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DevOps, Cloud & Continuous Delivery

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What We will talk about

- DevOps
- Continuous Delivery
- Cloud

they are related but not the same

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Let's start with DEVOPS

* Lots of content lifted from John Allspaw's Velocity 2009 talk

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Dev versus Ops

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“It’s not my machines, it’s your code”

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“It’s not my code, it’s your machines”

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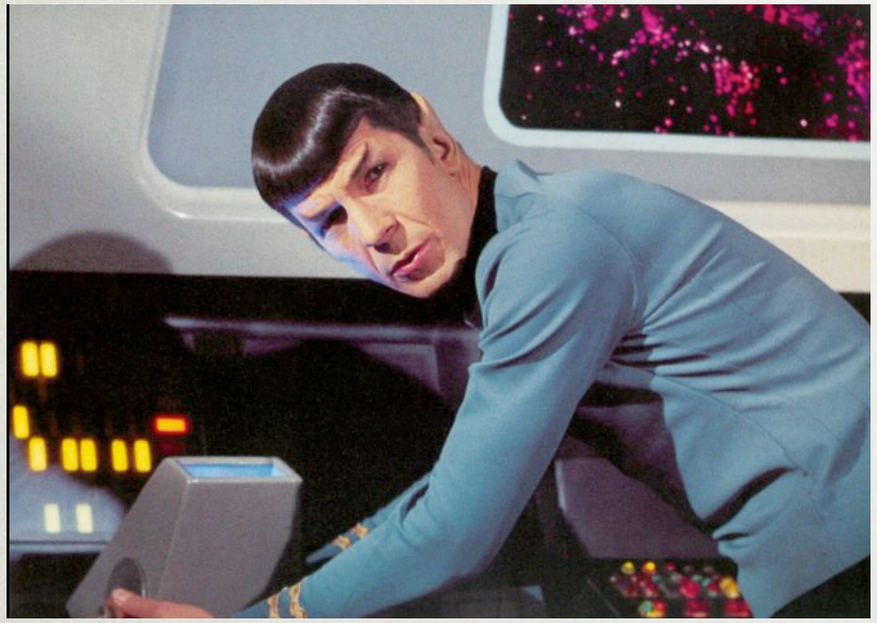
Dev



Little bit weird
Sits closer to the boss
Thinks too hard
Does things w/o Ops in mind

Ops

Pulls levers & turns knobs
Easily excited
Yells a lot in emergencies
Says no all the time

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Traditional Thinking

Dev's job is to add new features

Ops' job is to keep the site stable & fast

(this is how they are measured and paid!!!)

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Why do we think creating separate
silos of responsibility
will make an effective IT organization?

* these silos often go all the way up to the CIO

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Dev's job is **NOT** to add new features

Ops' job is **NOT** to keep the site stable & fast

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Both of their jobs are to **enable** the business

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The business requires change

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But change is the cause of most outages!

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Discourage change in the interest of stability

or

Allow change to happen as often as needed

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Lowering risk of change and increasing the speed of change through culture and tools

definition #1

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Causes of the Problem

Mindset & Incentives

- us & them; over-the-wall mentality
- change versus stability

Organizational

- different managers/executives/business units
- competing corporate politics
- sit separately or even different geographic locations

Tools

- rarely use the same tools
- ops buys big tools from big vendors
- different tools = inconsistencies

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Components of Solution

Culture

respect & trust

collaboration

avoid blame & fingerpointing

Automation

automate infrastructure

one click build & deploy

Small, frequent changes

deploy 20 times a day to production

Metrics

production metrics

shared by dev, ops & business

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An Analogy

Remember when QA was a completely separate function than Dev?

Ops should be on the same delivery team as the Business, Dev & QA

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Why a devops movement now?

- ✓ **criticality of time-to-market for web companies**

  need to deliver in days not months

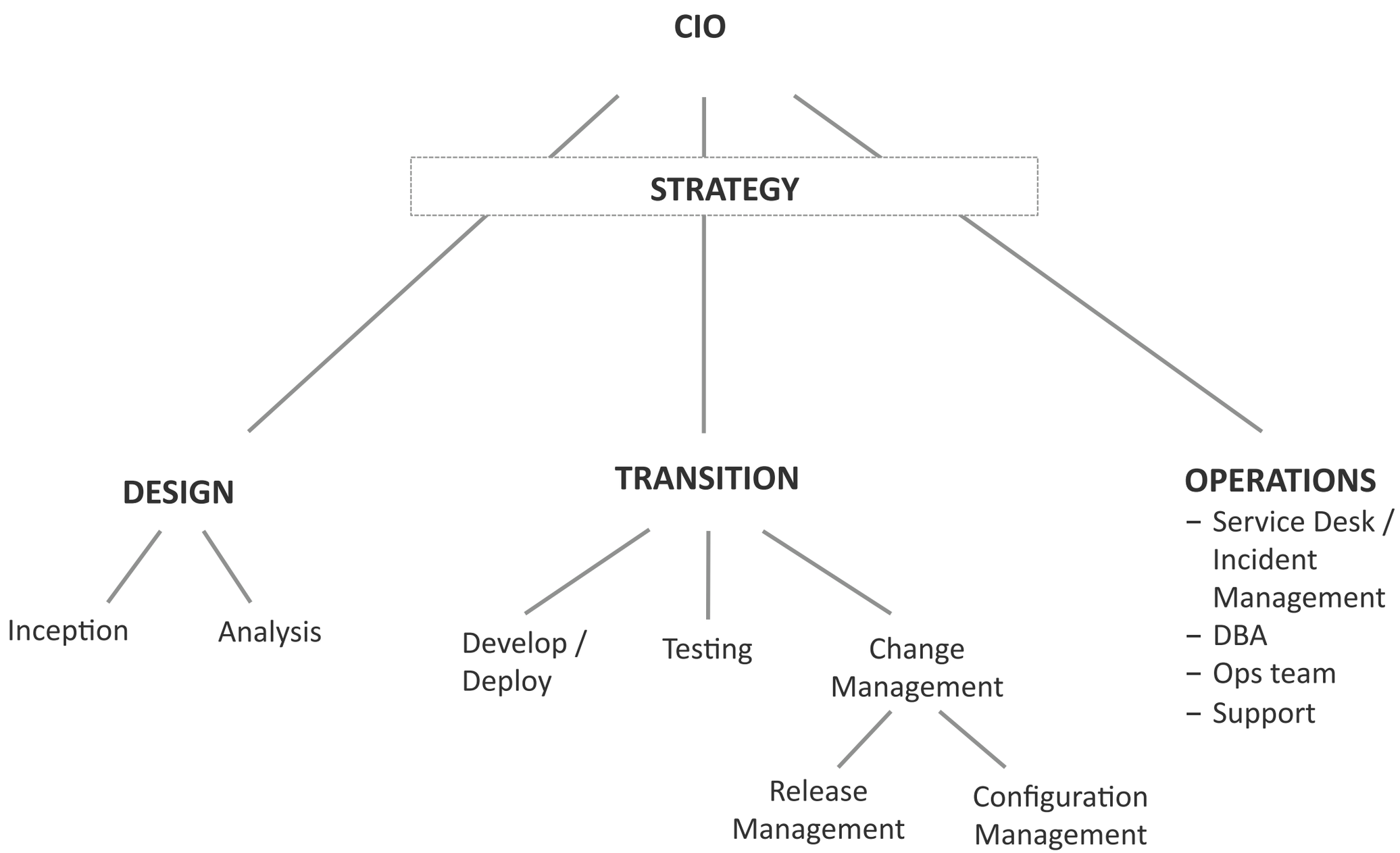
- ✓ **agile development**

  increases pressure on ops 4x

  provides examples for ops

- ✓ **cloud provisions servers in seconds, not weeks**
- ✓ **tools for managing infrastructure that both dev and ops can use**

ITIL (IT Infrastructure Library)



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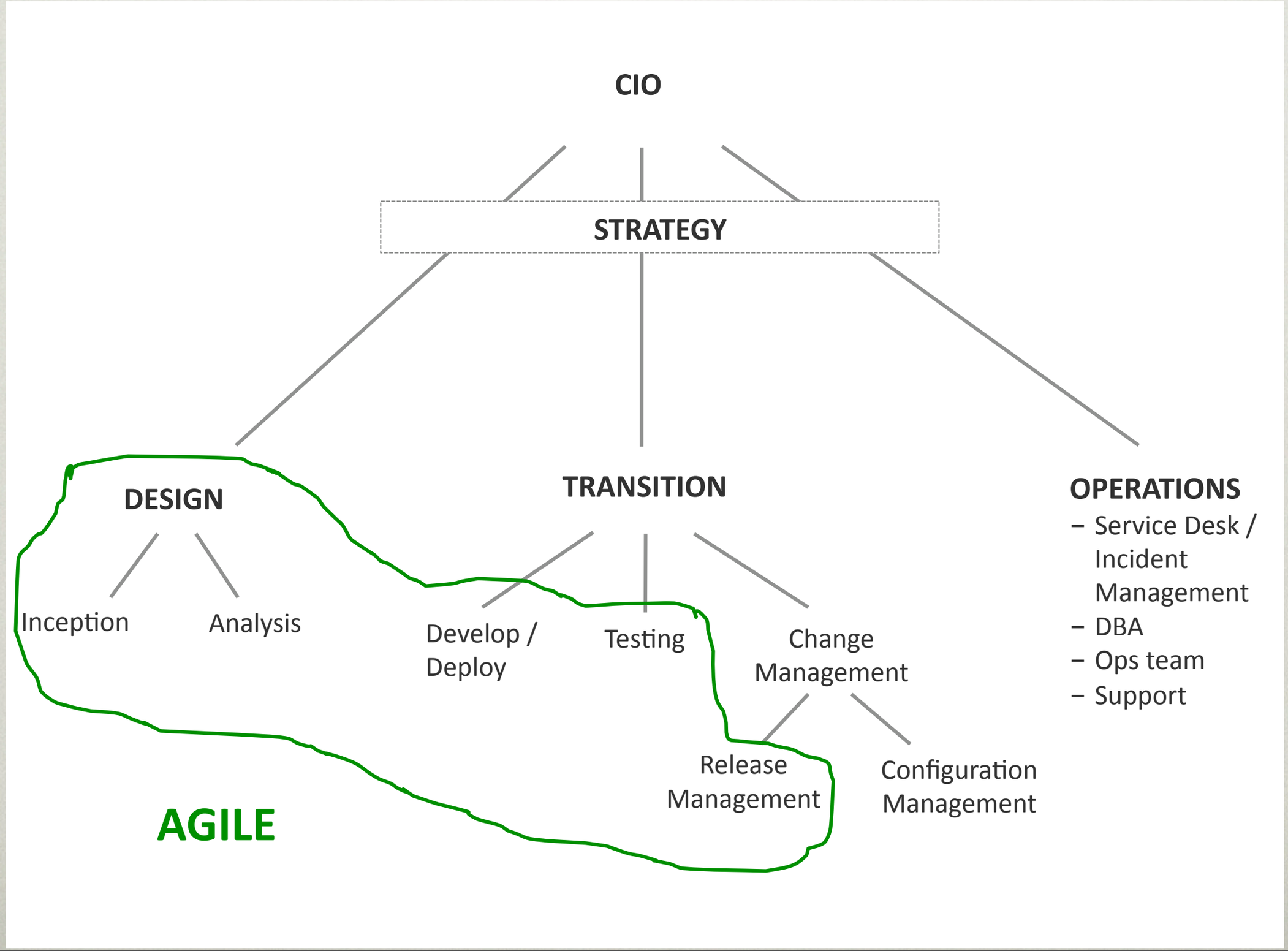

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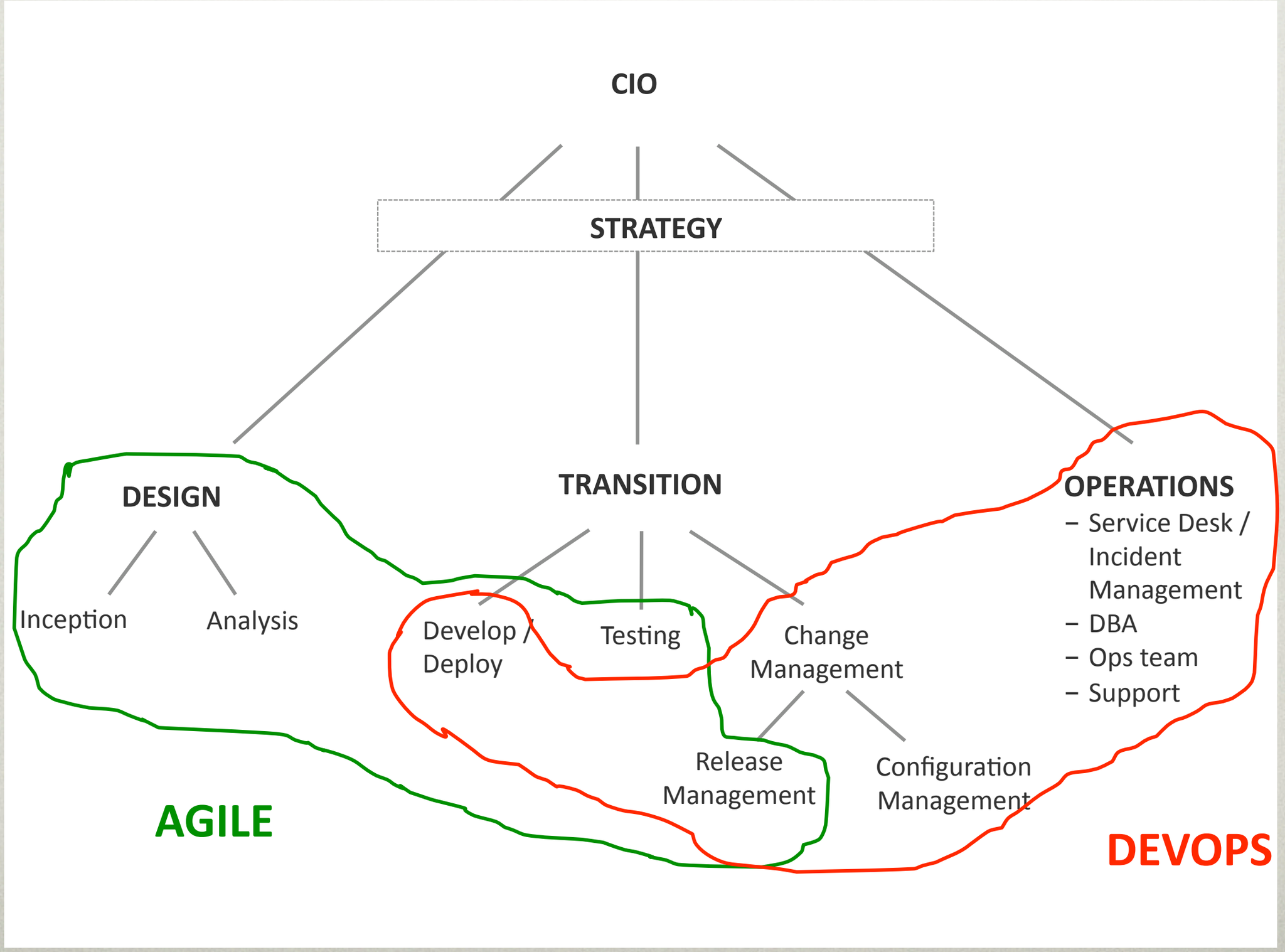

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By the way ....

Operations is 70% of the IT budget!

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DevOps Experience

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Bridgewater

- Large hedge fund asked us to recreate their build & release management system (cross-enterprise)
- Delivered solution that:
  - automates build & deployment for typical projects in 1 hour
  - is flexible enough for any use case
  - introduces continuous integration and unit testing
  - provides extremely strict security without hindering developers
- Side effects of introducing agile to the organization and driving more work
- $2,000,000 for build/release mgmt

Nokia

- Problems:
  - dev & ops silos
  - too much manual work to create environments
  - difficult deployments
  - adhoc infrastructure management
- Used Puppet to automate management of full infrastructure stack (O/S to apps)
- Pre-flight testing: automated testing infrastructure changes before rolling out
- CI & deployment pipelines

same problems everywhere

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REA

- Two week Optimizing IT engagement to improve effectiveness of Ops
- Lean approach
- Improved management of work: card wall design & WIP limits
- Consistent request-to-deliver process with metrics
- Shift from tactical to strategic focus: true north

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REA

Most Ops teams are stuck firefighting all day. We can help them get their work under control, focus better on the strategic, and become pre-emptive

- ...eek Optimizing IT engagement to ...eness of Ops
- Improve... design & WIP limi...
- Consistent request-to-deliver pr... metrics
- Shift from tactical to strategic focus: true north

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2. Continuous Delivery

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Web 2.0 Business

- Disruptive: Amazon, Facebook, NetFlix
- Vision
- Time-to-Market critical
- Software is strategic
- Extreme feedback

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Extreme feedback

- Constantly validating new functionality
- Low investment cost
- Multiple releases a day
- A/B testing

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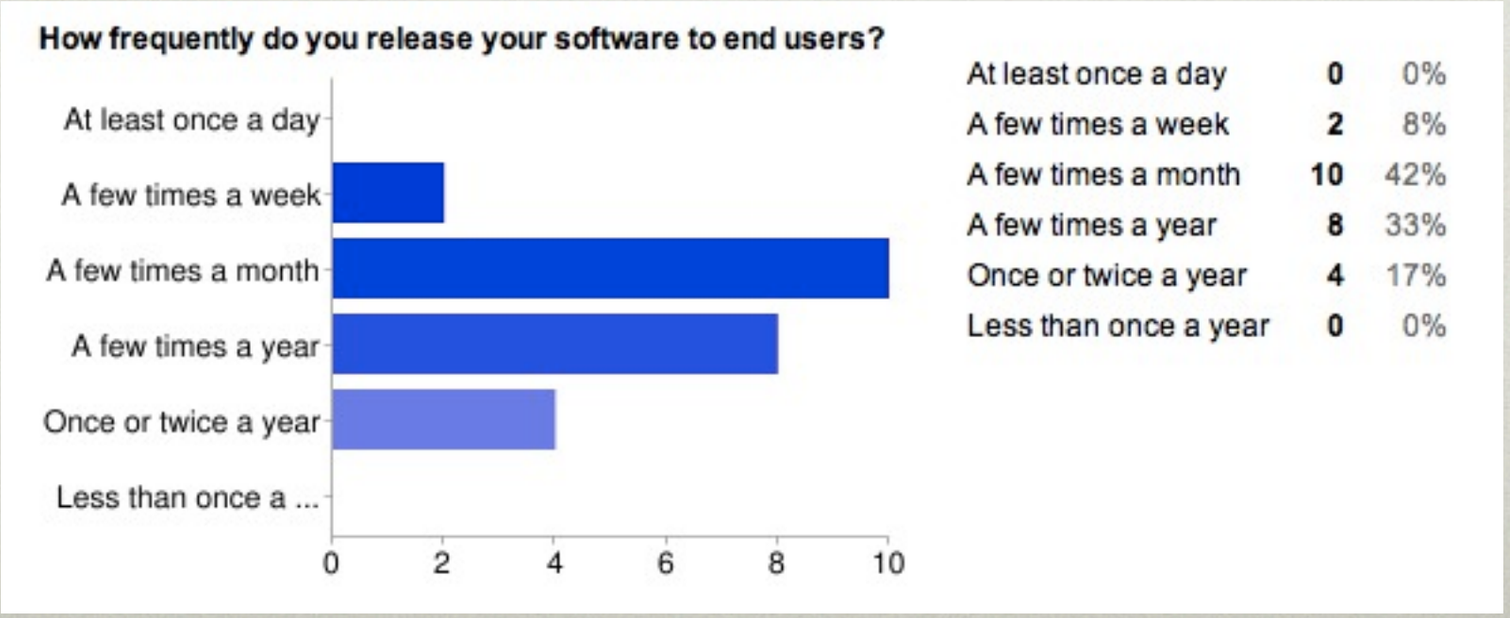
Enterprise 2.0

- Disrupted by the Web 2.0 business model
- Focus on cycle time
- Lean - continuous improvement
- Agile adoption != scrum



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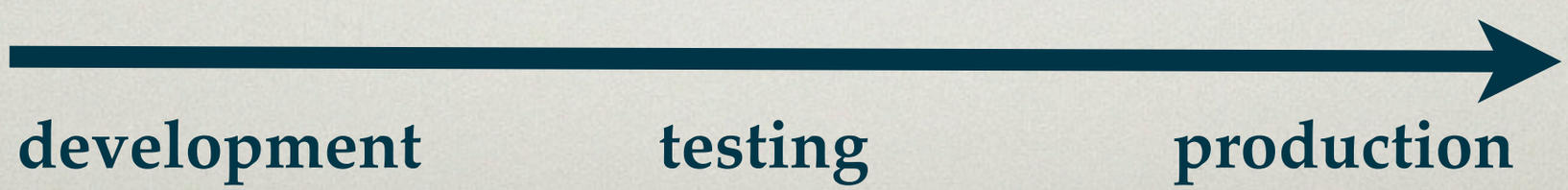
Continuous Delivery

- XP 2.0
- Configuration management++
- Continuous integration++
- Build quality in



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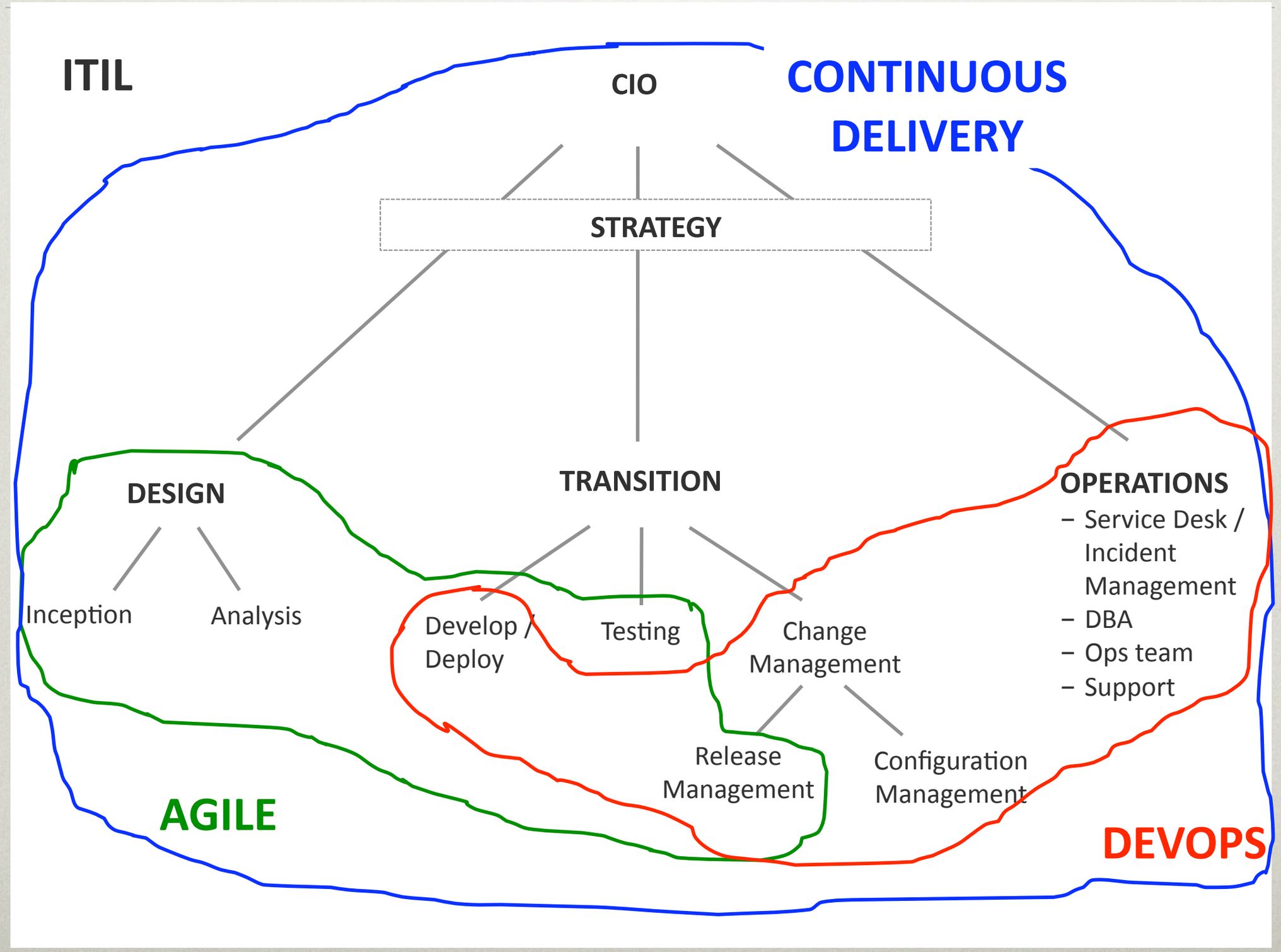

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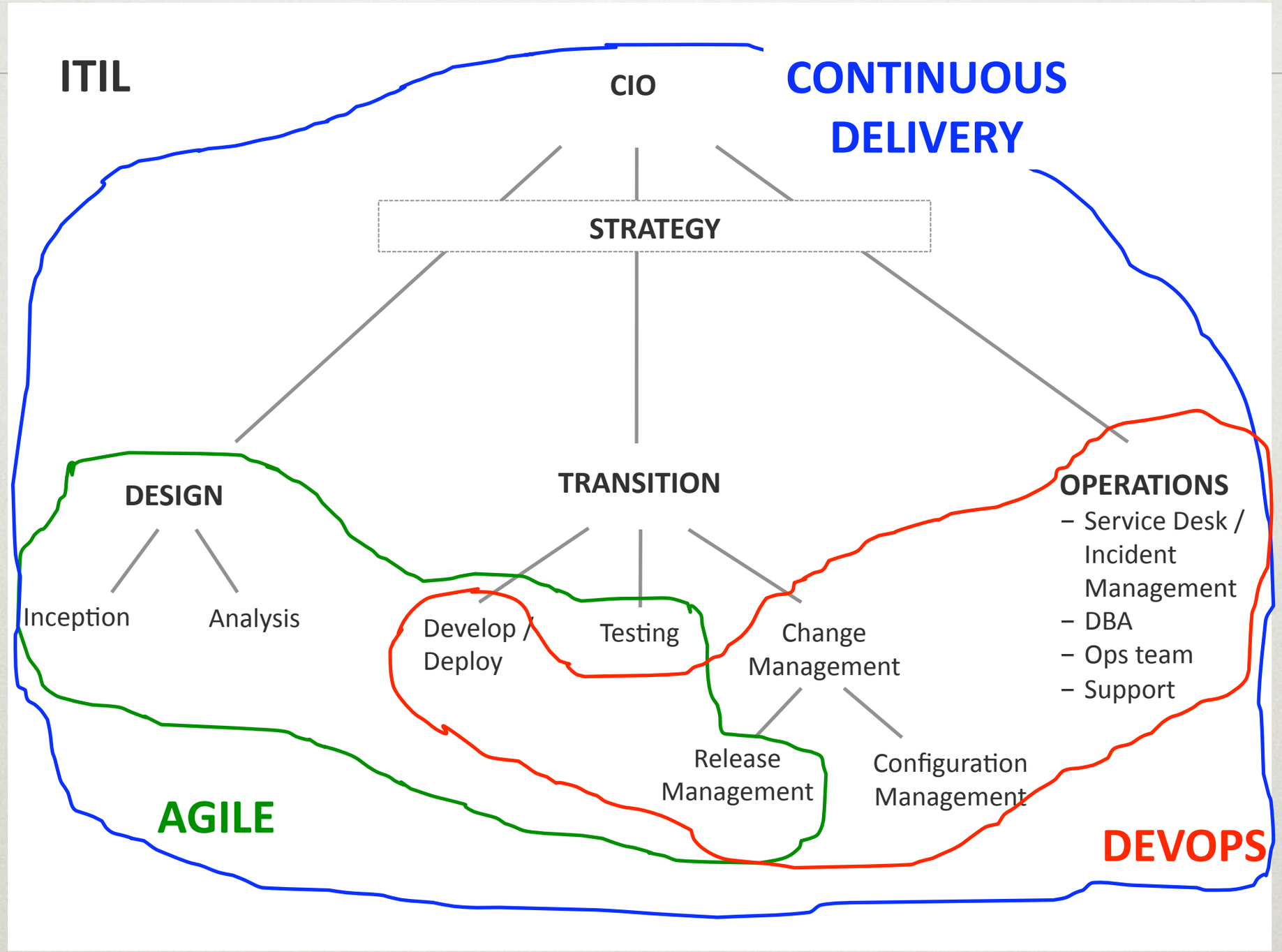

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4 CD Movements

- DevOps
- Agile testing
- Cloud computing
- Continuous deployment

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Continuous Deployment

"Continuous Deployment at IMVU: Doing the impossible fifty times a day"

'the impossible' = production deployment

deploy every check-in straight to production

no manual testing

might not be for every client, but we can talk about it

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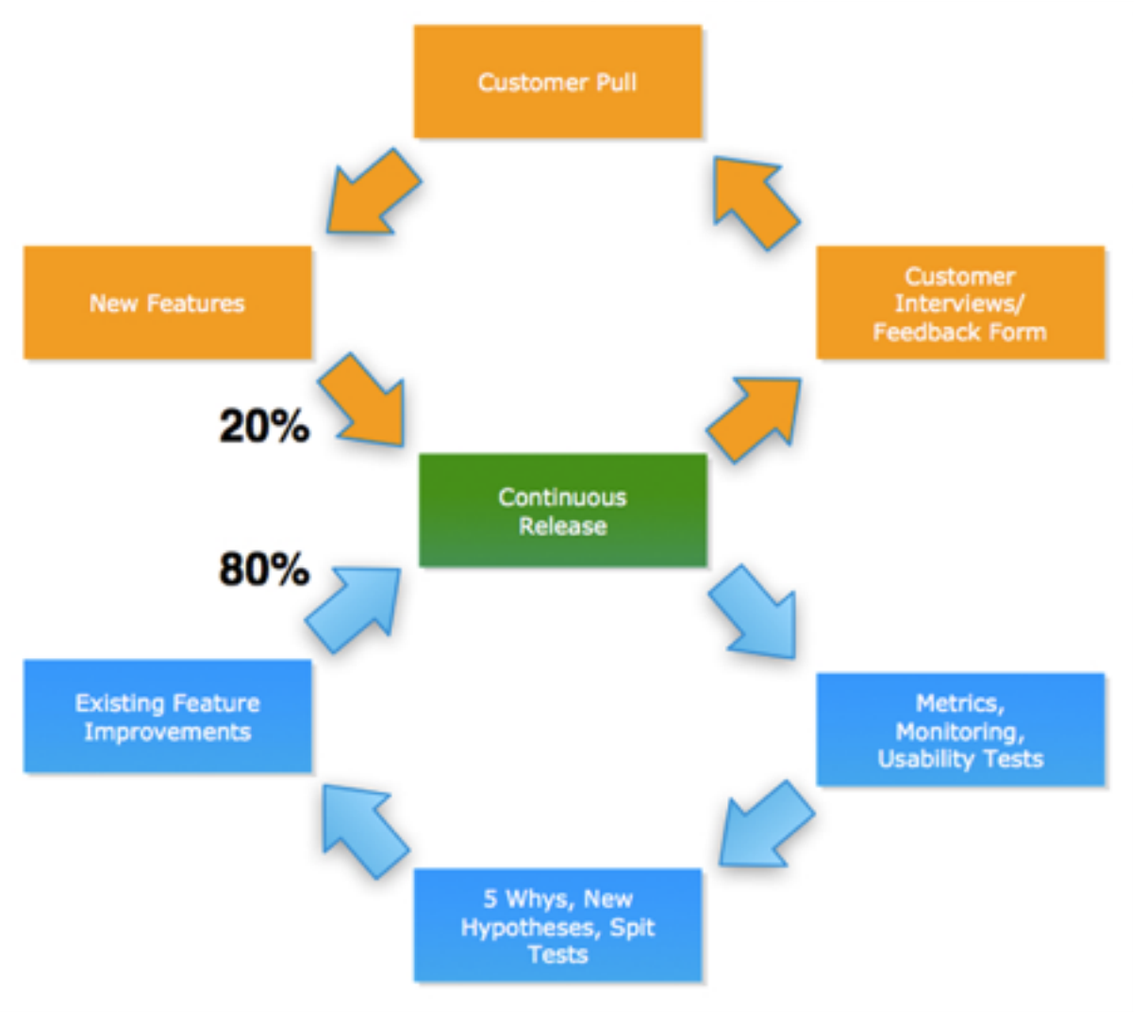
Continuous Ideation & Design

- Extreme feedback (again)
- Get ideas in front of users in 1 week
- User feedback is the best feedback
- Web-based systems



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Continuous Delivery Experience

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Trader Media Group

- From releases every few months to every 2 weeks
- Delivery process fully automated including build, test and deployment
- Software always releasable
- Management took a while to adjust

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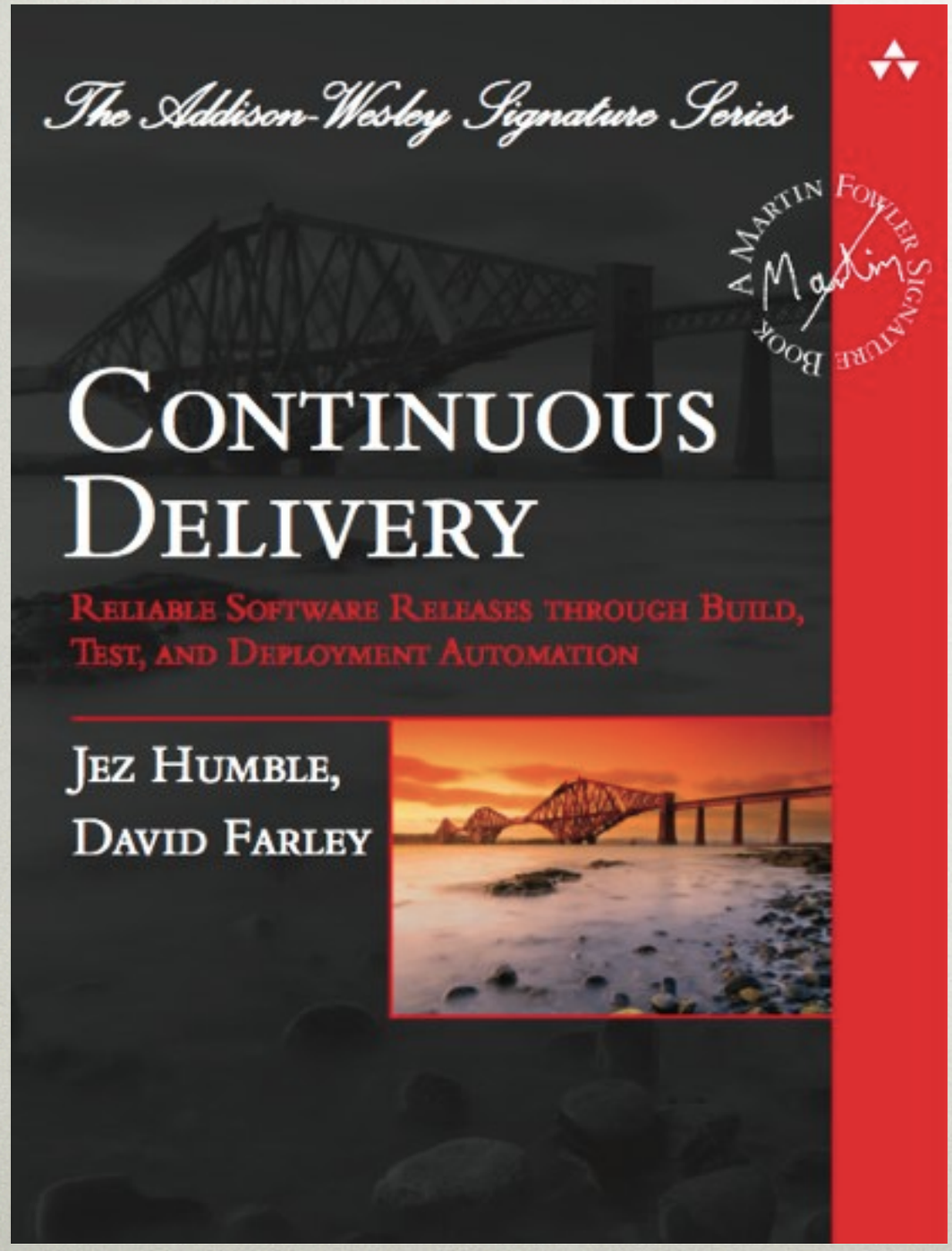
The Book



Martin Fowler thinks this is the most important book of the year

Analysts are picking up the term

Jez is a luminary

Give the book to your clients

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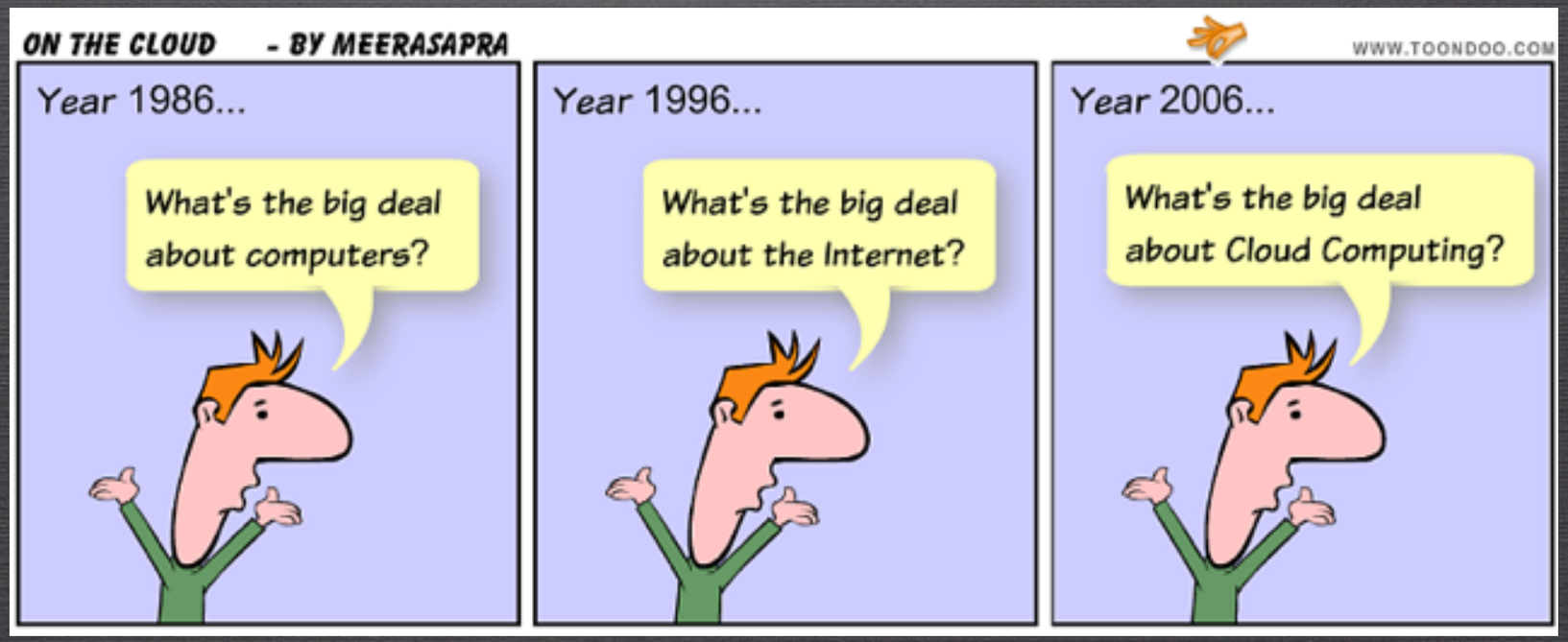
3. Cloud



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You tell us. What is ‘cloud’?

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Ajey's Definition

step back ...

what are the components of infrastructure?

- compute, storage, network & management

cloud is basic thread which weaves all these components together, removing clutter around provisioning infrastructure

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Gartner Defintion

a style of computing where scalable and elastic IT capabilities are provided as a service to multiple customers using internet technologies

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Attributes of Cloud

- service-based
- scalable and elastic
- shared
- pay as you go
- uses internet technologies

feels like an unlimited pools of computing services (but isn't really)

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3 Kinds of Cloud

Software as a Service (SaaS)

salesforce.com, gmail

Platform as a Service (PaaS)

Google App Engine

Infrastructure as a Service (IaaS)

Amazon AWS

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The benefits of IaaS

- no longer need to host and manage infrastructure
- elasticity and scaling
- pay only for what you use
- rapid & self-service

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Public Cloud Experiences

(all on Amazon AWS)

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Global advertising agency

- the challenge
  - major ad campaign to award a $500,000 diamond in contest
  - online microsite
  - expects to scale from 0 to 2,000,000 users in an hour when they appear on Oprah
  - will run for 6 weeks
- solution
  - deployed campaign on amazon
- cloud benefits
  - scaling with demand
  - pay for only 6 weeks of hardware
  - able to develop and deploy campaign much much faster
- this is how RazorFish does it too
  - "IT is no longer the bottleneck, the creatives are"

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OVE

- the challenge
  - client needed more server capacity to support build environments
  - additional hardware took weeks to provision
  - cost was already $140,000
- solution
  - moved build environments to amazon
- cloud benefits
  - pay-as-you-go reduced cost by $100,000
  - build time halved because more infrastructure allowed development to go faster
- why don’t all of our projects do this?

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Best Buy

- the challenge
  - lightweight, cost-effective disaster recovery solution for online store
  - enough features to keep customers engaged without replicating the full functionality of the website
  - extremely short deadline
- solution
  - provide catalog and store inventory search in disaster recovery site on amazon
- cloud benefits
  - don't need to buy disaster recovery hardware that you don't use 99% of the time
  - auto-scaling to handle sudden load spike when failover occurs
  - rapid provisioning of dev and production environments to meet deadline

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TW use cases for Amazon AWS

- Scaling for unpredictable production loads
- Not purchasing hardware for short-lived solutions
- Cost effective disaster recovery solutions
- Saving money on build & testing environments
- Speeding delivery with rapid provisioning
- Parallelization of automated tests

check out the case study on the website

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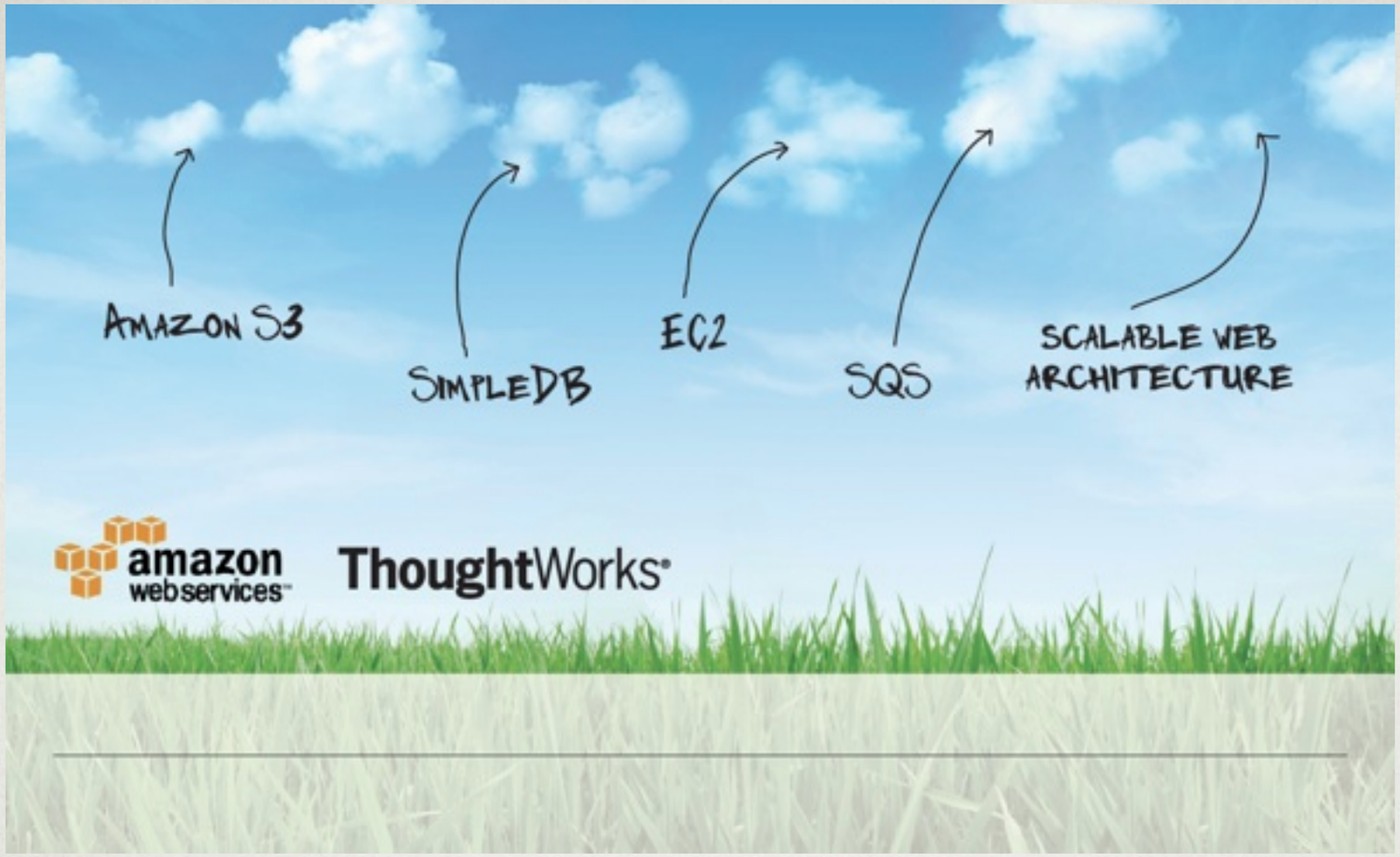

- TW Amazon AWS training
- co-written with Amazon
- 1 day, $500
- also for TWers
- on the website

Date	Location
Dec 10	Atlanta
Jan 14	SF
Feb 7	Toronto
Feb 9	Dallas

Date	Location
Feb 10	Chicago
Mar 18	Calgary
Apr 8	NYC
Apr 29	Atlanta

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Public, Private & Hosted Clouds

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Enterprise concerns with public cloud

- security and privacy of sensitive data
- location where data is stored
- existing infrastructure investments

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Private cloud ... the alternative

- private cloud: built inside an organization, on their hardware
- avoids concerns of data security, location and existing investments
- but also misses some benefits of cloud
  - scalability and elasticity
  - pay-as-you-go
- many companies investigating private cloud
  - including ThoughtWorks

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Hosted Cloud

- bit of a middle ground
- someone else (Rackspace) hosts your private cloud on exclusive hardware
- burst to public cloud
- gradually migrate to public cloud

from

&

- Opensource private cloud implementation
- TWIndia using to build their cloud
- TWUS to partner with Rackspace to provide professional services around implementing openstack clouds

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TWIndia OpenStack Experience

- the challenge
  - takes 4 - 6 weeks to provision hardware and instances
  - 1000+ virtual machines
  - scattered environments, source code repos and idle CI environments
- solution
  - openstack based private cloud
- cloud benefits
  - consolidate infrastructure
  - self provisioning of instances
  - reduce IS operations issues
  - reduce cost!
- we can do this for clients!