



PUTTING CAKE INTO YOUR CI

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ABOUT ME



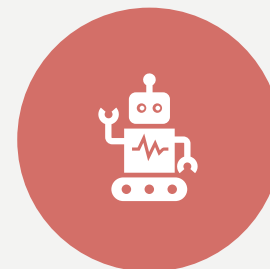
I MAKE GAMES
FOR 20+ YEARS



LAST 10+ YEARS,
HELPING OTHERS
MAKE BETTER GAMES



TOOLS,
AUTOMATION, CI



DEVOPS FOR GAMES

WHY DO WE NEED CAKE ANYWAY?

- CI is complex
- Simplify it into different concerns
- Compare different CI systems
- Suggest design improvements

THE CAKE IS NOT A LIE

BUT ALSO, IT IS A
MENTAL MODEL.
SORRY.



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LAYERS ARE NOT NEW

- OSI networking model
- Each layer is a separate concern
- Layers only interact with neighbors



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Meta

Allocation

Orchestration

Execution

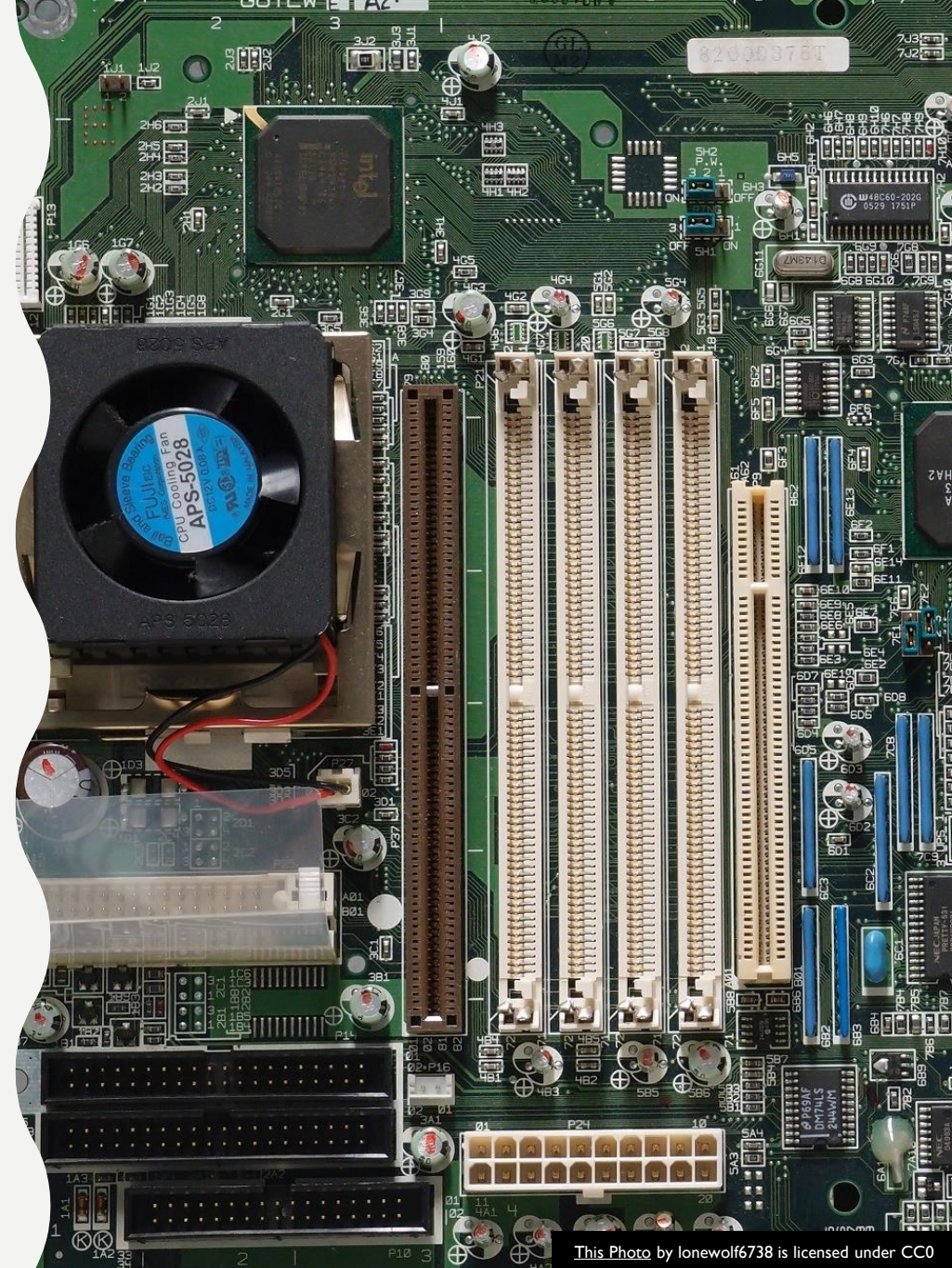
Environment

Hardware

LAYER CAKE MODEL

HARDWARE

- CPU, RAM and storage resources
- Could be physical hardware or virtual “hardware”
- Example of compatibility between different implementations of a layer



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ENVIRONMENT

- Software used to execute the CI job.
- Operating System
- Compiler, build tools, libraries, SDKs
- Agent communication/other services needed
- Typically the same Environment can be used for multiple similar CI jobs



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EXECUTION

- Controls execution on a single machine
 - e.g. ``maven test``
- Simple scripting language could be used
 - IDE is useful for local development



"stacked rocks" by Neil Howard is licensed under CC BY-NC 2.0

ORCHESTRATION

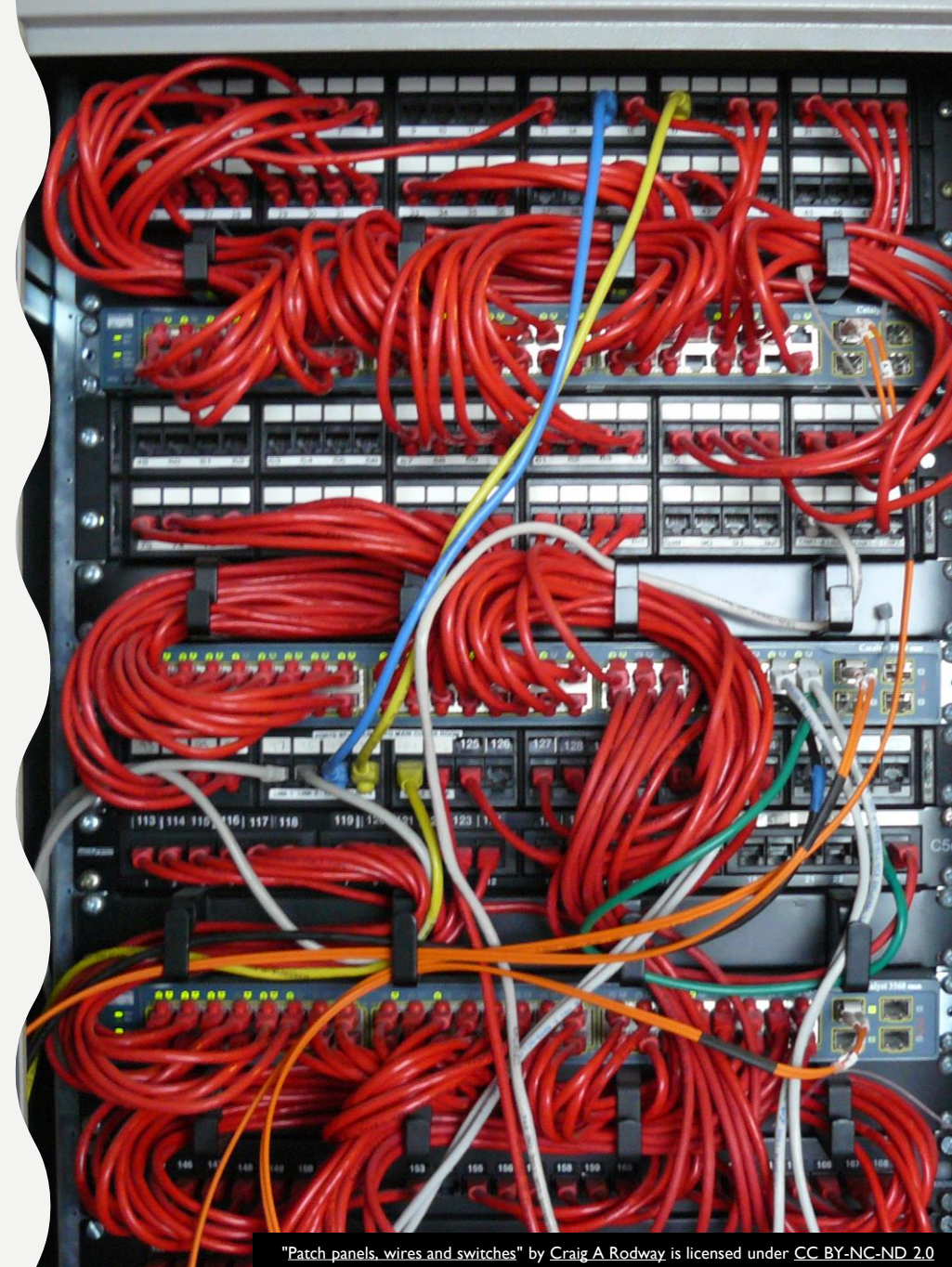
- Splits and combines work between multiple machines
- Vital for large pipelines
- Often in parallel
- Describe dependencies between Executions
 - Including outputs / inputs



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ALLOCATION

- Which SCM branch the CI operates on
- What causes a CI job to start
 - Which git hash / changelist
- A.k.a “Trigger” layer



"Patch panels, wires and switches" by Craig A Rodway is licensed under [CC BY-NC-ND 2.0](#)

META

- Which CI server / instance
 - Seed jobs, JobDSL
- Can be multiple in a larger team / company
- Less so with “CI as a Service” providers



This map of Meta, a department of Colombia, is from Wikipedia and is licensed under CC BY-SA

Meta	Distribute work between instances / sites
Allocation	Assigns a CI flow to a stream. Determines when CI flows start
Orchestration	Distributes work between machines and defines input/output dependencies
Execution	Executes work on a single machine
Environment	Operating System + installed tools needed
Hardware	CPU, Disk, RAM

Meta	Distribute work between instances / sites
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HOW DOES THIS HELP?

- We had put a lot of logic into Jenkins Groovy Build Flow implementation
- Slow to work with, hard to validate changes

TOO MUCH COMPLEXITY

- We had put a lot of logic into Jenkins Groovy Build Flow implementation
- Slow to work with, hard to validate changes
- Combined both Orchestration and Execution layers
- So...

SPLIT INTO LAYERS

- Split out into simpler Groovy Orchestration and Python Execution layers
- Changes to CI more localised

EXECUTION LAYER IN PYTHON

- Split out into simpler Groovy Orchestration and Python Execution layers
- Changes to CI more localised
- Easier to develop, understand, validate, debug locally
- Much happier team!

WHAT'S THE FUTURE OF LAYER CAKE?

- Blog post with more details
- Using Layer Cake to compare different CI systems
- Using Layer Cake to refine our own designs for “Game CI as a Service”



"Rainbow Layer Cake with mallow icing" by [Strawbyb](#) licensed under [CC-BY-NC-ND 2.0](#)

ALL FEEDBACK WELCOME!

- Read the blog post
- What do you think of the Layer Cake?
- @markltbaker

THANK YOU



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