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Calculate Toil

Site Reliability Engineering

Objectives

In this module, we will look at how to calculate toil for the SDLC pipeline and for other tasks required for production. We will also determine if we should automate.

Learning Objectives

- Determine whether to automate
- Perform pipeline toil calculation
- Perform other toil calculation
- Identify when to automate

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Determine if to Automate

Error budget should be the driver

- **Could be based on**
  - **Number of service requests per period of time and our service availability percentage**
  - **Number of service requests dependent on activity during the day**
  - **Amount of acceptable revenue loss/downtime during working hours**
  - **Agreed service time as per ITILv3**

$$Availability\ \% = \frac{AST\ - Downtime}{AST} \times 100$$

  - **Google request based**

$$Availablity = \frac{Successful\ Requests}{Total\ Requests}$$

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When and Where to Automate

- When performing the tasks manually exceeds the error budget
- Can the task be automated?
  - >>> Is the logic definable?
  - >>> Is the process repeatable?
  - >>> Is the process consistent?
- Where can the task be automated?
  - >>> Script
  - >>> In application
  - >>> From the monitoring/alerting system through triggers
  - >>> Other event based systems

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When Not to Automate

When automating will not give a ROI compared to manual

The task is simple and quick

The task could be run by anybody

The task is well documented

The task does not cause stress

It's a new process/task/functionality

It does not provide any gain to the project

Source: Rajkumar

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Automate Task Calculation Example

Automated test takes 3 hours/ 180 minutes to write

Run time of test is 1 minute of user hands-on time

Manual test takes 10 minutes of user hands-on time

Cost savings of
10 – 1 = 9 minutes

Automated test must run more than

180 / 9 = 20 times

ROI

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Automate Task ROI Calculation

- TTW = Time to write automated process
- HRTA = Hands-on run time automated
- HRTM = Hands-on run time manual
- MTTRA = minimum # times automated task must be run

$$\frac{TTW}{(HRTM - HRTA)} = MTTRA$$

All units must be the same

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Activity: Automate Yes/No?

Our onboarding process for new engineers joining the team

- The task requires
  - >>> Assigning the user to the relevant LDAP groups
  - >>> Adding the user to the email group
  - >>> Adding the user to the sudoers file through our configuration management
- Whole process takes 15 minutes hands on per user creation and requires
  - >>> Ticket raised and approved, user has to wait for acknowledgement email
  - >>> The commands are low risk as they are run at least 20x per month
    - ~ Across multiple teams
- Time to write the automated version: 5 hours
- Hands-on time to run the automated script: 2 minutes
- Automate?

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Solution

$$\frac{300\ minutes}{(15\ minutes\ -2\ minutes)} = 23\ times$$

Running it 23 times per year

$$\frac{23\ times}{240\ times} = .096\ years\ (35\ days)$$

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Activity: Automate Yes/No?

The database master needs to be failed over to another location.

- Platform engineers need to perform a software update
  - >>> A security vulnerability has been identified and is marked critical
  - >>> The update takes 10 minutes in total to run
  - >>> 1 minute to run the command
  - >>> 2 minutes to verify it worked
- The failover requires 30 minutes of human intervention
- It will take 5 days at 8 hours/day to create a script
- We perform the failover 3 times per year
- Running the automated version will take 5 minutes of hands-on time

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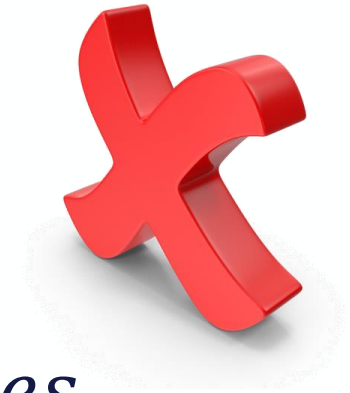
Solutions



$$\frac{2400\ minutes}{(33\ minutes\ -5\ minutes)} = 85\ times$$

We only run it 3x per year!

Running it 3 times per year

$$\frac{85\ times}{3\ times} = 28\ years$$

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Other Factors

- We need a starting point for our calculations
- Other factors you may include in your calculations
  - Impact
    - Financial Loss
    - Time
  - Urgency
  - Severity factor
  - And more

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Can We Fit it in the SDLC?

- Considerations of automating toil
- Will we get a return on investment?
  - >>> Coding time and running < current manual process run time (hands on)
  - >>> Do we have available cycles in the SDLC?
- SDLC cycles would be classed as value stream mapping
  - >>> Adding value to the whole process from documentation to deployment

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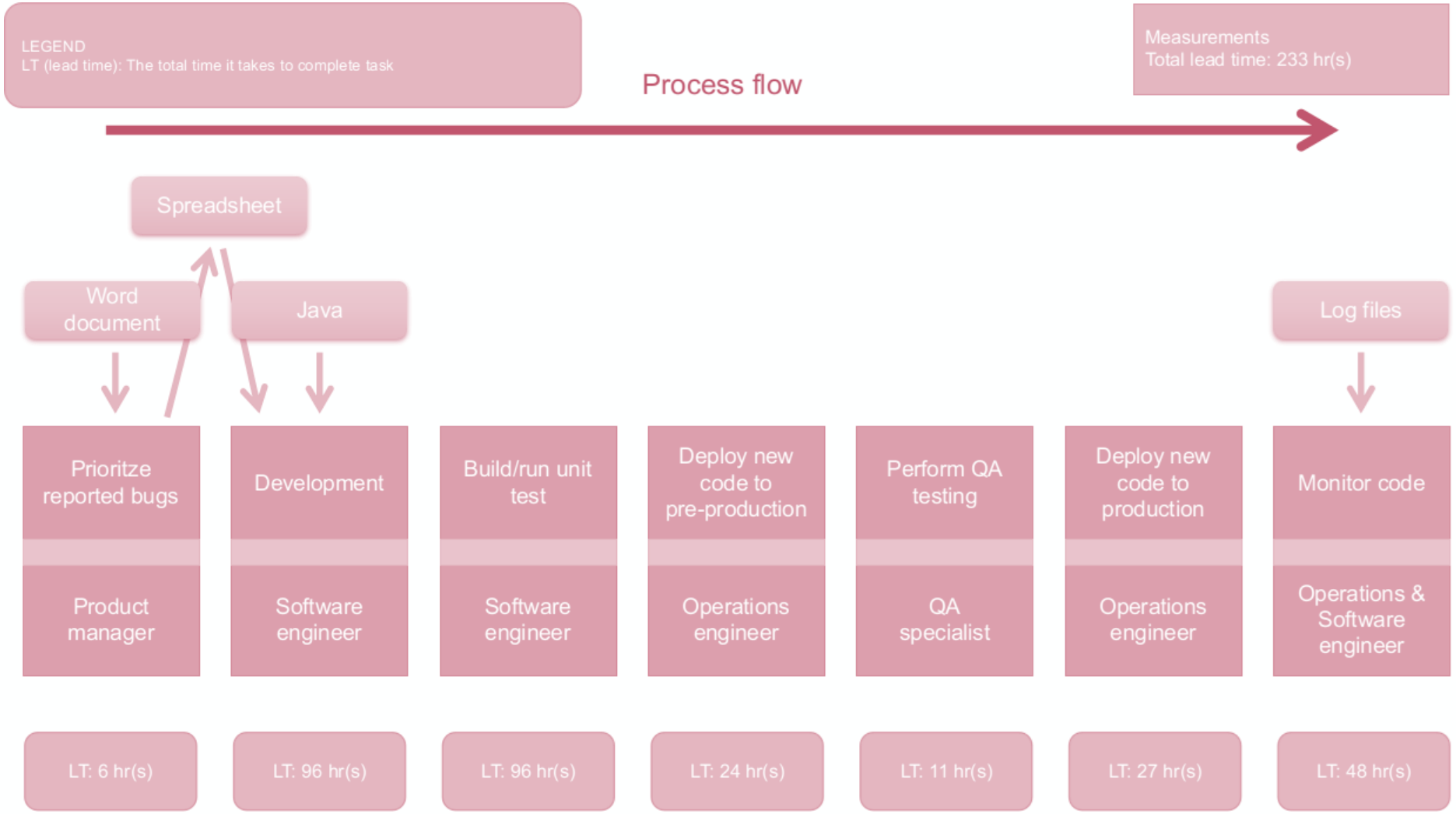
Toil in the Pipeline – Value Stream Mapping



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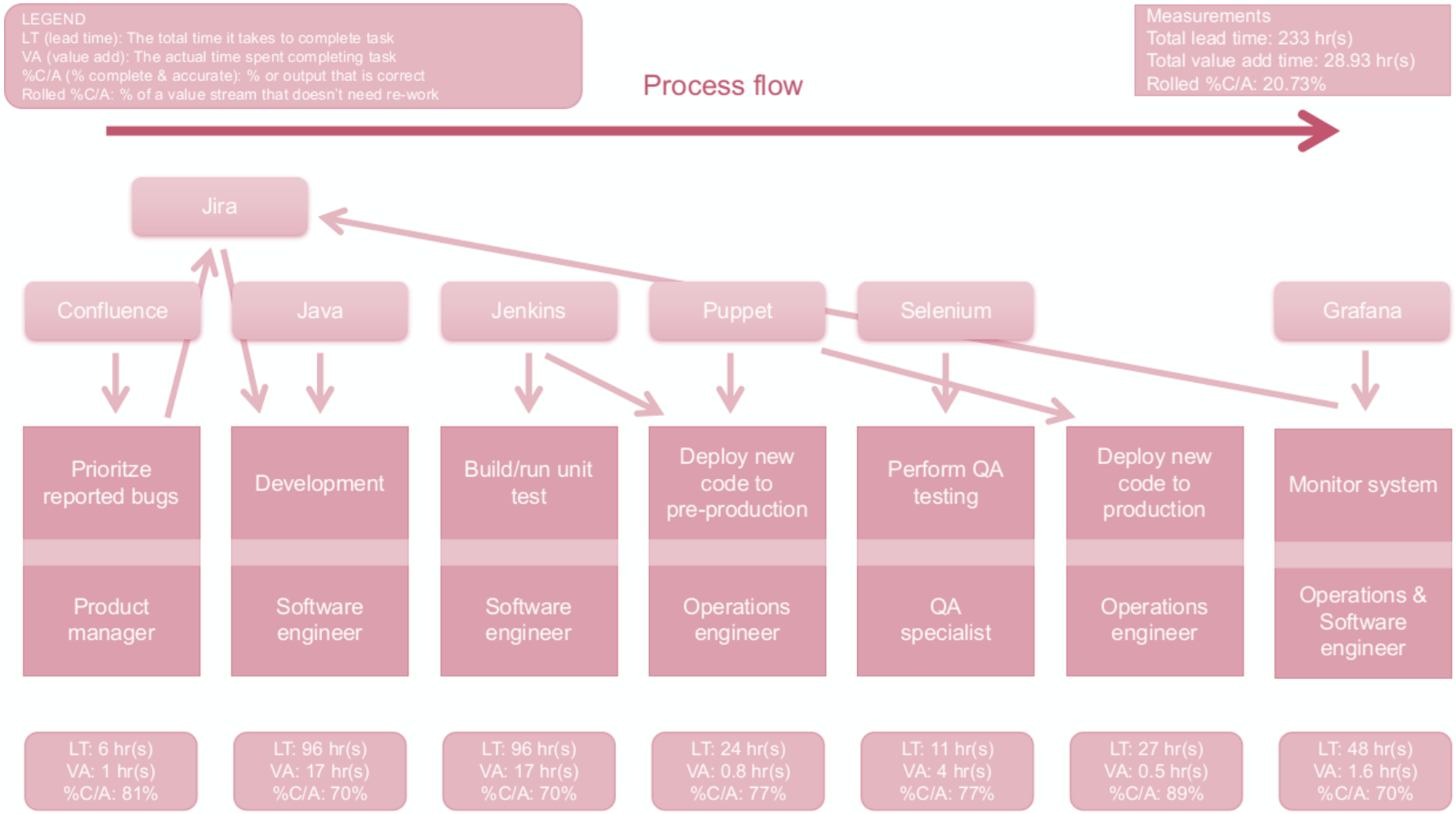
Automating the Pipeline



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Consider this:

- Our pipeline already has a lot of automation.
- Where in our pipeline could we still make improvements?

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Summary Q & A

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Reference

- Rajkumar. (n.d.). 8 Types of Test Cases Not To Be Automated. Retrieved from https://www.softwaretestingmaterial.com/test-cases-not-to-be-automated/

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