



Moving Skype to DevOps on the Cloud

Sam Guckenheimer
Jennifer Perret

About Us

Sam Guckenheimer

Product Owner, Visual Studio Team Services
14 years Microsoft

30 years software industry

@SamGuckenheimer



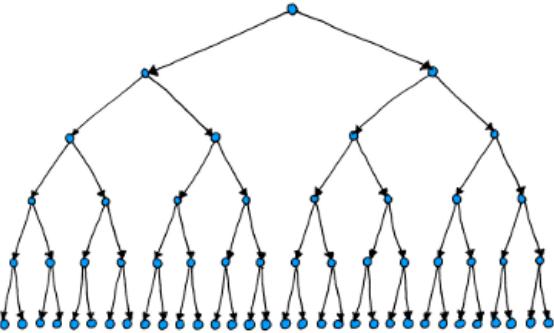
Jennifer Perret

Principal Group Program Manager
Skype Infrastructure now Azure Infrastructure
22 years Microsoft
25 years software industry

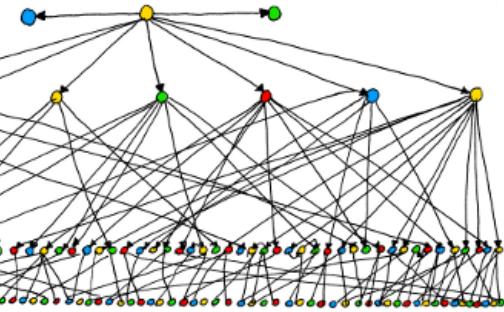
@jen_perret

<https://www.visualstudio.com/learn/devops-at-microsoft/>

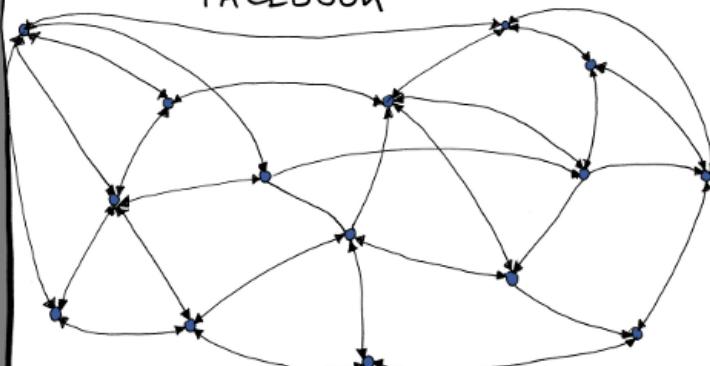
AMAZON



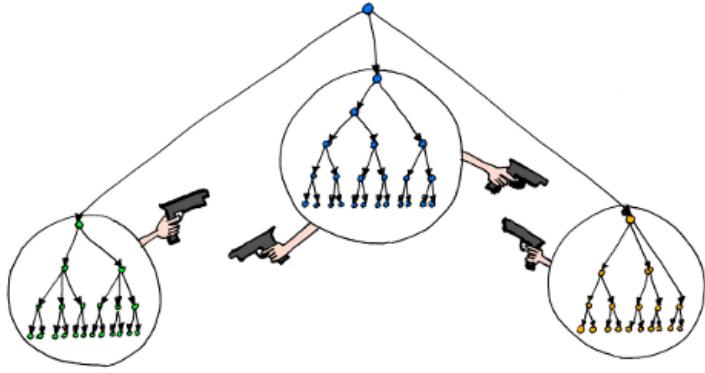
GOOGLE



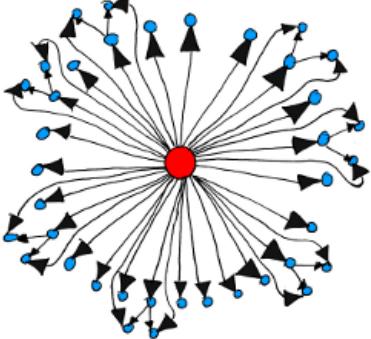
FACEBOOK



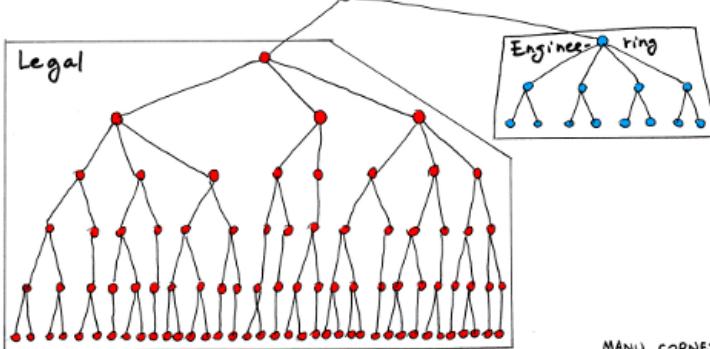
MICROSOFT



APPLE



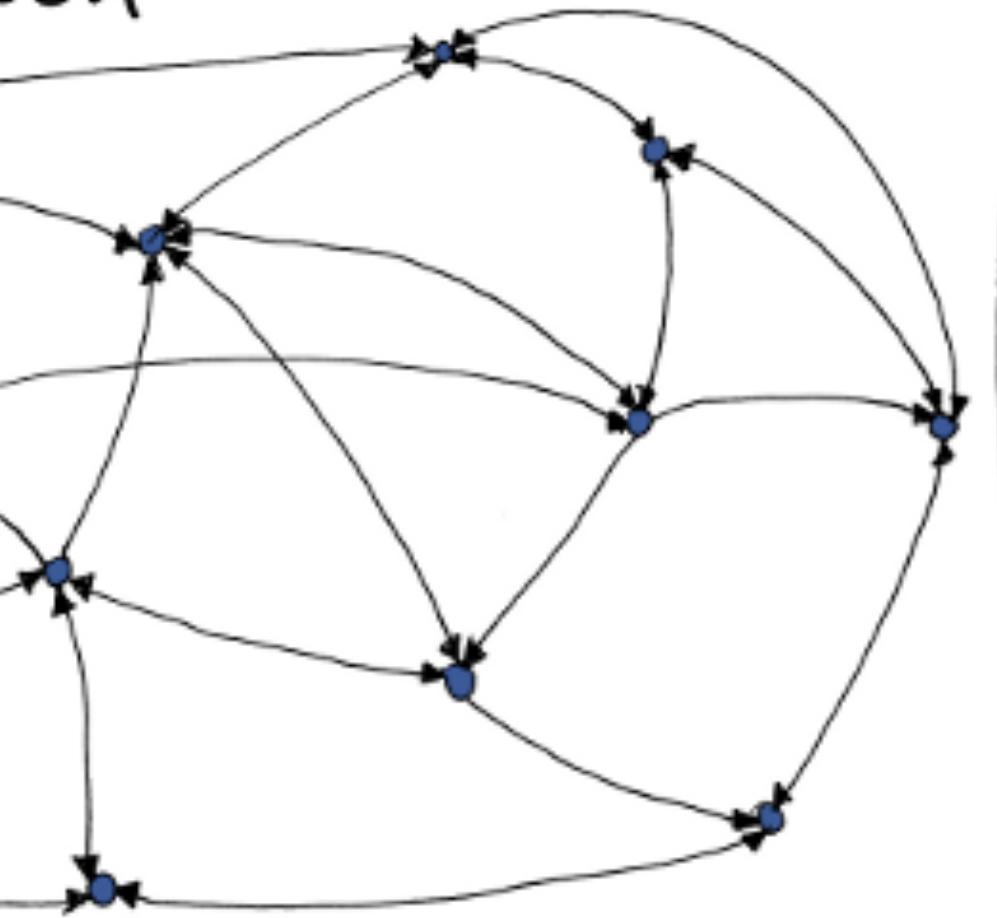
ORACLE



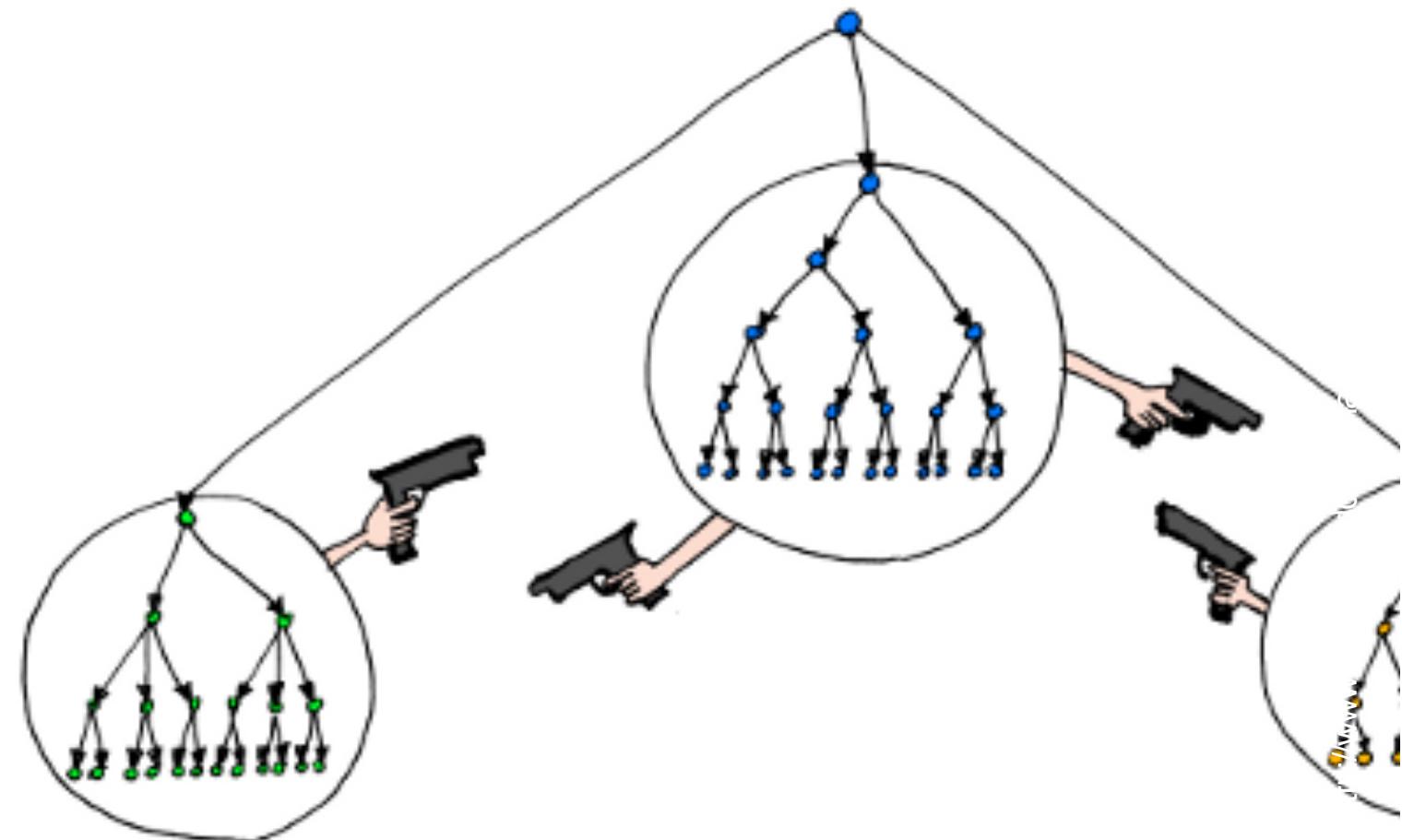
MANU CORNET



book



MICROSOFT



One Engineering System using VSTS

There cannot be a more important thing for an engineer, for a product team, than to work on the systems that drive our productivity

So I would, any day of the week, trade off features for our own productivity

I want our best engineers to work on our engineering systems, so that we can later on come back and build all of the new concepts we want

- Satya Nadela



Skype a Look Back...

Architecture

Started as a peer-to-peer network in 2003

Most people used Skype on desktop PCs

Most processes ran on the client

Most code lived in a huge Core Library



Tech stack

Linux, Java, PostgreSQL on server

Monolithic service in proprietary data centers

By 2010, the World Was Changing

Mobile Devices

Mobile devices were outpacing desktop PCs

Battery drain became a huge issue

Mobile clients became small
and lightweight relying on
server-side compute

Cloud Computing

Public Cloud became an option

Telemetry with big data
became a necessity

The image displays three news cards from the Skype website, each with a grey header and white body. The first card is titled 'Skype 5.1 for Mac hotfix' and includes a snippet of text about a hotfix for Mac. The second card is titled 'Update on Skype 5.x hotfix' and discusses a vulnerability reported by Pure Hacking. The third card is titled 'Security Vulnerability in Mac Client Has Been Addressed' and provides details about the addressed vulnerability.

Title	Date	Summary	Read more
Skype 5.1 for Mac hotfix	05/09/11 News	Hotfix released for Skype 5.1 for Mac. Today we've released an update to Mac (version 5.1.0.935) that has: Security updates Resolves video freezing in high-packet loss networks Fixes minor bugs We recommend that everyone upgrades...	Read more
Update on Skype 5.x hotfix	05/08/11 News	Looking for information about the reported vulnerability in Skype for Mac 5.x? Head over to the Skype Security blog for a full update. If you are using Skype for Mac 5.x, you can get the...	Read more
Security Vulnerability in Mac Client Has Been Addressed	05/06/11 News	Last month, we were contacted by Pure Hacking, a group of ethical hackers in Australia, who reported what they believed to be a zero-day vulnerability in Skype for Mac 5.x. This vulnerability, which they blogged...	Read more

By 2012, Decision for Microservices on Azure

Strategy:

Re-architect on the cloud to enable ability to scale out
Agility by decoupling teams and building microservices

Shift to a cloud mindset

Build for *high availability*

Expect outages and enable rapid mitigation with DC – DC failover, transparent to customer

Design for cloud service so it scales *out* instead of *up*

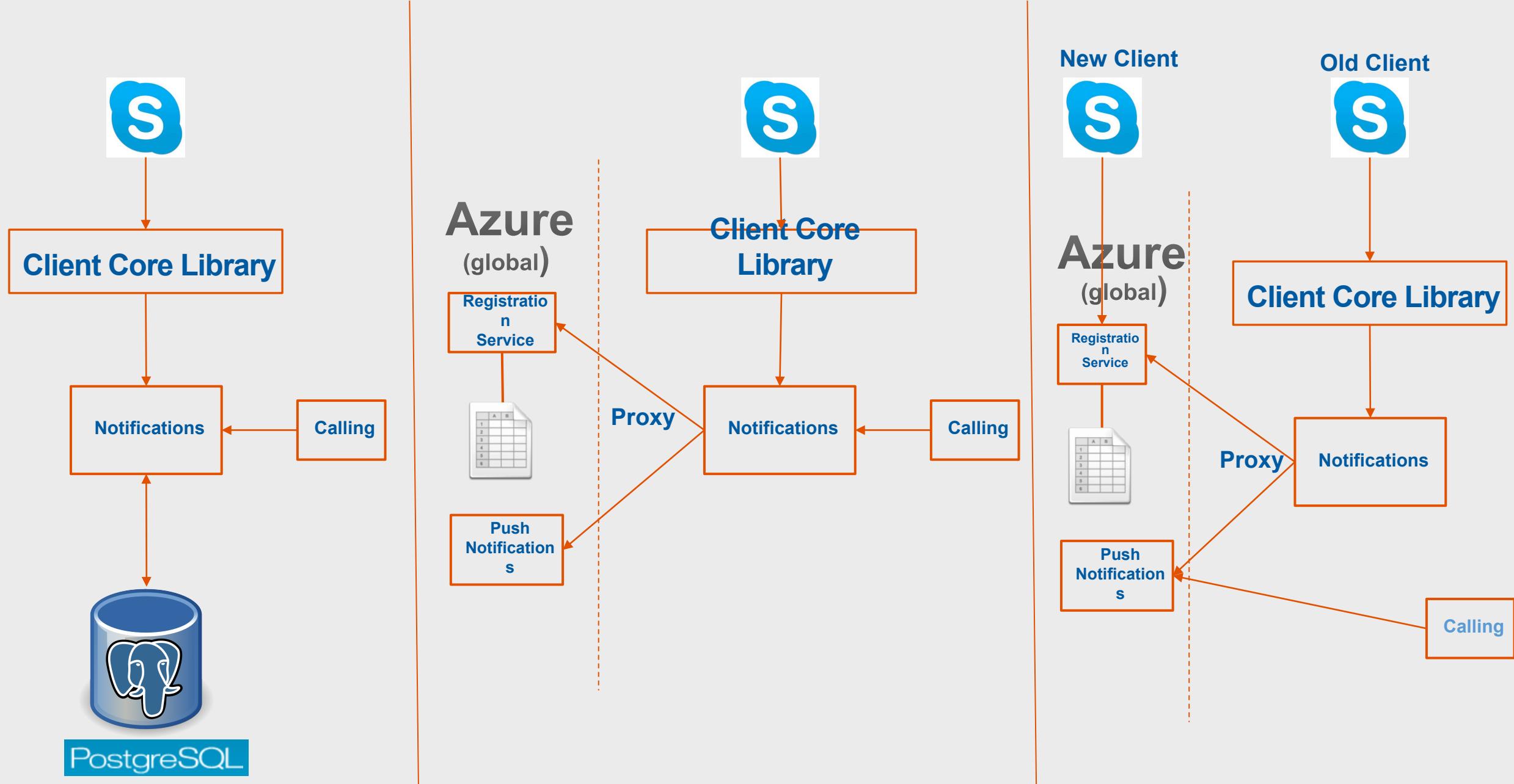
Things *break at scale* for many reasons

Critical to deploy progressively

Test in production

Rapidly reroute traffic to healthy version

From Monolith To Microservices



Moving to DevOps Had Some Key Challenges

Training an entire org on DevOps

Addressing international HR laws for OnCall

Building self service tooling

Creating a Healthy Live Site culture

Service Health Review including availability metrics

Incident Overview

Continual Improvement Service Plan (Repair Items)

Meeting Our Compliance and Security Bar

Updating our Standard Operating Procedures

From “Dev + Ops” teams to DevOps

Empower teams’ agility

Azure Deployment Tooling

Audit trails through VSTS work items (persistent data trail)



Argentina PDPA



CSA-CCM



CS Mark (Gold)



DISA



enisa

European Network
and Information
Security Agency



ENISA IAF



EU Model Clauses



GxP



HIPAA / HITECH



CCSL (IRAP)



ISO/IEC 27001



ISO/IEC 27018



Japan My Number Act



FDA 21 CFR Part 11



FedRAMP



FERPA



FIPS 140-2



FIEC



FISMA



iDA
SINGAPORE



NZ CC Framework



Section 508 / VPATs



SHARED ASSESSMENTS



SOC 1



SOC 2

Becoming Data Driven

Design KPIs carefully, understand your business metrics, scenario metrics, service metrics

Teams focused on microservices, and need to **correlate end to end**

Experiment continuously to learn from customers

The screenshot shows two Skype conversations side-by-side.

Left Conversation (Andrew Kowal):

- 17 December 2013: Andrew asks Krishna to pick up his daughter from school. Krishna responds that he's signed off on pushing to prod though and gives Andrew a bell on his mobile for urgent issues.
- 13 January 2014: Krishna says he thinks they're good and asks Andrew to update his mood message.
- 14 January 2014: Krishna asks if Andrew can accept an auth request from Arctic Monkeys.
- Andrew Kowal responds with "Sry tech issues" and asks if Krishna can call him in.

Right Conversation (Andrew Kowal):

- 17 December 2013: Andrew informs Krishna he's signed off on pushing to prod. Krishna asks for a bell on his mobile for urgent issues.
- 13 January 2014: Krishna says they're good and asks Andrew to update his mood message.
- 14 January 2014: Krishna says "yo" and asks Andrew to email more details about ECS testing.
- Yesterday: Krishna asks if Andrew can accept an auth request from Arctic Monkeys.
- Andrew Kowal responds with "Sry tech issues" and asks if Krishna can call him in.
- A message input field at the bottom right is visible.

And Measure What's Important (KPI's)

Usage

- Acquisition
- Engagement
- Satisfaction
- Churn
- Feature Usage

Velocity

- Time to Build
- Time to Self Test
- Time to Deploy
- Time to Learn

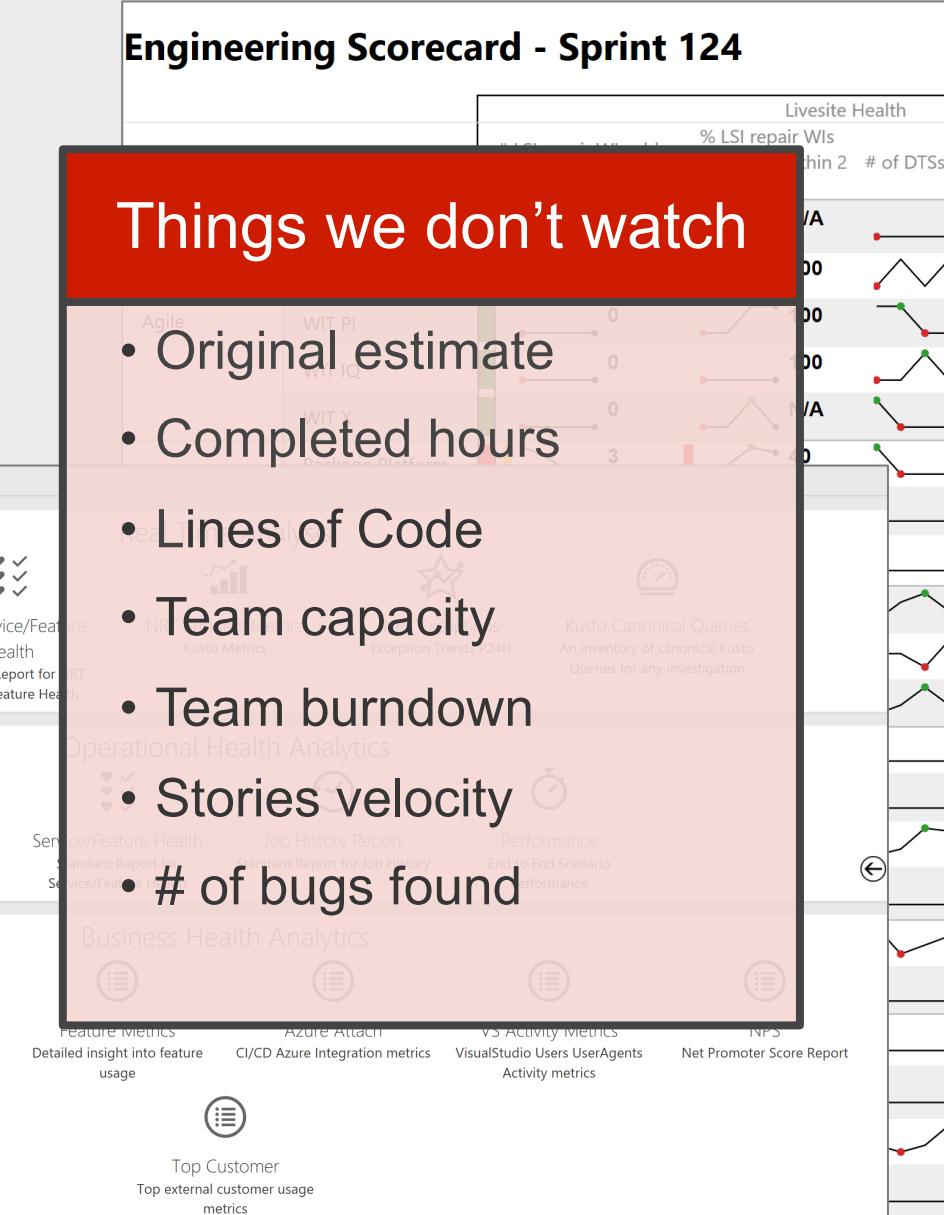
Live Site Health

- Time to Detect
- Time to Communicate
- Time to Mitigate
- Customer Impact
- Incident Prevention Items
- Aging Live Site Problems
- SLA per Customer
- Customer Support Metrics

Engineering Scorecard - Sprint 124

Things we don't watch

- Original estimate
- Completed hours
- Lines of Code
- Team capacity
- Team burndown
- Stories velocity
- # of bugs found



Skype Used and Contributed to 1ES at
Microsoft
Moved to Git under VSTS

Co-developed with VSTS for Maven/Ivy packages,
now generally available

Co-developed deployment pipeline with Azure

Skype Today

1000 Engineers

5 locations, 10+ hours apart:

Palo Alto, Redmond, Vancouver, Prague, Tallinn

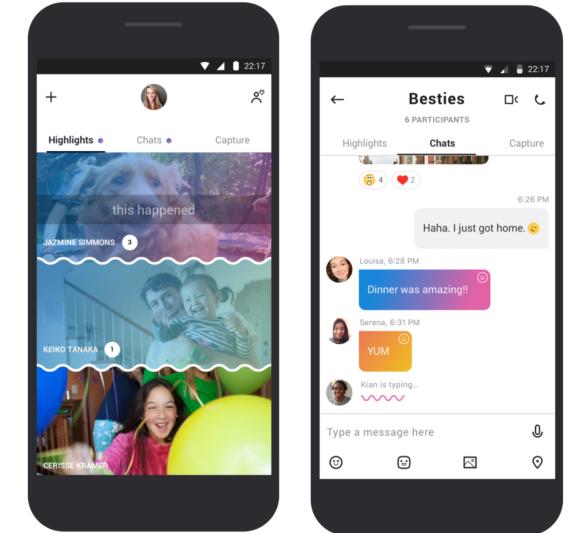
Service volume

1.8 M Push notifications daily

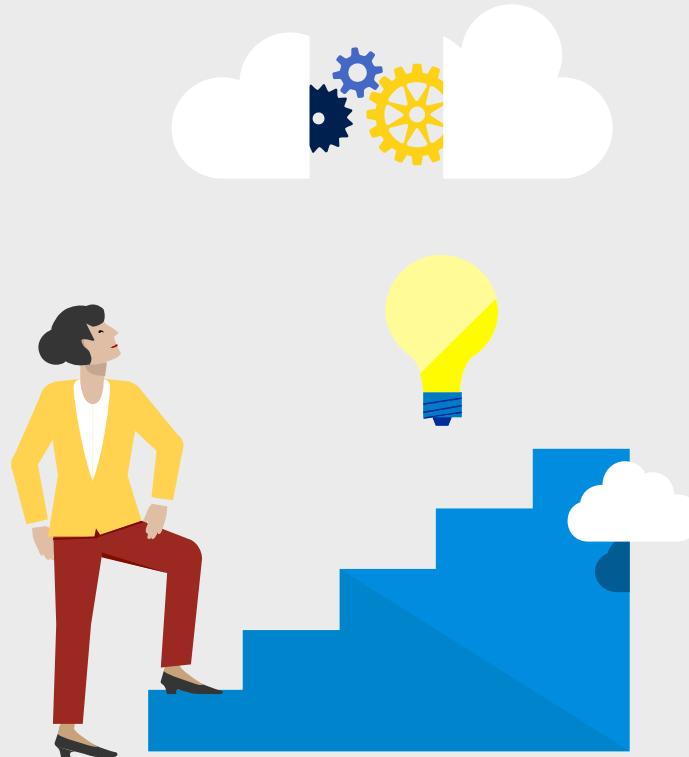
2.5 M Call connections daily

Data driven

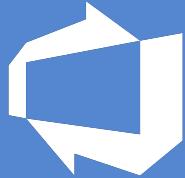
Quality telemetry - 142 B events daily



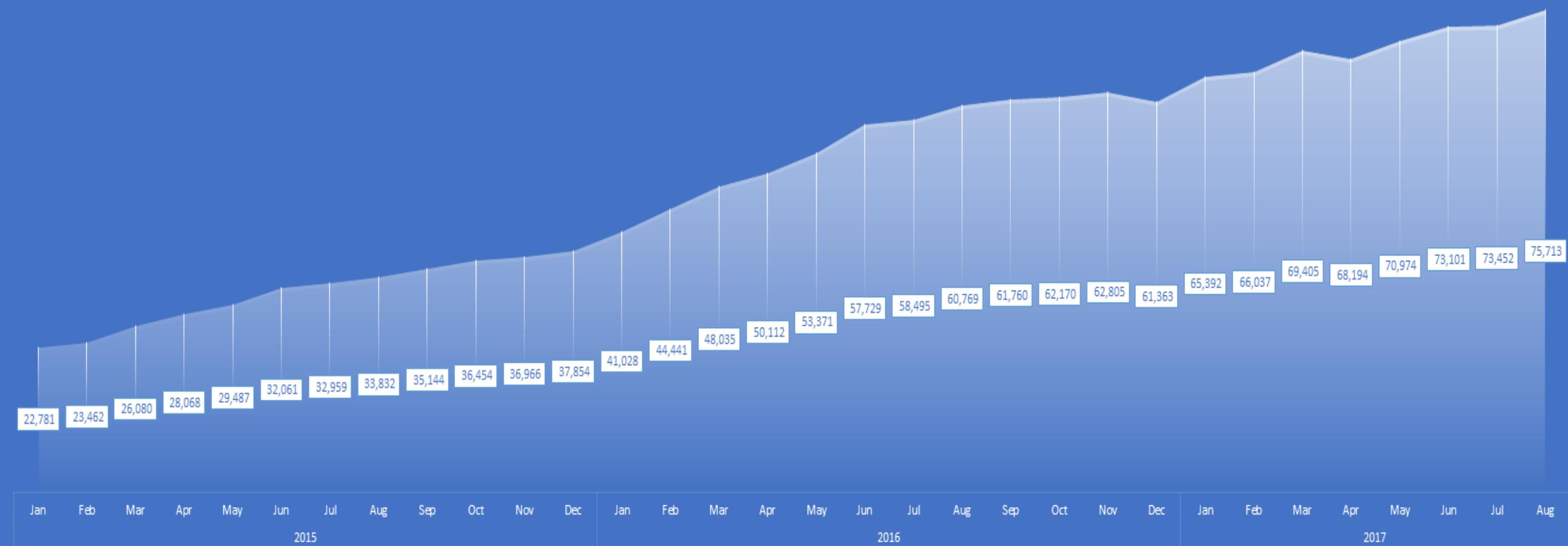
Five habits we've learned so far



-  Microservices require design for resilience
-  Agility requires developer self-service
-  Change requires growth mindset
-  Contribute back to engineering system
-  Auditors get that cloud requires new SOP



VSTS: Millions of Users + Most of Microsoft



Company wide engaged users of VSTS in the Microsoft organization (Aug 2017)



Call to action

Look at your practices on
<http://devopsassessment.net>
(developed jointly with DORA and ITRev!)

Fill out on your own or at booth 206

Earn 10 points for the #DOES17 techie badge!



Thank you!

Sam Guckenheimer
samgu@microsoft.com
[@vsts](https://twitter.com/@vsts)

Jennifer Perret
jenp@microsoft.com
[@jen_perret](https://twitter.com/@jen_perret)