- If any changes are made to product design or the process itself; and
- For non-conformance recording, accompanied by the root cause and corrective action plan.

The deployment of FMEAs enable the identification and prioritisation of design and production risks, resulting in product development being more efficient and successful in future.

Get in touch with the Construction Innovation Hub to learn more about how the CPQP Framework and FMEA approach can help your business.

Please contact:

cpqp@constructioninnovationhub.org.uk

Up next in the Inside CPQP series...

Extracting value through control plans with
Control Plan

1. QFD

2. FMEA

3. Control Plan

4. 8D

5. VV