

Value Stream Maps

One of the most powerful tools in Lean Software Development is using Value Stream Maps (VSMs). One reason is that Value Stream Maps allow you to visually see the work flow and to help you follow the Lean Principles of:

From the Perspective of Fast-Flexible-

Flow

Value

Value Stream

Flow

From the Perspective of Lean Software

Development

Optimize the whole

Eliminate Waste (particularly the waste of delay)

Deliver Without Delay

Value stream maps present a way for us to see the flow of the original idea into something that provides value to the business and its customers. Its purpose is to help identify:

- Where time is spent that does not add value to the product being built
 - Which of this time is pure waste
 - Which of this time is preparatory to adding value
- Delays in the process
- Areas of possible improvement

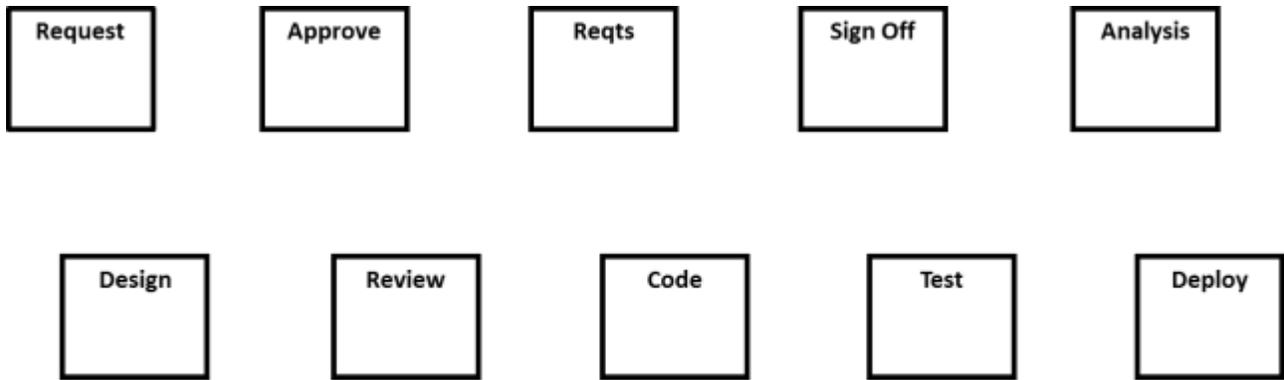
Drawing Value Stream Maps

Value stream maps must should always begin and end with a customer. The beginning is typically a request from the customer while the end is when value is delivered to the customer.

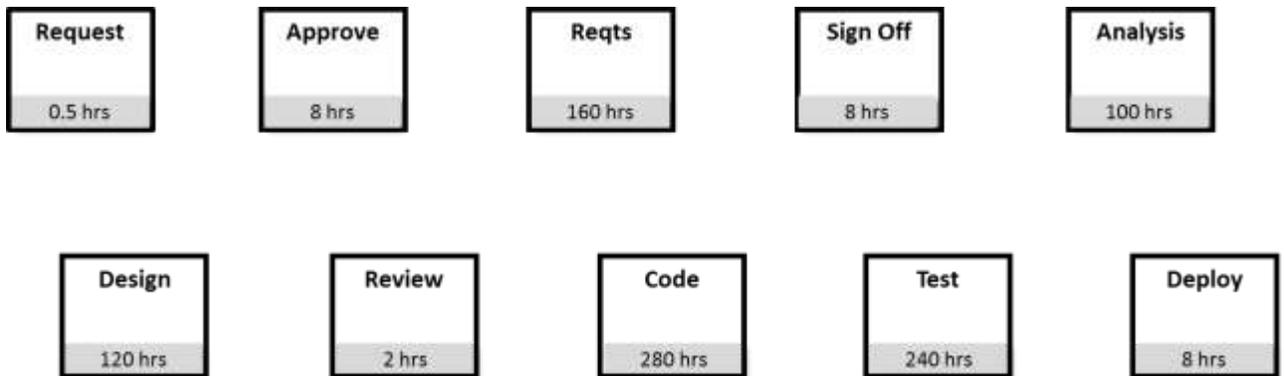
There are seven main steps in drawing value stream maps:

1. Identify the actions taken in the value stream
2. Calculate the time for each action
3. Calculate time actually worked on each action
4. Identify time between actions
5. Identify any loop backs required
6. Identify how many items are waiting before an action starts
7. Calculate the process cycle efficiency

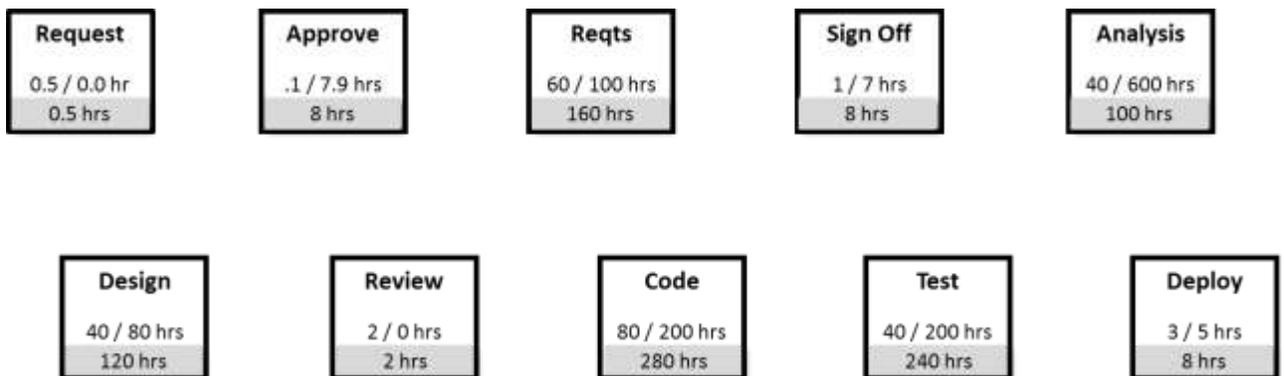
Step 1: Identify the actions taken in the value stream



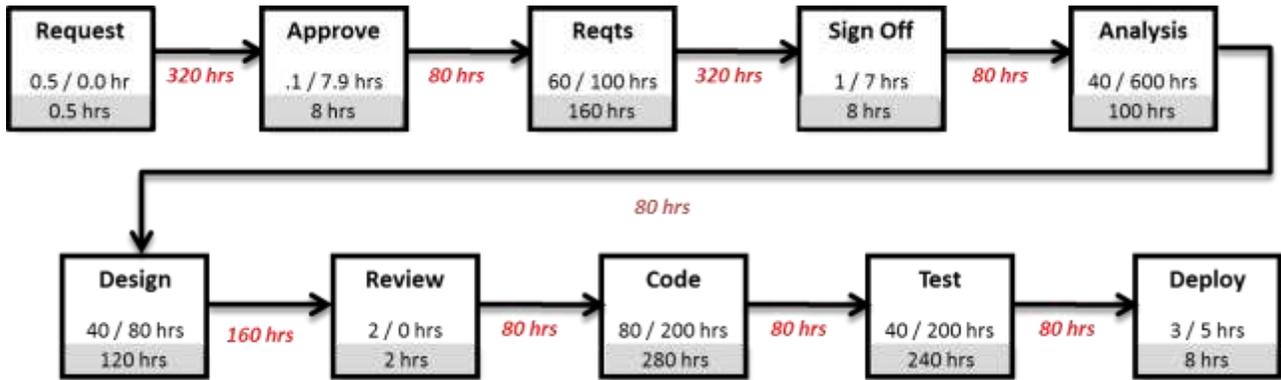
Step 2: What was the real time from start to finish of the action?



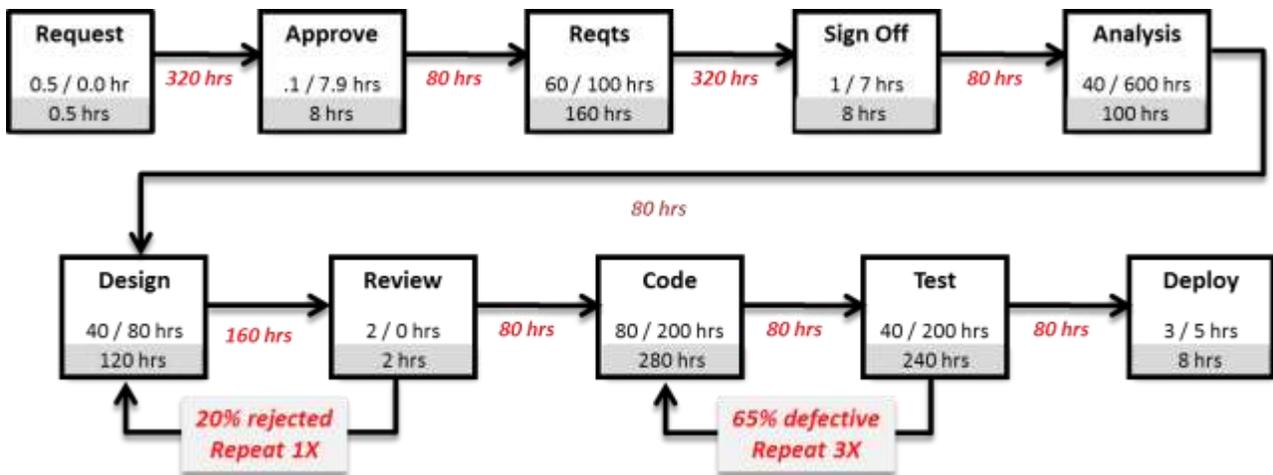
Step 3: What was the average time working on this vs working on other things?



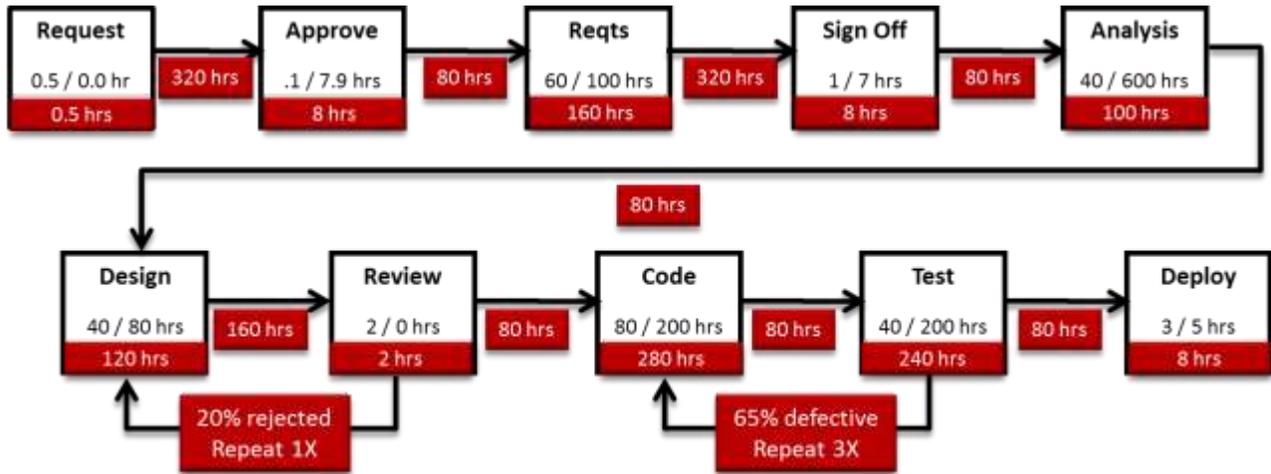
Step 4: Identify Time Between Actions



Step 5: Identify any loop backs required.

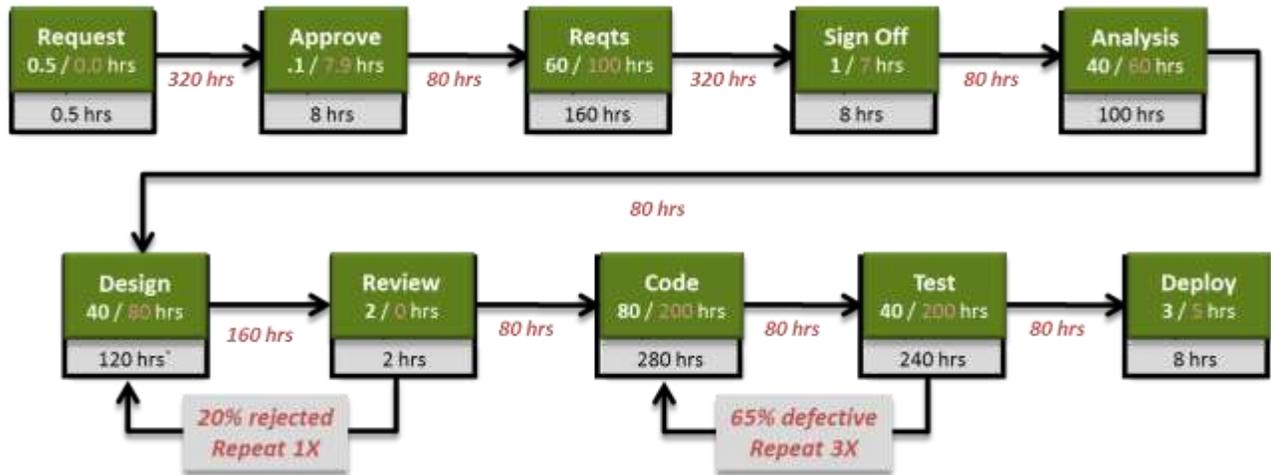


Step 6: Compute Process Cycle Efficiency



Total Cycle Time = 3433

$$0.5 + 320 + 8 + 80 + 160 + 320 + 8 + 80 + 100 + 80 + 120 + 160 + 2 + 1 * 0.2 * (120 + 160 + 2) + 80 + 280 + 80 + 240 + 3 * 0.65 * (280 + 80 + 240) + 80 + 8 = 3433$$



Time Work Taking Place = 509

$$.5 + .1 + 60 + 1 + 40 + 40 + 2 + 1 * 0.2 * (40 + 2) + 80 + 40 + 3 * 0.65 * (80 + 40) + 3 = 509$$

Process Cycle Efficiency = (Average Time Worked / Total Cycle Time) = 509 hrs / 3433 hrs = 14.9%

It's actually worse as no credit should be given for making and fixing errors as that is not time that value is being added.

Actual value added time was:

$$.5 + .1 + 60 + 1 + 40 + 40 + 2 + 0.2 * (40 + 2) + 80 + 40 + 3 * 0.65 * (80 + 40) + 3 = 267$$

So actual process cycle efficiency is 267 hours / 3433 hrs = 7.8%

Frequently Asked Questions

What do I do when there are parallel activities? Value streams often have actions taken in parallel. When this happens, the calendar time is the longest of the parallel efforts. The value added time is the *average* of all the parallel streams.

Isn't rework waste? I thought I'm not supposed to count that towards value? While this is true, the first few value streams you do don't need to be concerned with this. Technically, you could track value added time, worked time that isn't value added and calendar time.

Using Value Stream Maps in Transitioning To Lean

Value stream maps are very useful when transitioning to Lean or Lean-Agile methods. Use value stream maps to detect time delays that may not be tracked by your looking at dollars spent. Value stream maps can also be useful to see how one group affects another group.

Using Value Stream Maps in as a Continuous Process Improvement Tool

Value stream maps detail both your value added time and your delay (waste) time. Any time that isn't value added time is time that should be eliminated. Value stream maps give us an opportunity to identify this waste and come up with improvements while considering the effect to the whole process.