

Problem Definition Worksheet (Part of Your Process Improvement Project)

Background about the Process Improvement Project

Project Selection Criteria

Select an issue or opportunity that can be written as a problem statement.

- Must be within your sphere of influence
- Is not an attempt to solve world hunger
- Uses data that is accessible to you or can be collected in a reasonable amount of effort/time
- You have the ability to measure the current and future state; you have access to baseline data or can collect it
- Preferably uses more continuous data (rather than all discrete data)
- Fixing this problem will provide value; you should develop a business case to support working this issue (consider your time and others when calculating ROI)

Examples

- Improve product quality
- Reduce expenses
- Improve the output of your organization
- Decrease wait time

Problem Definition Worksheet

Complete each section:

A. Problem statement. Define your problem. What pains are you (or your customers, family, clients, etc.) experiencing? What is broken, wrong, or not working? How do you know that you have a problem? What is telling you this? What is your evidence?

Improve turn-around time & time-to-resolution for customer found defects (CFDs).

Customers in my line of work are typically enterprise datacenters, cloud service providers and IT infrastructure shops providing security and network functions like switching/routing among other services for their workloads at large scale (commonly referred to as Massively Scaled Datacenters/MSDCs). Given that these are extremely complex eco-systems comprising solutions across several networking and security vendors customers are subject to software defects when installing, upgrading, consuming certain product features or even just doing mundane day-2 operations.

Software product lifecycle is complex, time-consuming and expensive. Further, software components are constantly changing behavior to become more resilient & incorporating new features.

A CFD therefore can take several hours or days to triage at multiple levels of support before it lands in the right feature owner's hands.

The attempt through this project is to study the process and end-to-end lifecycle of CFDs in terms of:

- typical time-to-resolution/turn-around time (time to provide an RCA, workaround/method to revive a production-down scenario) from the time the customer raises a defect with support
- incorporate customer topologies/workflows during the development/test cycle

And plug gaps working with the corresponding support, product and feature owners.

B. Business impact. Why should you fix this problem? What is the estimated benefit for solving this problem? What is this problem worth in dollars? How will you measure success? What is your key output (y)?

Broadly, direct business impact to the producer and consumer of the software product:

- Impact to customer (consumers) – critical services and applications can be impacted depending on the severity of a CFD. A defect severity is categorized as Catastrophic, Serious and others and correspondingly have a spiraling effect impacting growth and revenue.
- Impact to R&D (producers) - Engaging support personnel (multi-tier support), R&D escalation groups, development and test teams investigating, root-causing and fixing CFDs.
There are additional operational costs involved to R&D in terms of moving resources (software, hardware & Engineering resources) from on-going releases to work on a CFD from an earlier shipping software release which will likely also impact immediate revenue and impact customer sentiment in the long run.

While we measure the duration CFDs spend in various levels of support, time to being root-caused within R&D, customer turn-around times (to restore services/applications as quick workarounds vs disabling certain product features until a fix is available) it is as important to analyze and cover test gaps – simulating/emulating customer topologies/workflows and the cost of fixing bugs during the development cycle is far cheaper.

C. Goals. What are your improvement objectives, goals, or targets? How much "better" do you want to be? Quantify this goal.

Conservatively estimating:

- ~10% CFD turn-around time (in terms of hours) – that is:
 - o If a CFD took ~10hrs for turn-around (responding to a customer query, applying a known workaround etc), we are estimating a 1hr gain by process change
 - o If a CFD took ~20hrs for overall resolution, we are estimating a 2hr gain by better logging, better analysis of logs as CFDs flow down the chain into R&D.
- ~5% lower incoming CFD rate – bracing some customer practices into our existing

Will need to measure some of the existing data to quantify the above numbers.

D. Project scope. What are your boundaries? What is the first step and last step of the process you need to fix? What is not within your scope?

As a Staff Engineer/Technical-Lead I am responsible for the product quality for certain features so, I will factor-in my sphere of deliverables into the quality measurement process.

Everything outside the R&D is not in my scope but more details below on people who I've spoken to, to be on my Team.

E. Team. Who is the process owner/champion? Who do you need to work with or involve to analyze and/or impact this process?

I will be working with the Vice-President - Quality Engineering & a Customer Advocacy Specialist within our business-unit to study the process, gather data & drive process/technology improvements.

F. Project plan (very high-level). Estimate time (or date) per DMAIC step. Develop a rough timeline.

Total project timeline – 10 weeks + 4days = 74 days

Below is rough estimate:

Step of the DMAIC process	% Time spent	Time spent (hours) (8hrs/day)
Design	15	11days * 8 ~ 88
Measure	20	15days * 8 ~ 120
Analyze	15	11days * 8 ~ 88
Improve	25	18.5days * 8 ~ 148
Control	25	18.5days * 8 ~ 148

G. Process map. What are the steps in the process you are trying to fix? Document the flow of process steps (of the process you are working to improve). This should be a high-level flow chart.

See attached ppt object comprising details of the process map.

Assignment Formatting

Create your Problem Definition Worksheet in Microsoft Word.

Submission Instructions

Save your responses in a .doc file.