

DMADV Road Map

STEP 1

DEFINE

Scope and plan the project

The DEFINE phase is about organising and planning the journey for your project. It is important to understand the purpose, rationale and business case, as well as knowing who you might need to help you, and how you will go about managing things. The main aim (like DMAIC) is to scope and plan the project – so here it is important to understand the boundaries of the project, including the processes, market(s) and customers involved.

Key tools

- Affinity and Interrelationship Diagrams
- Thought Map
- Improvement Charter
- In Frame Out of Frame
- Customer Segmentation
- Multi-Generation Plan
- SIPOC
- Elevator Speech
- Stakeholder Analysis
- FMEA
- PDPC

STEP 2

MEASURE

Define customer needs

The MEASURE phase focuses on planning and conducting the research necessary to understand the customer needs and requirements associated with the product or service. These are translated into measurable characteristics (CTQs) that become the overall requirements for the product or service. The phase ends by setting targets and specification limits for the CTQs. The aim is to fully understand the customer requirements and define the measures.

Key tools

- Customer Segmentation
- Customer Research Methods
- Data Collection and Sampling
- Quality Function Deployment (QFD House 1)
- CTQ Analysis and Prioritisation
 - Affinity Diagram
 - Tree Diagram
- Kano Model
- Performance Benchmarking
- Design Scorecards

STEP 3

ANALYSE

Develop functional specification

The ANALYSE phase starts the process of moving from WHAT the customer wants to HOW we might achieve it. This means mapping CTQs onto internal functions and starting to look at alternative concepts.

Key tools

- Functional Analysis
 - Tree Diagram
 - SIPOC
 - Transfer Functions
- CATALYST
- Quality Function Deployment (QFD House 2)
- Benchmarking
- Pugh Matrix/Priority Based Matrix

STEP 4

ANALYSE

Develop high-level designs

Taking the most promising concepts, you can then start to identify requirements for a more detailed design. This usually involves creating several high-level designs, assessing the capability of each, and then selecting the best fit.

Key tools

- Quality Function Deployment (QFD House 3)
- Design Elements
- Process Maps
- Capability Evaluation
 - Process Modelling and Simulation
 - Design Scorecards
- Pugh Matrix/Priority Based Matrix
- Design Review
- FMEA
- Design of Experiments

TOLLGATE REVIEWS AND DESIGN REVIEWS

In DFSS a great emphasis is placed on reviews. There are tollgate reviews at the end of each of the 5 phases and following the pilot to help determine whether it is appropriate to move on to the next phase, and you'll see there are questions to address at the end of each of the steps before moving on to the next one.

There are also a number of design reviews; these take place within the phases rather than at the end and are particularly relevant to Analyse, Design, and Verify.

There should be a minimum of four design reviews, one in Analyse, one at the end of the detailed design in step 6, a post-pilot review in step 7, and finally a post implementation review in step 8.

There is also a pilot readiness review at the end of the Design phase but this usually forms part of the tollgate review at the end of Design.

DESIGN REVIEWS

- WHY:** To evaluate the capability of the design as far as possible, highlighting any iterative design work required before the tollgate is reached
- WHEN:** In Analyse, Design and Verify
- WHAT:** The actual design of the process according to some specified criteria
- WHO:** Design Team, Champion, Stakeholders, Customers, Experts
- HOW:** Format of reviews differ depending on the phase that the project is in

TOLLGATE REVIEWS

- WHY:** To assess the deliverables of the particular phase and give sign-off for progression to the next phase
- WHEN:** At the end of Design, Measure, Analyse, Design, and Verify. And following the pilot
- WHAT:** The quality and content of the deliverables, appropriate application of tools, Change Management thinking and Project Management thinking
- WHO:** The Project Leader, Champion, Stakeholders
- HOW:** The basis of the reviews is set out in the step by step guide that follows

STEP 5

DESIGN

Create detailed design

The DESIGN phase takes the "HOW" thinking into more detail by adding more detail onto each element of the high-level design. The emphasis remains on developing designs that satisfy the requirements of the process outputs.

Key tools

- Design Elements
- Process Maps
- Architecture and Structure Diagrams
- Detailed Design Documents
- Process Benchmarking
- Quality Function Deployment (QFD House 4)
- Design of Experiments

STEP 6

DESIGN

Plan and test design

By this stage there should be enough detail to test and evaluate the capability of the design by preparing a pilot.

Key tools

- FMEA/EMEA
- Simulation Software
- Design Scorecards
- Capability Evaluation
- Control/Verification Plan
- Pilot/Test Plans
- Design of Experiments

STEP 7

VERIFY

Implement and standardise the solution

In the VERIFY phase the design is piloted and assessed. All the facets of project, process and change management then come together for a full-scale implementation and deployment of the new service/process.

Key tools

- Process Management
- Control Charts
- Standards/Procedures
- Control/Response Plans

STEP 8

VERIFY

Assess achievements and lessons

The results of the implementation are verified against the original CTQs, specifications and targets. The project cannot be closed until the solution has been standardised and transitioned to Operations and Process Management.

Key tools

- Multi-Generation Plan
- Process Stapling
- Control Charts
- Data Displays