Stealing the Best Ideas from DevOps

A Guide for Sysadmins without Developers

Thomas Limoncelli

stackoverflow

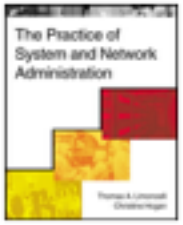
Christine Hogan

at&t

Who are we?

Tom Limoncelli

- SRE Manager at Stack Overflow
- Sysadmin since 1988 (Google, AT&T/Bell Labs, Mentor)
- Blog: EverythingSysadmin.com
  Twitter: @YesThatTom
- Author…



Christina Hogan

- Principal Network Engineer at AT&T (Switzerland)
- Sysadmin for 20 years
- Ex- Formula 1 race car aerodynamics designer
- Author…

DEV
OPS

Punk Rock

The
Principles of
Punk Rock

The Principles of Punk Rock
+
Music

The Principles of Punk Rock + Music =

The Principles of Punk Rock + Music =

The Principles of Punk Rock + Music

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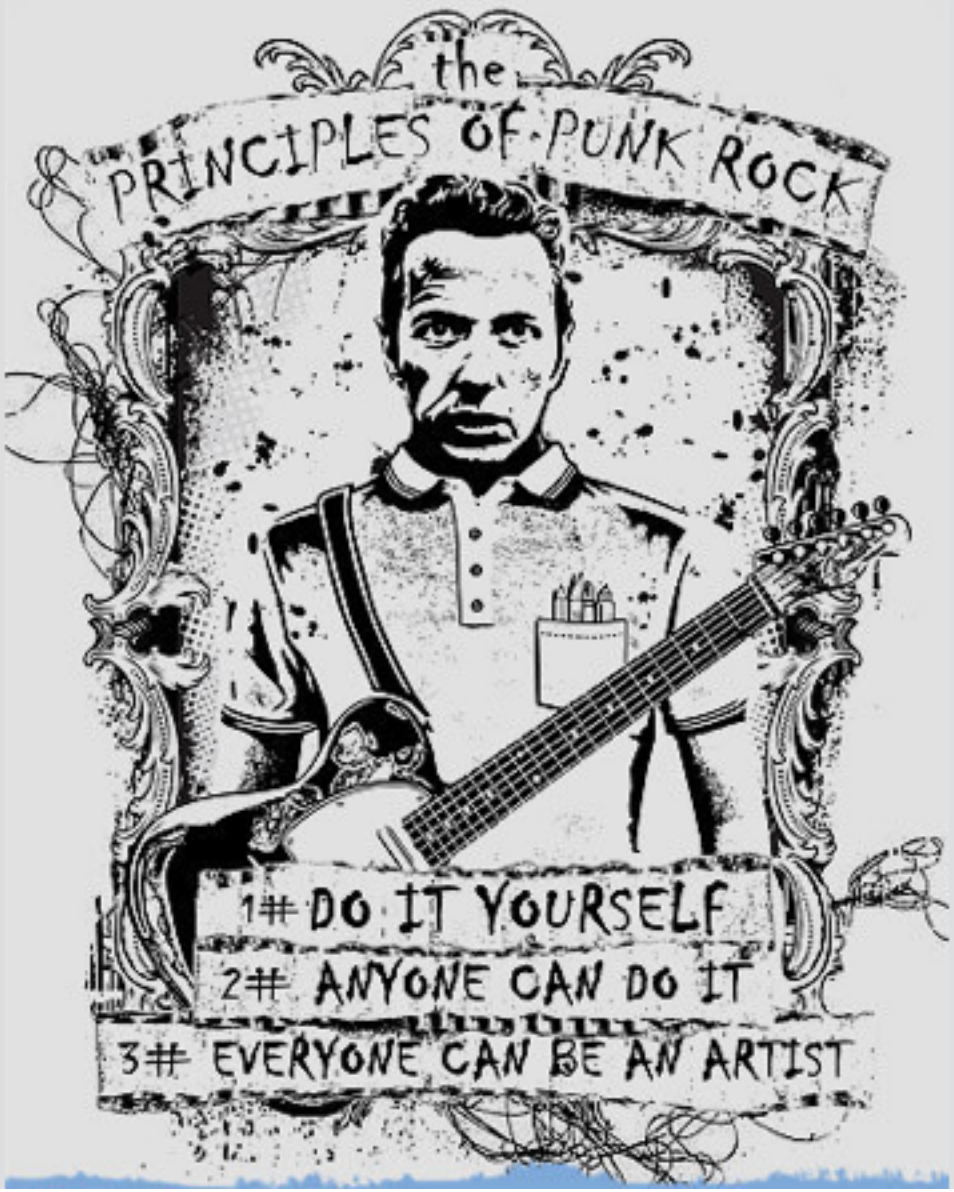
the
PRINCIPLES OF PUNK ROCK
1# DO IT YOURSELF
2# ANYONE CAN DO IT
3# EVERYONE CAN BE AN ARTIST
properganda.co.uk

The Principles of Punk Rock + Music =

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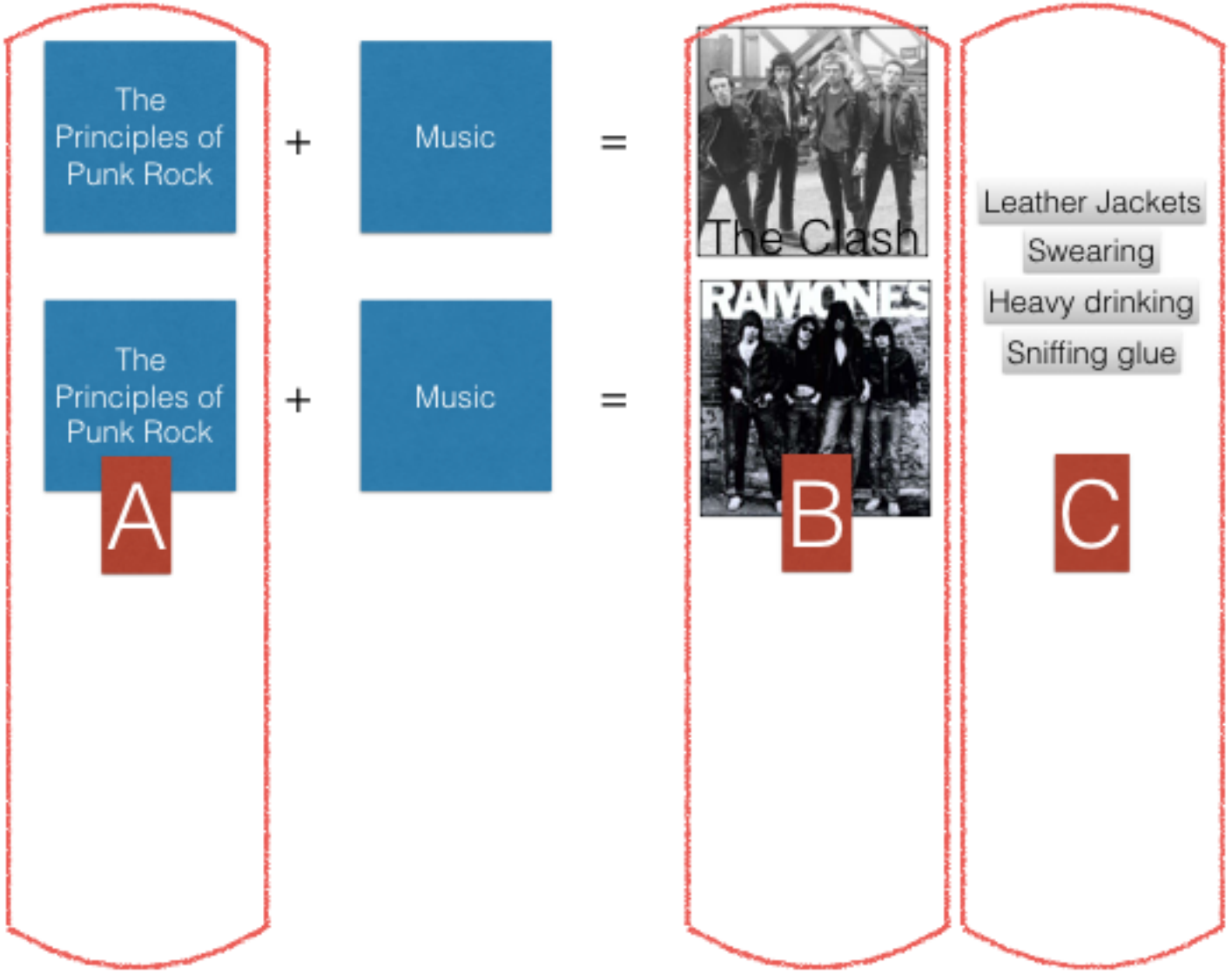
The Principles of Punk Rock + Music =

Leather Jackets

Swearing

Heavy drinking

Sniffing glue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The Principles of Punk Rock + Poetry

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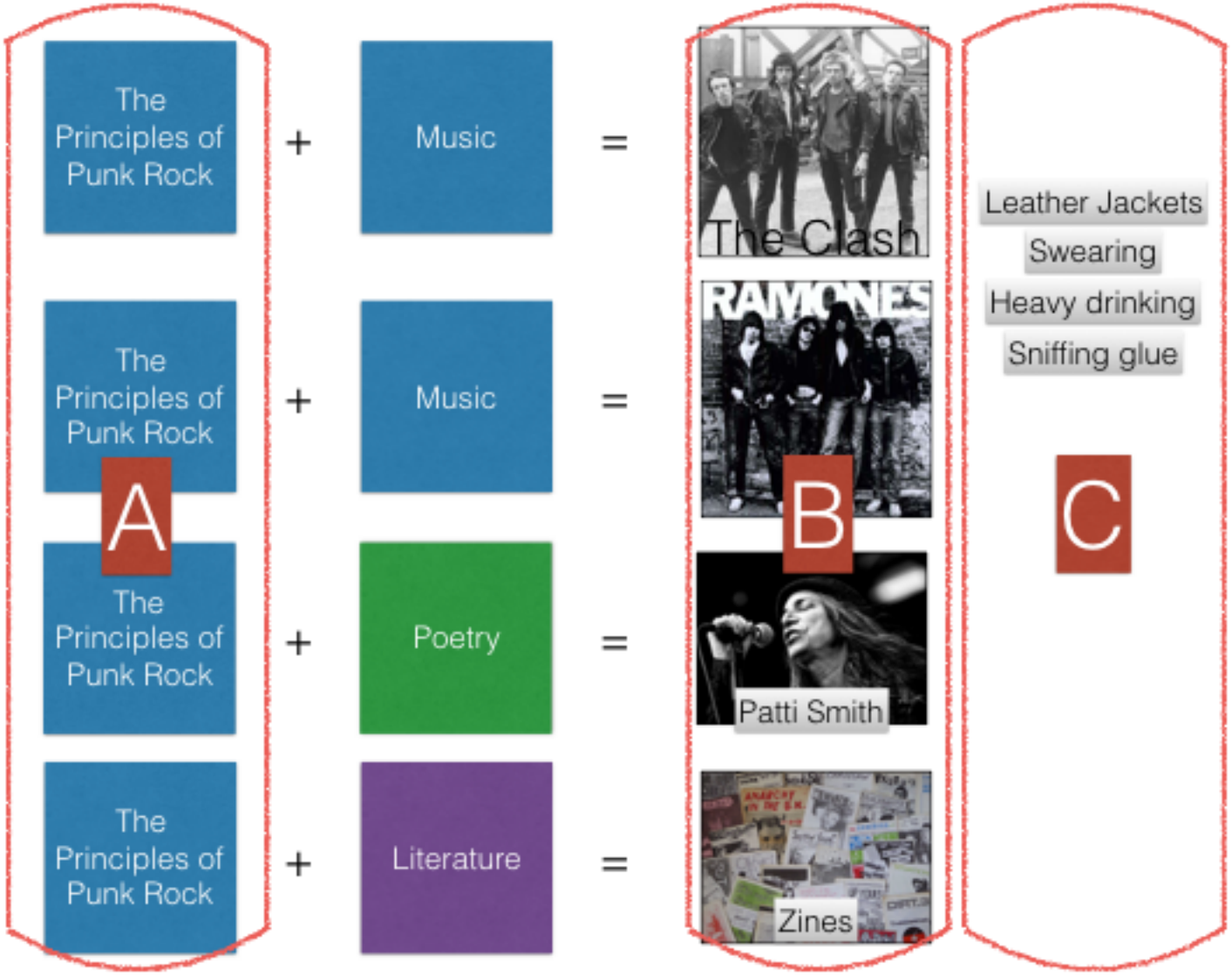
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DEV
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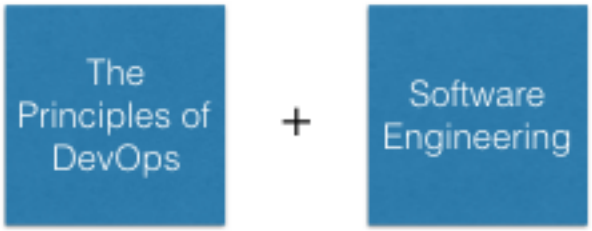
The
Principles of
DevOps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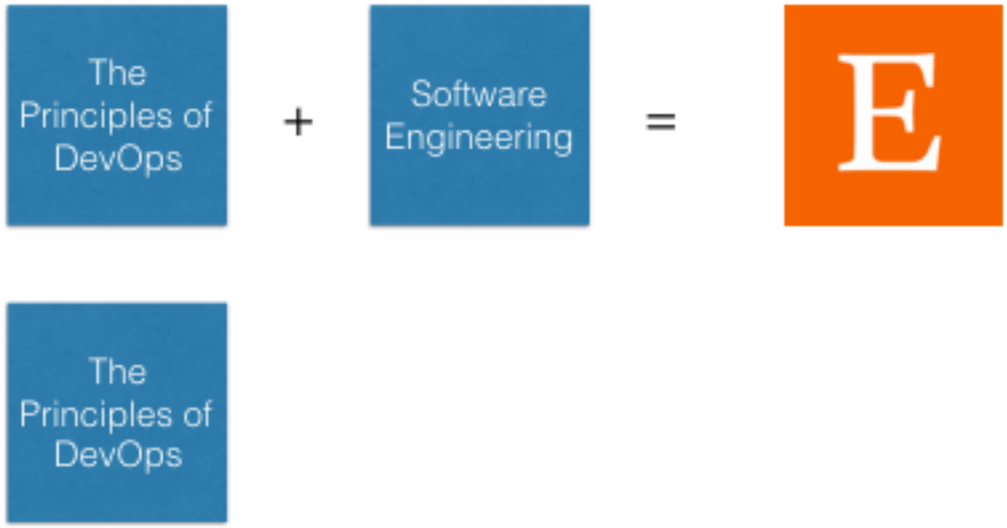
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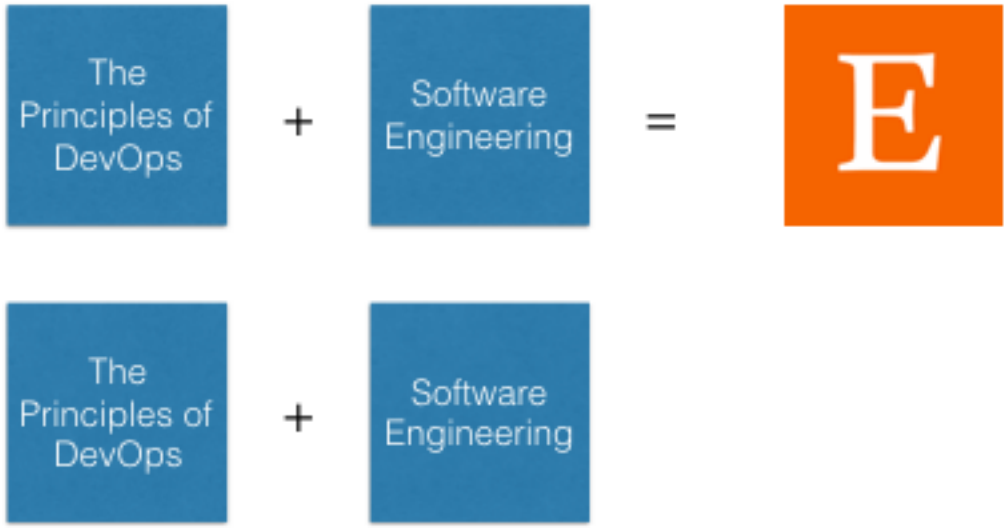
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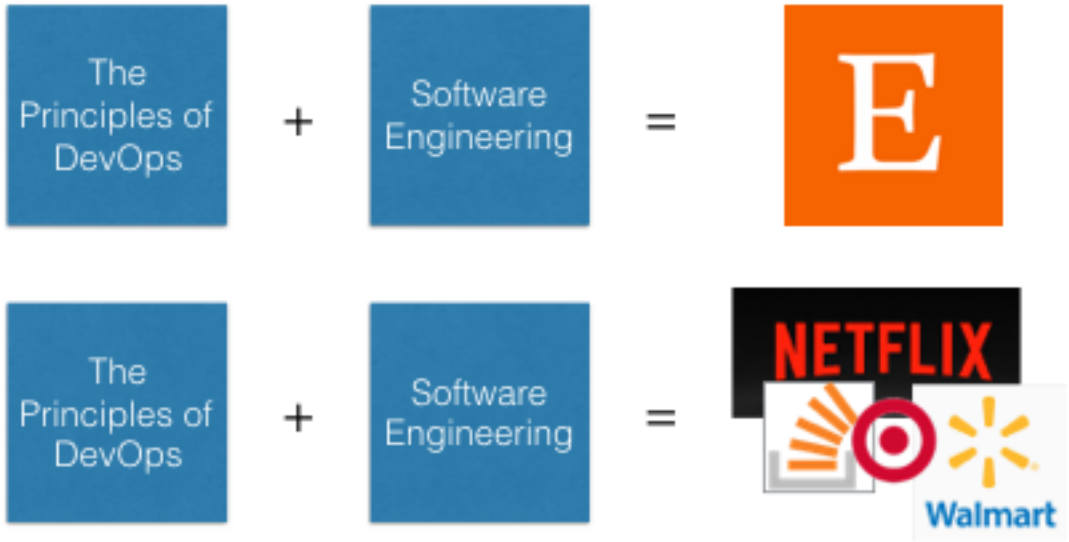
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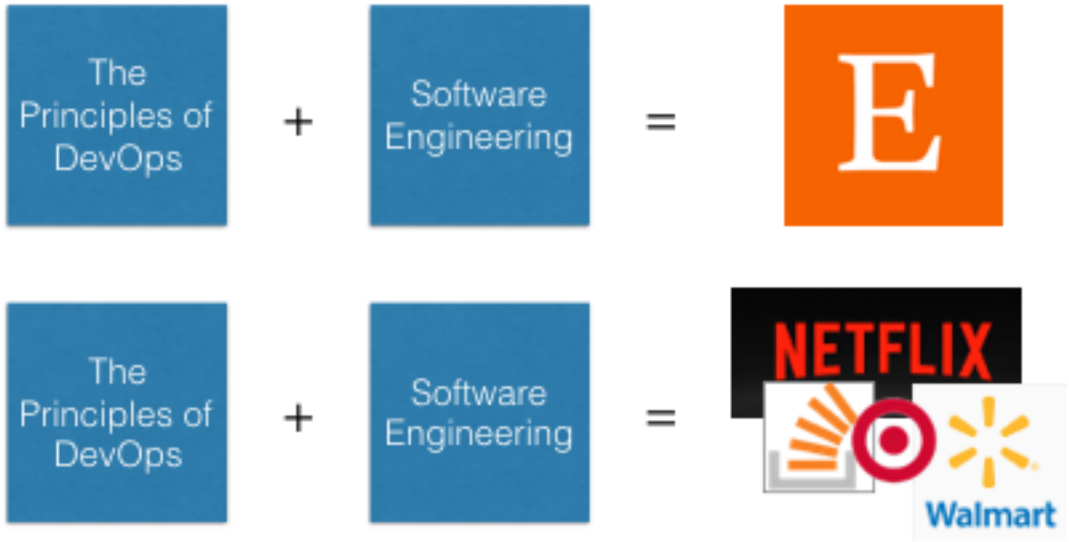
Walmart

The DevOps Principles

(1) The Three Ways of DevOps

(2) The Small Batches Principle

(3) Minimum Viable Product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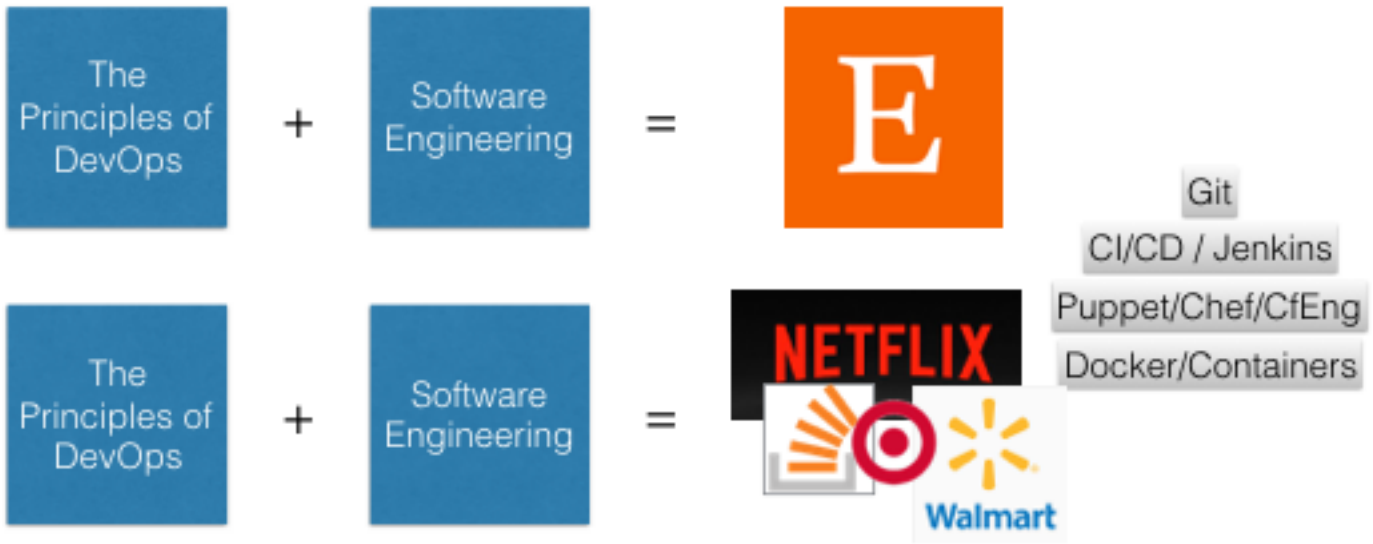
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Docker/Containers
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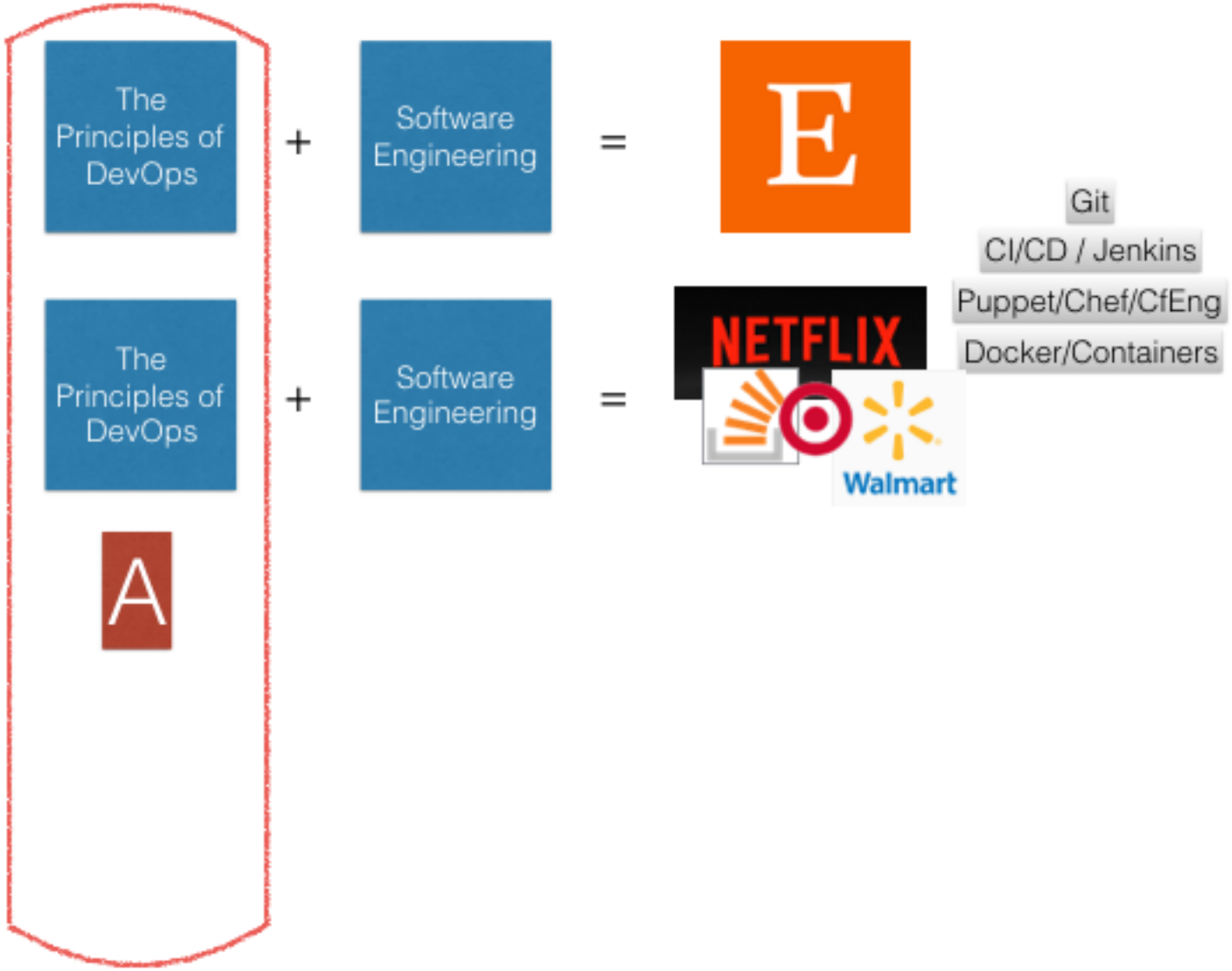
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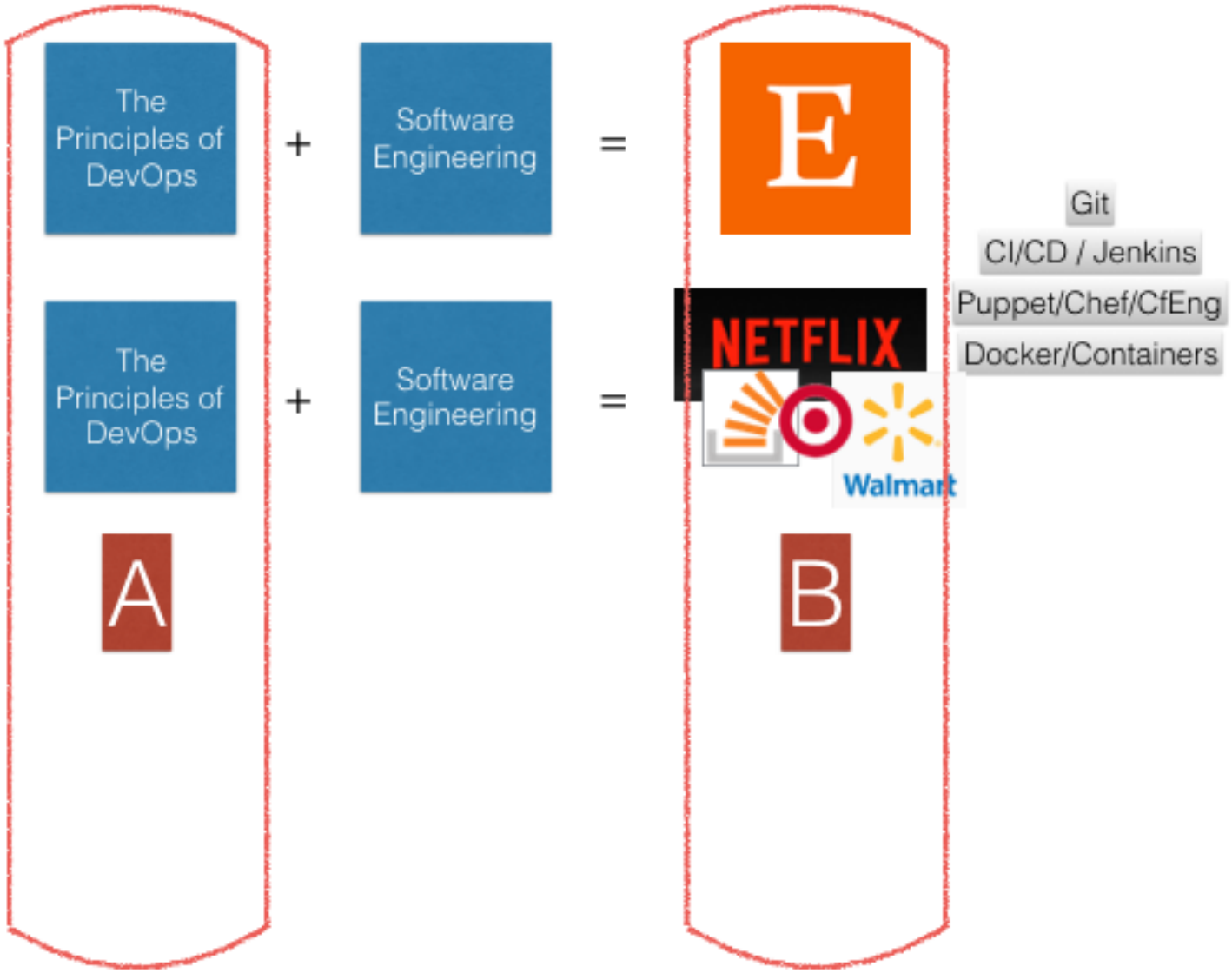
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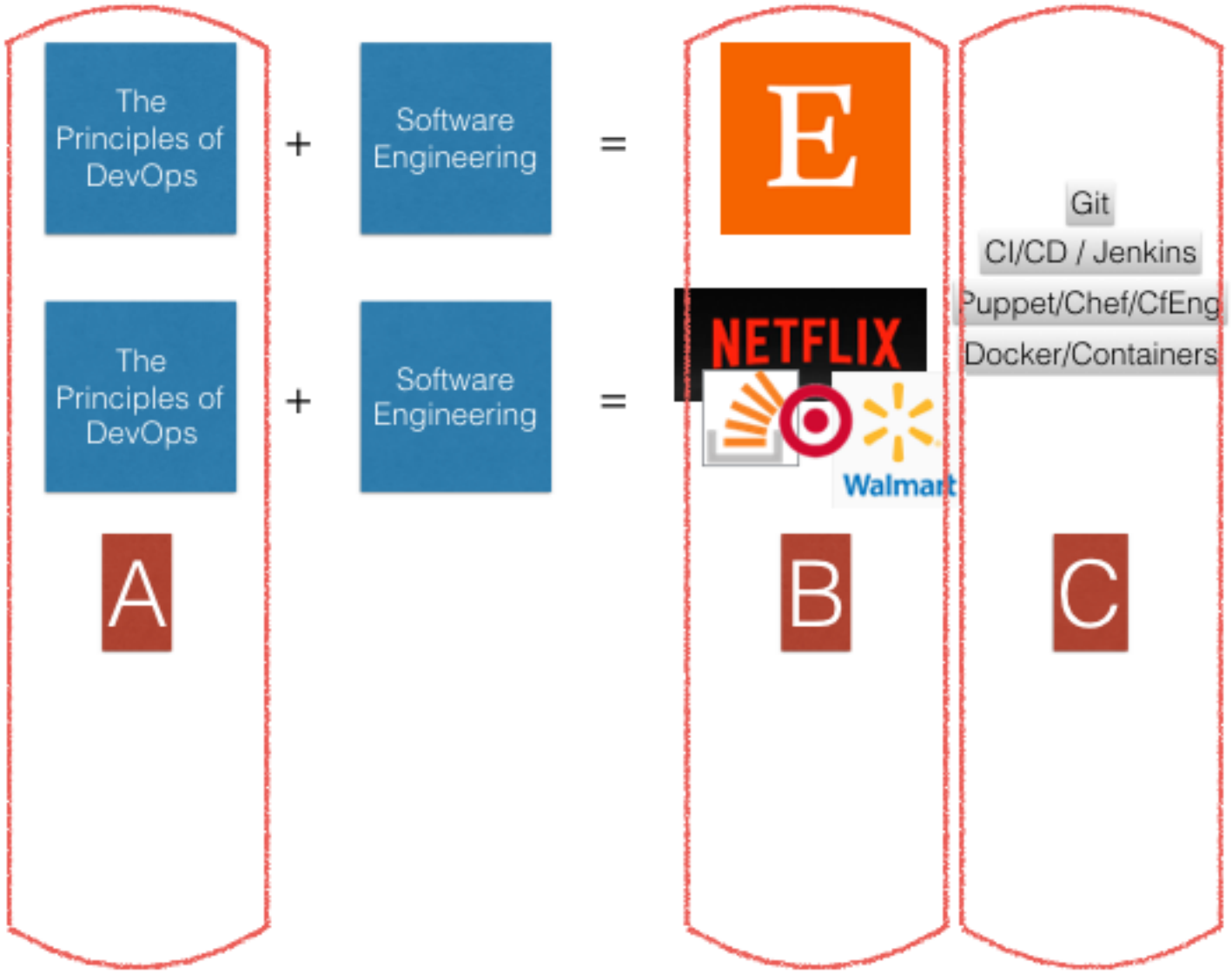
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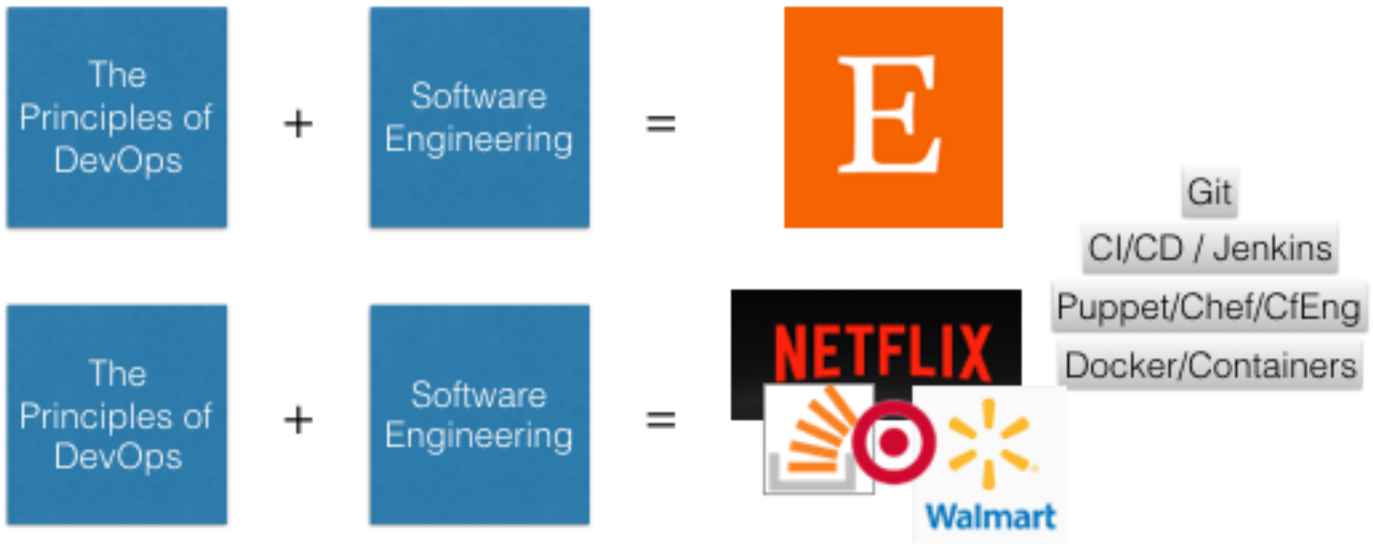
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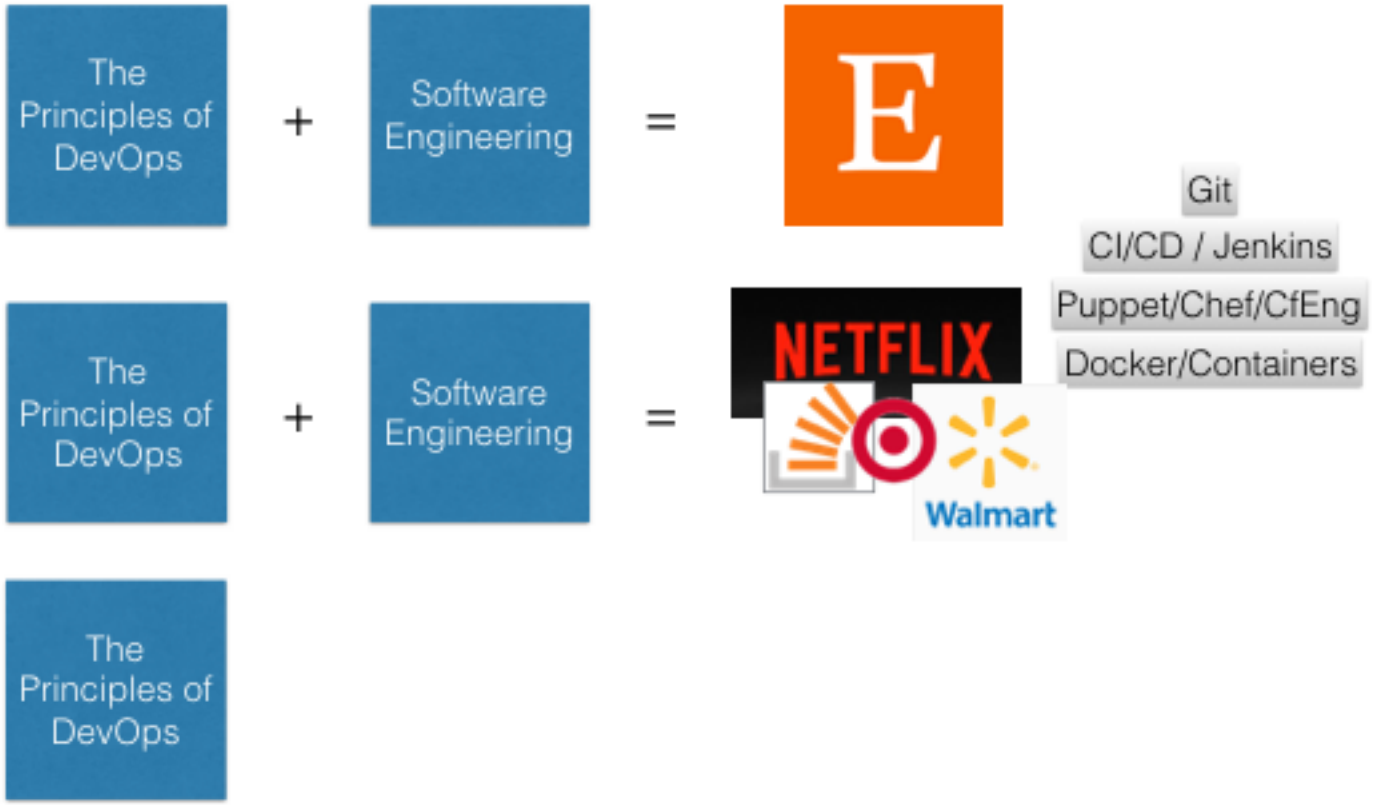
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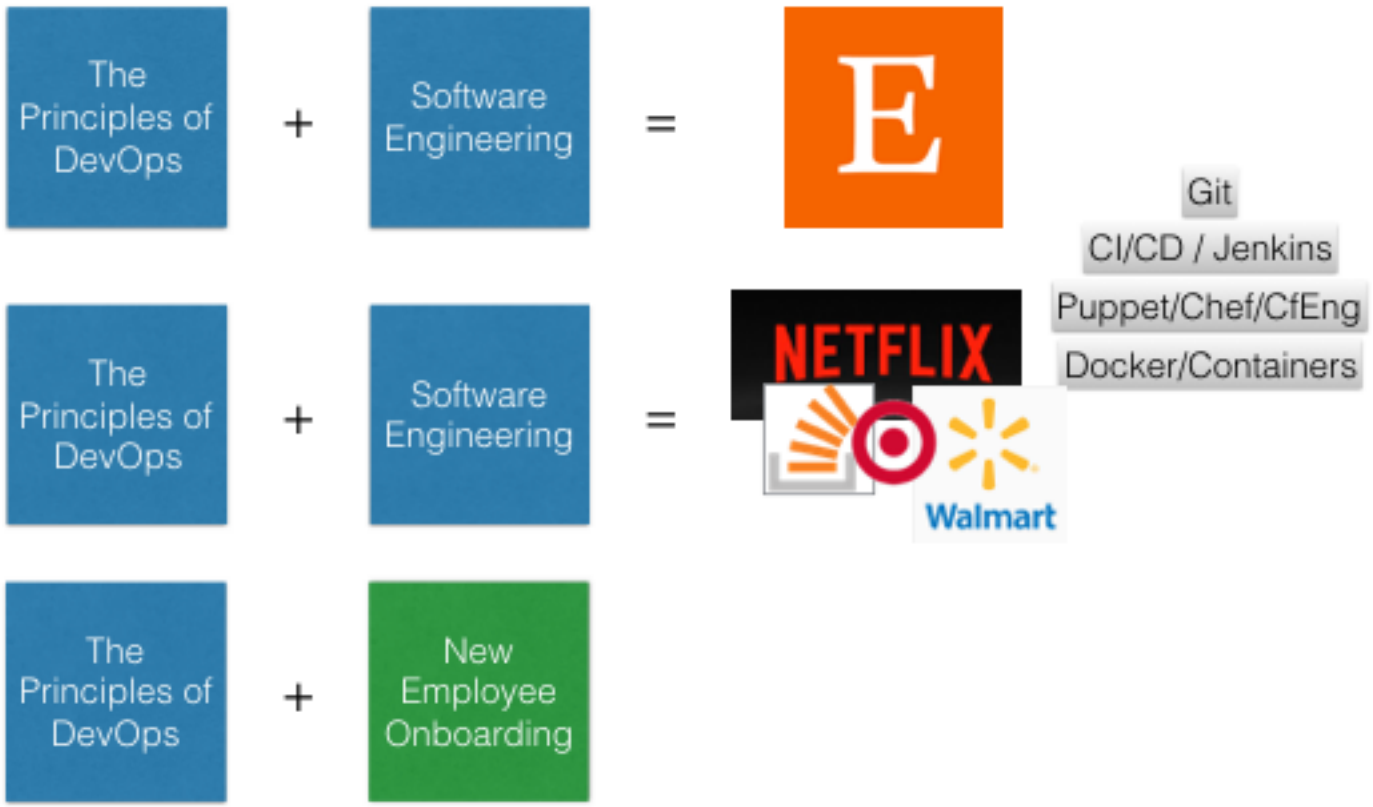
The Principles of DevOps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The Principles of DevOps
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New Employee Onboarding

The Principles of DevOps + Software Engineering =

The Principles of DevOps + Software Engineering =

Git
CI/CD / Jenkins
Puppet/Chef/CfEng
Docker/Containers

The Principles of DevOps + New Employee Onboarding =

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The Principles of DevOps

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The Principles of DevOps + Failovers

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The Principles of DevOps + New Employee Onboarding =

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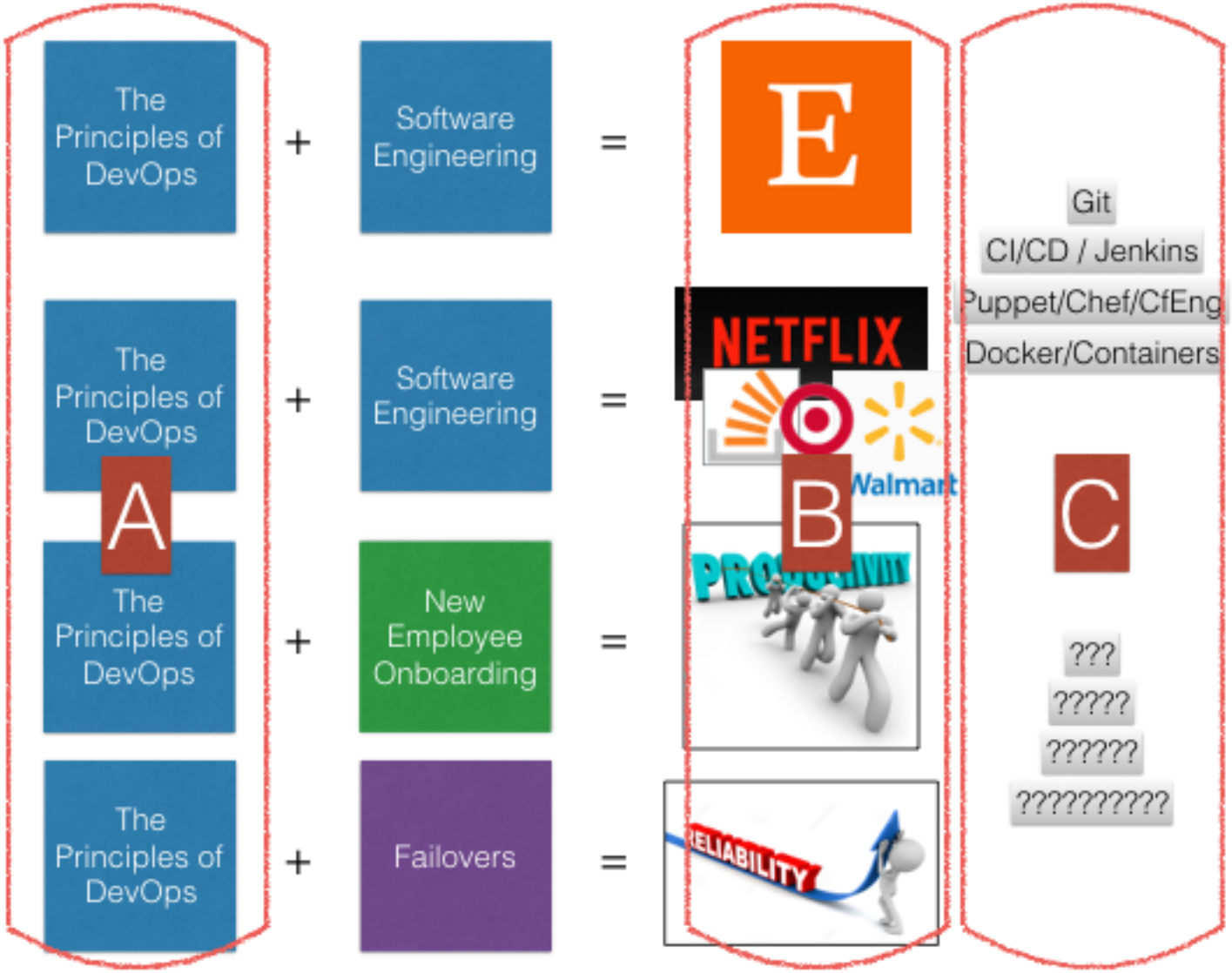
The Principles of DevOps + Failovers =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The DevOps Principles

(1) The Three Ways of DevOps

(2) The Small Batches Principle

(3) Minimum Viable Product

(1) The Three Ways of DevOps

The Three Ways of DevOps

(you really should read this book)

The Three Ways of DevOps

(a way to improve **complex** processes)

The Three Ways of DevOps

(a way to improve **complex** processes)

The Three Ways of DevOps
(a way to improve **complex** processes)
PM
DEV
QA
OPS

The Three Ways of DevOps

System Thinking

Amplify Feedback Loops

Culture of Continual Experimentation and Learning

The Three Ways of DevOps

The Process

Amplify Feedback Loops

Culture of Continual Experimentation and Learning

The Three Ways of DevOps

The Process

Communication

Culture of Continual Experimentation and Learning

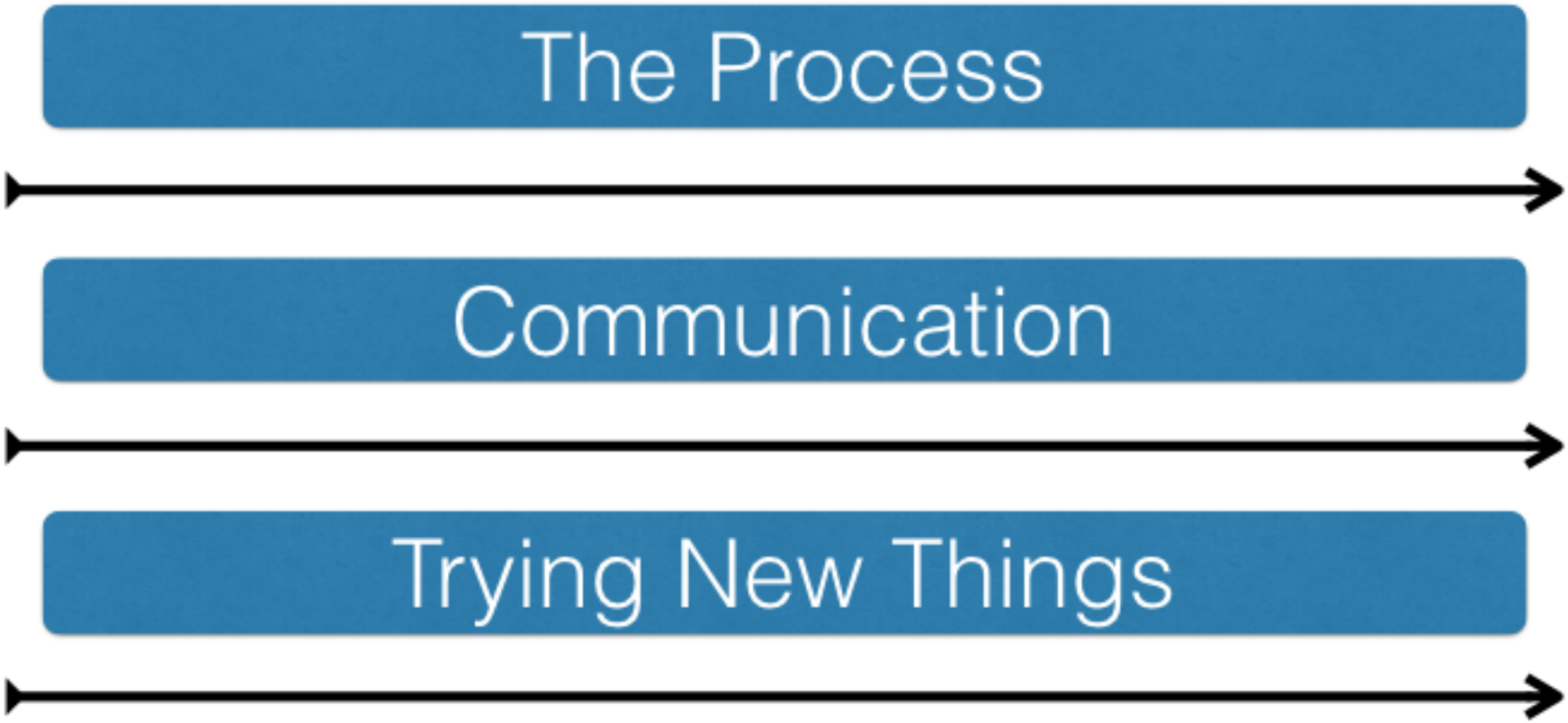
The Three Ways of DevOps

The Process

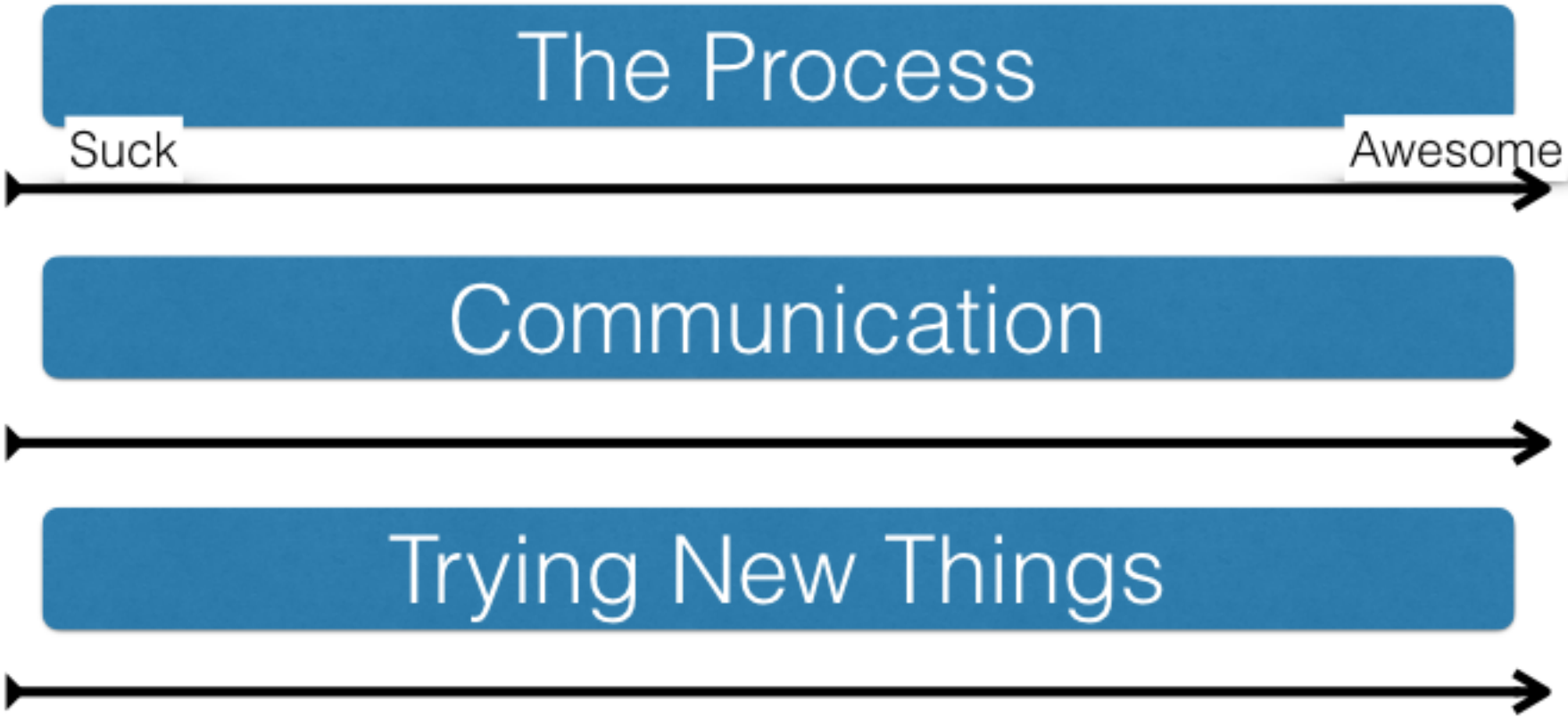
Communication

Trying New Things

The Three Ways of DevOps



The Three Ways of DevOps



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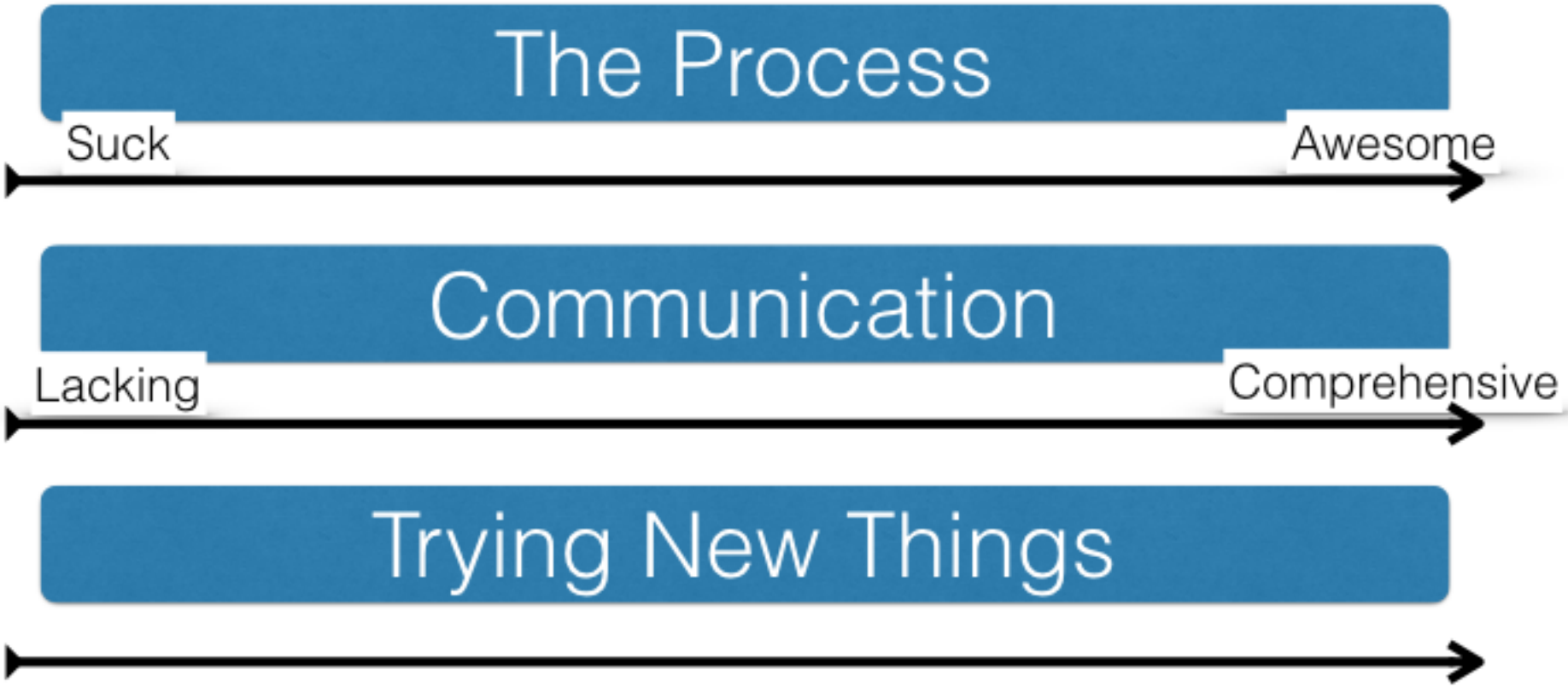

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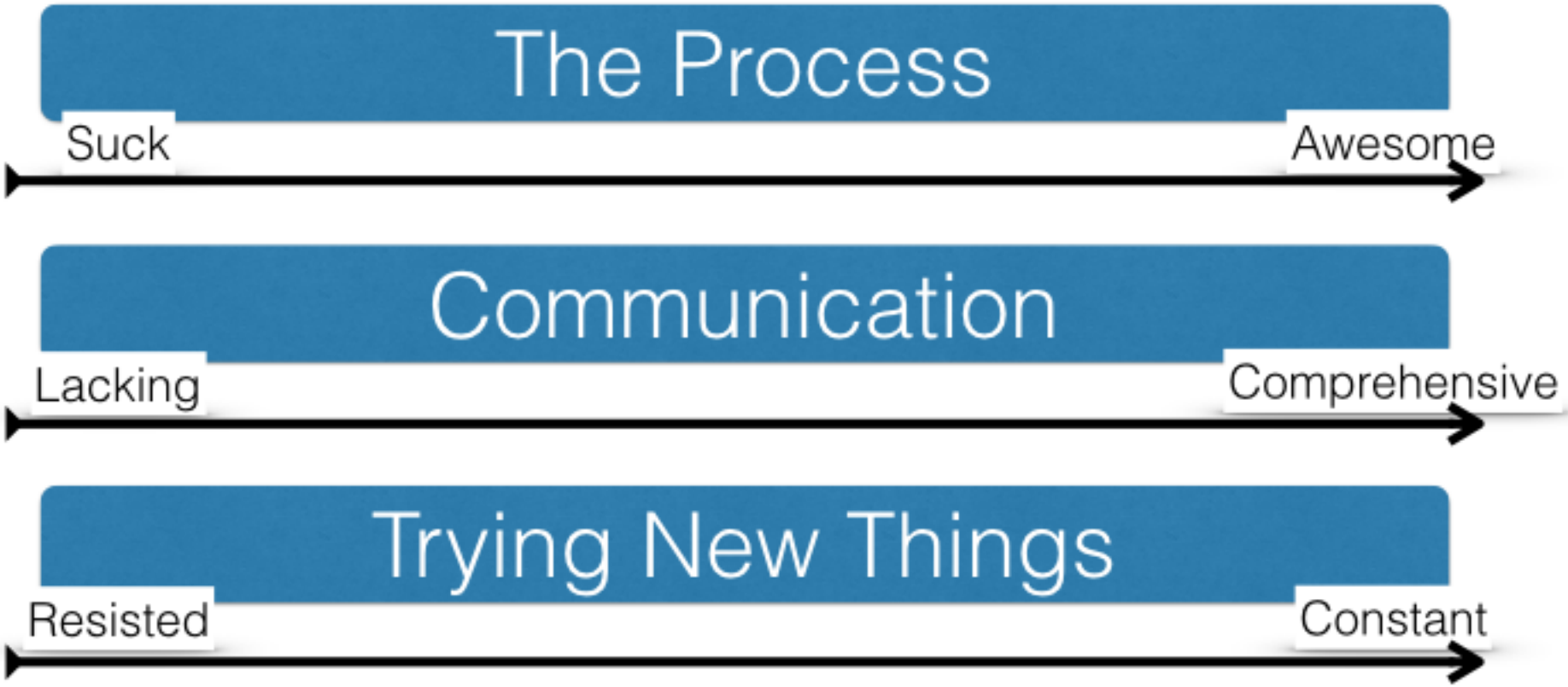

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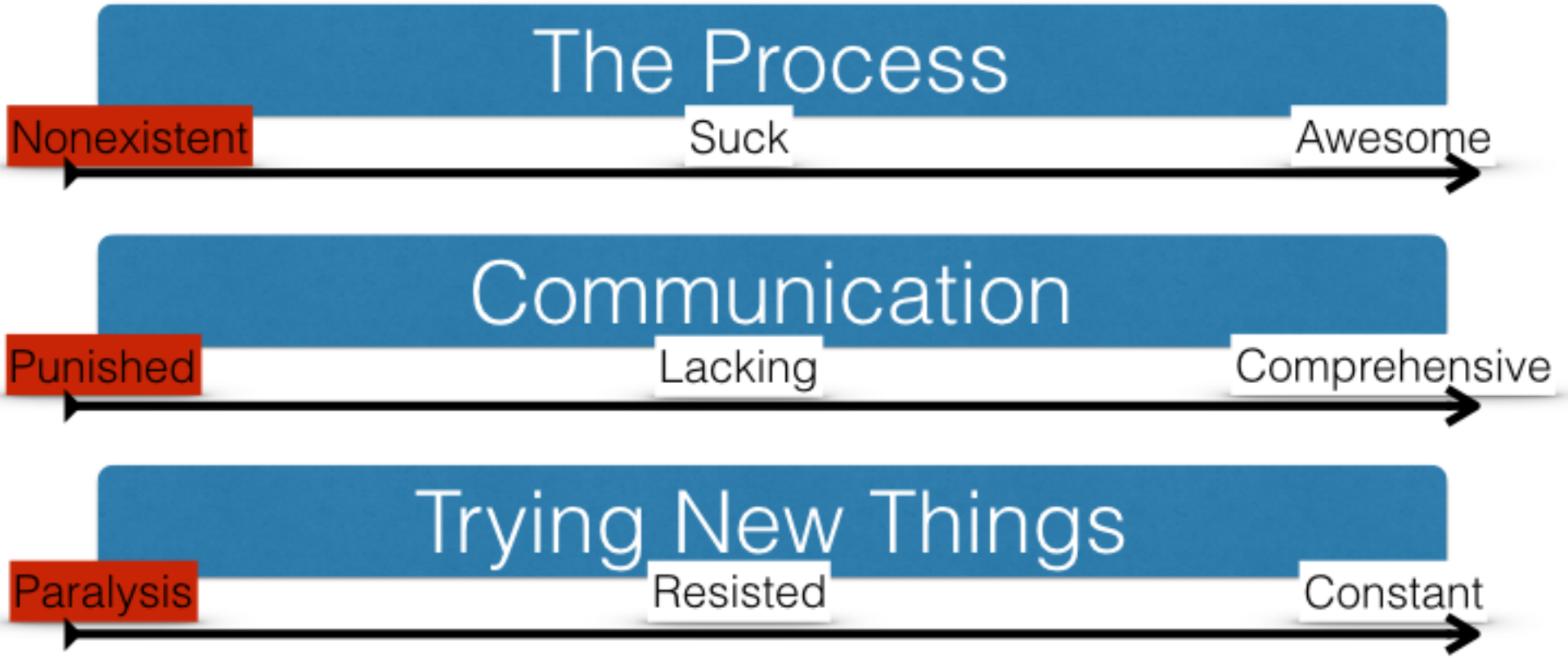


The Three Ways of DevOps
(a way to improve **complex** processes)
Recruiting
HR
IT
Team

New Employee Onboarding

- **Process:** Ad hoc. Improvised. Broken.
- **Communication:** Terrible. IT given no warning about arrivals.
- **Trying New Things:** Out of the question.
- **Result:**
  - New employees unproductive for 4 weeks.
  - First impression: I just joined a company of idiots.
  - Everyone blames the IT department.

New Employee Onboarding

- **Process:** Got agreement on a “onboarding timeline”.
  Automated OS install/config for workstations.
- **Communication:** ID’ed process owner. Communication channels.
- **Trying New Things:** Google Sheets -> Trello -> Custom app.
  Efficiency through alignment: Monday is Start Day.
- **Improvements:**
  - New employees: Productive on day #1.
  - First impression: Excellence/cooperation/efficiency.
  - Less work for everyone involved!
  - Opened the door to software to manage accounts, machines, etc.

And more…
Customer support escalations:
Cust
Support
2nd Tier
PM/Dev
Product fulfillment:
Sales
CFO
Make
Shipping

(1) The Three Ways of DevOps

(2) The Small Batches Principle

Drink Delicious
SMALL BATCH
COFFEE
EST. 2013
Small Batch
WHISKEY & FARE
SMALL BATCH
All Natural
SMOKED MEATS
PERFECTLY BALANCED
SMALL BATCH
AUTHENTIC INGREDIENTS
smallbatchdog
people · pets · planet
chickenbatch sliders

The Small Batches Principle:

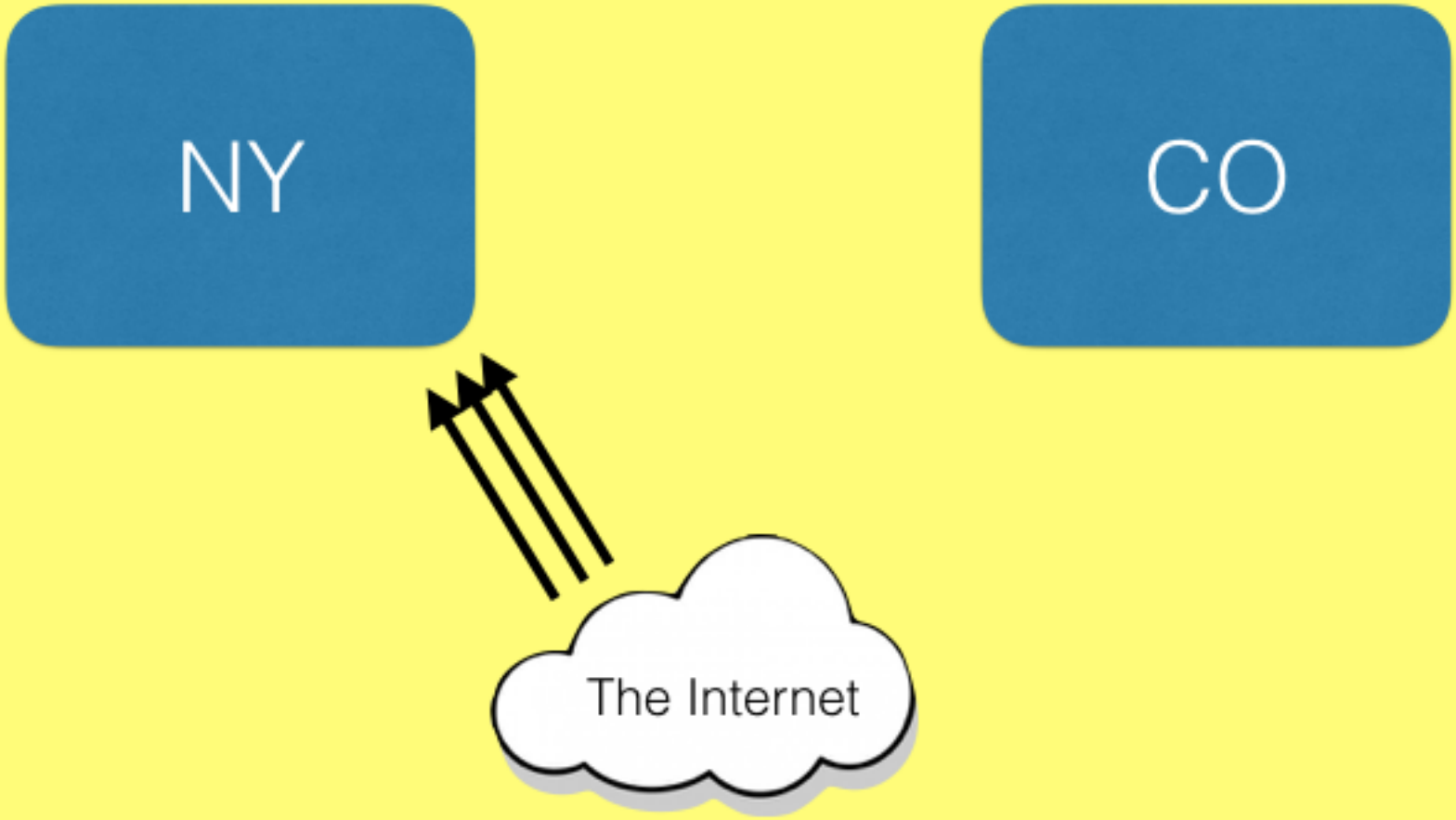
Doing work in small batches
is better than big batches.

[Work. Check. Work. Check. Work. Check.]

is better than

[Work, work, work, Check.]

StackOverflow.com



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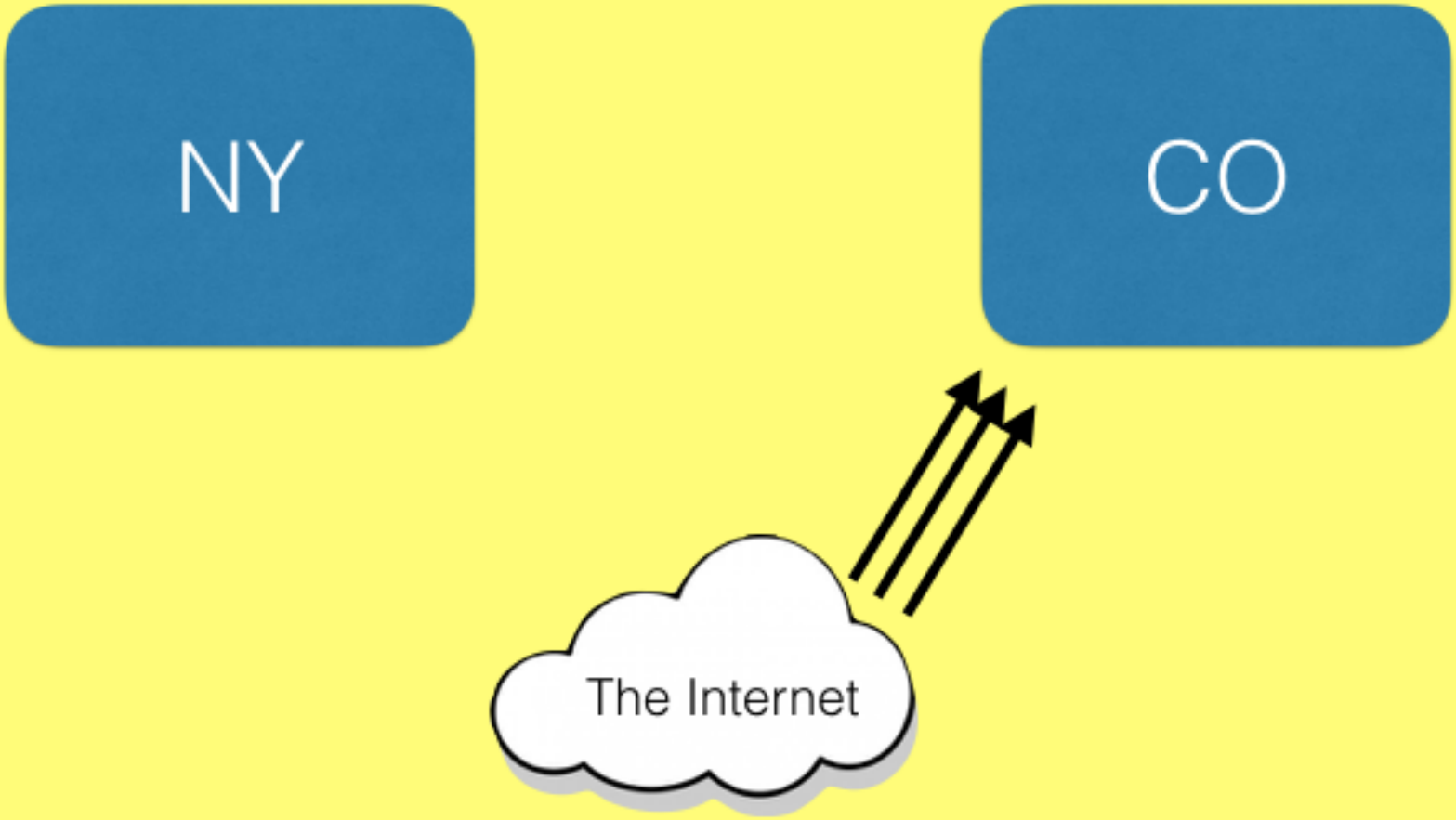


Big Batch Failovers

- The NY Datacenter fails less than once a year.
- In that time:
  - “unintentional differences” accumulate.
  - New SRE team members are hired

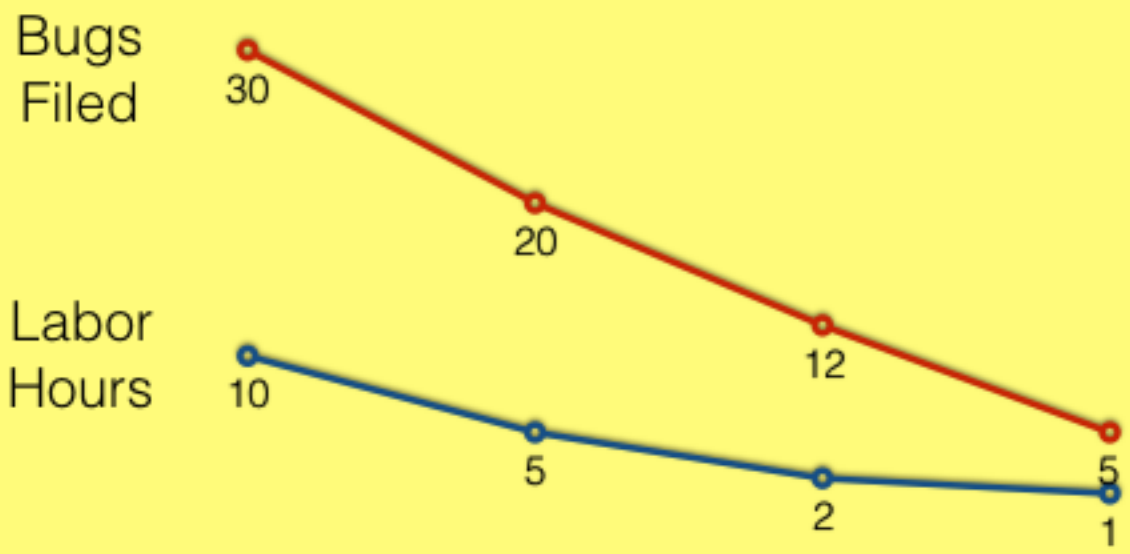
The 2013 failover was a “big batch”

- Took 10+ hours (15 minutes user-visible down-time)
- Required “hands on” by 3 teams.
- Found 30+ “improvements needed”
- Certain people were S.P.O.F.

Needed: “small batch” failovers

- More frequent failovers == smaller accumulation of differences.
- So…. we **F**orce **F**ailovers **F**requently to achieve our “small batches”

Drill Results



Why?

- Each drill “surfaces” areas of improvement.
- Each member of the team gains experience and builds confidence.
- Highlighted automation, documentation, and resource needs.
- Frequency reduces risk!

Other applications of SBP

	Big	Small
Desktop PC Upgrades	All PCs replaced next Thursday	"n" PCs replaced per week

Other applications of SBP

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Desktop PC Upgrades	All PCs replaced next Thursday	"n" PCs replaced per week
New Email Sever	Service disabled for a weekend-long upgrade	Migrate n users each week

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Relationships	Letting frustration build up… then explode	Frequent constructive criticism

Other applications of SBP

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New Email Sever	Service disabled for a weekend-long upgrade	Migrate n users each week
Relationships	Letting frustration build up… then explode	Frequent constructive criticism
Weight Loss	"I'll lose 40 pounds"	"I'll lose 5 pounds, again and again"

(2) The Small Batches Principle

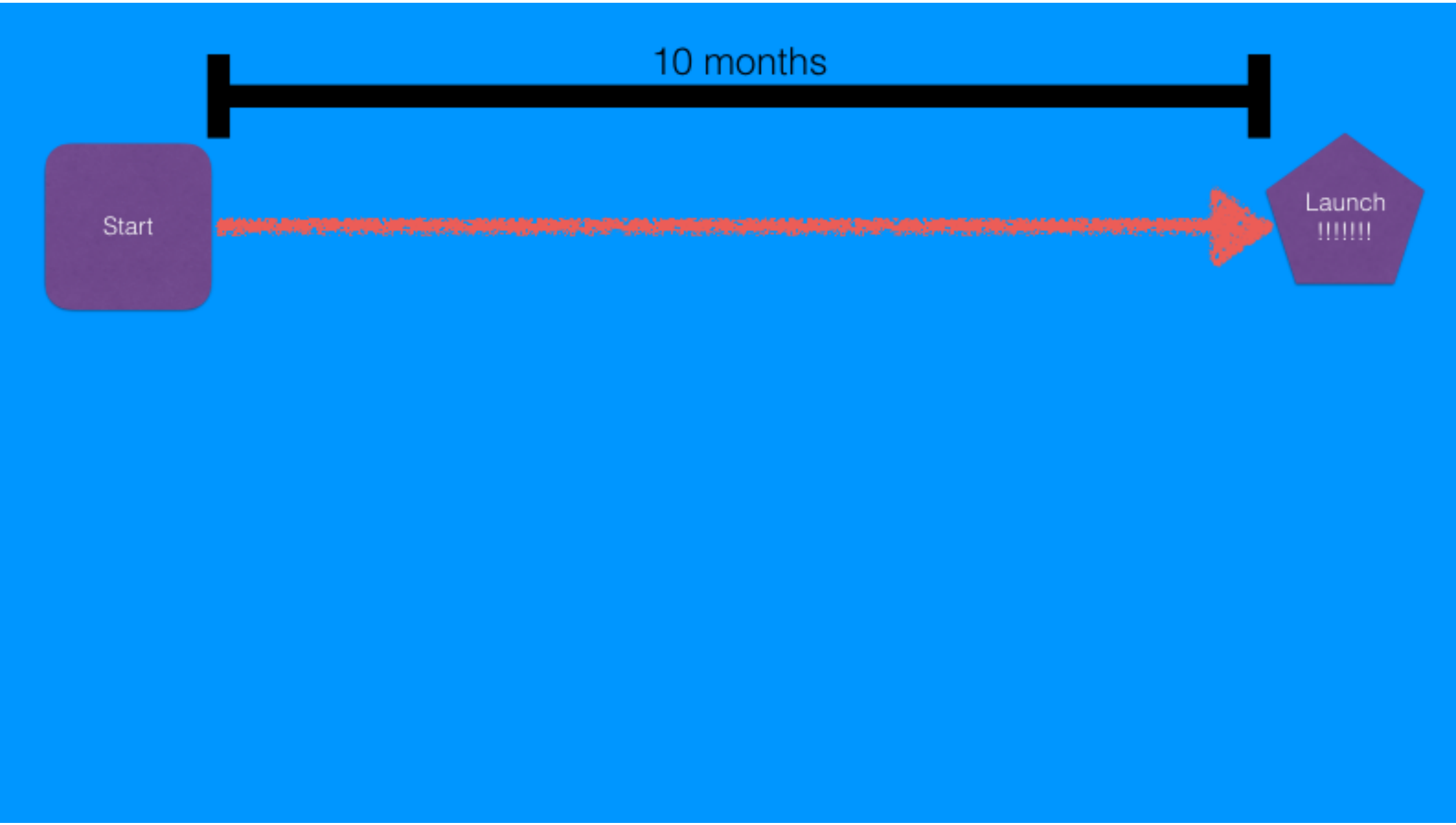
(3) Minimum Viable Product

Minimum Viable Product

Delivering some value sooner is better than all value later.

Minimum Viable Product

10 months


10 months
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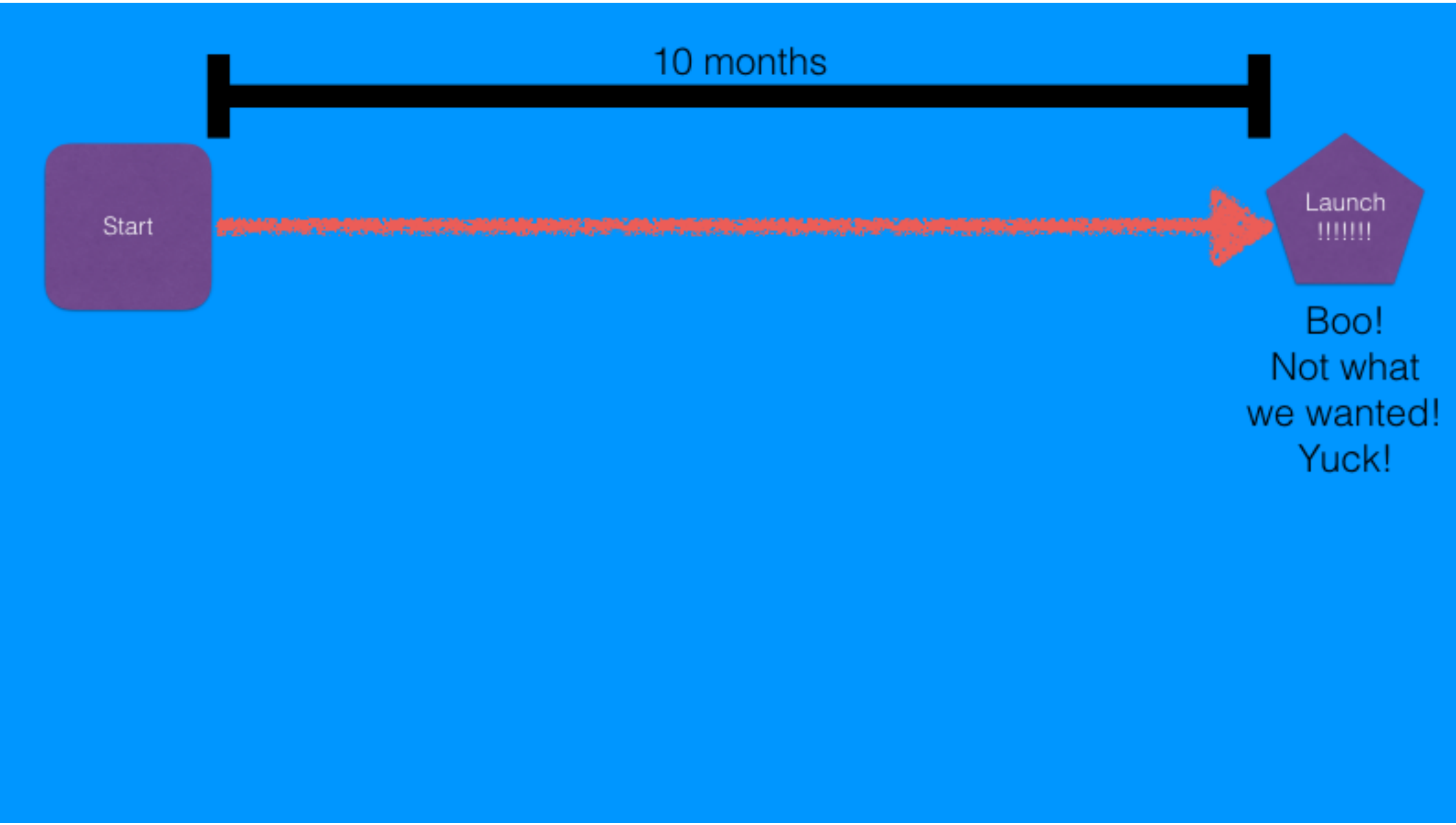
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Boo!
Not what
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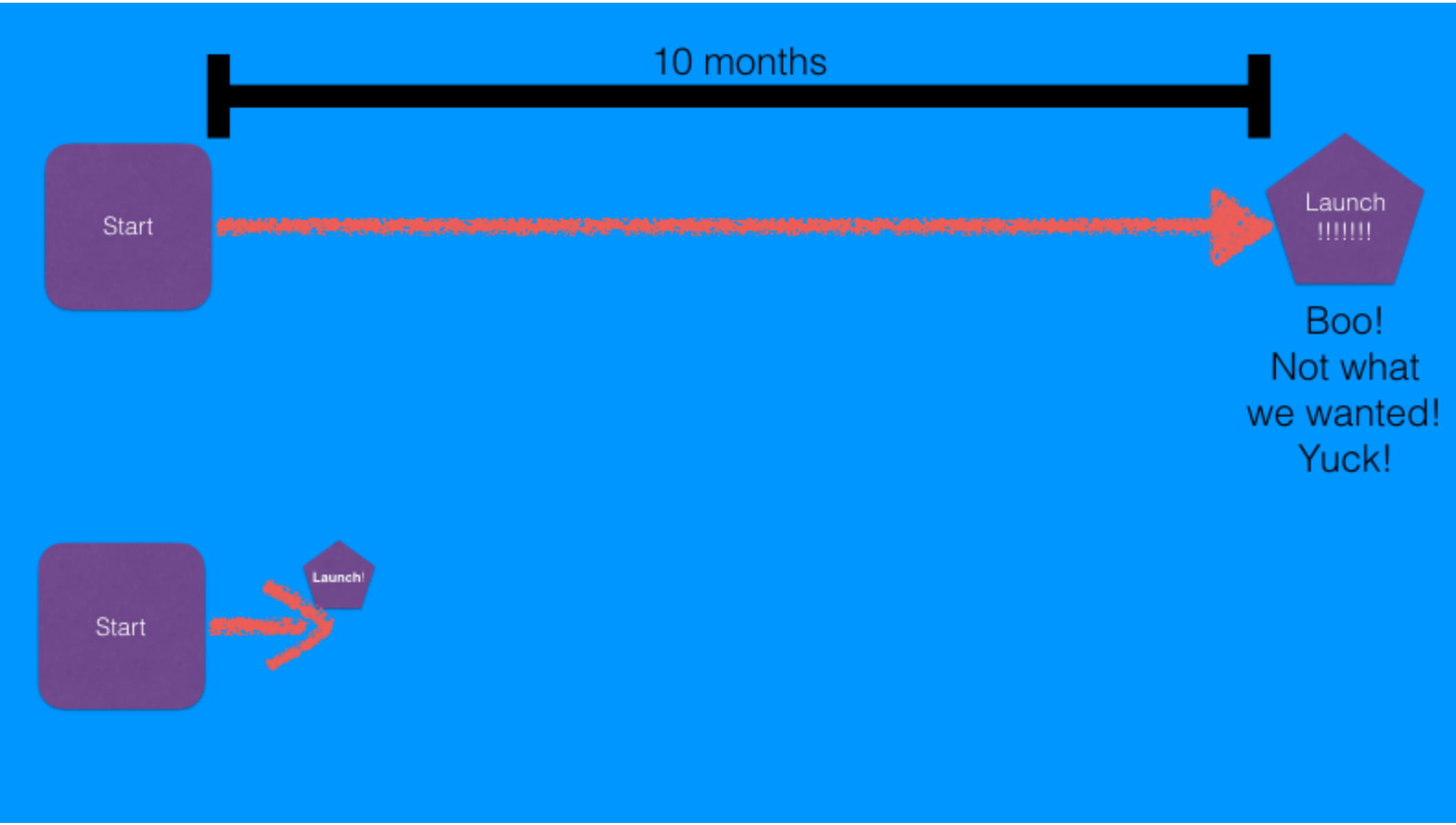
Yuck!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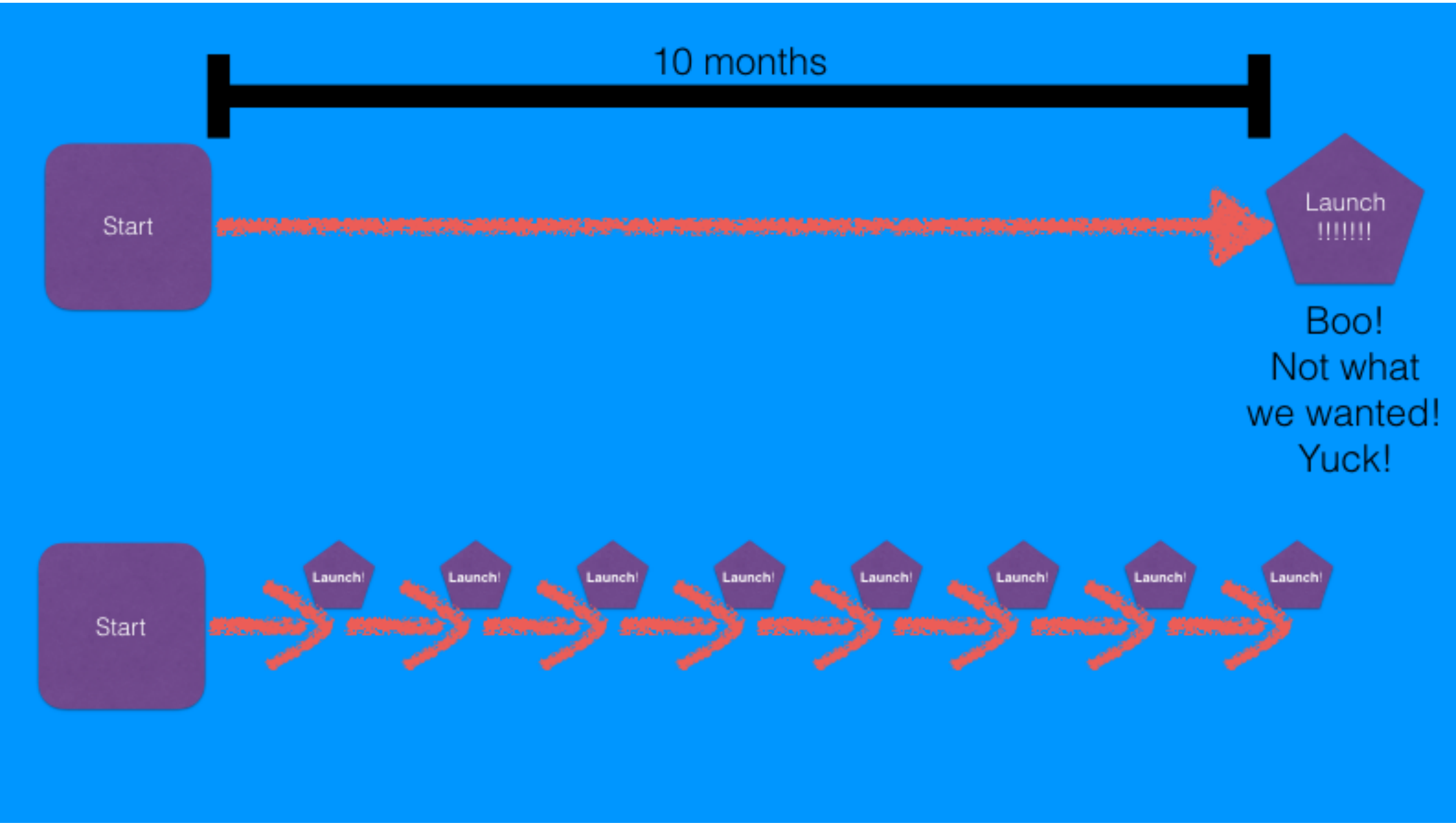
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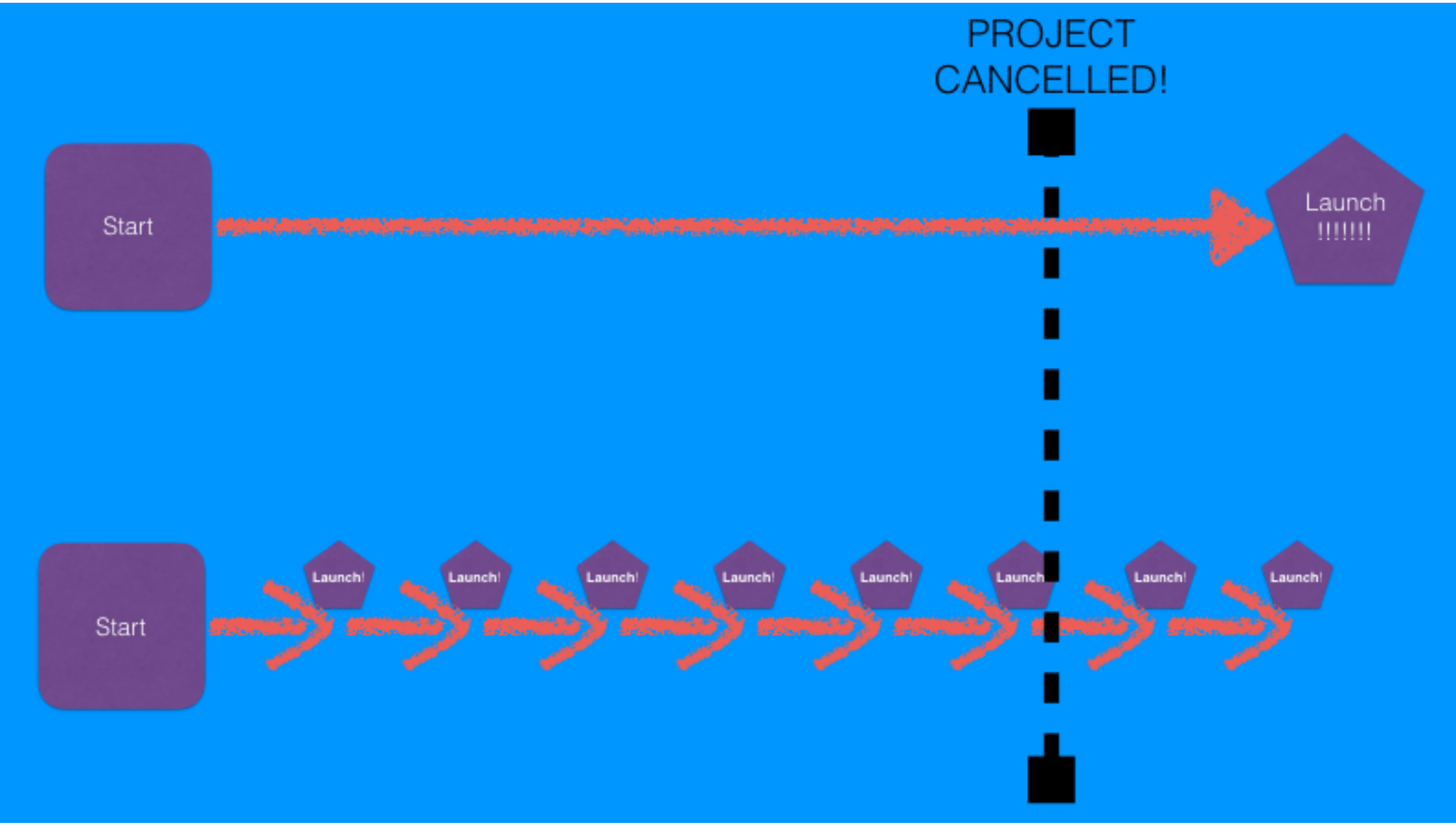
Launch!
Launch!
Launch!

Benefits

- You help people sooner! (“Accelerated Delivery of Value”)
  - One feature *now* is better than all features *later!*
- Earlier Feedback!
  - Validates assumptions.
- A chance to pivot!
  - Users don’t like it? Change direction!
- SREs get a chance to develop operational expertise:
  - Run-book, Upgrade process, Failover practice, Documentation, etc.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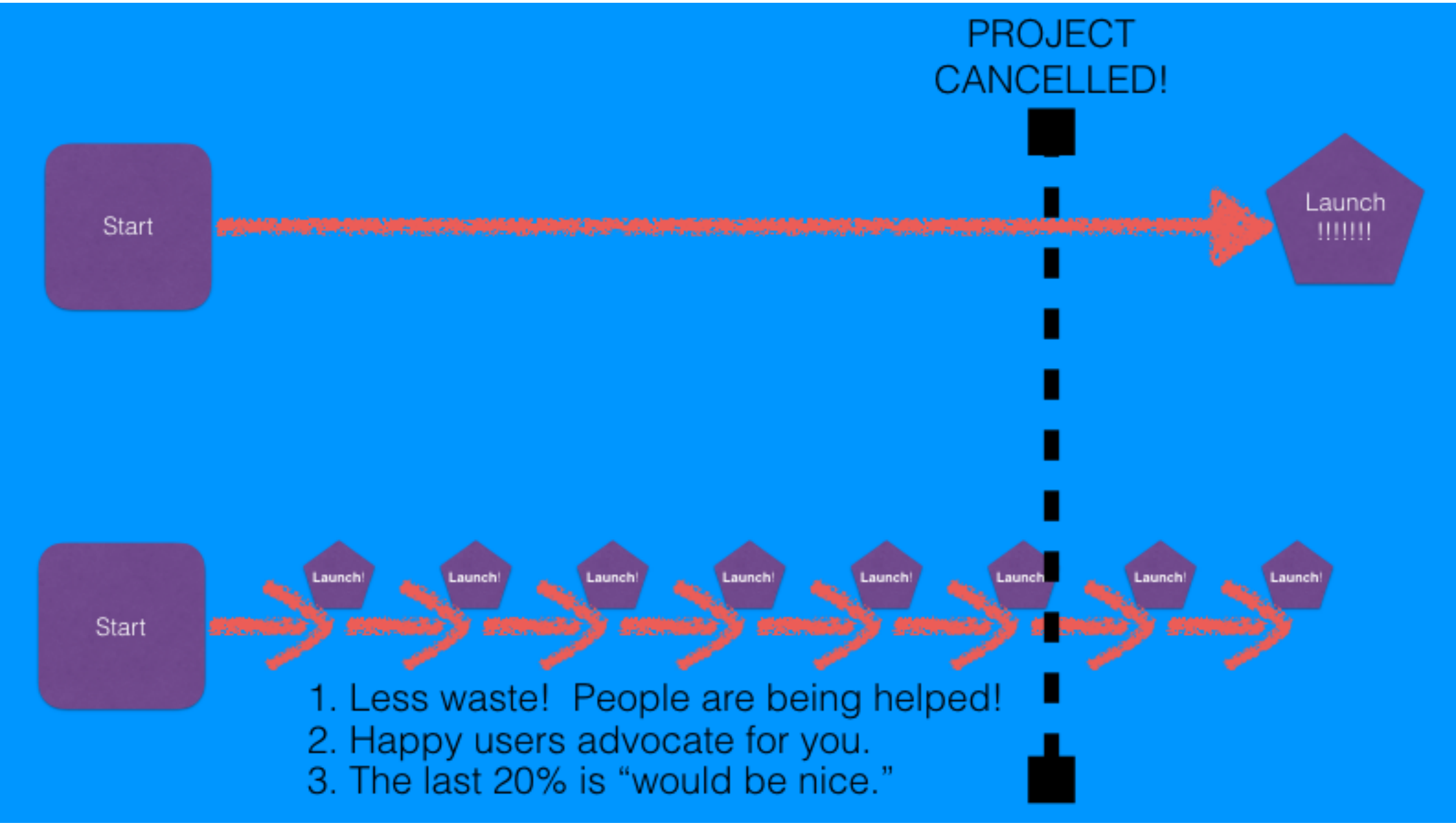
Launch!
Launch!


PROJECT
CANCELLED!
Start
Launch
!!!!!!!
Start
Launch!
Launch!
Launch!
Launch!
Launch!
Launch
Launch!
Launch!
1. Less waste! People are being helped!
2. Happy users advocate for you.
3. The last 20% is “would be nice.”

OS Install Automation

1. Replace “carrying DVD to desktop” with netboot.
   - Only a specific VLAN.
   - No OS customization.
   - No RAID/special NICs.

OS Install Automation

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4. Start Puppet.

OS Install Automation

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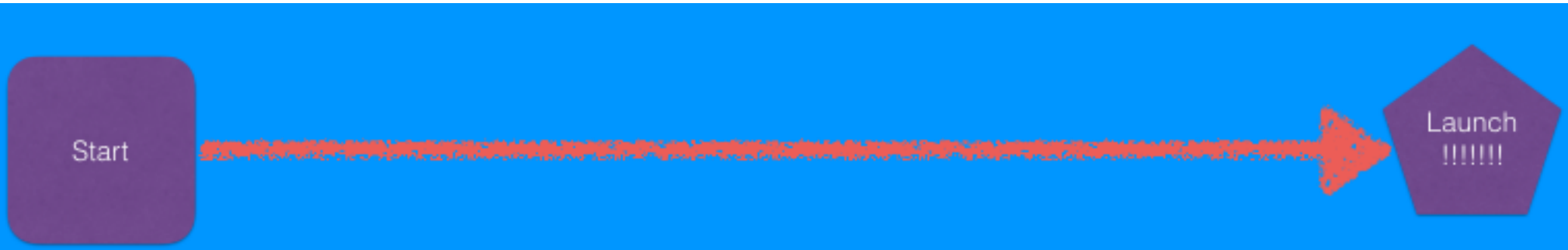
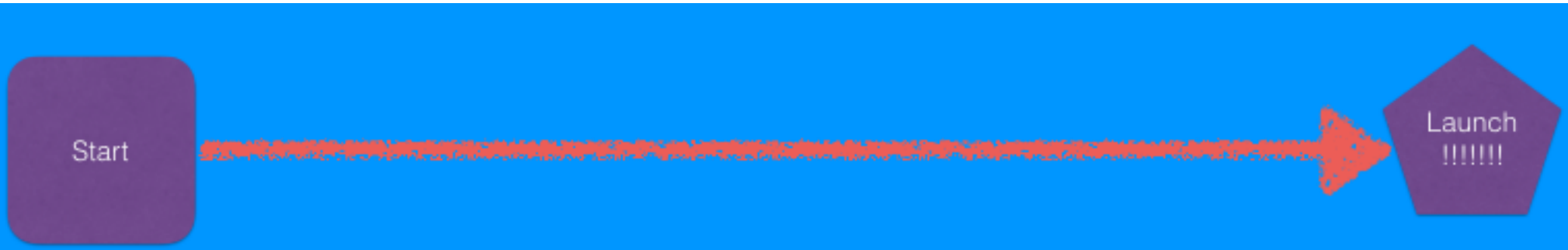
   - Only a specific VLAN.
   - No OS customization.
   - No RAID/special NICs.
2. Eliminate all prompts.
3. Customize OS.
4. Start Puppet.

- Activate for more VLANs.
- Handle RAID controllers.
- Dual NICs.
- Replicate in other buildings.
- Add host to inventory.
- Choice of disk layouts.
- Other operating systems.
- Boot LiveCD.



The Monitoring Project

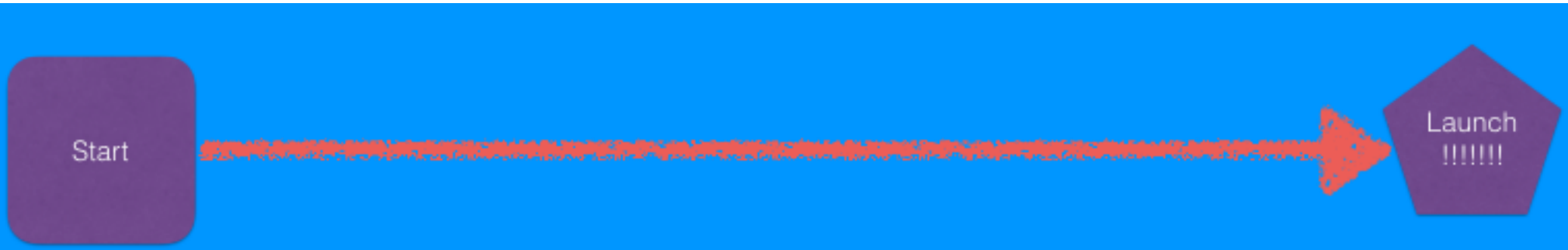
6 months in:



The Monitoring Project

6 months in:

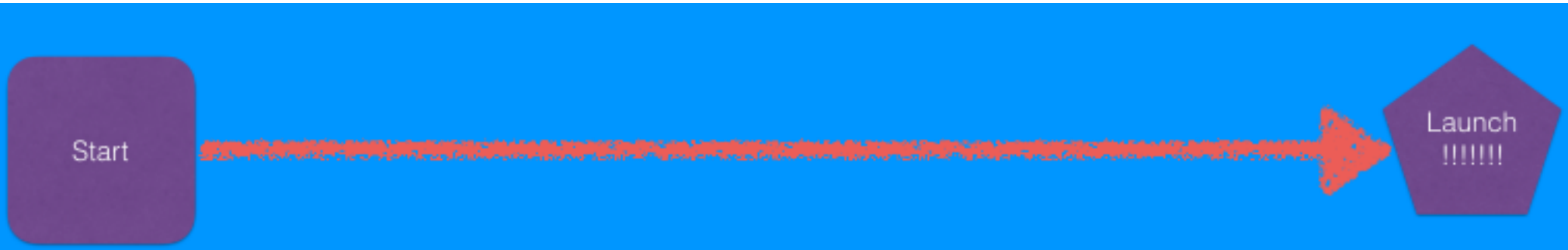
- A lot of debates.



The Monitoring Project

6 months in:

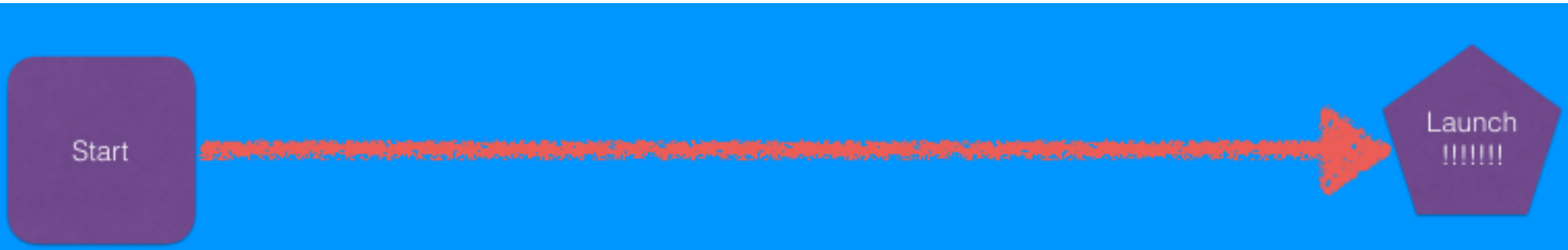
- A lot of debates.
- A lot of disagreements.



The Monitoring Project

6 months in:

- A lot of debates.
- A lot of disagreements.
- A lot of specification documents.



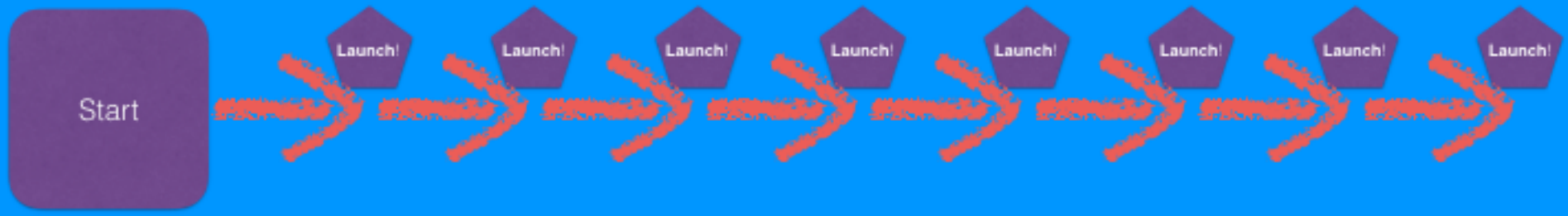
The Monitoring Project

6 months in:

- A lot of debates.
- A lot of disagreements.
- A lot of specification documents.
- Nothing is being monitored.

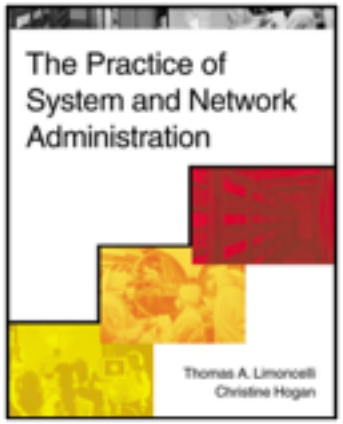
The Monitoring Project II

1. Install open source system.
2. Monitor 1 server.
3. Monitor Routers.
    1. Discover SNMP disabled.
4. No dashboards?
5. Change software.
6. Focus on self-service dashboards.
7. Monitor more devices.
8. …
9. …
10. ….
11. ….
12. ….
13. ….
14. ….
15. ….



The Book Project

2001 2006 2014 2016



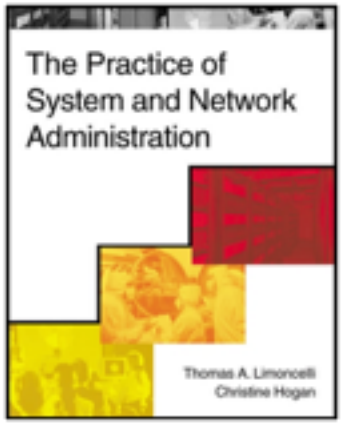
2001

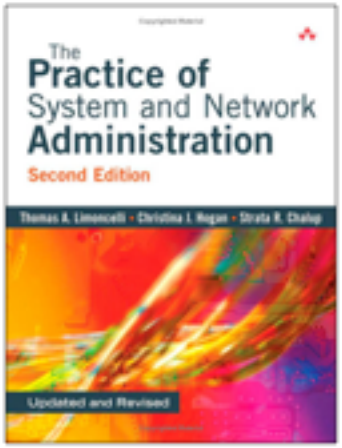
2006

2014

2016

2nd Edition





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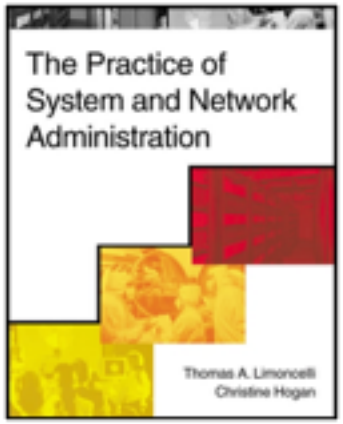
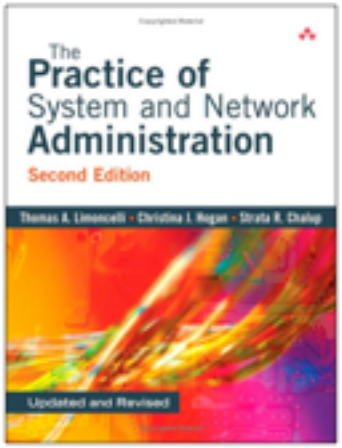
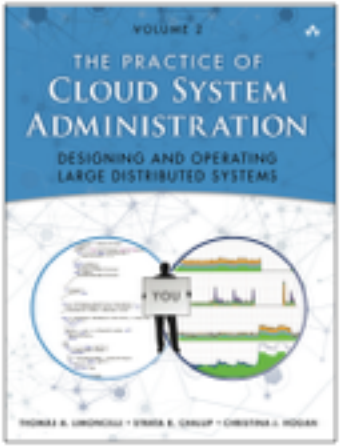
2nd Edition

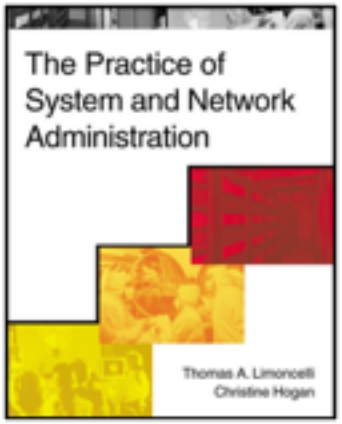




"Volume 2"
SRE/Cloud/
Web



2001



2006

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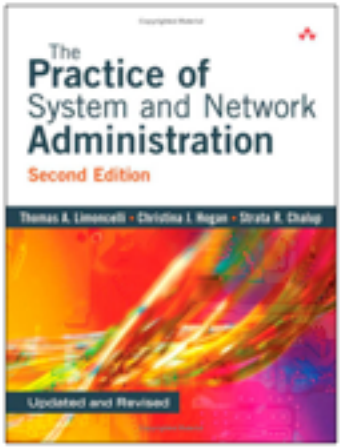

2014

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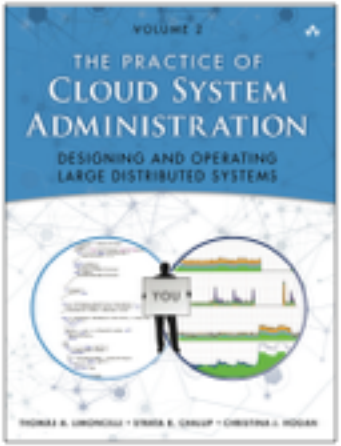
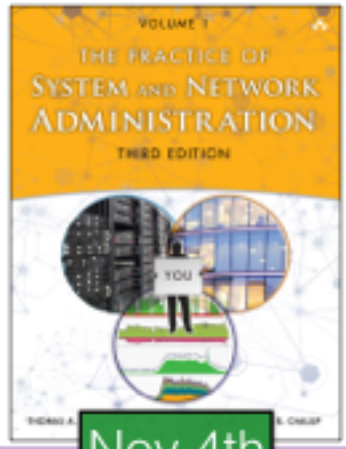


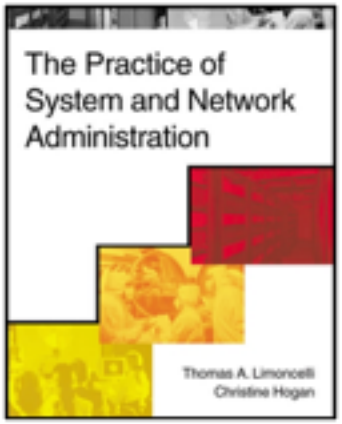
2016

3rd Edition



Nov 4th

2001



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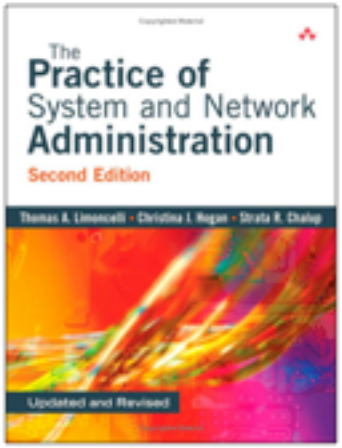

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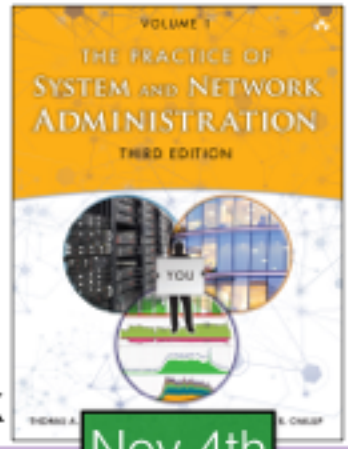

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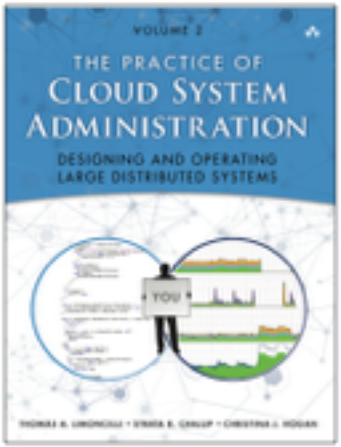
Enterprise/
IT/Helpdesk

Nov 4th

"Volume 2"
SRE/Cloud/
Web



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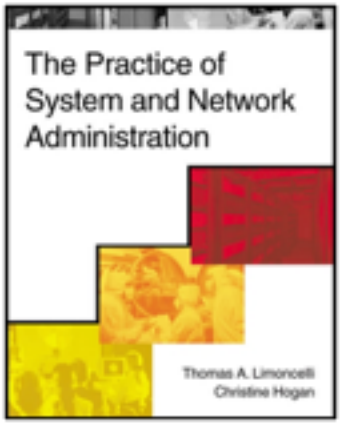

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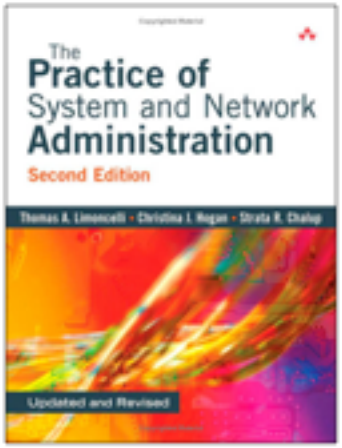

3rd Edition

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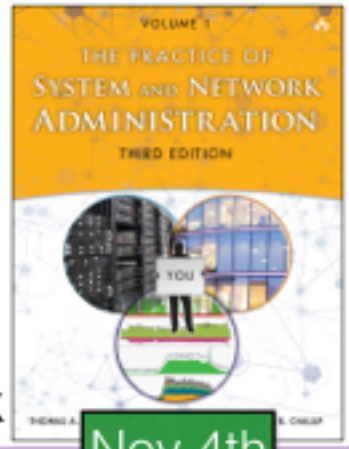
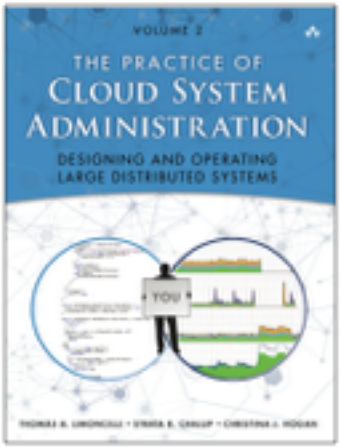
Enterprise/
IT/Helpdesk



Nov 4th

"Volume 2"
SRE/Cloud/
Web



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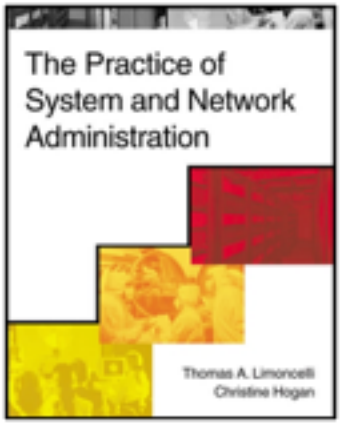
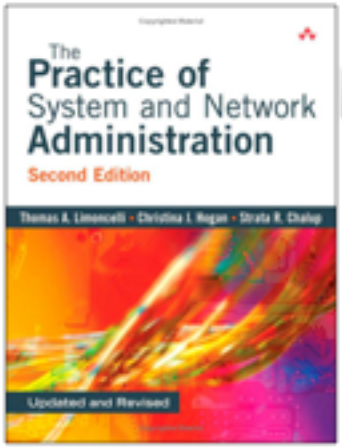


CVS

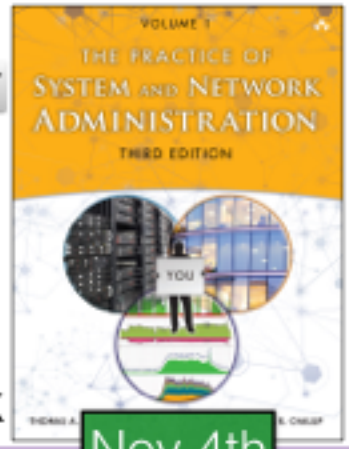
2nd Edition



SubVersion

3rd Edition

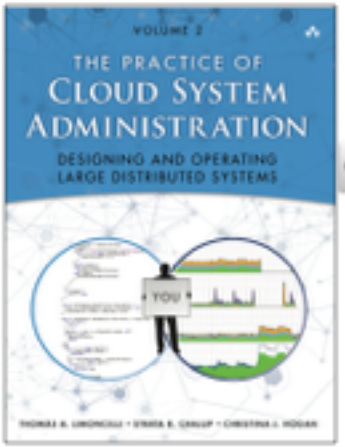
GIT



"Volume 1"
Enterprise/
IT/Helpdesk

Nov 4th

"Volume 2"
SRE/Cloud/
Web



GIT

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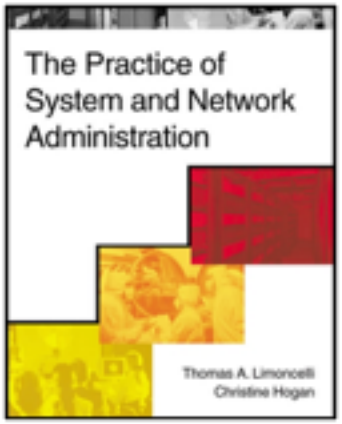

CVS

LaTeX

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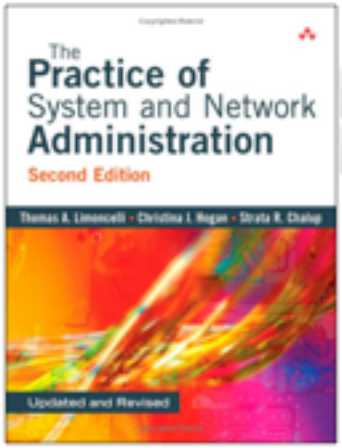


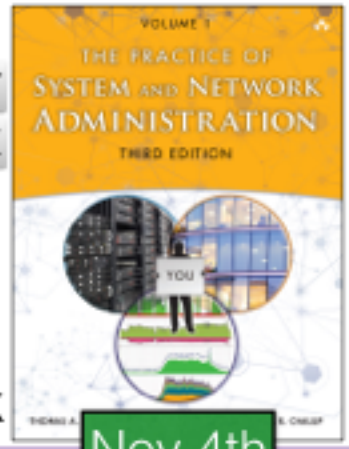
SubVersion

LaTeX

3rd Edition

GIT

LaTeX



"Volume 1"
Enterprise/
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Nov 4th

"Volume 2"
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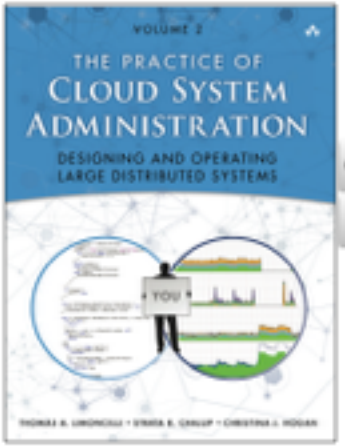

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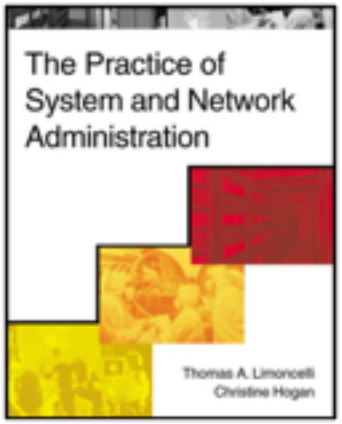
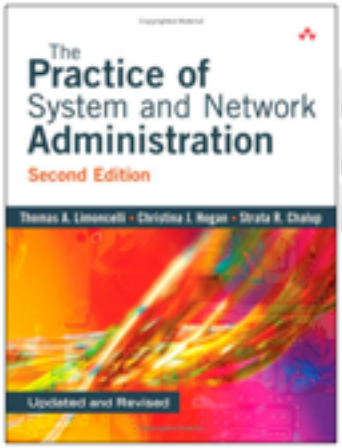


CVS
LaTeX
Make

2nd Edition

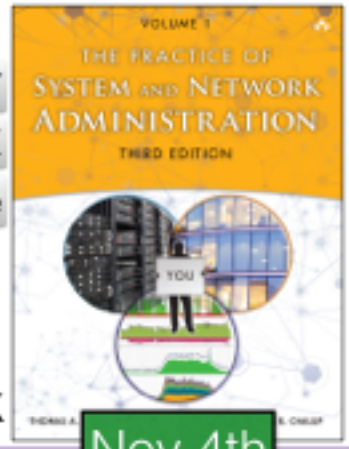


SubVersion
LaTeX
Make

3rd Edition

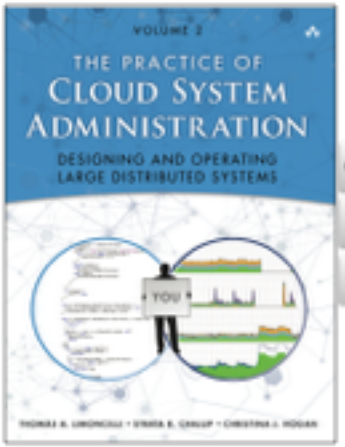
GIT
LaTeX
Make

"Volume 1"
Enterprise/
IT/Helpdesk

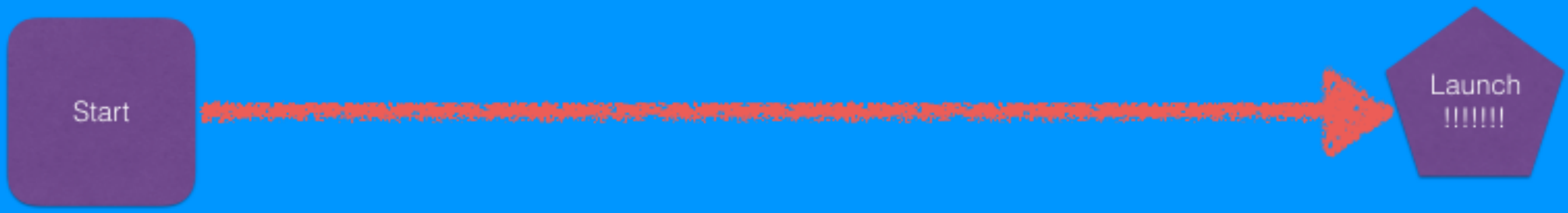


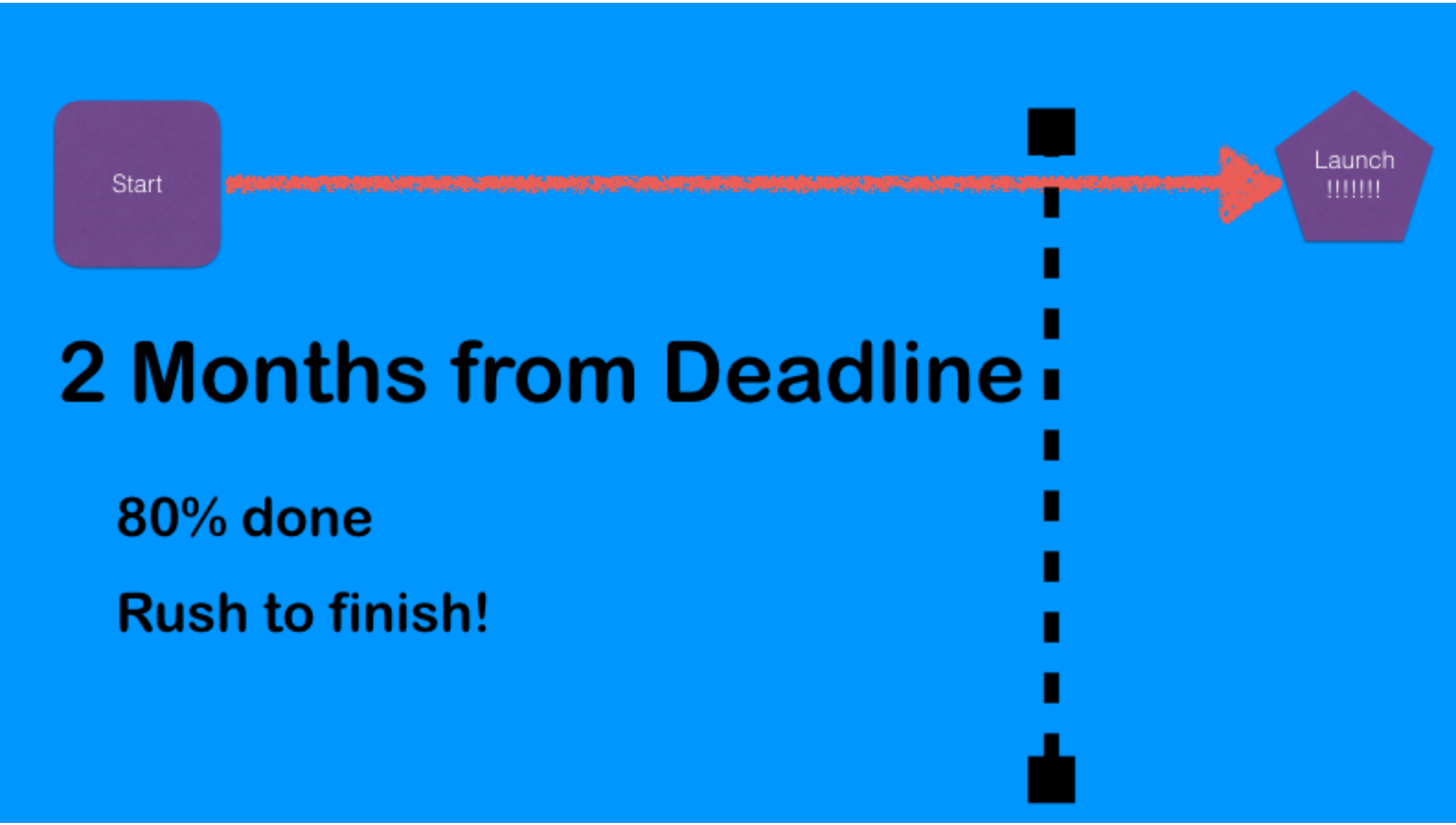
Nov 4th

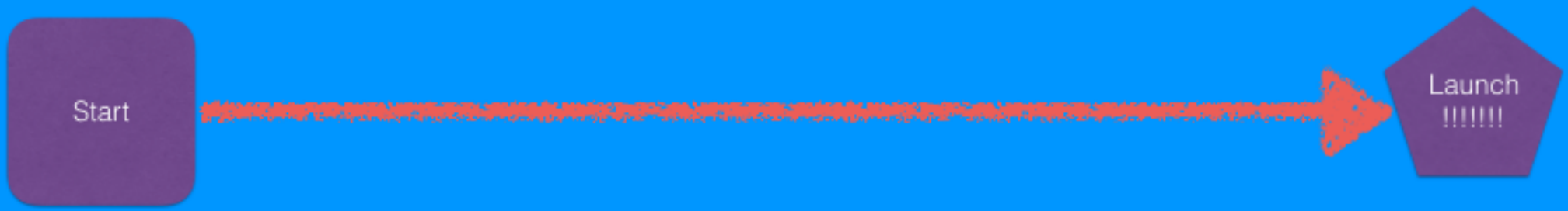
"Volume 2"
SRE/Cloud/
Web



GIT
LaTeX
Make

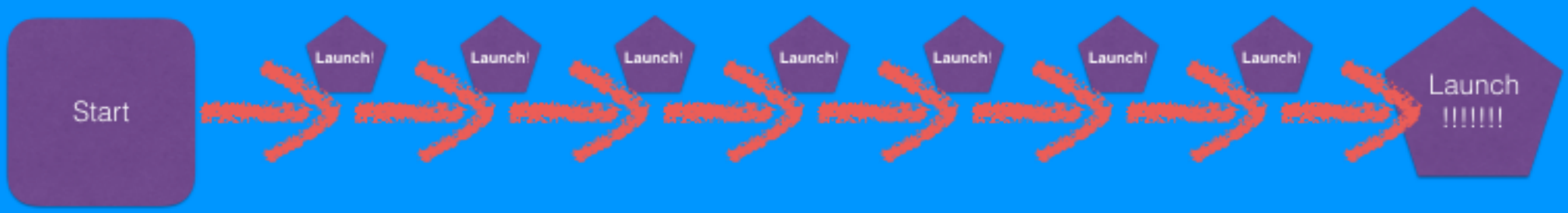

Start
Launch
!!!!!!!


Start
Launch
!!!!!!!
2 Months from Deadline
80% done
Rush to finish!



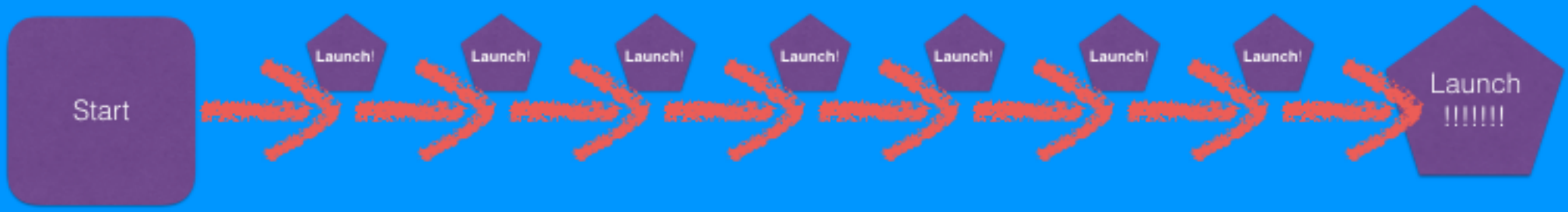
3rd Edition Goals

1. Fix Chapter Order
2. New chapters (22)
3. Replaced outdated chapters (6)
4. Update all other chapters



Project Phases

1. Fix Chapter Order
2. New chapters (22)
3. Replaced outdated chapters (6)
4. Update all other chapters



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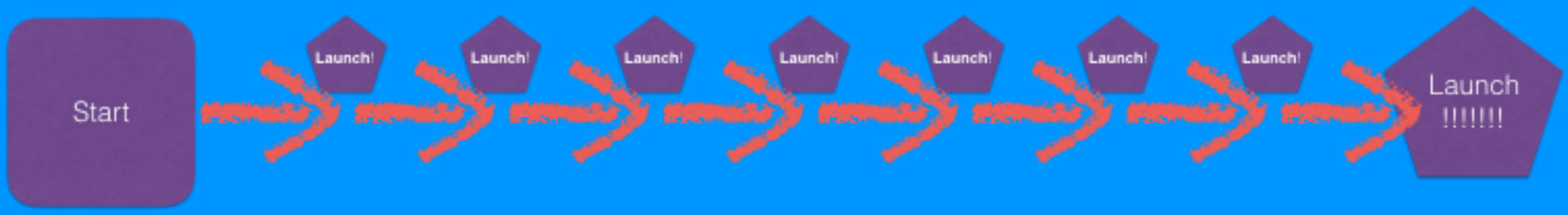

Project Phases

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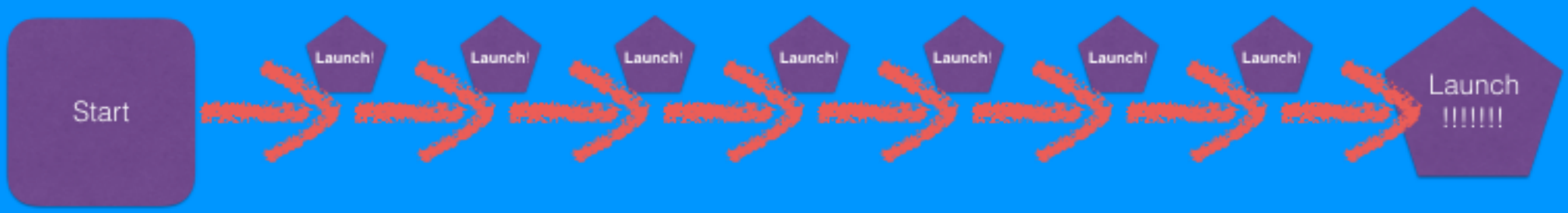

Project Phases

1. Fix Chapter Order
2. New chapters (22)
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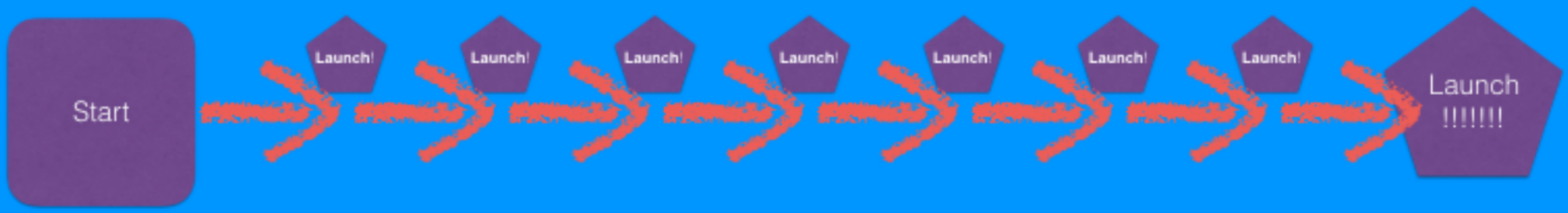
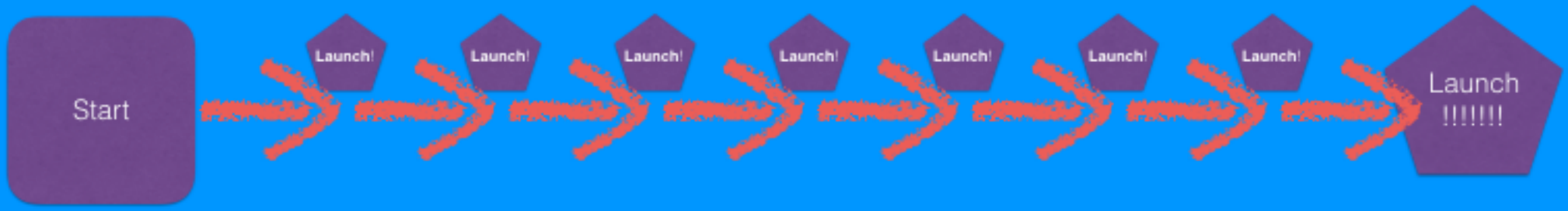
4. Update the other chapters



Project Phases

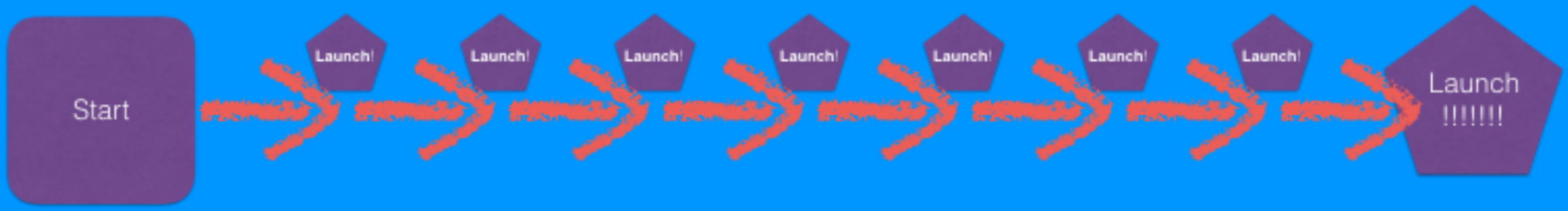
1. Fix Chapter Order
2. New chapters (22)
3. ~~Replaced outdated chapters (6)~~
4. Update the other chapters



Project Phases

1. Fix Chapter Order
2. New chapters (22)
3. Replaced outdated chapters (6)
4. Update the other chapters

HINT!

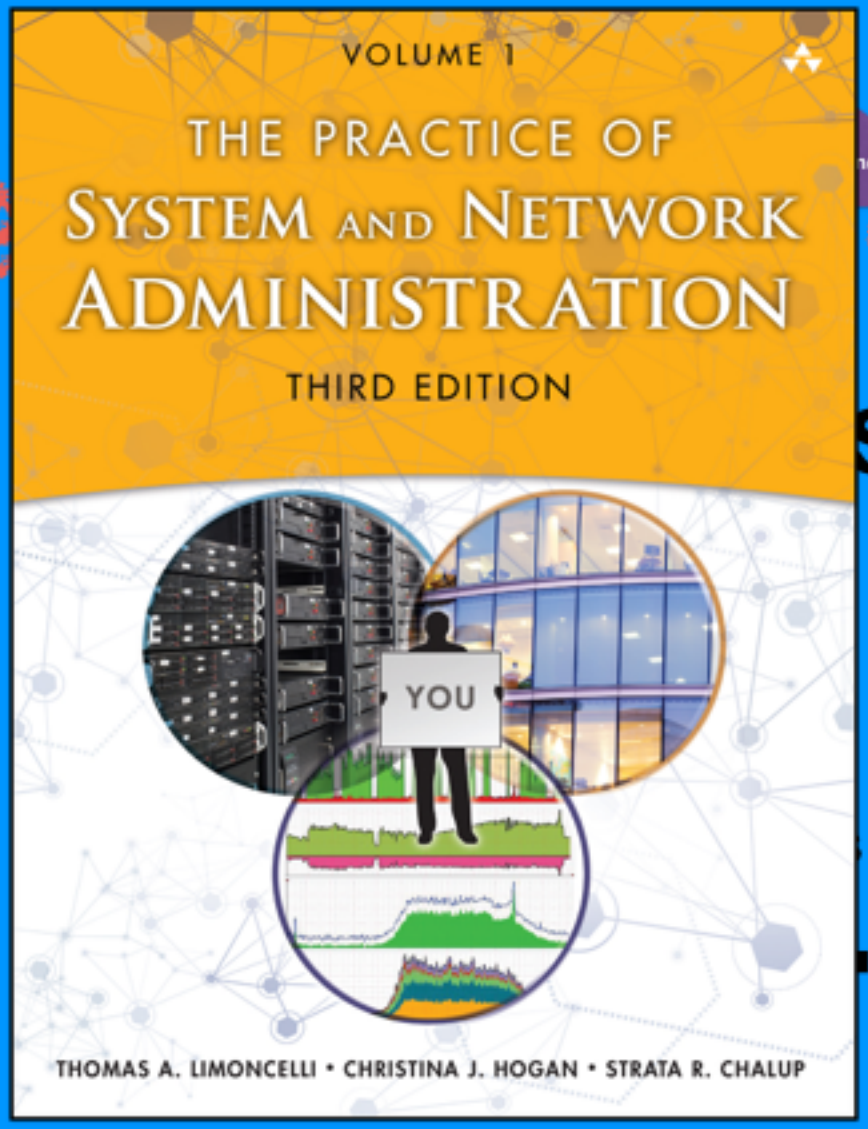


Project Phases

1. Fix Chapter Order
2. New chapters (22)
3. Replaced outdated chapters (8)
4. Update the other chapters

Start

Launch!



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Launch!!!!!!!

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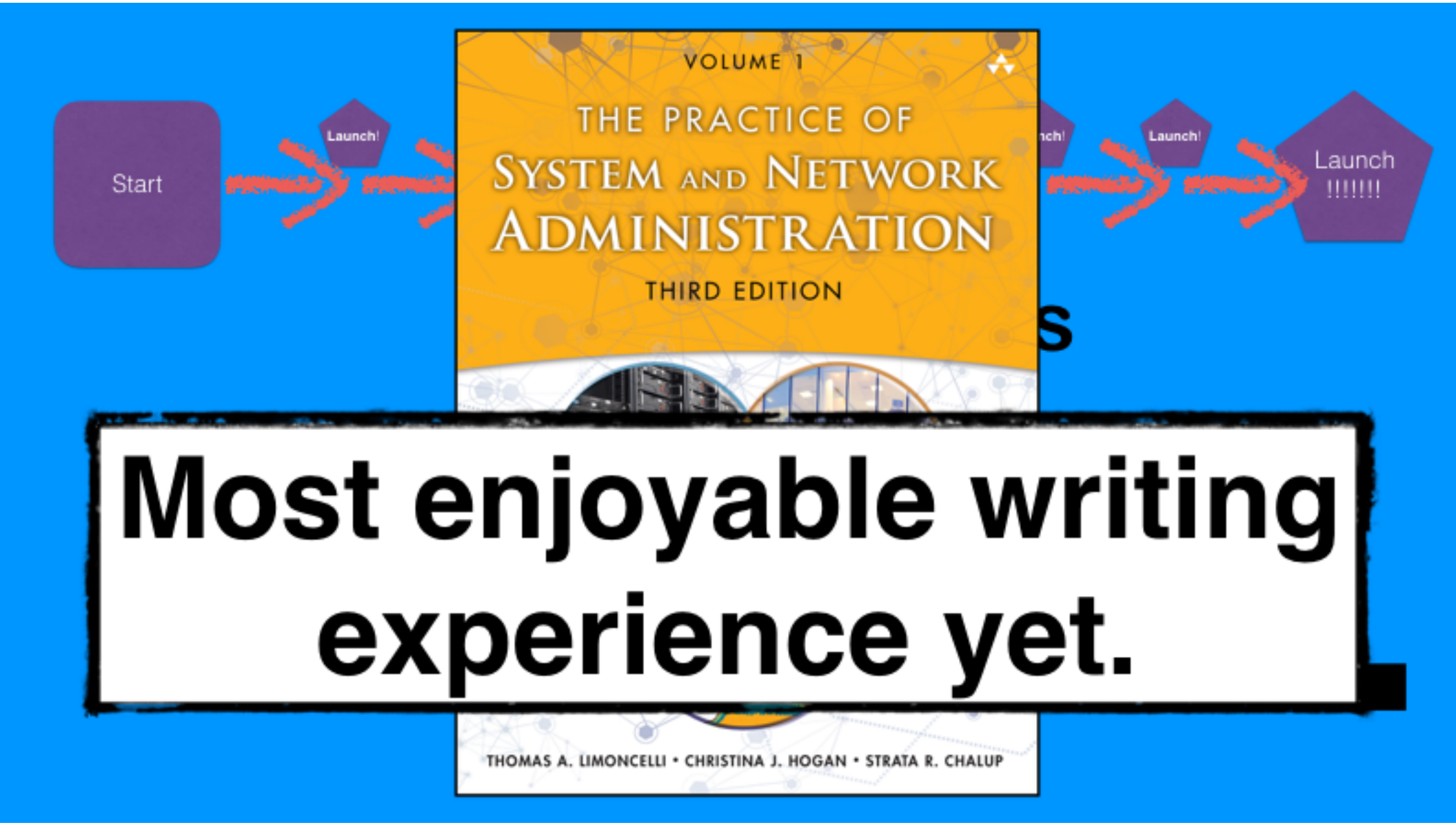
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(3) Minimum Viable Product

Summary

The Three Ways of DevOps:
Improves Complex Process
- Software Engineering
- Support Escalations
- Restaurant Logistics
- Product Fulfillment
- New Employee Onboarding

Small Batches Principle:
Reduce Risk/Better Quality
- Failovers
- Desktop PC Upgrades
- Migrating Users
- Relationships
- Losing Weight

Minimum Viable Product:
Deliver Value Faster
- Software Releases
- OS Installation
- Controversial Projects
- Unclear Requirements
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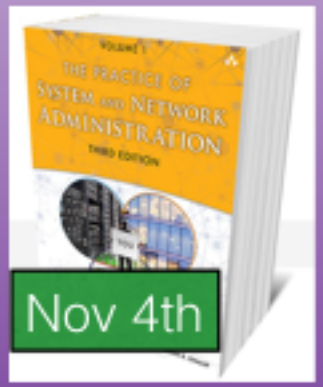

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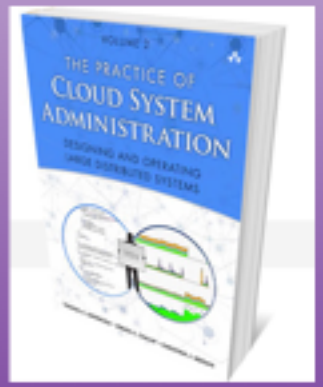

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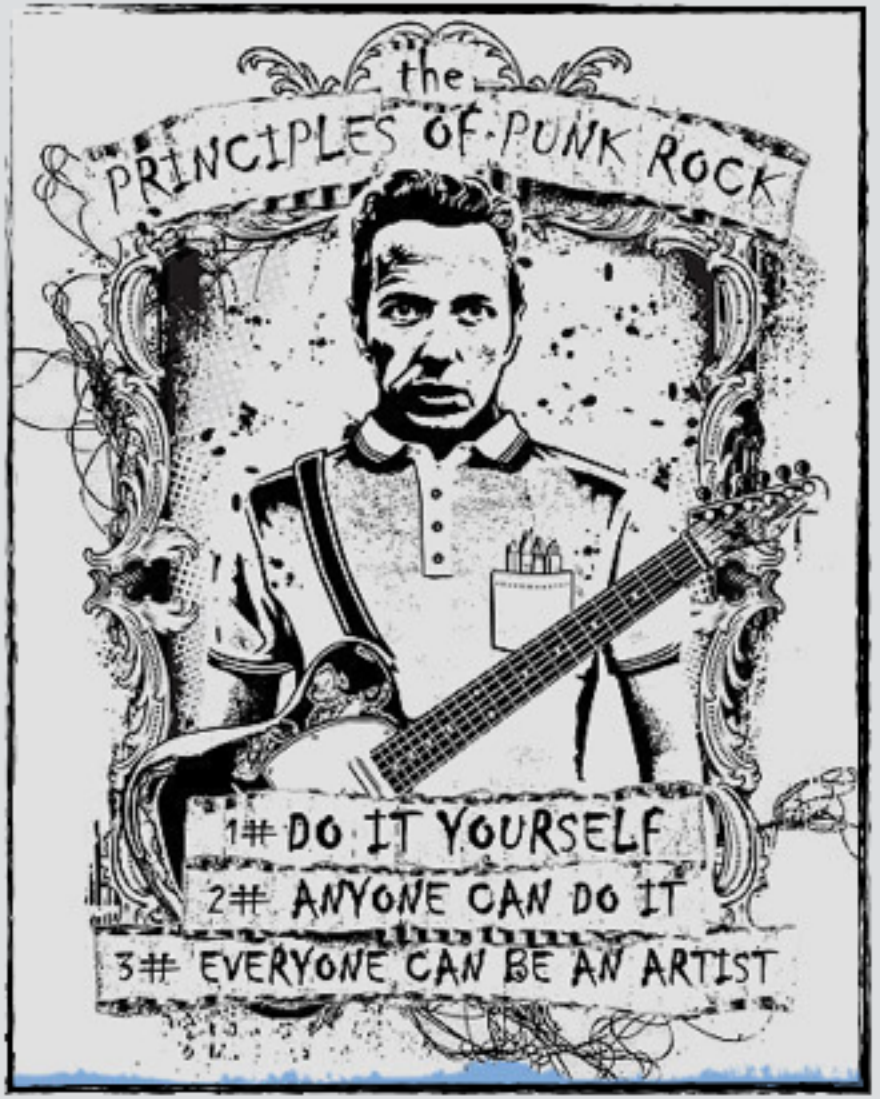
Punk Rock

DEV
OPS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PRINCIPLES OF PUNK ROCK
1# DO IT YOURSELF
2# ANYONE CAN DO IT
3# EVERYONE CAN BE AN ARTIST

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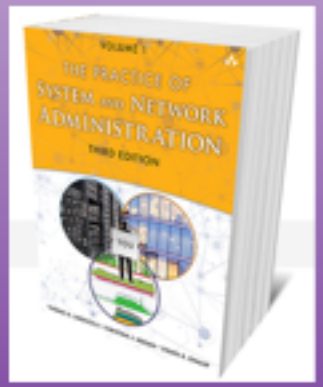

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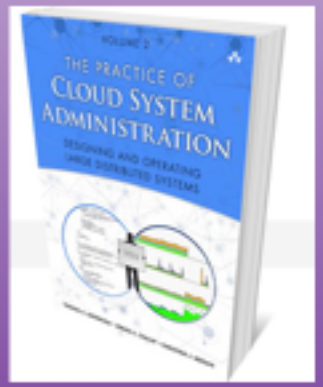

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