# How to Replace a Jet Engine of Your System In-Flight

Aysylu Greenberg, Software Engineer, *Google*

# Aysylu Greenberg

Google

@aysylu22

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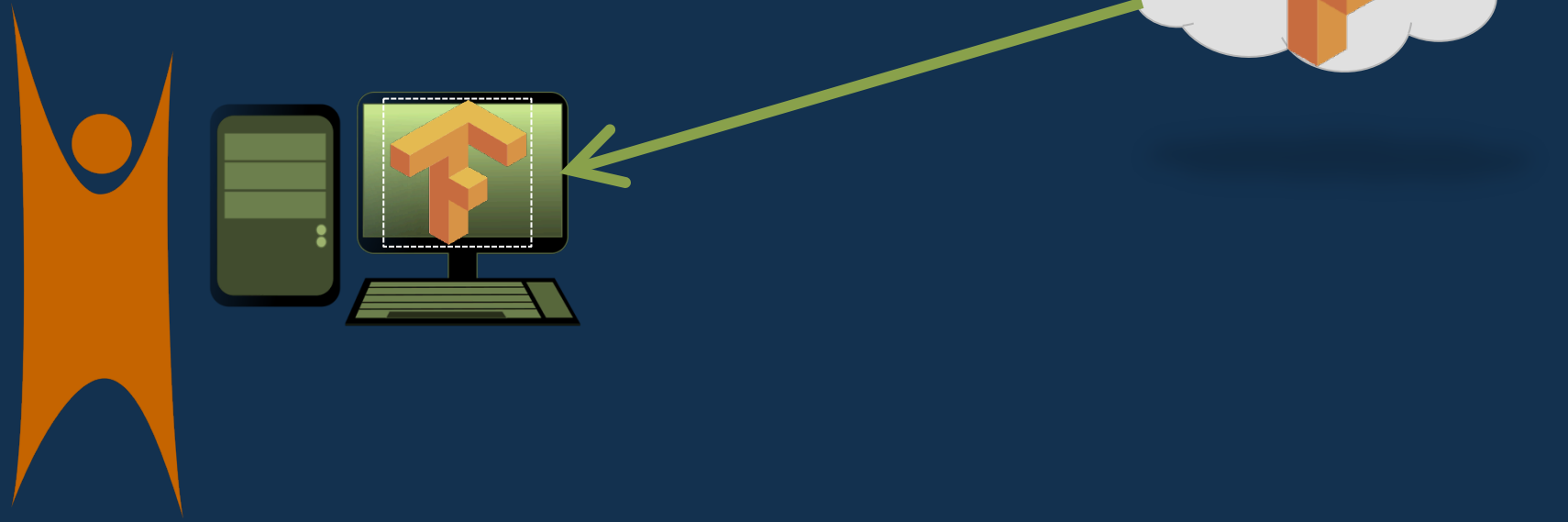
# Build System Story

# Towards Distributed Build System

# Towards Distributed Build



# Towards Distributed Build

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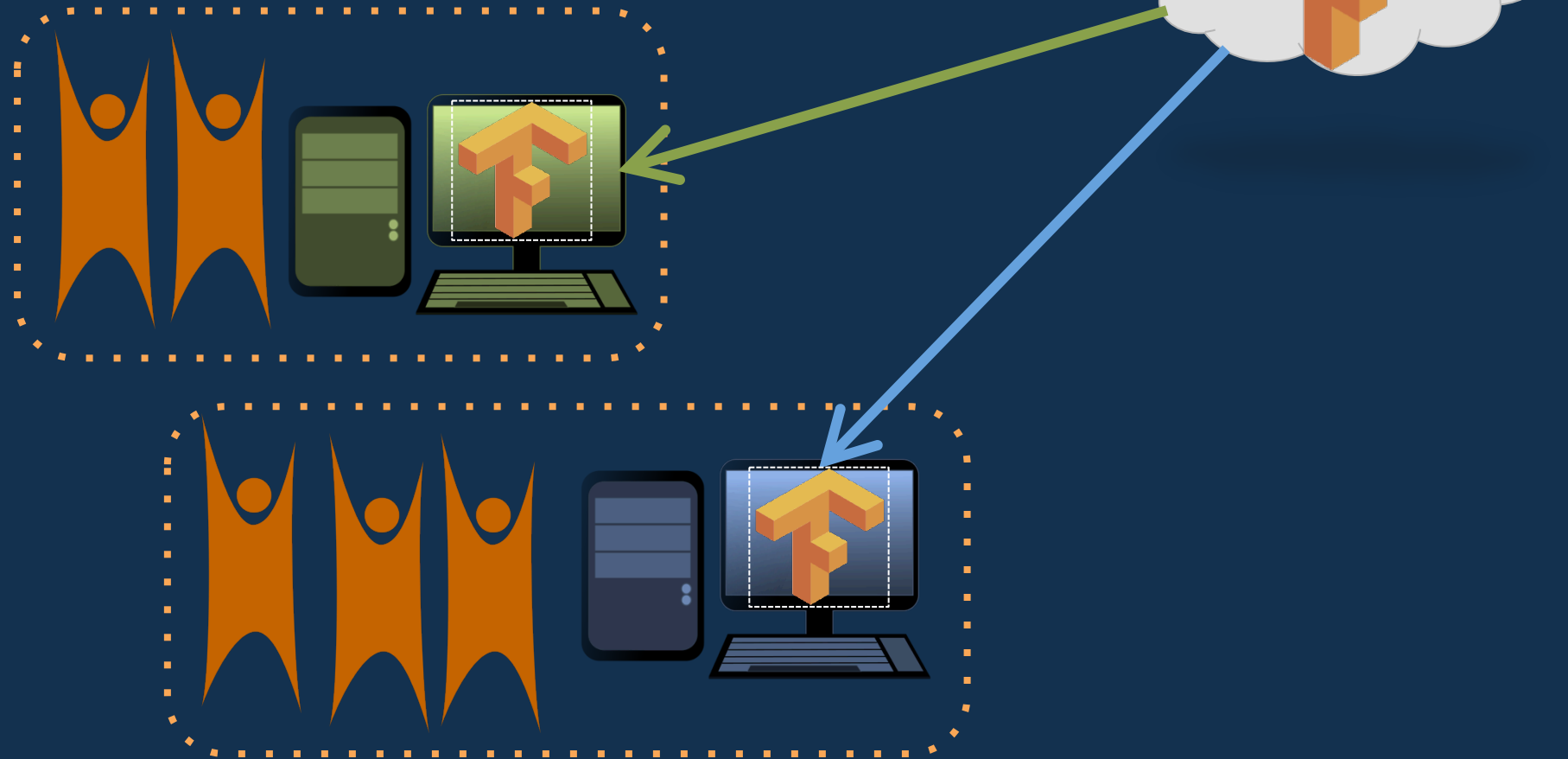

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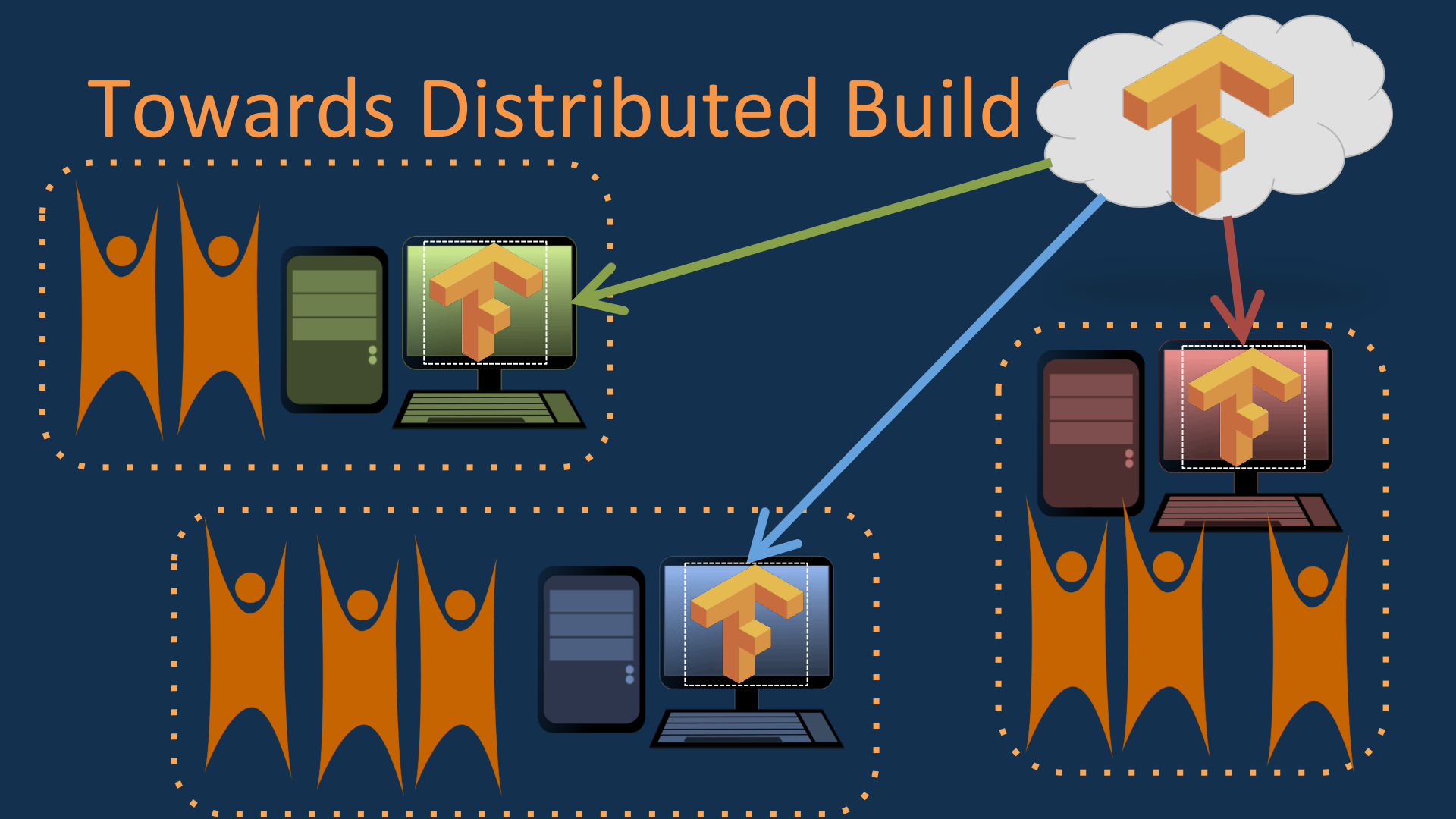

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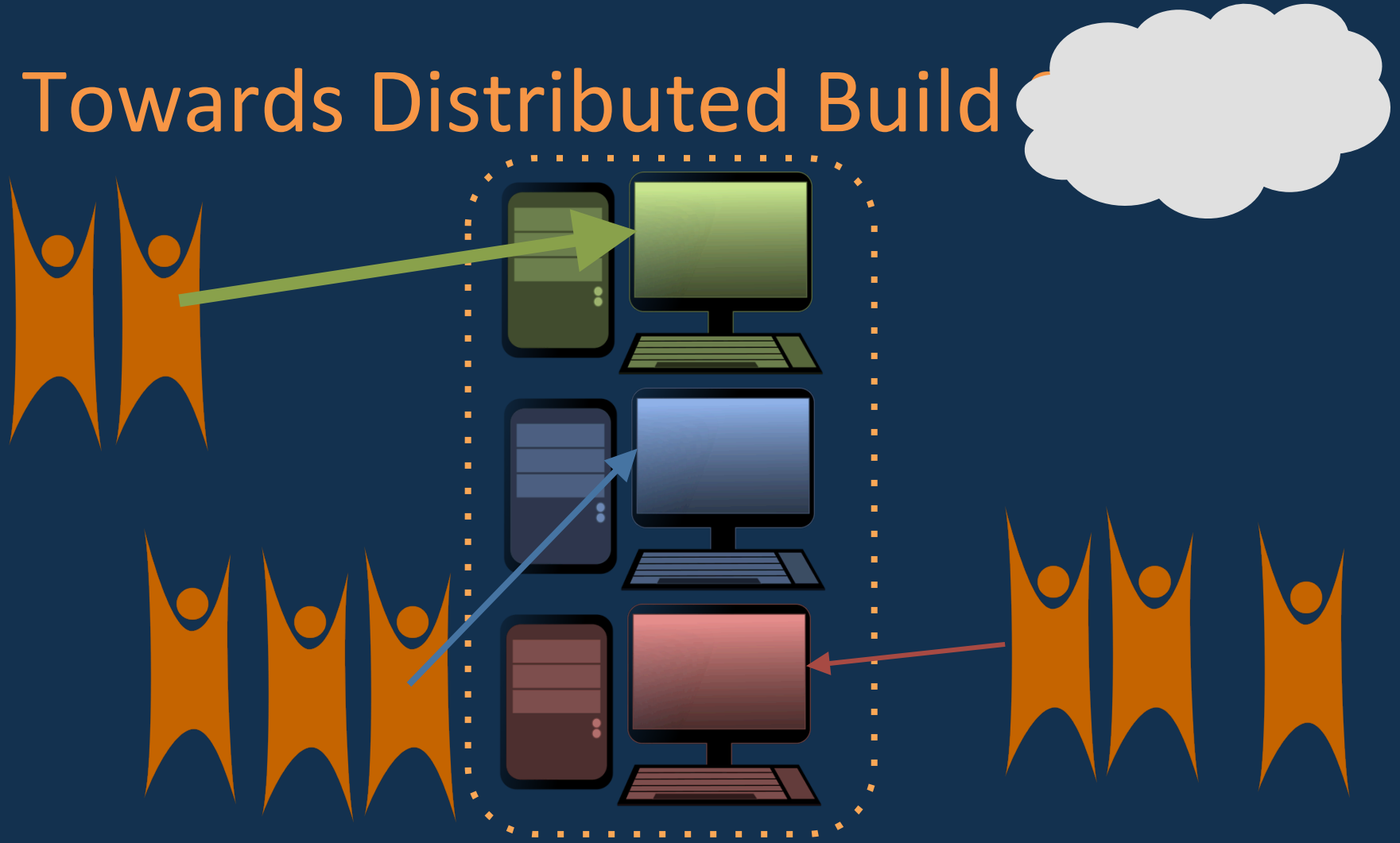

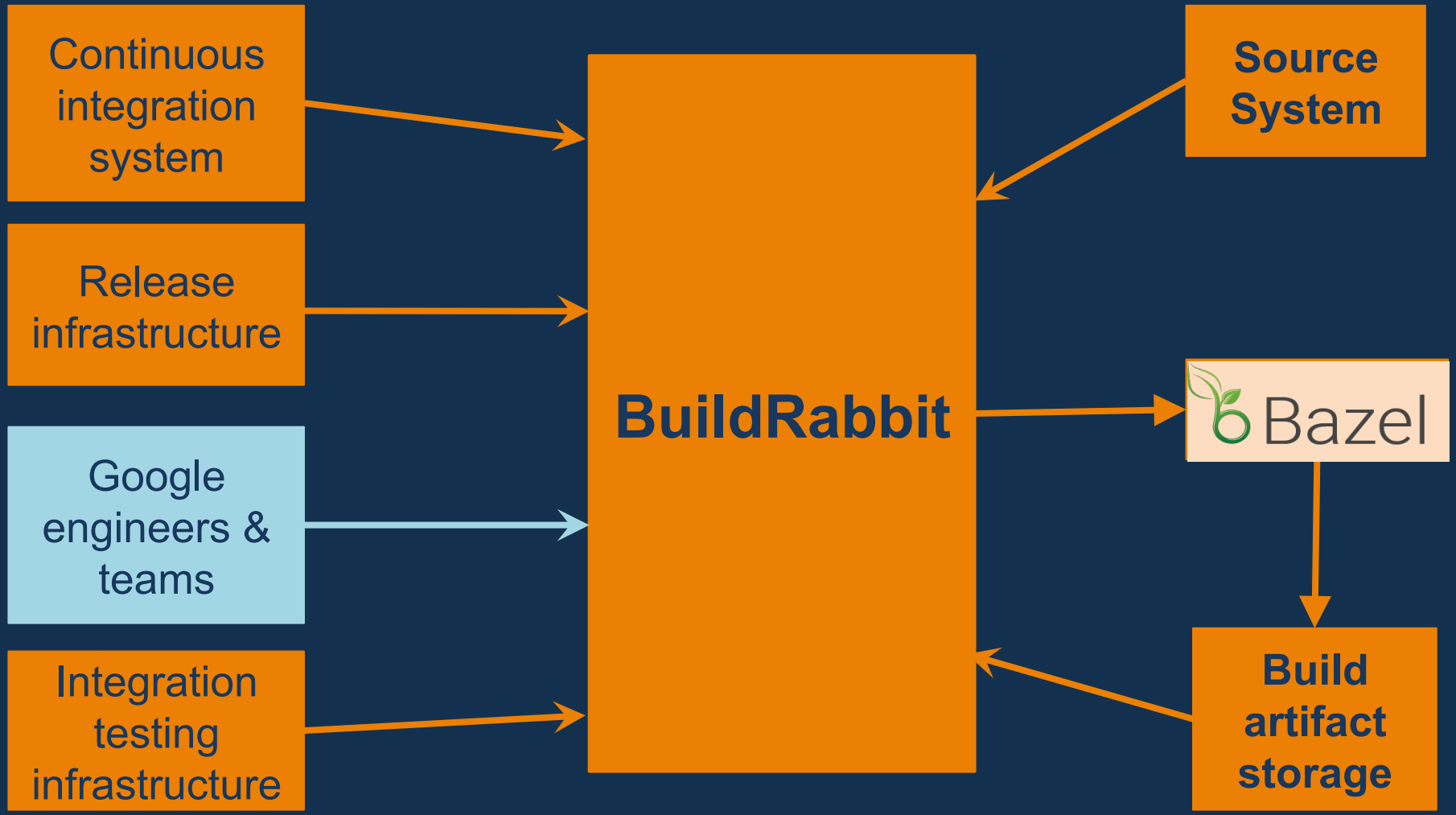
Continuous integration system
Release infrastructure
Google engineers & teams
Integration testing infrastructure
BuildRabbit
Source System
Bazel
Build artifact storage

# Google Scale

- Engineers: >30,000 developers in 40+ offices

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- Commits: 15K by humans + 30K by robots/day
- Source code: 2 billion LOC
- Builds and tests: 5M per day through BuildRabbit
- Petabytes of output artifacts

https://thetravelintern.com/hangzhou-things-to-do/

# Architecture Upgrade

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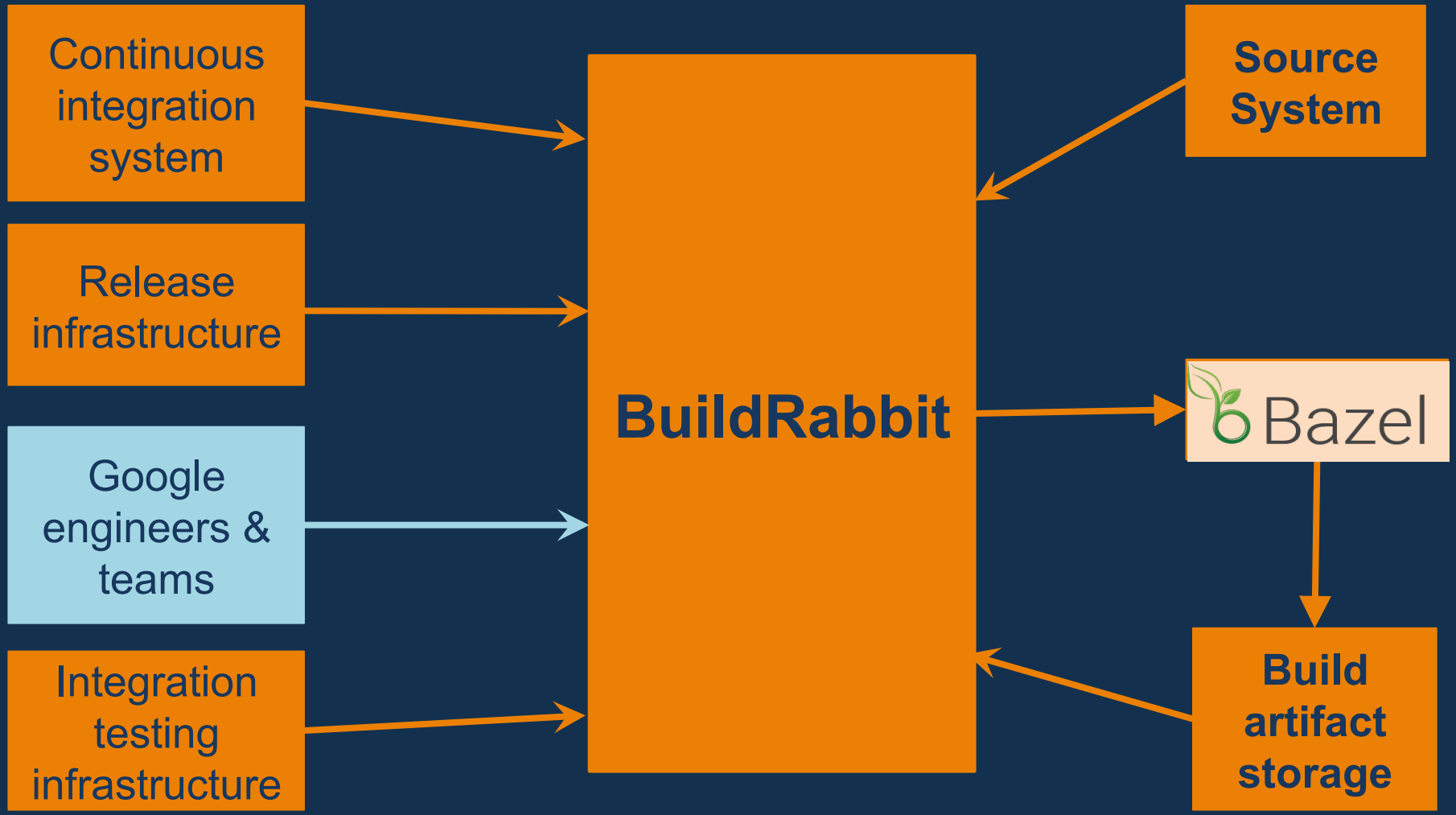
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https://en.wikipedia.org/wiki/File:Helicopter_aerial_refueling.jpg

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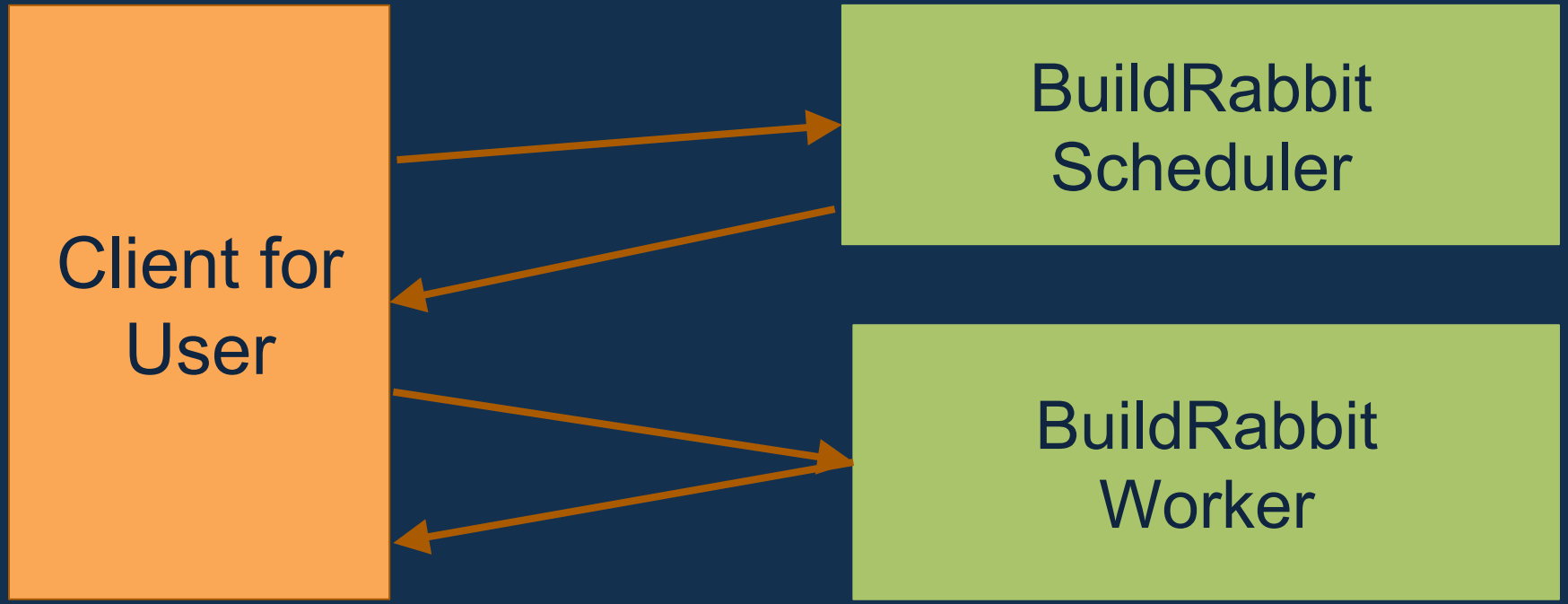
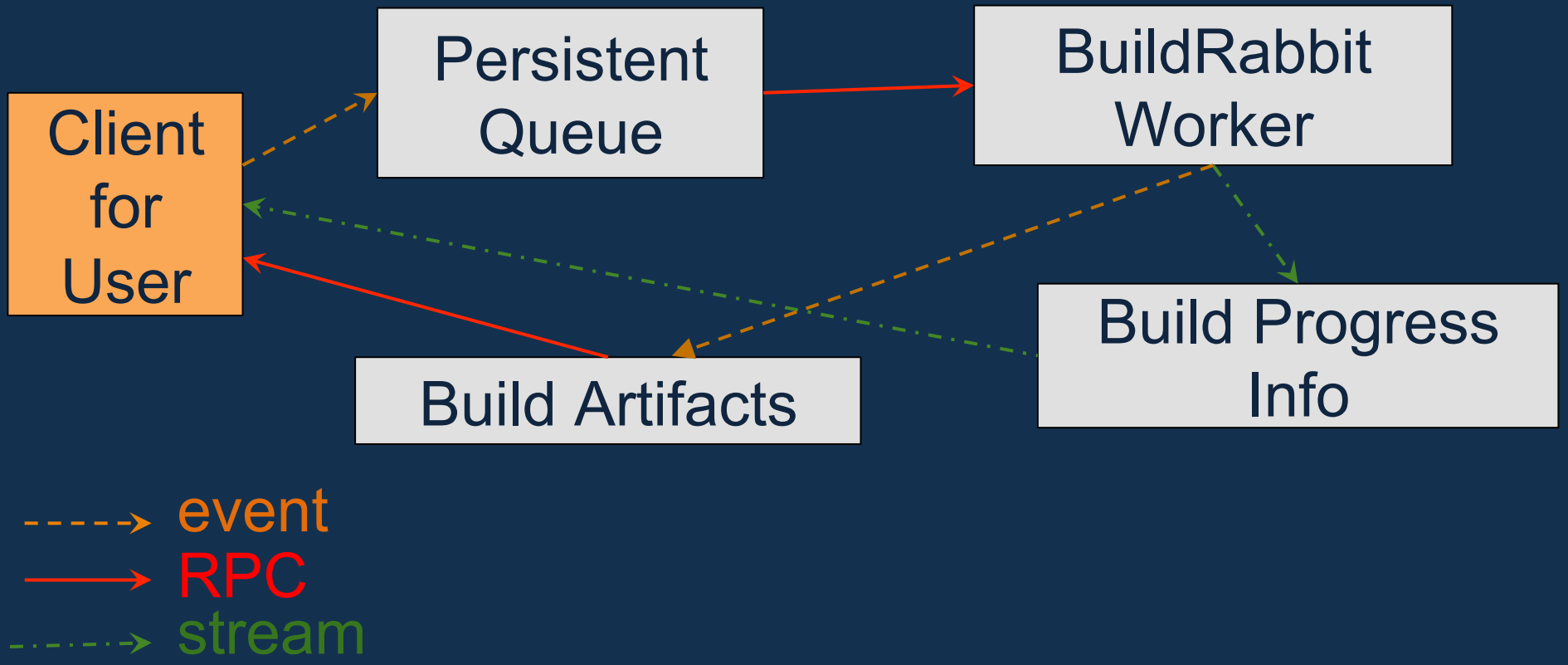
# Migration with Zero Downtime

# Old Architecture: Client / Server



# New Architecture: Build Service



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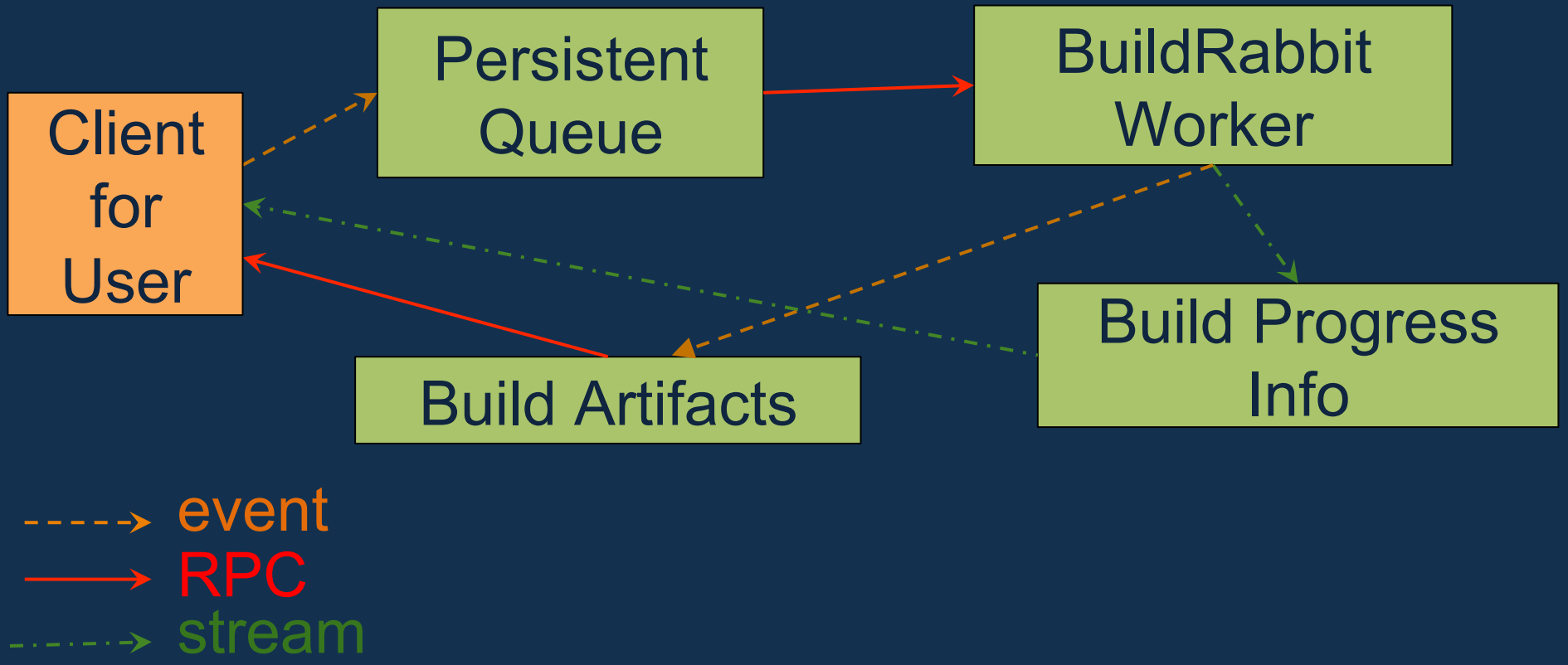
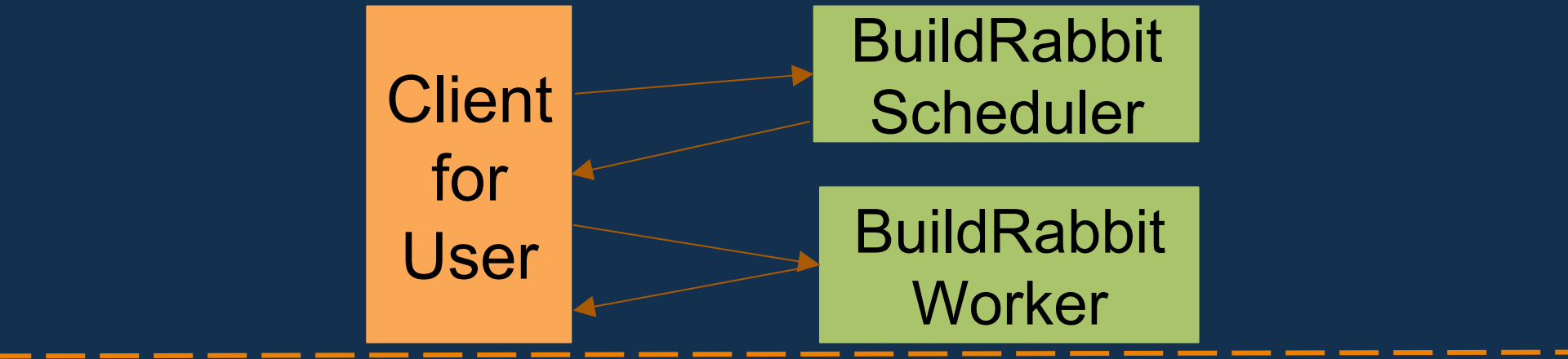
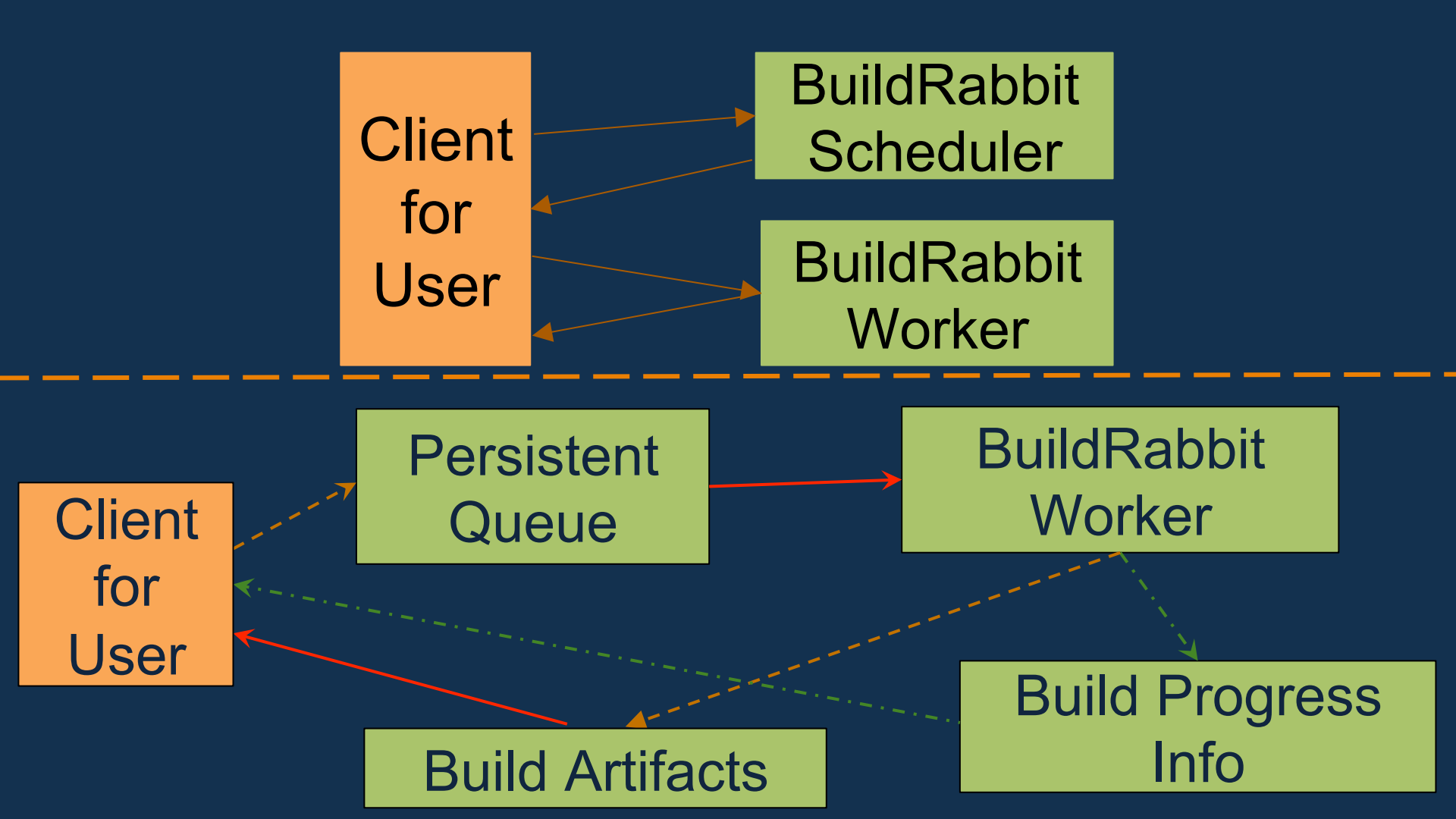



Client
for
User
BuildRabbit
Scheduler
BuildRabbit
Worker


Client for User
BuildRabbit Scheduler
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Client for User
Persistent Queue
BuildRabbit Worker
Build Progress Info
Build Artifacts

Photo by goosmurf / CC BY

# FOCUS ON INTERMEDIATE STATE

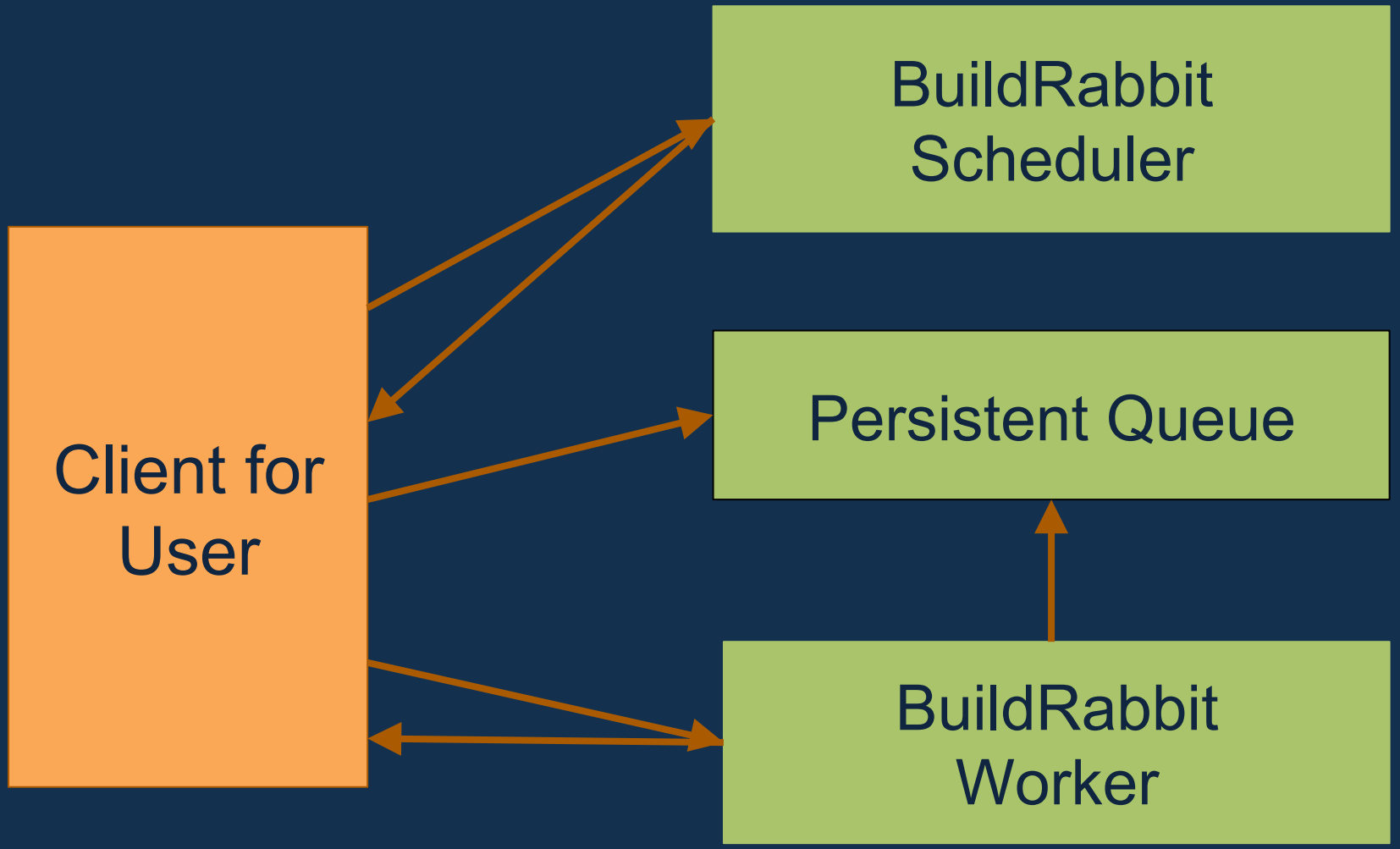
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Photo by goosmurf / CC BY

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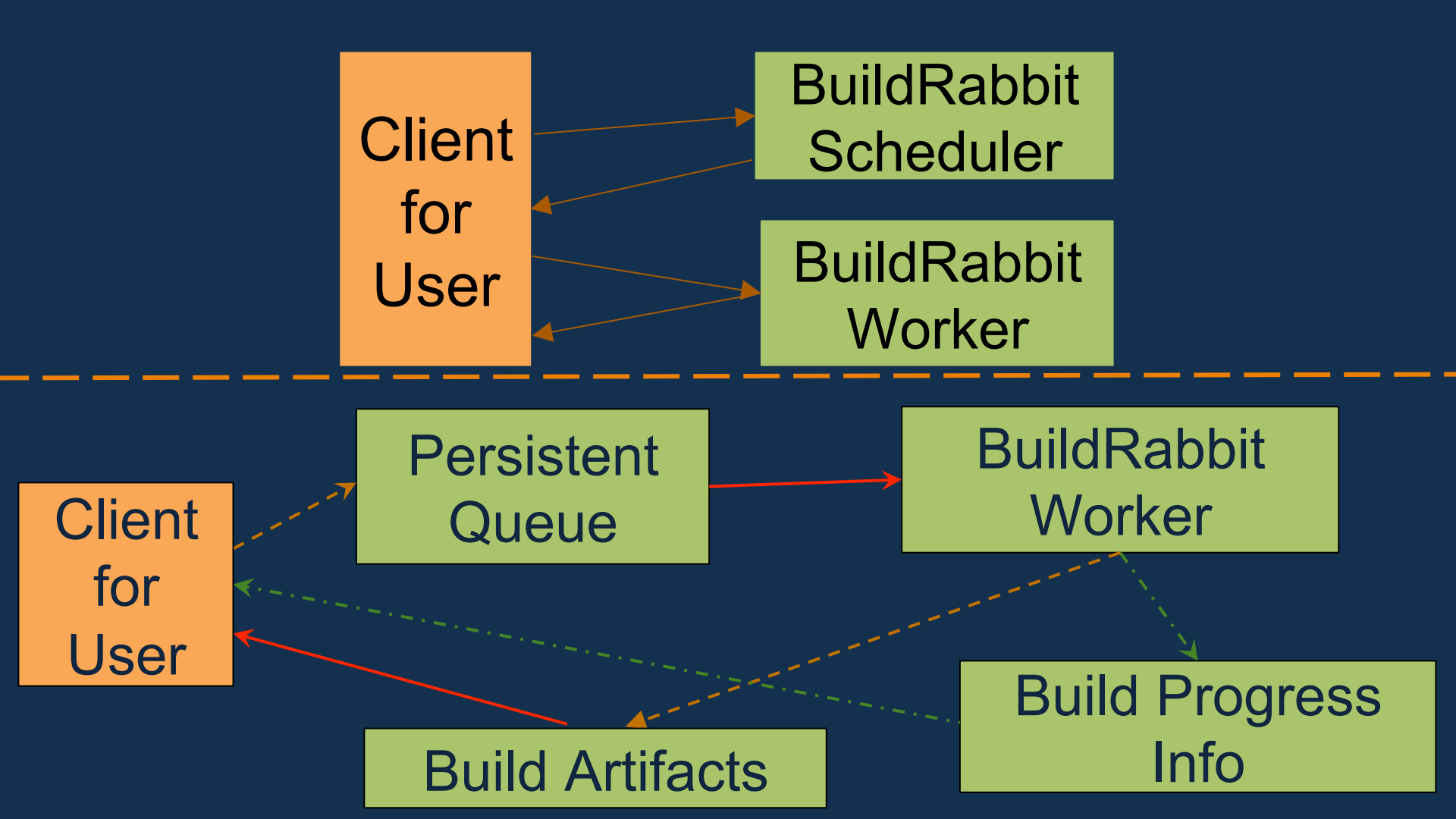
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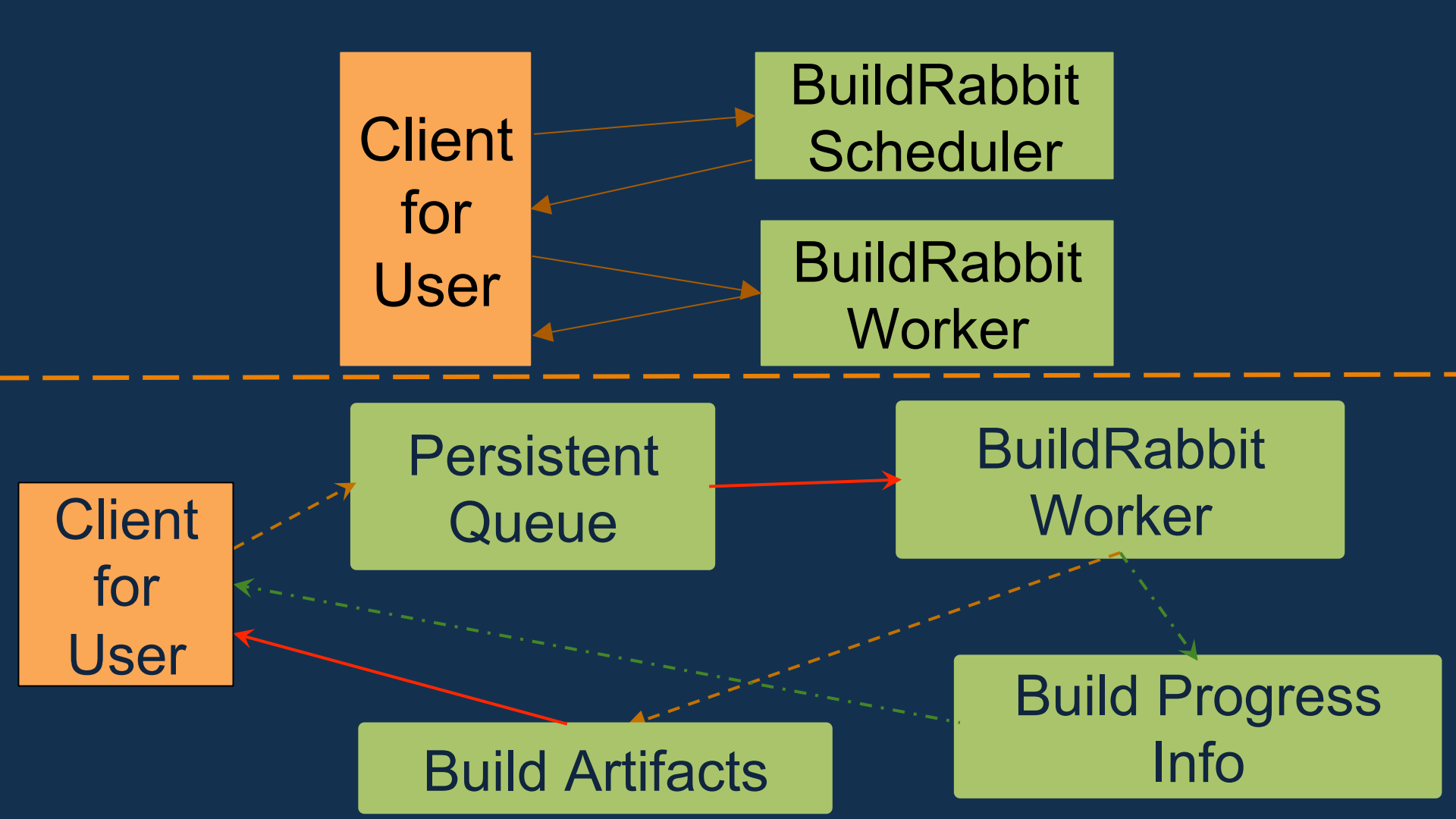
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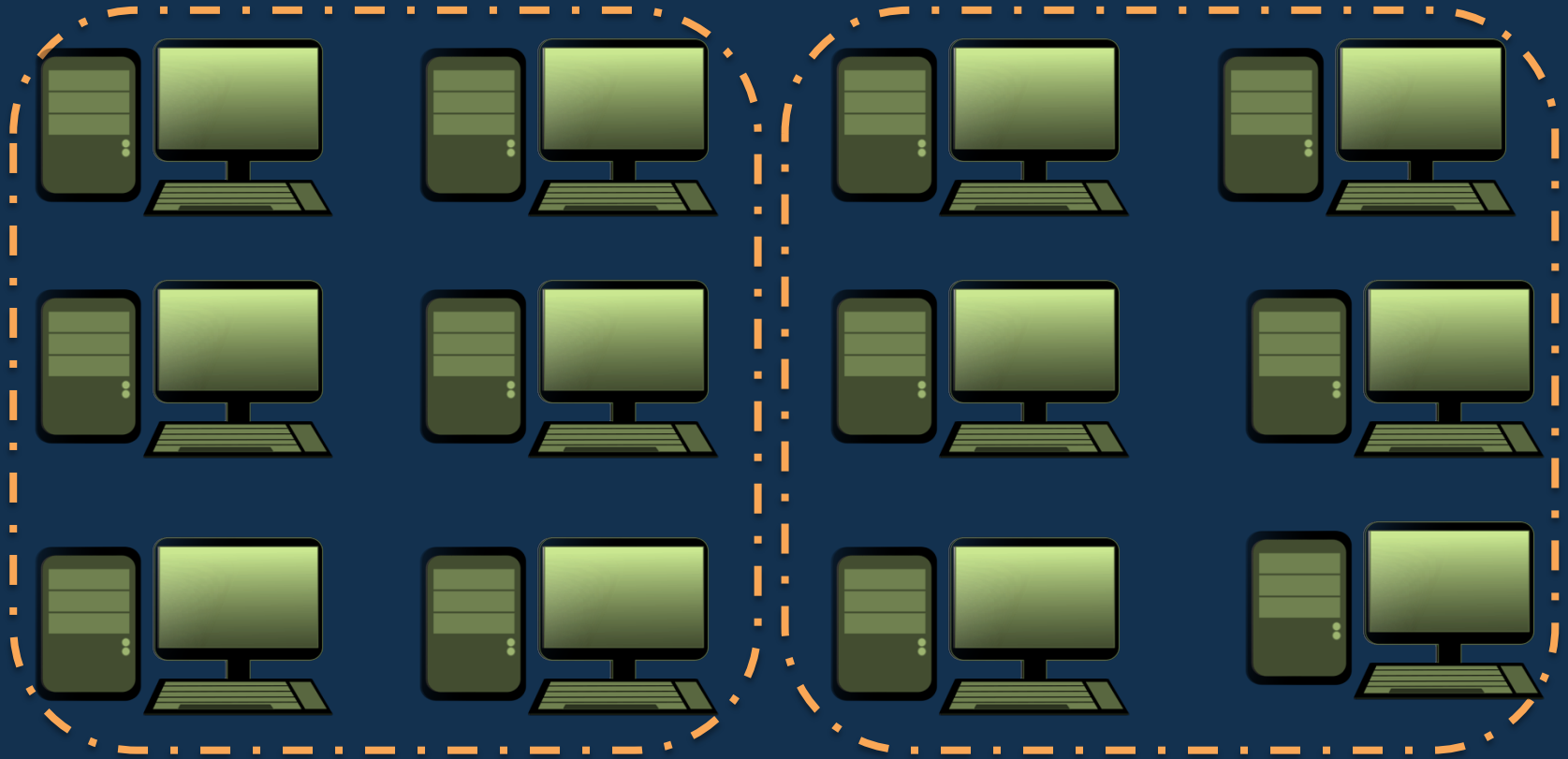
# ROLL OUT INCREMENTALLY



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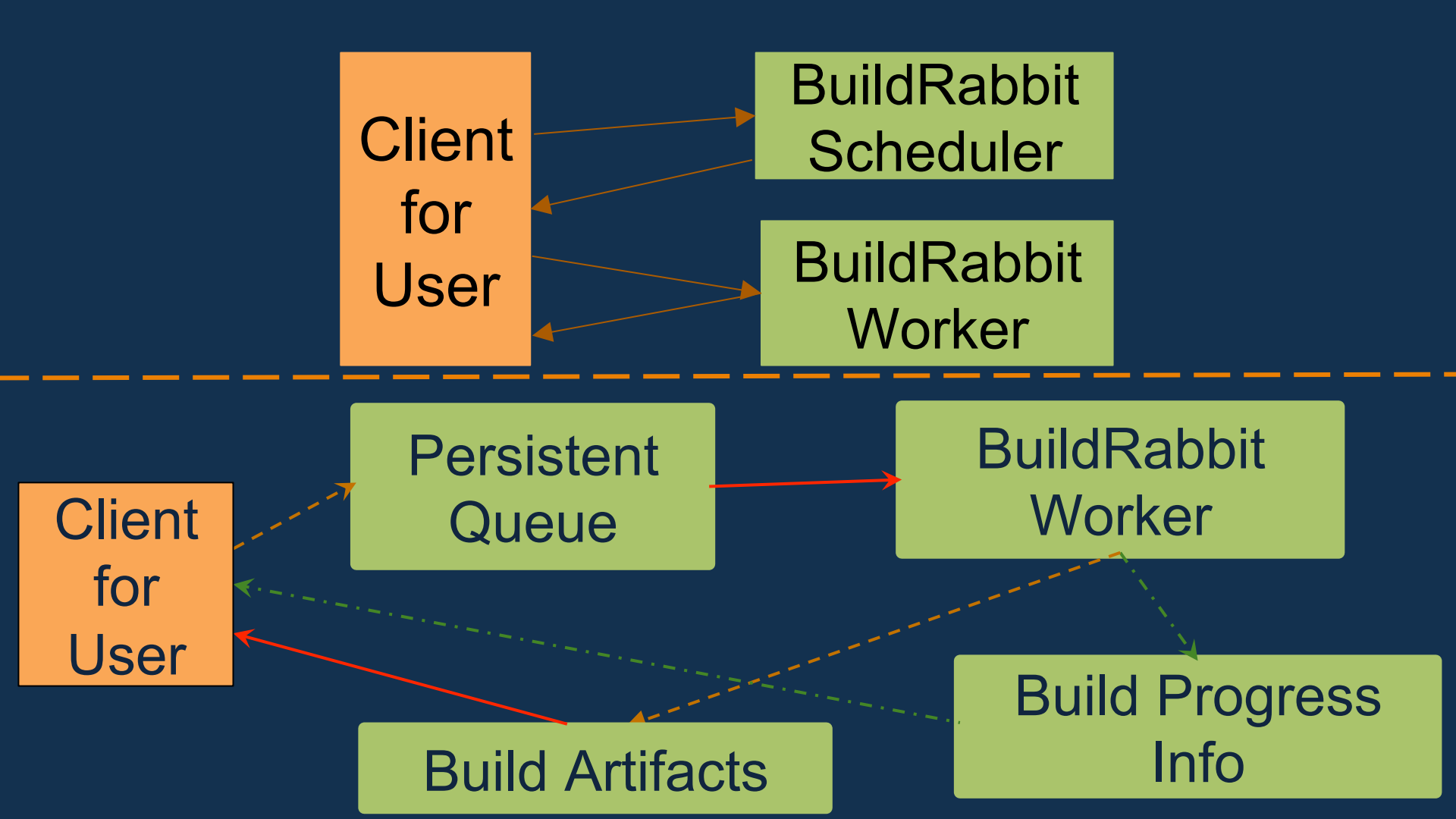
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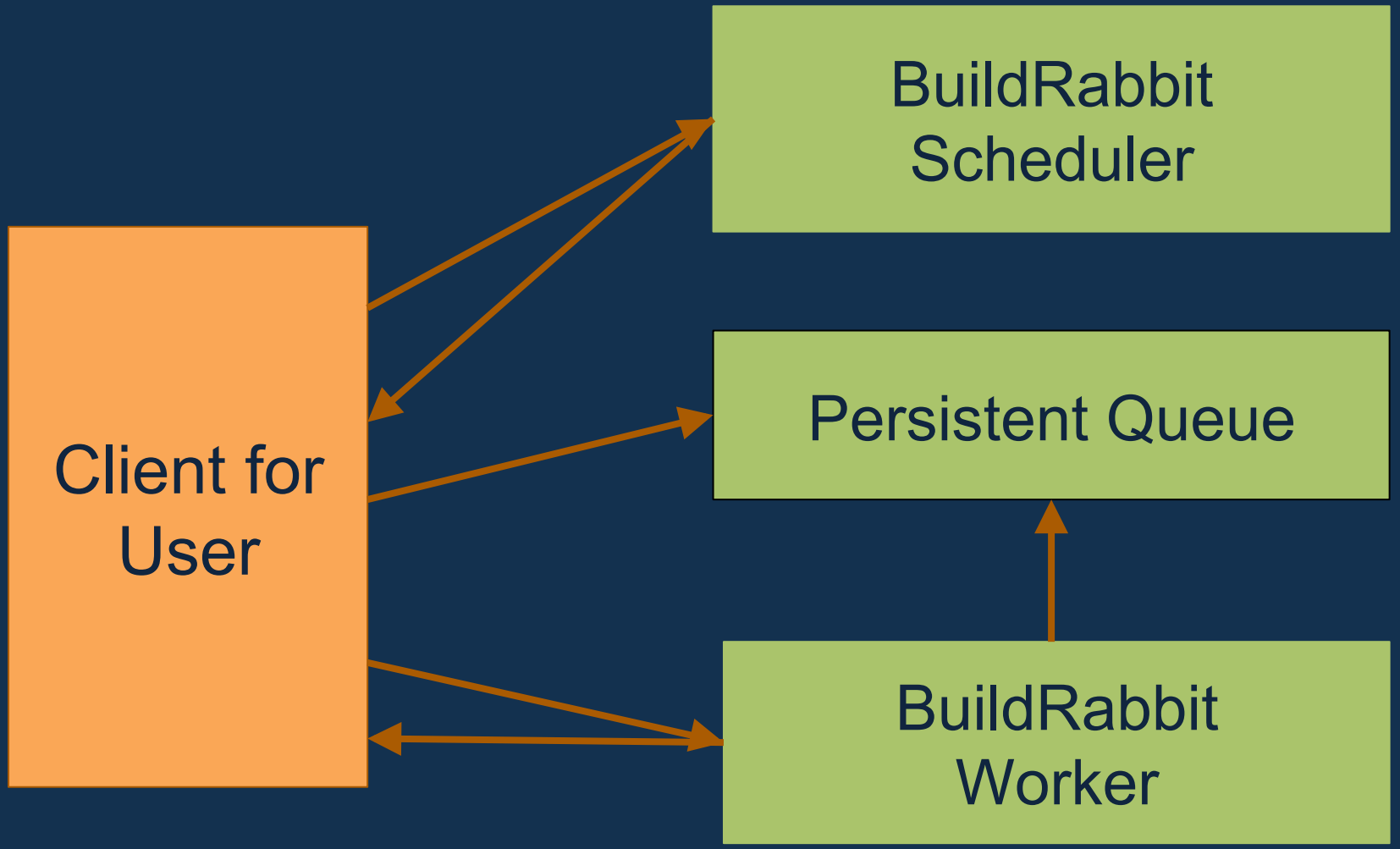
# ROLL OUT INCREMENTALLY

Photo by greg_photos / CC BY SA

# PRACTICE ROLLOUT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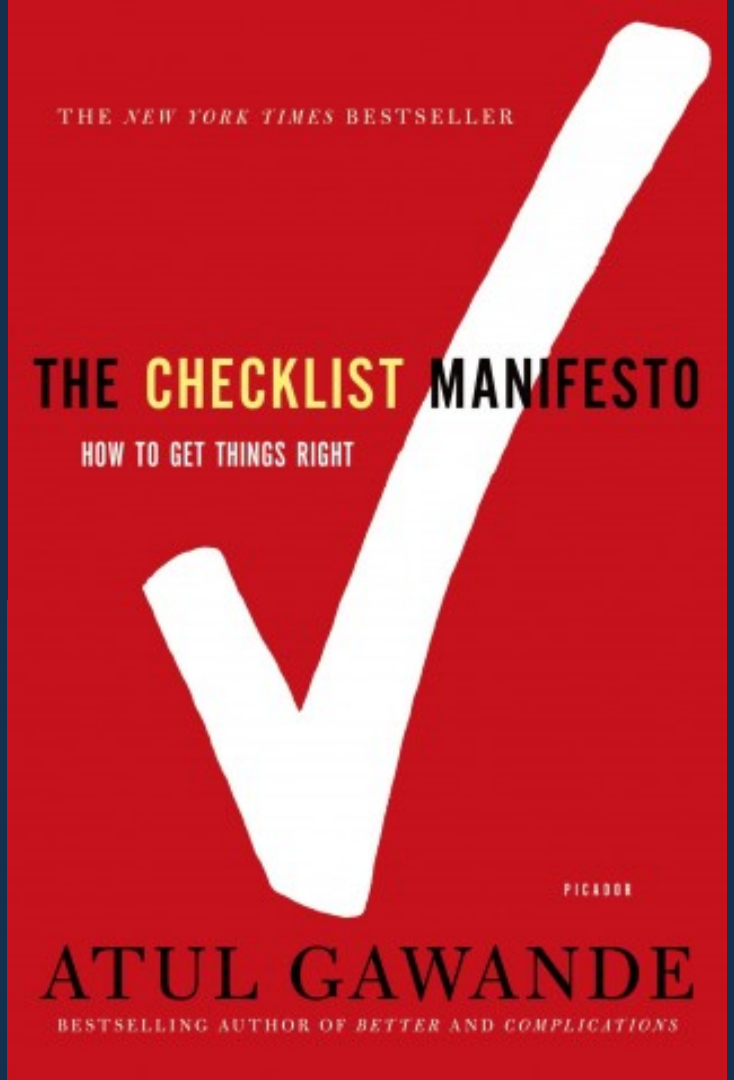
# PRACTICE ROLLOUT

- To prevent simplest mistakes
- For organization resilience



FOCUS ON INTERMEDIATE STATE
ROLL OUT INCREMENTALLY
PRACTICE ROLLOUT

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