

# Deriv

Process Description - Engineering Solution

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# 1. VERSION CONTROL

Version No.	Date of Last Change	Preparer	Approver
0.1	28/09/2021	Syeda Bariya Haq, Prince Coching, Mohammadreza Ghorbani	

# 2. OVERVIEW

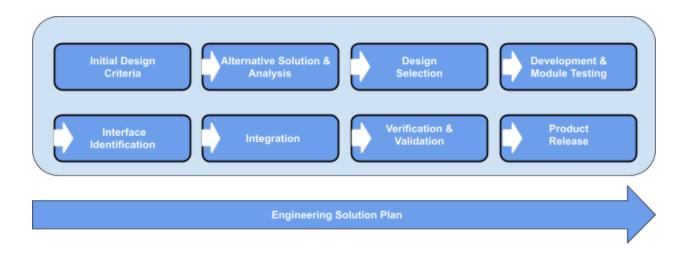
### **OVERVIEW**

Technical solution gives details regarding the design which is focused not only to give the solution to meet requirements but also, it introduces to alternative solutions, criteria for design decisions which targets optimal results, and the information needed to meet all those customer, functional, and quality requirements. This document provides a process flow and execution of the technical activities performed in an Agile environment to get the best and most optimised design solution delivered to the customer. The technical solution process area is applicable at all the level of the product architecture and to every product, product component or services and related life cycle process.

Following are focused under technical solution:

- Analysing, evaluating and selecting the solution that is potentially satisfying the set requirements.
- Developing detailed designs for the selected solutions stating all the dependencies and information related to it.
- Implementing the design solution as a product or product component.

The above mentioned points can be divided into the following phases



Each of the phases is described in detail below.

# 3.1 INITIAL DESIGN CRITERIA

#### 3.1.1 OVERVIEW

For getting an optimal solution, we need to set relative merits and criteria on which we assess those solutions.



#### **3.1.2 TEAMS**

The following teams will be involved at this stage:

- Project Management
- Product Owner
- Design
- Development

#### 3.1.3 PROCESS DESCRIPTION

- A meeting would be held with the relevant stakeholders from the above mentioned teams.
- The relevant stakeholders will then come up with criteria on which the designs will be selected in the later phase.
- These criteria could be costs (e.g., time, people, technology, and budget), benefits (e.g., performance, complexity, maintainability, capability, and effectiveness), and risks (e.g., technical and non-technical both).

### **3.1.4 INPUT**

- Requirements
- User Stories/Epics as Work Breakdown Structure (WBS)

# 3.1.5 PURPOSE, KEY ELEMENTS, OUTPUT

Purpose

The purpose of the initial design criteria is to set the requirements and entrance criteria Those criteria can be

- To evaluate the developed system architecture and the design flow
- To ensure that desired and required capabilities are in conformance with the prototype
- To ensure high and medium risk items have been addressed to mitigate the risk as much as possible
- · To documentation of engineering and management decisions

Key Elements  The design criteria provide the basis of the solutions for all the future phases so they should be locked once approved by all the stakeholders so minimum changes are expected.



Once the design criteria is set, we would be able to initiate the development of design collusion which satisfies this criteria.

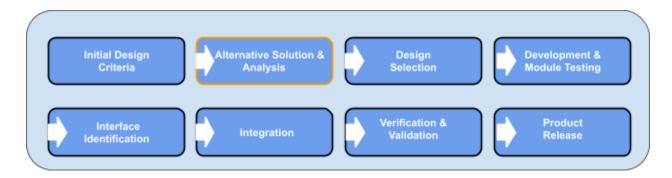
- Preliminary Design Sketches
- Preliminary Database Architecture
- Interfaces (internal and external)
- Development Environment
- Risk Related to the Project

# **3.2 ALTERNATIVE SOLUTION & ANALYSIS**

#### 3.2.1 OVERVIEW

The activity is conducted in order to evaluate the multiple choices and options available to get the solution. These options can lead to different complexity levels and hence, would require different resources count as well in order to implement it.

The analysis activity comprises comparing different alternative solutions which best encompasses the initially set criteria. This needs to be first done by the project manager as per the proposals of the solutions given by all the teams (i.e., designs, development, QA) and come up with the best combined solution.



#### **3.2.2 TEAMS**

The following teams will be involved at this stage:

- Project Management
- Product Owner
- Design
- Development
- Quality Assurance

#### 3.2.3 PROCESS DESCRIPTION

- The product owner and designers need to come up with multiple solutions that are aligned with the design criteria set previously.
- These solutions give the same output for the set design criteria and can include different design flows, use of different technology stack, any externally provided solutions and/or internally reusable components, etc.
- As the teams are working in an agile manner so it is not always possible to have everything recorded or conveyed in a documentation, instead, agile ways for communication are used like sprint retrospectives, white boards, video calls, and Miro boards for making design and architecture decisions and sharing the alternative solutions.
- At the stage of analysis, the project manager and all relevant stakeholders need to perform an analysis of the presented solutions.
- The analysis would be about purchases made like COTS products or in-made components would be better.
- The products or technology stack which can be used again or any new technology should be considered for better cost and handling.
- The designs which are presented need to consider user experience and are worth the effort of the developers.
- Risks involved with using the proposed solutions
- Capabilities and limitations of the end user and operators

### **3.2.4 INPUT**

- Preliminary Design Sketches/Workflow
- Set Design Criteria

# 3.2.5 PURPOSE, KEY ELEMENTS, OUTPUT



- Present alternative solutions to identify and select not only the best, but also the most optimised solution.
- Business owners can make a choice out of the given options

Key Elements

- Communicate all the available solutions with stakeholders to get their feedback in the initial phases.
- Track the requirements against the design criteria to ensure they are satisfied.

Output

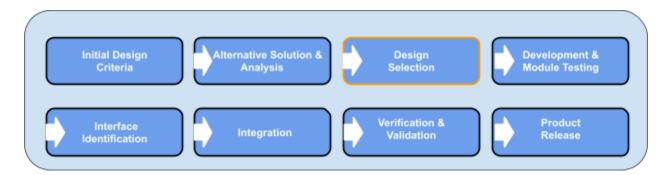
The output would be the report or summary or can be any or combination of the following:

- Different technology stack yielding the same solution
- Different design flows and screens for the same solution
- Options using COTS or in-made components

# 3.3 DESIGN SELECTION

#### 3.3.1 OVERVIEW

As per the evaluation and analysis of the different design solutions presented, the project manager and product owner should be able to propose the solution that best satisfies the criteria established.



### **3.3.2 TEAMS**

The following teams will be involved at this stage:

- Project Management
- Product Owner
- Design
- Development
- Quality Assurance

### 3.3.3 PROCESS DESCRIPTION

- Project manager will be asking for a meeting to discuss the selected design solution.
- The solution needs to be presented by the project manager and product owner.
- All the stakeholders from the above mentioned team should present any dependencies or questions, if any, regarding the solution.
- All stakeholders need to accept the solution unanimously.

### **3.3.4 INPUT**

• The reasons/report generated after the analysis of different design options.

# 3.3.5 PURPOSE, KEY ELEMENTS, OUTPUT



- To select the product solution that best satisfies the established criteria involving all the stakeholders and their concerns needs to be addressed.
- To evaluate whether the product components should be developed, purchased, or reused based on the set criteria.

# Key Elements

 Once the design is selected and approved unanimously, it should be locked so there will be minimal change requests.



 An efficient and the most beneficial solution which fulfills all the previously set design criterias.

# 3.4 DEVELOPMENT & MODULE TESTING

#### **3.4.1 OVERVIEW**

Development and module testing phase discusses the development process of any feature using the selected design. This phase will start as soon as the design solutions are finalized and delivered to the development team. On an individual level, developers will be doing the research for the tasks to initiate the coding. The coding will be done following the best practices and company set standards. As soon as any changes are made in the designs or business logic, the related documents and components need to be updated accordingly. While implementing, developers should keep revising the information to design the solution whenever needed.

In order to provide the users with material on how to use the products, some support documentation needs to be created as well which should be available all the time for the users.



#### **3.4.2 TEAMS**

The following teams will be involved at this stage:

- Project Management
- Product Owner
- Development

#### 3.4.3 PROCESS DESCRIPTION

- Development team will be providing the task work breakdown structure (WBS) for the implementation of the design solution.
- Developers need to do the required R&D for the given tasks and initiate the coding.
- After coding, the development team needs to perform unit testing and share the coverage of their test results.
- Once unit testing is done, the developers will get the work reviewed by their peers as per the peer review process.
  - https://docs.google.com/document/d/11a8PYYlBE M3DcOev\_nynn2lNuF6qcJ6/edit?usp=sharing&ouid=114073244909975916167&rtpof=true&sd=true
- The peer reviews should be recorded and used for providing data later for measurement and control.
- Once the peer reviews are done, then the tasks will be moved for testing which is described in the topic: Verification and Validation process.
- In case of bugs, the task will be moved back to developers and once fixed, again it'll be moved for testing and once testing is completed, only then the feature will be moved to Ready.
- After the feature is completed, a support document needs to be created for the user to
  which they can refer anytime. This should be readily available to them in the shape of
  either a user manual for the products or an onboarding-tutorial, online help center or
  demo on the website, linked to each of the products.

## **3.4.4 INPUT**

• Finalized designs and architecture

# 3.4.5 PURPOSE, KEY ELEMENTS, OUTPUT



 To initiate and complete the development of the product as per the defined criteria and get the product.

## Key Elements

 Much changes should not be made during the development phase. For changes, proper change request process as described in Configuration Management document should be followed.



- Features ready in the form of small modules as per work breakdown structure (WBS)
- Online help in the form of FAQs, Help Center, online tutorials and demos.

# 3.5 INTERFACE IDENTIFICATION

## **3.5.1 OVERVIEW**

Interfaces would be the interactive components within the solution, which when merged as a whole, give a system level information. This also includes identification of user interfaces or connections which were part of the development.



### **3.5.2 TEAMS**

- FrontEnd
- BackEnd
- Mobile Development
- Design
- QA

### 3.5.3 PROCESS DESCRIPTION

- Solution interfaces needs to be identified on the basis of any or all of the following quality attributes:
  - o Performance
  - Standards
  - Complexity

- o Risks
- Selection of interfaces needs to be recorded and updated with progress in the project by the relevant stakeholders.
- The reason and rationale of selecting the interfaces should also be recorded.

#### **3.5.4 INPUT**

- Developed modules the unit components which are developed by the coders
- External interfaces links referring to external sites or 3rd party sites
- Teams working together Design, Development, QA

## 3.5.5 PURPOSE, KEY ELEMENTS, OUTPUT

Purpose

 The definition of interfaces is important specially for big projects to better understand which part or team needs to handle which area or component. Interfaces also help in traceability which then reduces the risks related to failure and minimizes the chances of rework.

Key Elements  The identified interfaces need to be shared with the teams and recorded for monitoring and control.

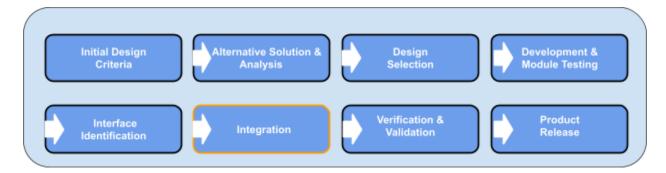
Output

- Unit Components new features developed by the Coders
- External links to the website
- Plugins or COTS components
- APIs and Databases

# 3.6 INTEGRATION

#### **3.6.1 OVERVIEW**

Separate interfaces such as APIs, widgets and components are combined in this process. Testing environments are used to connect these interfaces to become a one working solution.



### **3.6.2 TEAMS**

- DevOps
- FrontEnd
- BackEnd
- Mobile Development
- QA

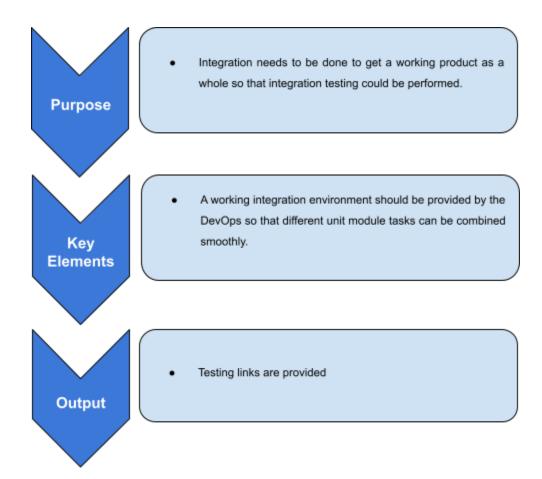
### 3.6.3 PROCESS DESCRIPTION

- DevOps should ensure that the testing environment is working and all frameworks are set up properly.
- FrontEnd, BackEnd and Mobile development teams need to combine their solutions based on interface requirements using proper QA box setup.
- Pull requests should be merged together to get tested as a whole solution.
- QA and Devops should prepare and build the solution in their QA boxes to start the test.
   The guidelines in this process that are documented in WikiJs should be followed.

## **3.6.4 INPUT**

- GitHub Pull Requests with all the code changes from different teams.
- Testing environment where all the changes are merged and is identical to the current production environment.

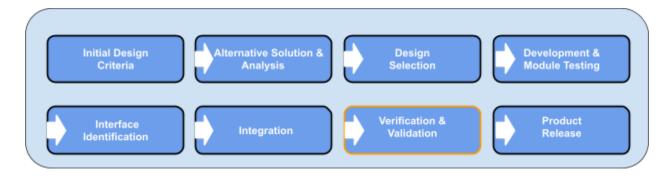
# 3.6.5 PURPOSE, KEY ELEMENTS, OUTPUT



# 3.7 VERIFICATION AND VALIDATION

#### **3.7.1 OVERVIEW**

Before individual integrated components are merged into the final solution they should be verified that they work as per the specifications. Interfaces are checked thoroughly to ensure that the implementation of the interface followed the requirements. Checklists are provided in Redmine cards for testers to test and check defects. Figma and other external materials are also provided for proper examination of the interfaces. After the individual interfaces have been verified and tested they should be tested as a whole. This will generally be a form of automated regression testing as set out in the testing plan of the project. Testers will gather as a group to conduct testing, compliance and usability teams may take part in the test to check if the current interface is implemented as per specification.



#### **3.7.2 TEAMS**

- DevOps
- Tech Team
- QA
- Compliance Team
- Usability Team

## **3.7.3 PROCESS**

- Each single solution should be tested individually.
- Once the verification of each Individual solution is done, then those solutions should be merged together in the staging environment to begin a regression test.
- A regression Redmine card should be created according to the guidelines of each individual teams mentioned in WikiJs
- A new Redmine card will be created once a defect has been discovered.
- Once the test is complete and free of defects, it will be moved for the release process.

### **3.7.4 INPUT**

#### **Individual Test**

- Test Links
- Checklists
- Figma design references

#### **Regression Test**

- Regression card on Redmine
- Test links, API Keys, Login credentials
- Internal/External Documents

# 3.7.5 PURPOSE, KEY ELEMENTS, OUTPUT



 The purpose of this activity is to ensure the quality of the product and to check the conformance of the product with the initially set criteria.



 The test cases should be created by the QA team for the original requirements and user stories provided by the product owner. These should be tested in this phase and an analysis should be shared.

# Output

#### **Individual Test**

- · List of defects found in the draft interface.
- Photos and/or videos showing contrast between the expected integration and draft interface
- Redmine subtasks for modification

#### Regression Test

- · Redmine cards of defects
- Regression results

# 3.8 PRODUCT RELEASE

#### **3.8.1 OVERVIEW**

Product Release is the process of merging the combined individual components into a finalized solution. This is normally merging the staging branch to the production branch in GitHub. Translation team may take part in handling newly added labels, paragraphs and descriptions within the interface.



#### **3.8.2 TEAMS**

The following teams will be involved at this stage:

- Technical Teams (Devops, Backend, Frontend, Mobile)
- Translation Team

### **3.8.3 PROCESS**

- Technical Teams (Release Managers) should announce the release in the public slack channel and email to x-all@deriv.com, then they will tag the verified branch with the production version and will trigger the automated release.
- All related Redmine issues should be marked as archived.
- After the successful release, the QA team should do a sanity check on the integrated solution in the production environment.

## **3.8.4 INPUTS**

- Validated GitHub branch
- Version tagged Redmine cards

# 3.8.5 PURPOSE, KEY ELEMENTS, OUTPUT



Successful integration of components versus failed integrations.

# Key Elements

 Release notes should be mentioned by the product owner and version needs to be set.



- Integrated product.
- · Announcement of new features (usually on email and slack)

# 4. RACI MATRIX

Process Steps	Initial Design Criteria	Alternative Solution & Analysis	Design Selection	Development & Module Testing
Project Manager	С	Α	А	I
Product Owner	А	-	А	1
Compliance	I	I	С	R
Design	R	R	R	I
Backend	I	R	С	R/A
Web/ Mobile Frontend	I	R	С	R/A
DevOps	I	I	ı	С
QA	I	R	С	R/A

(A=Accountable , R=Responsible , C=Consulted , I=Informed )

Process Steps	Interface Identification	Integration	Verification & Validation	Product Release
Project Manager	С	С	I	А
Product Owner	С	С	I	А
Compliance	I	I	С	I
Design	I	I	С	I
Backend	R/A	С	С	R
Web/ Mobile Frontend	R/A	С	С	R
DevOps	С	R/A	I	R
QA	I	I	R/A	С

(A=Accountable , R=Responsible , C=Consulted , I=Informed )