

Technological Revolutions

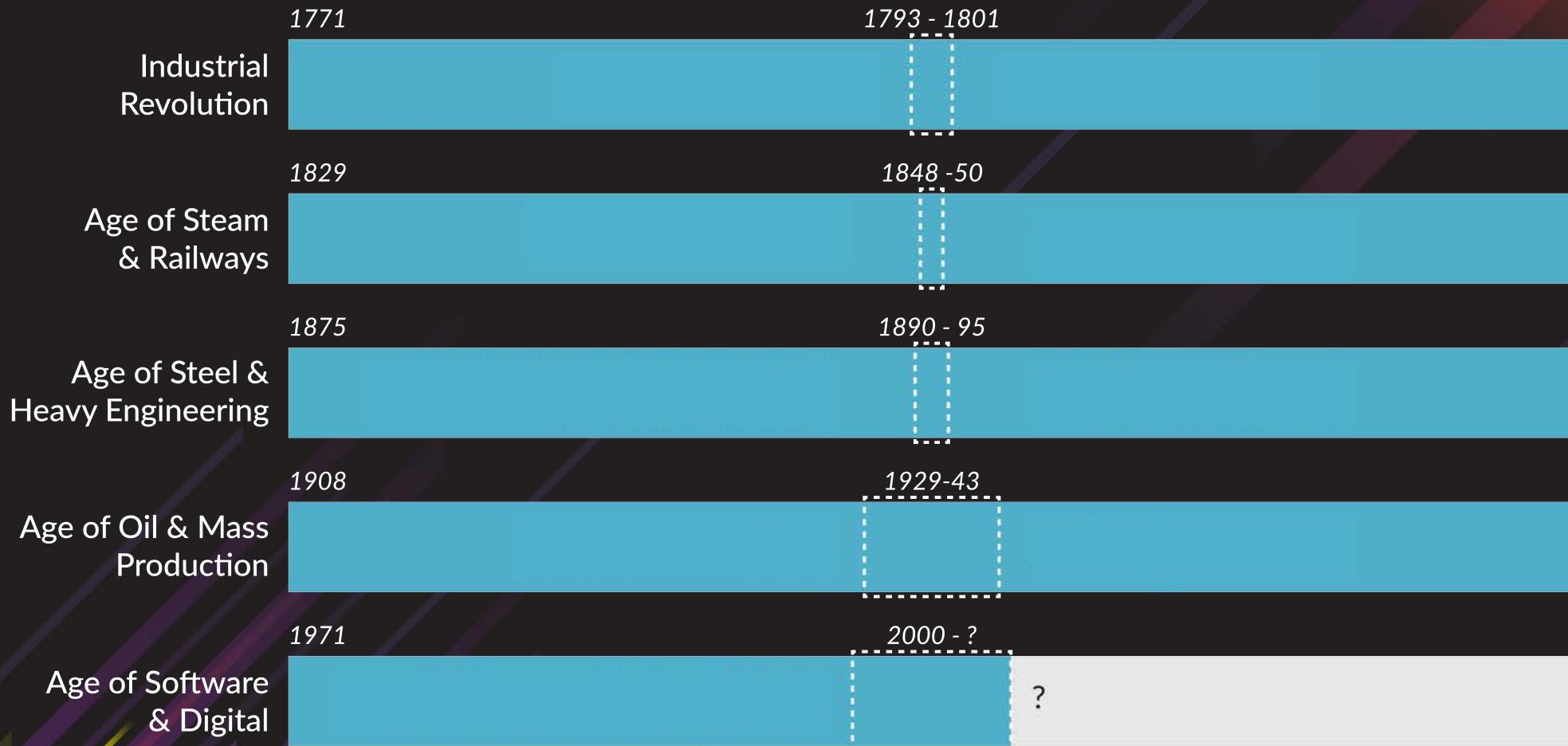


Figure: Adapted from Carlota Perez

Technological Revolutions

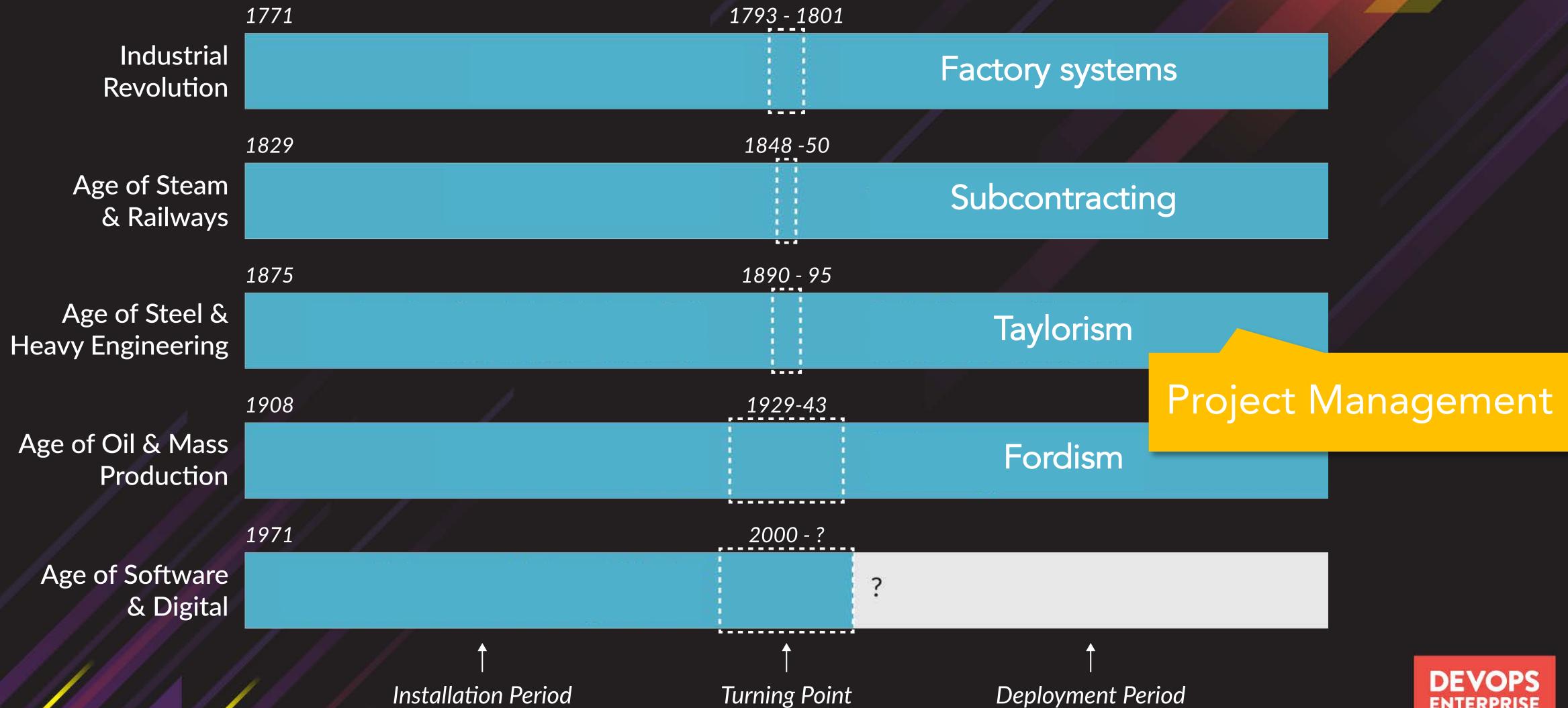


Figure: Adapted from Carlota Perez

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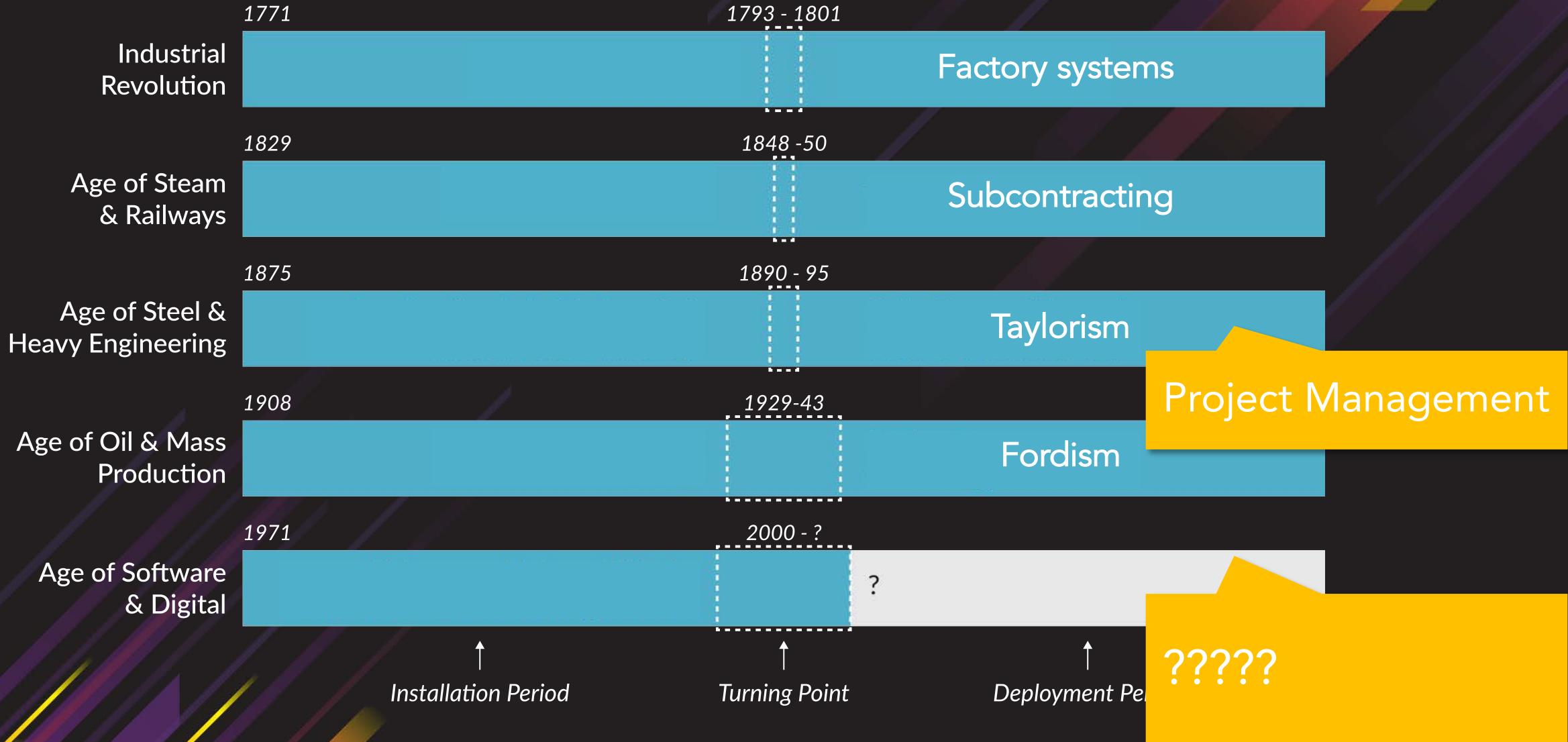


Figure: Adapted from Carlota Perez

Technological Revolutions

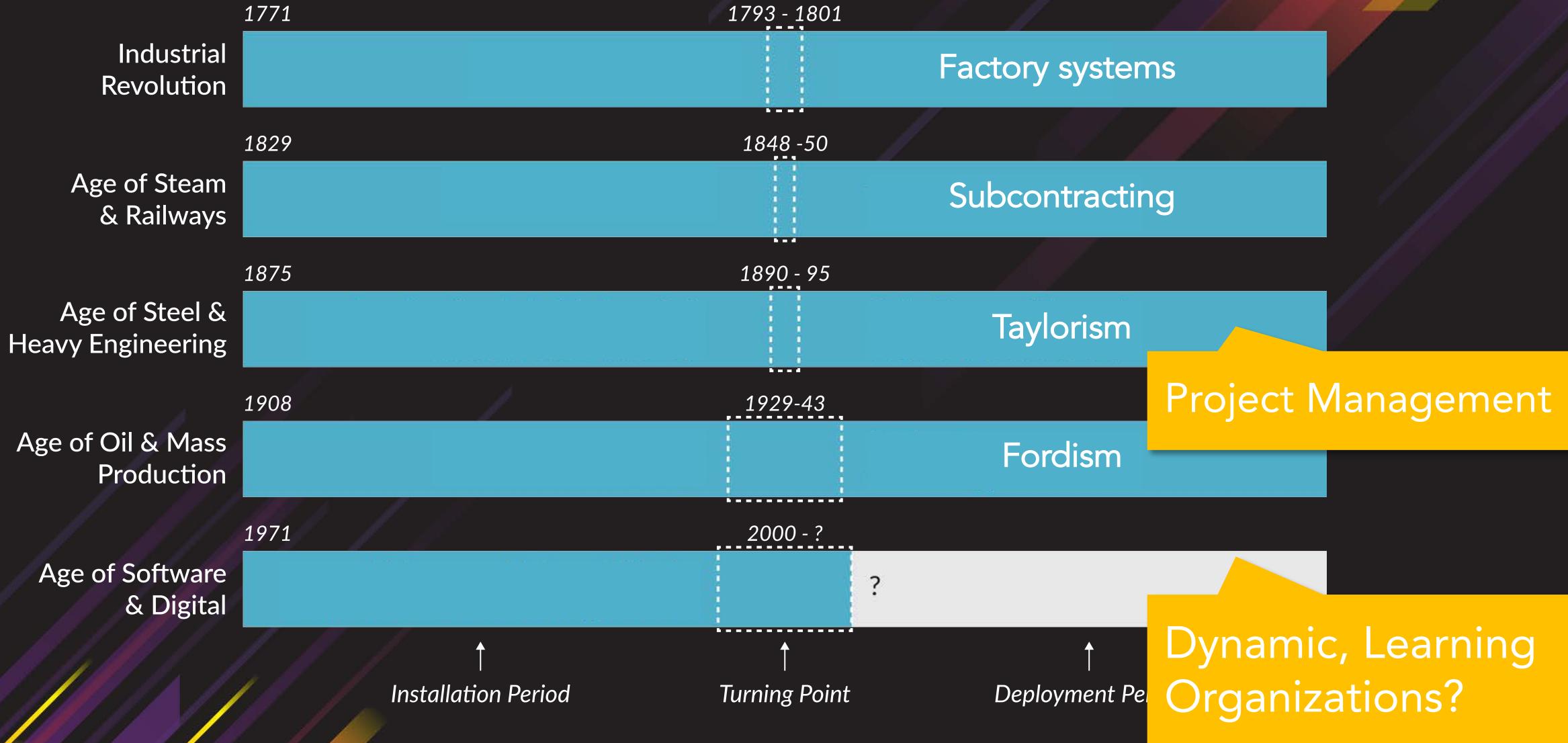
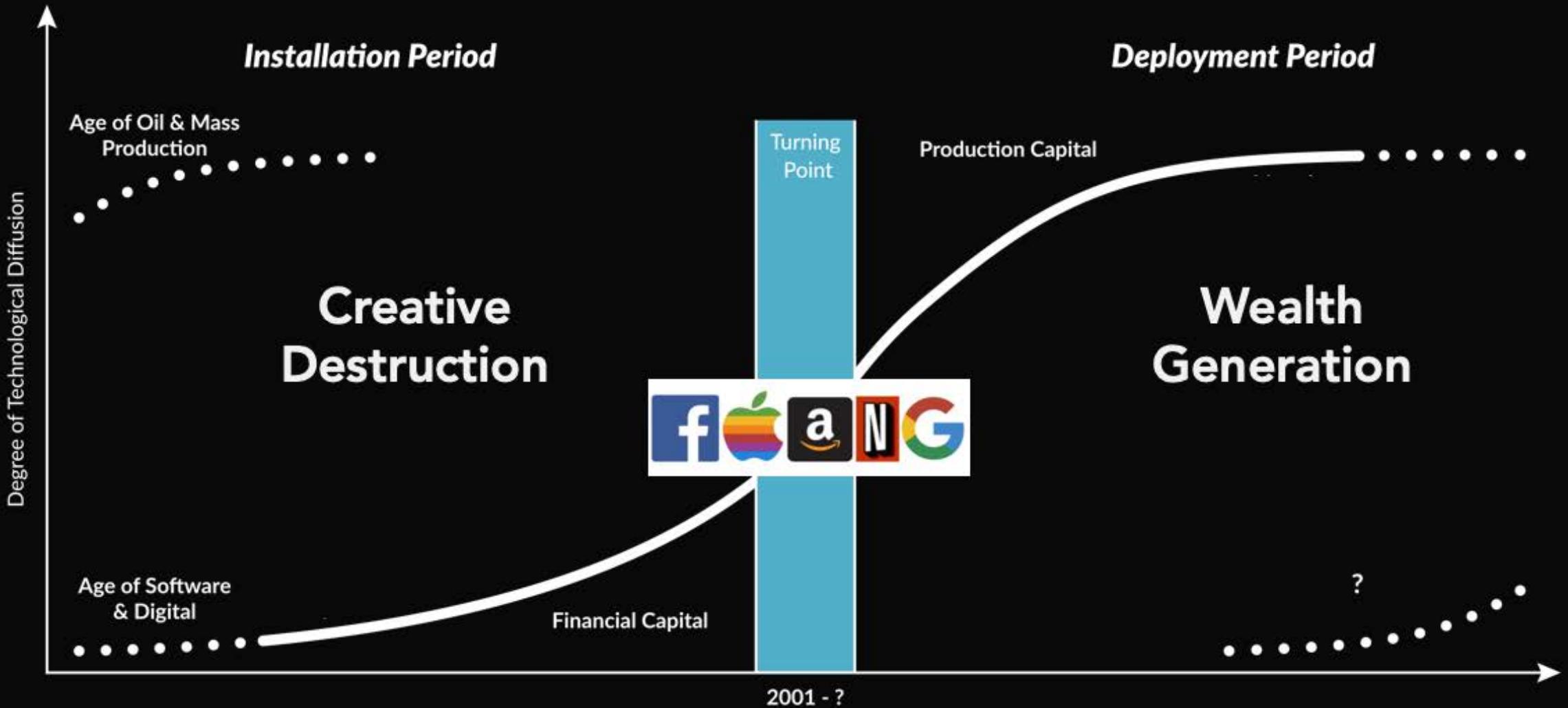


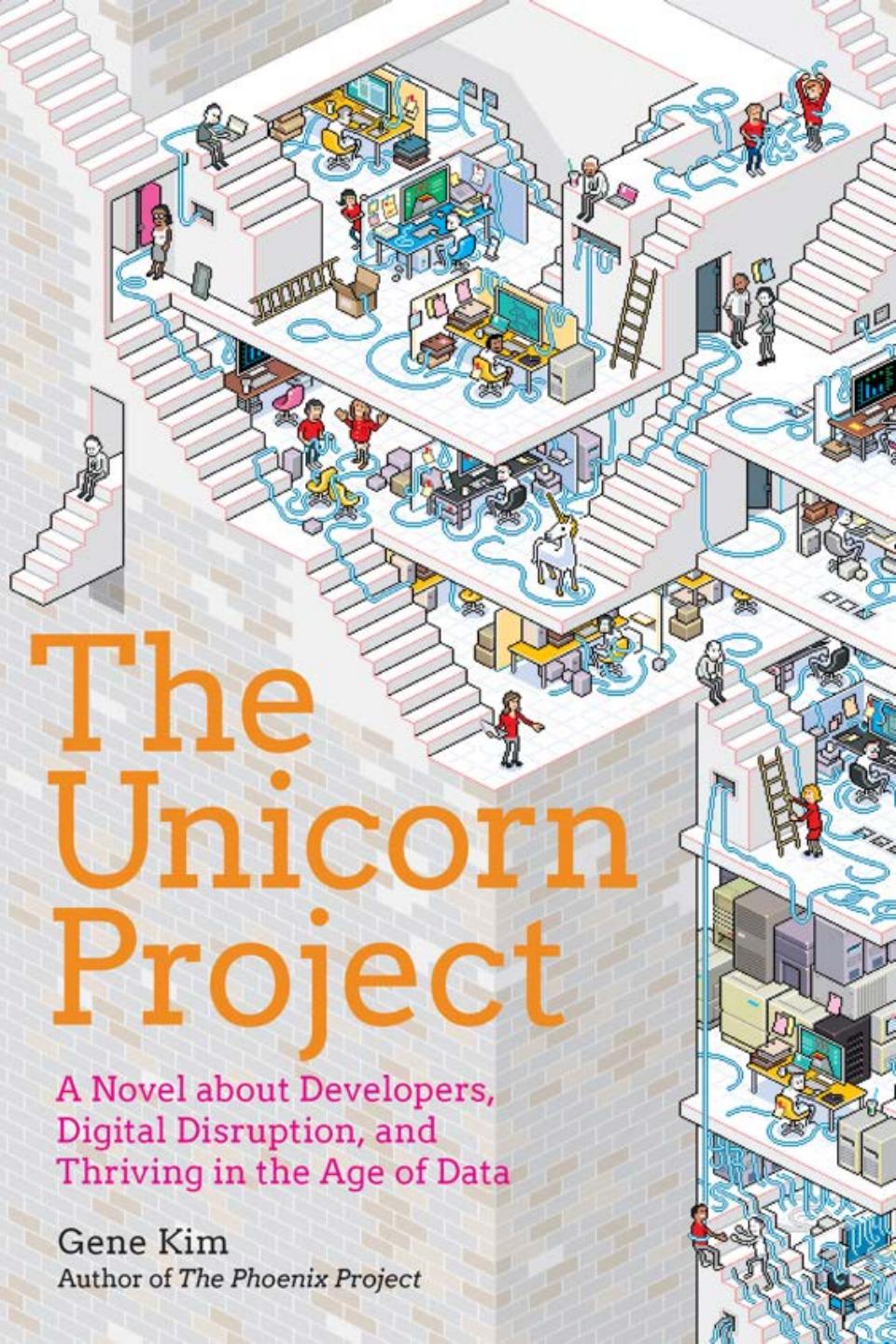
Figure: Adapted from Carlota Perez

The Turning Point



The Five Ideals

1. Locality and Simplicity
2. Focus, Flow, and Joy
3. Improvement of Daily Work
4. Psychological Safety
5. Customer Focus



Ideal #1:

Locality and Simplicity

The First Ideal: A Measure

GET TOGETHER GO FASTER

- Bus factor
- Lunch factor

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How Many People Do You Need To Feed?

GET TOGETHER GO FASTER

- Two pizza team
- Feeding everyone in the building
- Schedule lunch with 43 different people

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The First Ideal: Code

GET TOGETHER GO FASTER

- Ideal: anyone can implement what they need by looking at one file or module, and make the needed change
 - Kubernetes sidecars
 - Spring (http-retry, Dependency Injection)
 - Aspect Oriented Programming
- Not Ideal: to make your needed change, you have to understand and change all the files and modules



The First Ideal: Code

GET TOGETHER GO FASTER

- Ideal: changes can be independently implemented and tested, isolated from other components (composability)
- Not Ideal: in order for changes to be implemented and tested, the entire system must be present (e.g., integrated test environment)

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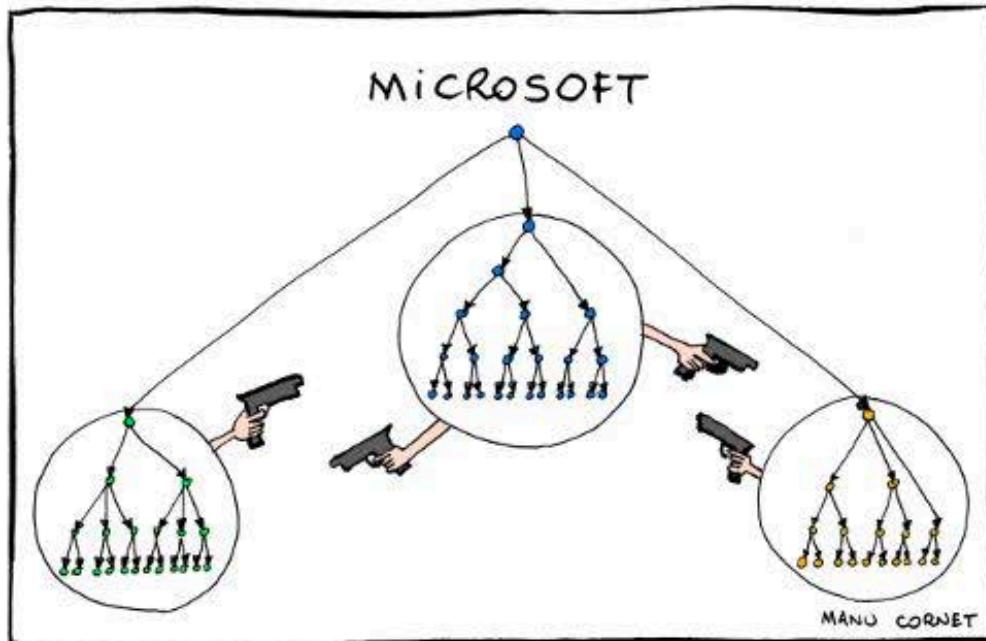
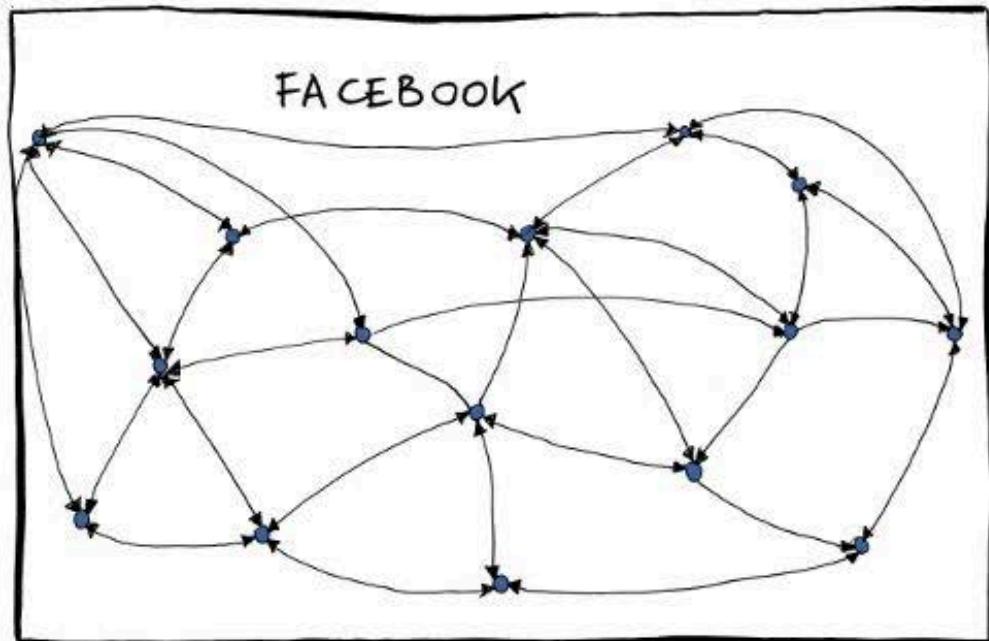
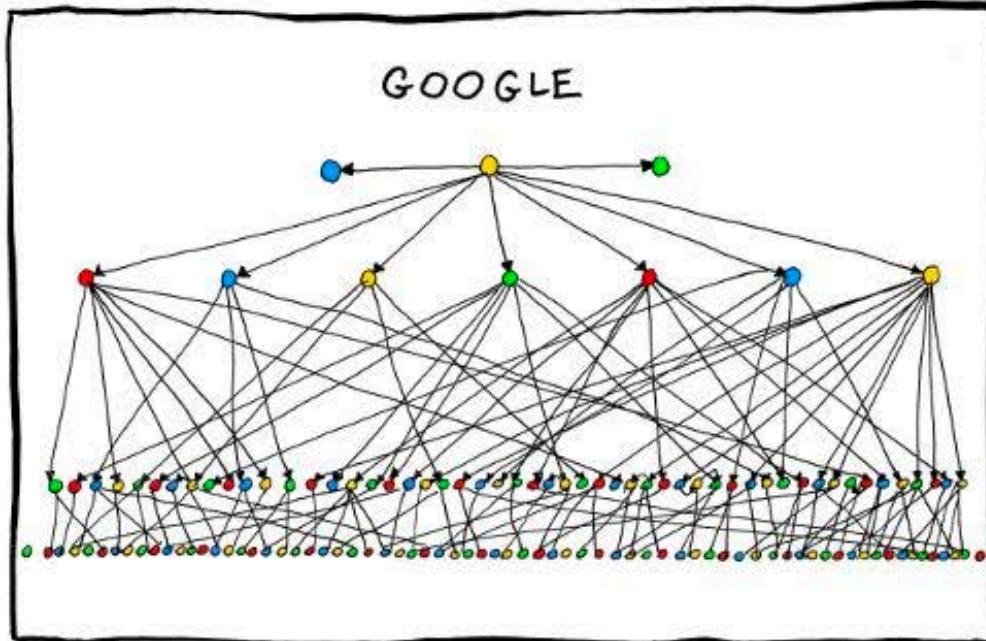
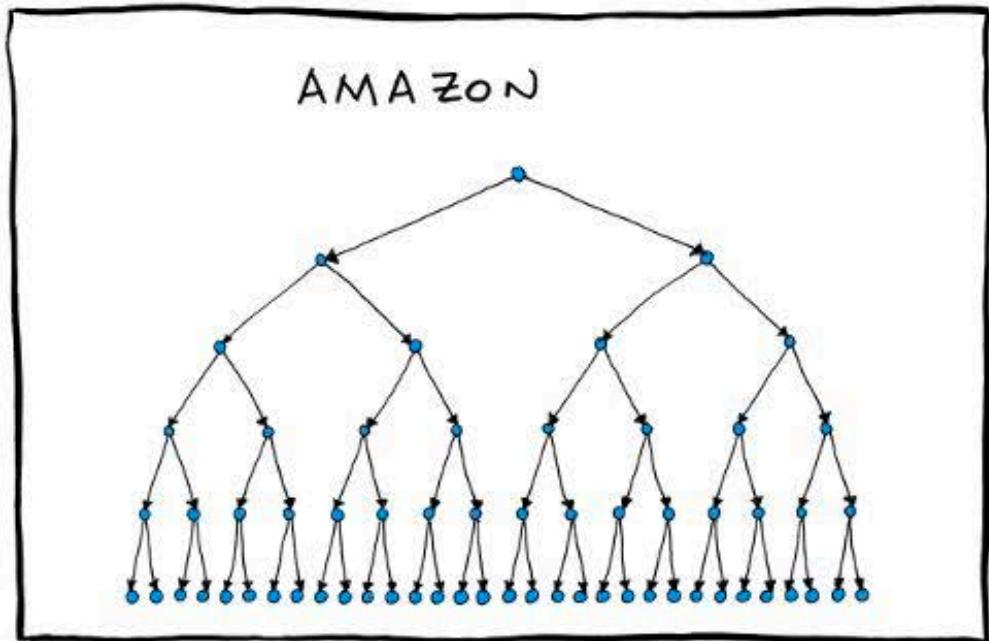
The First Ideal: Organization

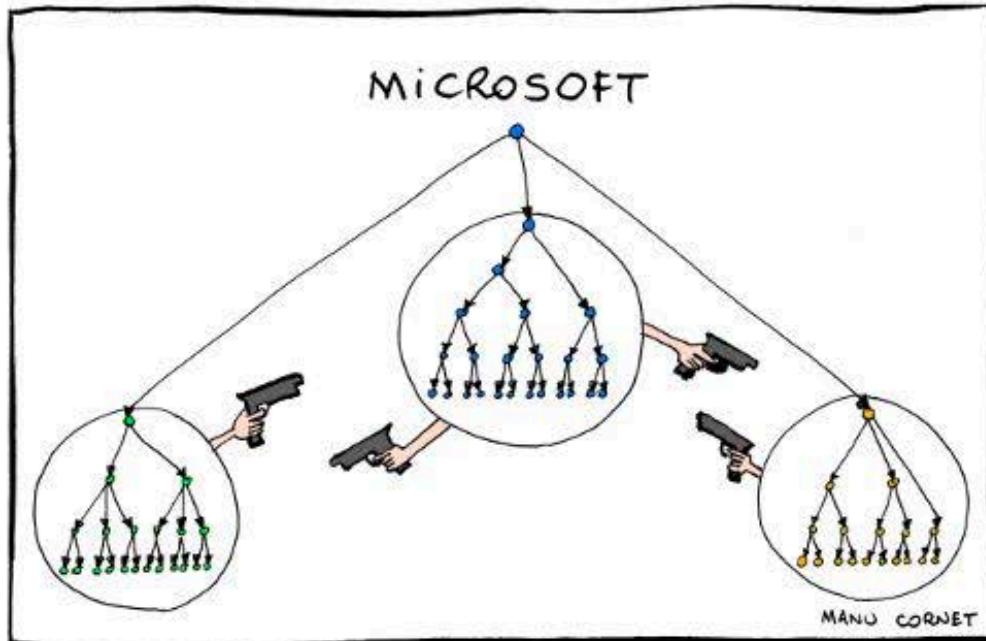
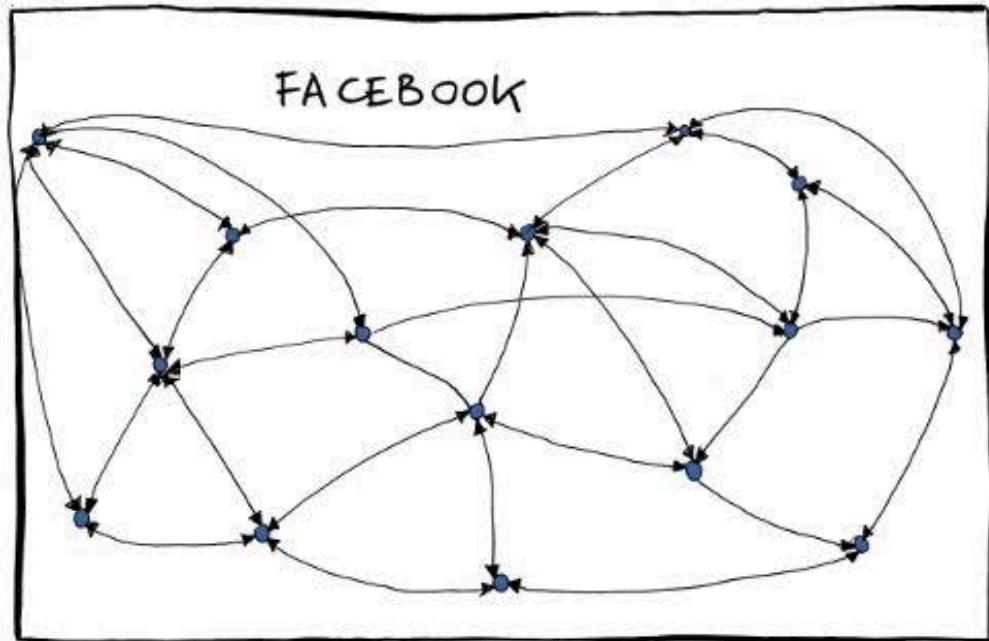
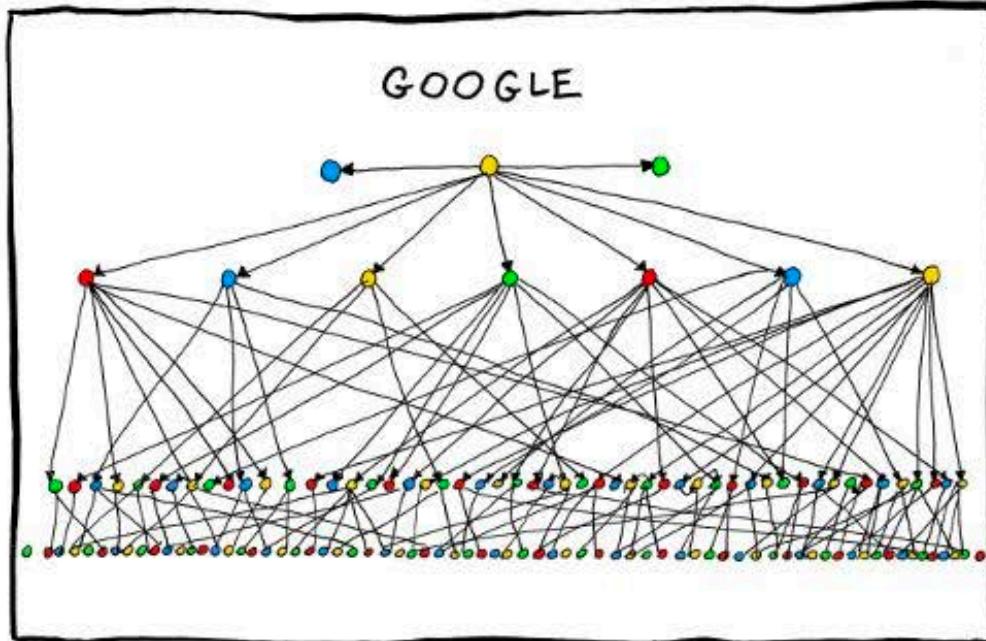
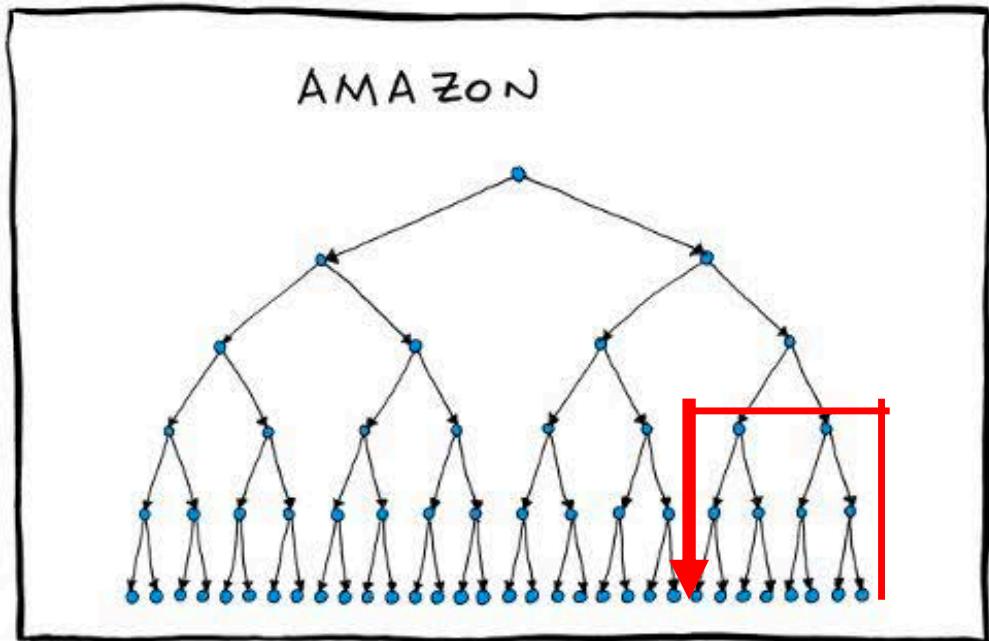
GET TOGETHER GO FASTER

- Ideal: every team has the expertise, capability and **authority** to satisfy customer needs
- Not Ideal: in order to satisfy customer needs, every team must escalate up two levels (and over two, and down two)

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Ideal #2:

Focus, Flow, and Joy

The Second Ideal: Focus and Flow

GET TOGETHER GO FASTER

- Ideal: your energy and time is focused on solving the business problem, and you're having fun
- Not Ideal: all your time is spent trying to solve problems you don't even want to solve (e.g., YAML files, Makefile and spaces in filenames, bash)

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Never Have I Valued Infrastructure More



- Things I detest now
 - Everything outside of my application
 - Connecting to anything to anything
 - Updating dependencies
 - Secrets management
 - Bash
 - YAML
 - Patching
 - Building kubernetes deployment files (mostly by Googling)
 - Why my cloud costs are so high



The Value Of Platforms

GET TOGETHER GO FASTER

- Enable developer productivity
 - Self-service
 - On-demand
 - Immediacy and fast feedback
 - Focus and flow
 - Joy
- Monitoring, deployment, environment creation, security scans, orchestration...

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GET
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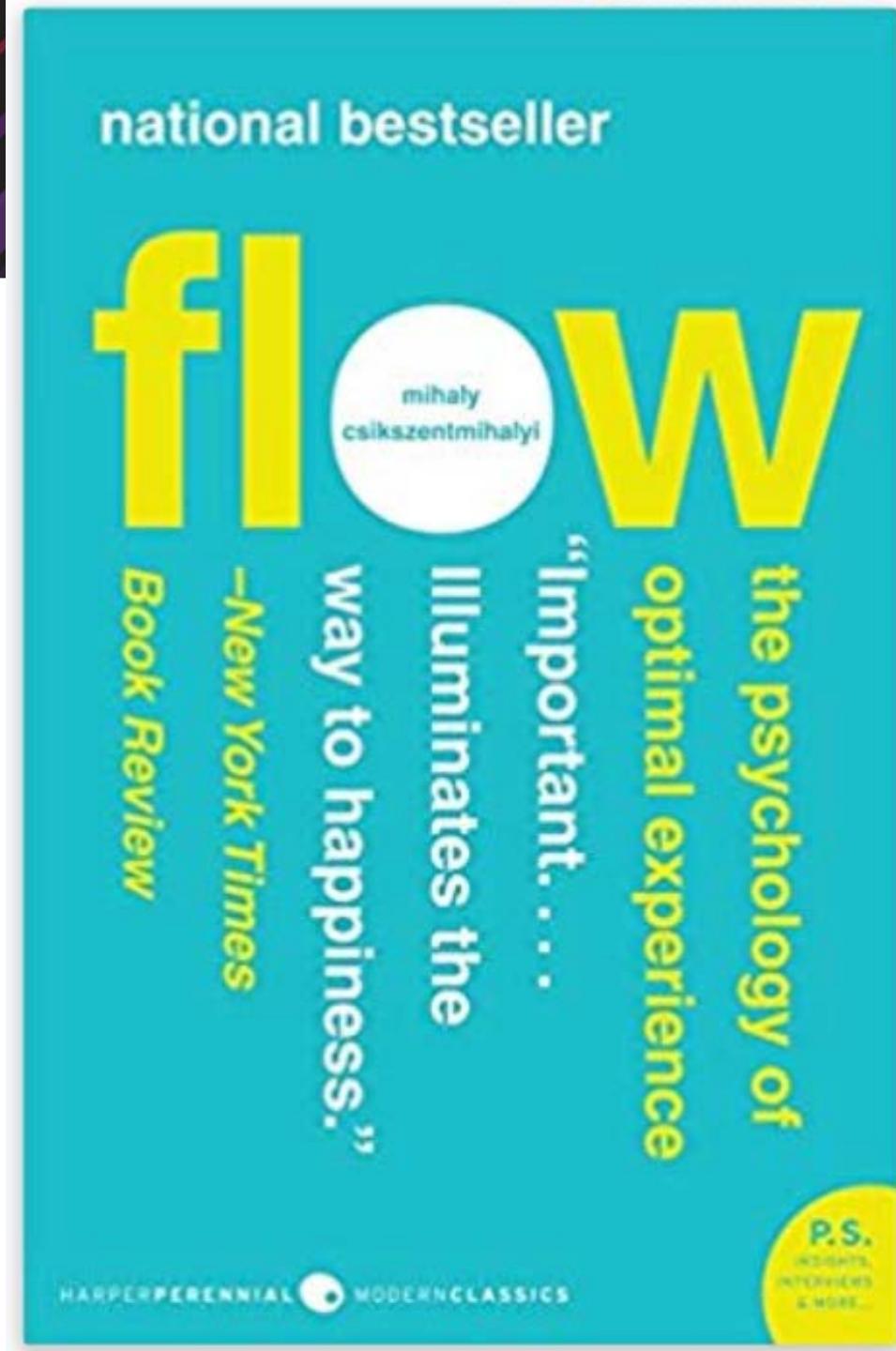
There's Never Been A Better Time
for Infrastructure and Operations

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Two Types Of Learning

- Procedural Learning
- One-shot Learning



- Feb 26, 2019  dm3/clojure.java-time: Java 8 Date-Time API for Clojure github.com
- Feb 26, 2019  clojure convert java.time instant to inst - Google Search www.google.com
- Feb 26, 2019  date - Java 8 – Create Instant from LocalDateTime with TimeZone - Stack Overflow stackoverflow.com
- Feb 26, 2019  [#CLJ-2466] java.time.ZonedDateTime is not an inst - Clojure JIRA dev.clojure.org
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- Feb 26, 2019  convert java.time to instant clojure - Google Search www.google.com
- Feb 26, 2019  Could not convert [#object[java.time.LocalDate 0x3a7c1922 "2019-01-01"]] to class java.time.... www.google.com
- Feb 26, 2019  clojure java.time localdate to inst - Google Search www.google.com

Ideal #3:

Improvement Of Daily Work

Not Ideal

“In manufacturing, the absence of effective feedback often contribute to major quality and safety problems. In one well-documented case at the General Motors Fremont manufacturing plant, there were no effective procedures in place to detect problems during the assembly process, nor were there explicit procedures on what to do when problems were found.

“As a result, there were instances of engines being put in backward, cars missing steering wheels or tires, and cars even having to be towed off the assembly line because they wouldn’t start.”

Ideal



GET
TOGETHER
GO
FASTER

Create as much feedback in our system, from as many areas in our system, sooner, faster, and cheaper, with as much clarity between cause and effect.

Why? Because the more assumptions we can invalidate, the more we learn, improving our ability to fix problems and innovate.



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TOYOTA



Your Toyota is My Toyota

"If I suspect a problem, I pull the Andon cord and the whole production line stops immediately, and it doesn't start again until the issue has been resolved. I've pulled it thousands of times and it's good because it makes everyone personally responsible for producing the highest quality car."

Bridie Tucker
Team Member, Trim Assembly, Toyota Burnaston, UK

Today
Tomorrow
Toyota

Visit Bridie Tucker at TIMT.com/bridie

How many times per day is the andon cord pulled in a typical day at a Toyota manufacturing plant?

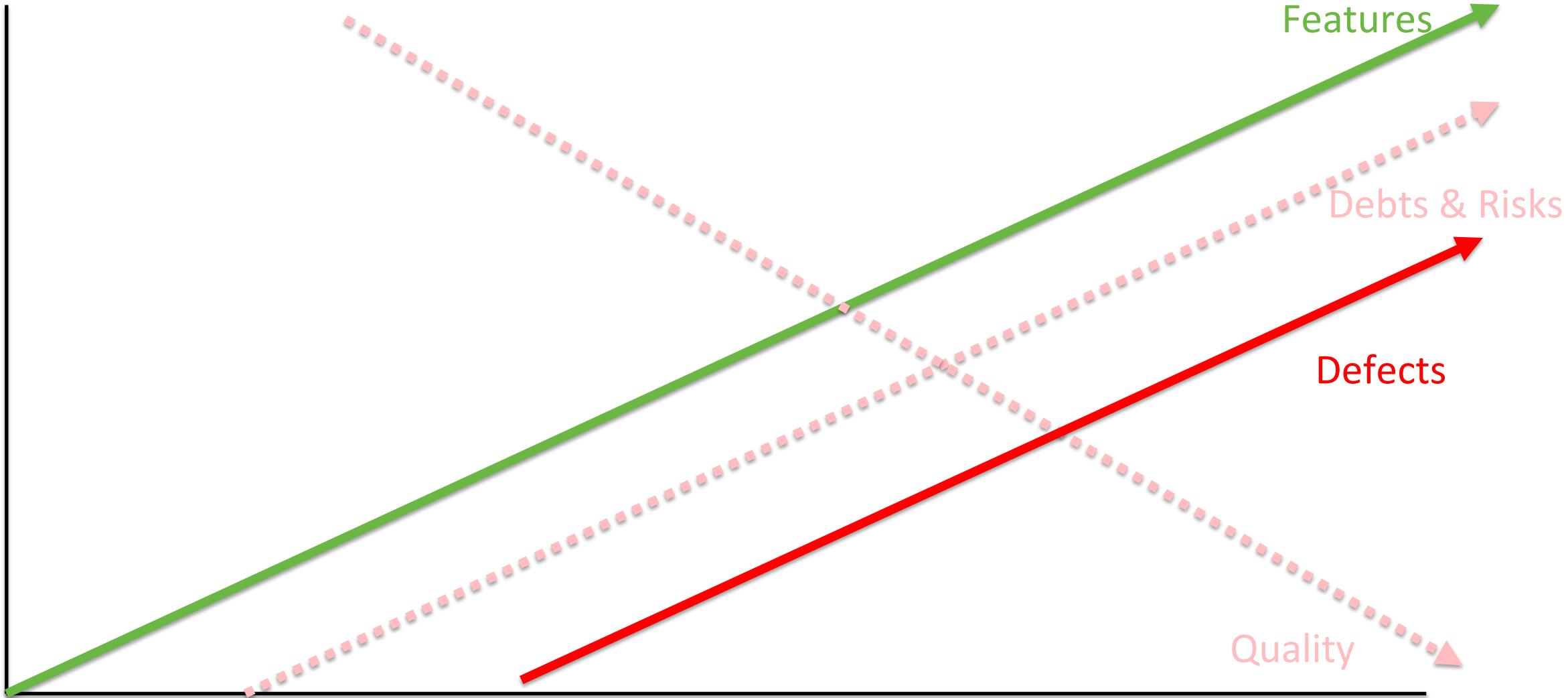
3,500 times per day



Greatness Isn't Free... The Need To Pay Down Technical Debt



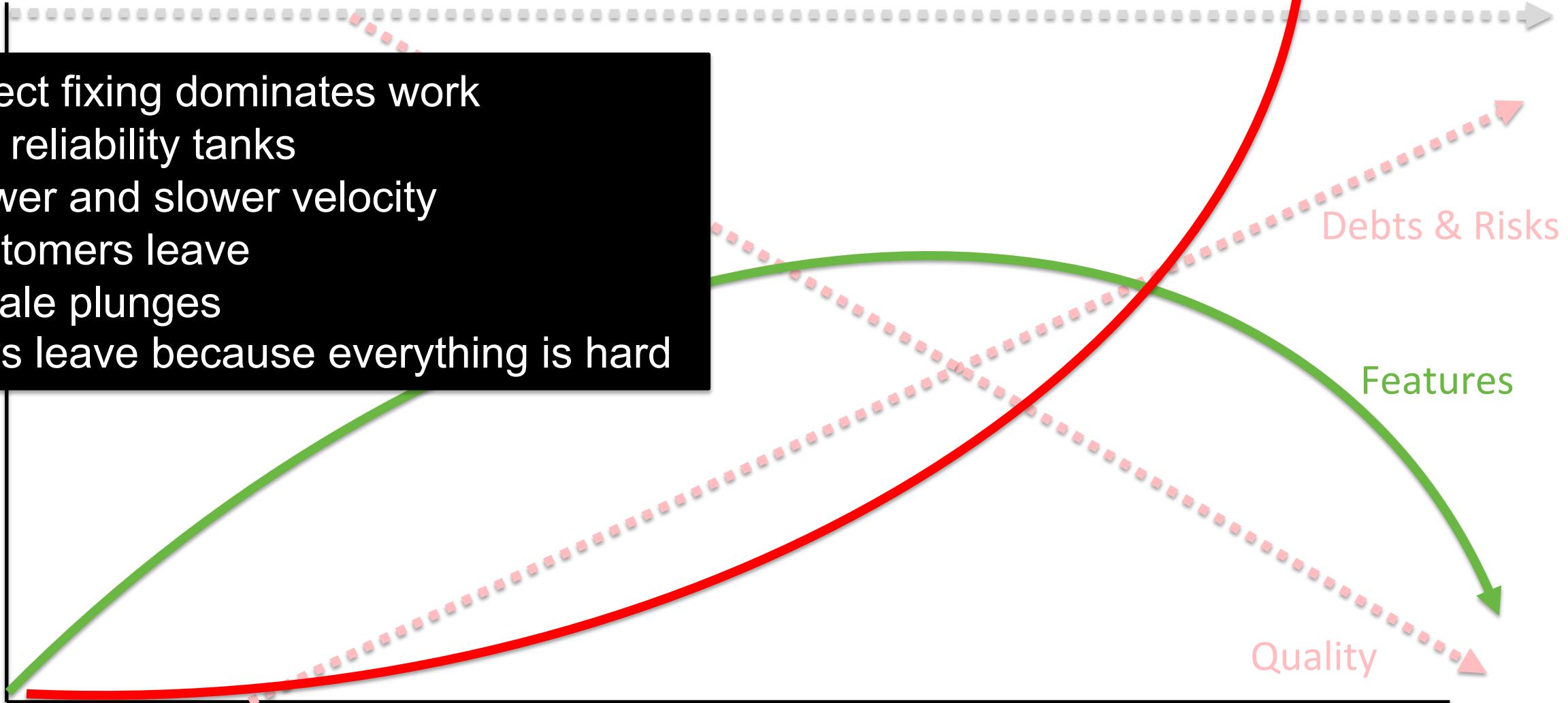
Fast Push To Market



Fast Push To Market – Continued

|

Defect fixing dominates work
Site reliability tanks
Slower and slower velocity
Customers leave
Morale plunges
Devs leave because everything is hard



Who hasn't felt this?

You hire a bunch of developers, but you still can't ship the features you promised...

...and maybe you even have the feeling that things are slowing down...



John Cutler
@johncutlefish

Follow

Case in point (from actual org)

- * In 2015 reference feature took 15-30d.
- * In 2018 same (class of) feature took 150-300d

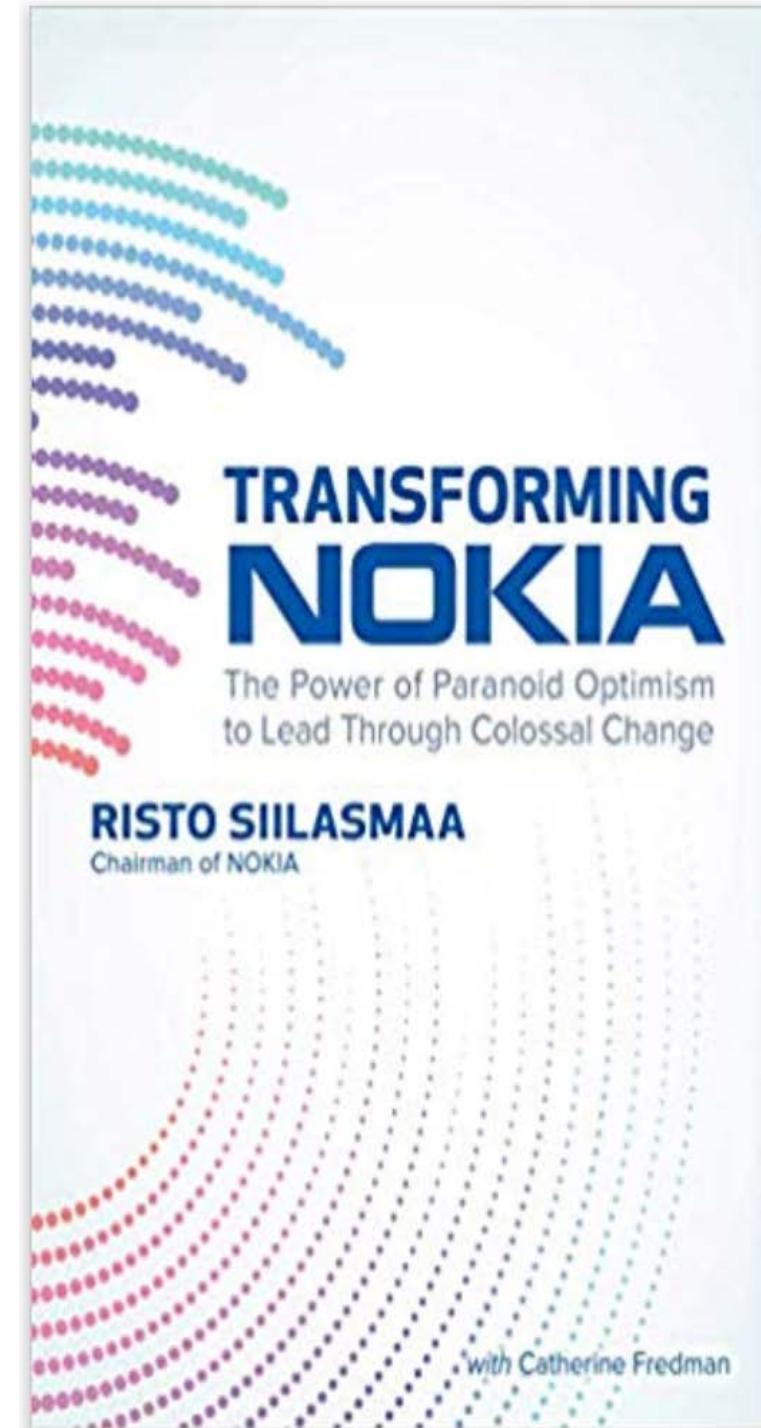
primarily bc of 1) tech debt, and 2) fast track silver bullets to drive success theater and/or acquisitions (for same effect)

Cc: [@realgenekim](#) [@mik_kersten](#)

Risto Siilasmaa, NOKIA

"In 2010, Risto Siilasmaa was a board director at Nokia. When he learned that generating a Symbian build took *a whole forty-eight hours*, he said that it felt like someone hit him in the head with a sledgehammer," Erik says. "He knew that if it took two days for anyone to determine whether a change worked or would have to be redone, there was a fundamental and fatal flaw in their architecture that doomed their near-term profitability and long-term viability. They could have had twenty times more developers, and it wouldn't have made them go any faster."

Erik pauses. "It's incredible. Sensei Siilasmaa knew that all the hopes and promises made by the engineering organization was a mirage. Even though there were numerous internal efforts to migrate off of Symbian, it was always shot down by the top executives until it was too late.



Near Death Experiences

GET TOGETHER GO FASTER

- Ebay (1999)
- Microsoft (2002): Bill Gates memo
- Google (2005): Automated testing culture
- Amazon (2004): Jeff Bezos memo
- Twitter (2008)
- LinkedIn (2009)
- Etsy (2009)

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2002 Microsoft Security Standdown

- Famously, Microsoft after SQL Slammer required every product group to freeze feature

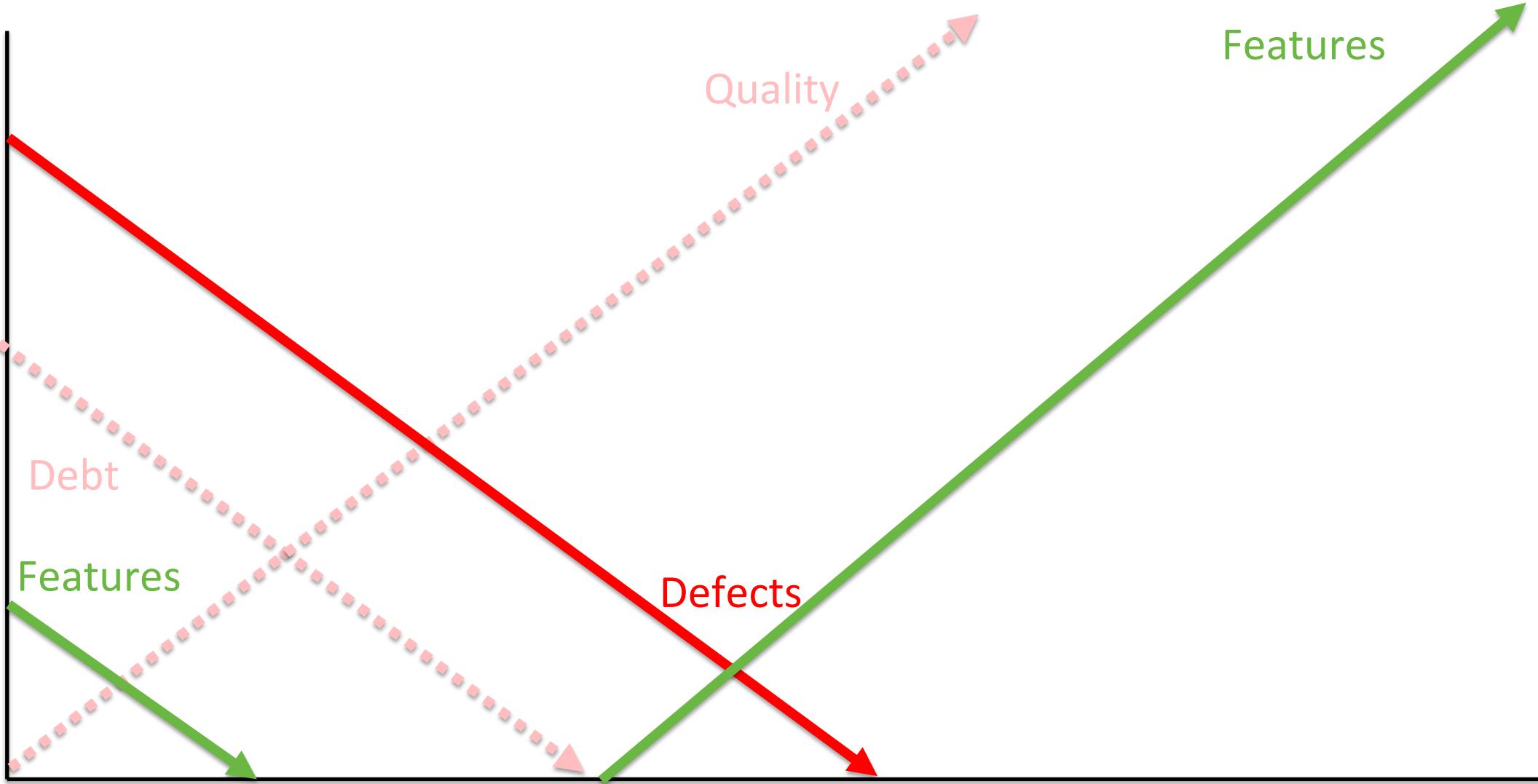
BILL GATES BUSINESS 01.17.02 12:00 PM

BILL GATES: TRUSTWORTHY COMPUTING

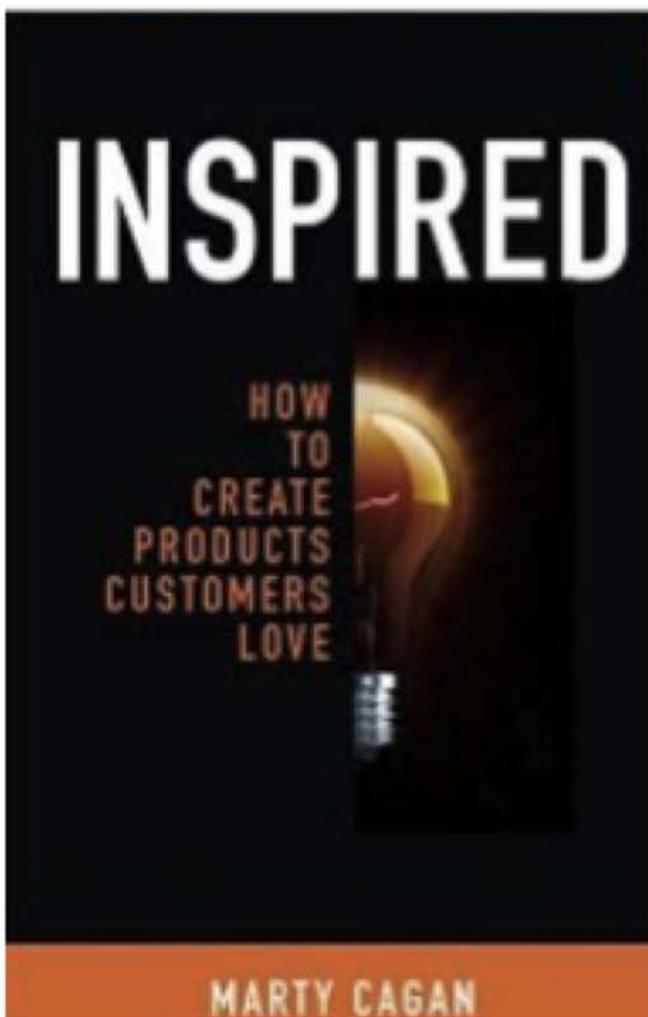
In the past, we've made our software and services more compelling for users by adding new features and functionality, and by making our platform richly extensible. We've done a terrific job at that, but all those great features won't matter unless customers trust our software.

So now, when we face a choice between adding features and resolving security issues, we need to choose security. Our products should emphasize security right out of the box, and we must constantly refine and improve that security as threats evolve. A good example of this is the changes we made in Outlook to avoid e-mail-borne viruses. If we discover a risk that a feature could compromise someone's privacy, that problem gets solved first. If there is any way we can better protect important data and minimize downtime, we should focus on this. These principles should apply at every stage of the development cycle of every kind of software we create, from operating systems and desktop applications to global Web services.

The Feature Freeze / Standdown



Allocate 20% Of Cycles To Technical Debt Reduction



CNET News / E-Business

August 8, 1999 3:50 PM PDT

eBay online again after 14-hour outage

By Tim Clark
Staff Writer, CNET News

@RealGeneKim

Quote from Marty Cagan from his book *Inspired*



The deal [between product owners and] engineering goes like this: Product management takes 20% of the team's capacity right off the top and gives this to engineering to spend as they see fit. They might use it to rewrite, re-architect, or re-factor problematic parts of the code base...whatever they believe is necessary to avoid ever having to come to the team and say, 'we need to stop and rewrite [all our code].' If you're in really bad shape today, you might need to make this 30% or even more of the resources. However, I get nervous when I find teams that think they can get away with much less than 20%.

Cagan notes that when organizations do not pay their “20% tax,” technical debt will increase to the point where an organization inevitably spends all of its cycles paying down technical debt. At some point, the services become so fragile that feature delivery grinds to a halt because all the engineers are working on reliability issues or working around problems.

The Third Ideal: Enabling Greatness

GET TOGETHER GO FASTER

- Ideal: 3-5% of developers dedicated to improving developer productivity
 - Google: likely 1,500+ devs (\$1B+)
 - Microsoft: likely over 3,000 devs
- Not ideal: assigned to summer interns and “people not good enough to be developers”

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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 Nadella





*Josh Cohen and Zack Ayers,
Excella*

Ideal #4:

Culture Of Psychological Safety

One Of The Highest Predictors Of Performance



Scenario A (Pathological)	Scenario B (Bureaucratic)	Scenario C (Generative)
Information is hidden	Information may be ignored	Information is actively sought
Messengers are “shot”	Messengers are tolerated	Messengers are trained
Responsibilities are shirked	Responsibility is compartmented	Responsibilities are shared
Bridging between teams and functional groups is discouraged	Bridging between teams and functional groups is allowed but discouraged	Bridging between teams and functional groups is rewarded
Failure is covered up	Organization is just and merciful	Failure causes enquiry
New ideas are crushed	New ideas create problems	New ideas are welcomed

One Of The Highest Predictors Of Performance

GET TOGETHER GO FASTER

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Google: Project Aristotle, Oxygen, re:Work



Over two years we conducted 200+ interviews with Googlers (our employees) and looked at more than 250 attributes of 180+ active Google teams. We were pretty confident that we'd find the perfect mix of individual traits and skills necessary for a stellar team -- take one Rhodes Scholar, two extroverts, one engineer who rocks at AngularJS, and a PhD. Voila. Dream team assembled, right?

We were dead wrong. ***Who is on a team matters less than how the team members interact, structure their work, and view their contributions.*** So much for that magical algorithm.

We learned that there are five key dynamics that set successful teams apart from other teams at Google:

1. **Psychological safety:** Can we take risks on this team without feeling insecure or embarrassed?
2. **Dependability:** Can we count on each other to do high quality work on time?
3. **Structure & clarity:** Are goals, roles, and execution plans on our team clear?
4. **Meaning of work:** Are we working on something that is personally important for each of us?
5. **Impact of work:** Do we fundamentally believe that the work we're doing matters?

Modeling Continual Learning

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- “When adult learners start trying to learn a new skill, they will often do it in private, because of the embarrassment associated with doing something they’re not good at.”
- We can help by saying “I don’t know”

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Ideal #5:

Relentless Focus On Our Customer

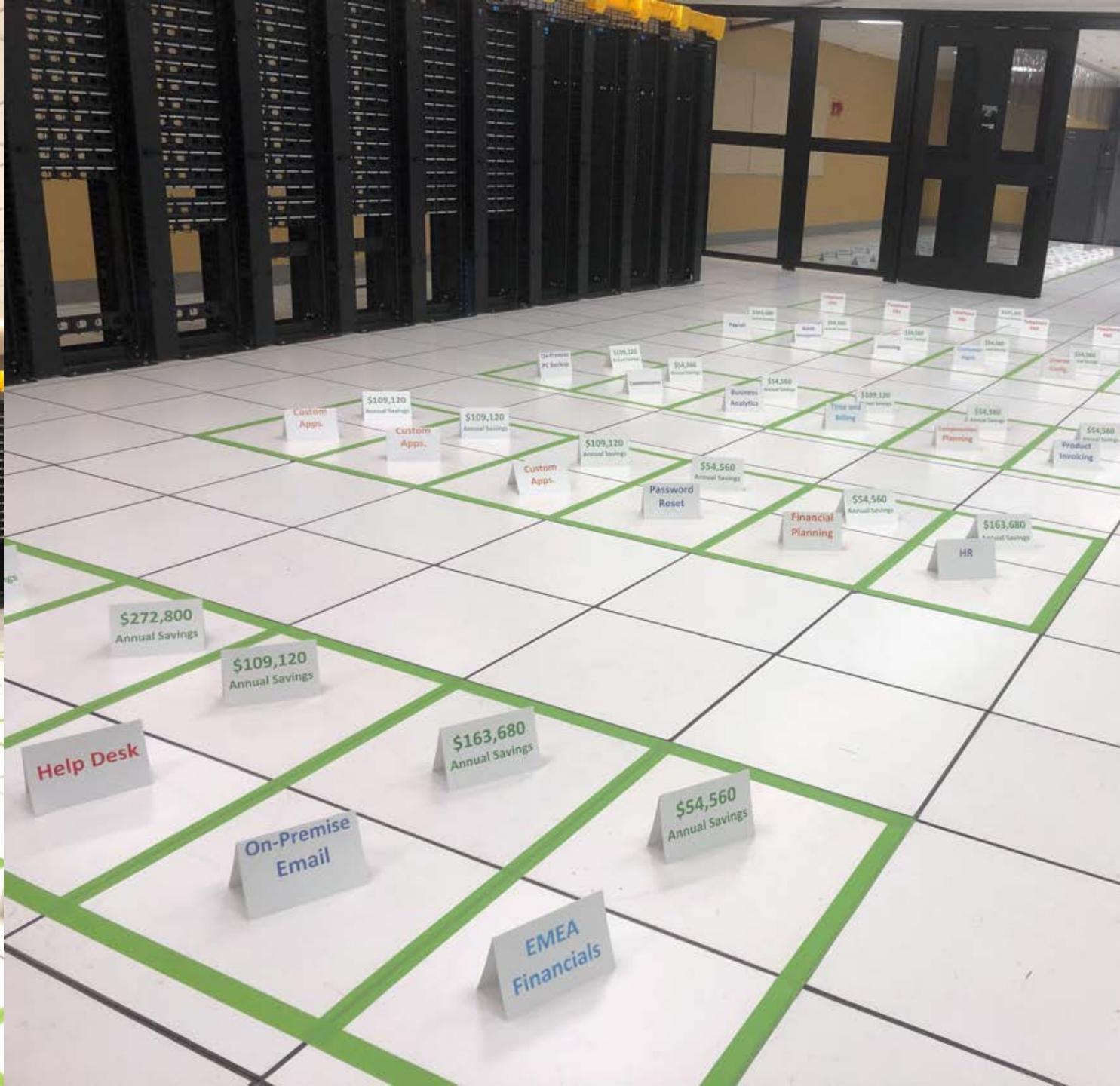
The Fifth Ideal: Focus On The Customer

GET
TOGETHER
GO
FASTER

- Not ideal: Functional silo managers behave like union leaders, as opposed to business leaders
- Ideal: Functional silo managers make decisions based on what the customer values, and helps ensure their teams have the skills to thrive in the long term

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The Fifth Ideal: Focus On The Customer

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- Core vs. Context

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LIGHTNING TALKS

GET
TOGETHER
GO
FASTER



Thank you!

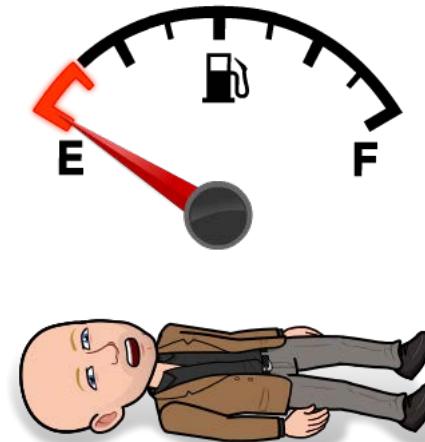
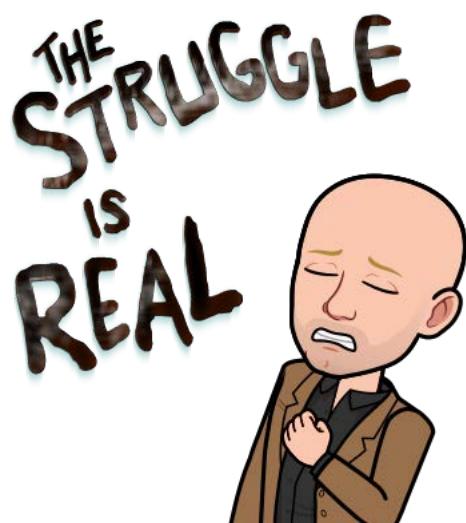
 sonatype

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HOW ARE YOU FEELING?

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YOUR STORIES

GET TOGETHER GO FASTER



What you've learned.

The people you've met.

The ideas you want to try out.

The actions you'll take.

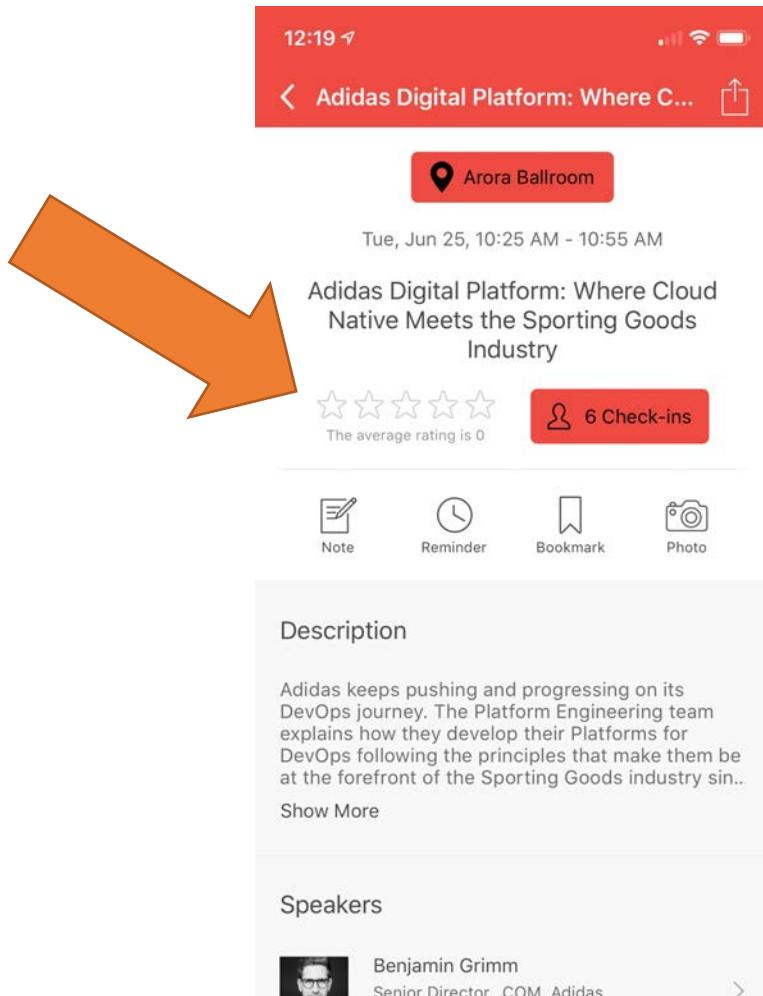
Share in #summit-stories.

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SESSION EVALUATIONS

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The feedback is really valuable to the speakers and the programming committee.

Sharing is caring!

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EXPO HALL HOURS

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Belmont Ballroom

Monday, October 28 | 11:00 am – 3:00 pm

Tuesday, October 29 | 10:00 am – 5:00 pm

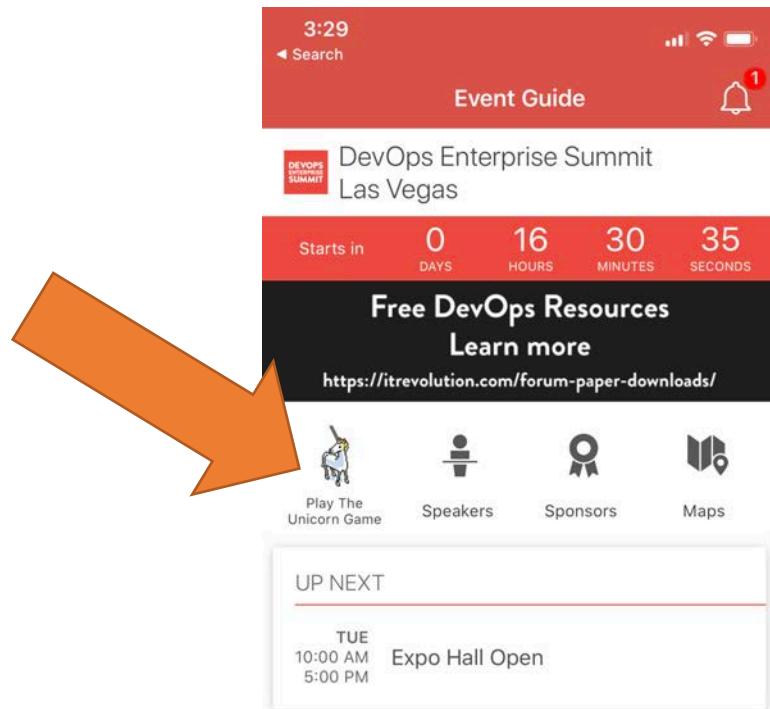
Wednesday, October 30 | 10:00 am – 5:00 pm

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THE UNICORN GAME

GET TOGETHER GO FASTER



Upload the unicorn selfies through the AttendeeHub app.

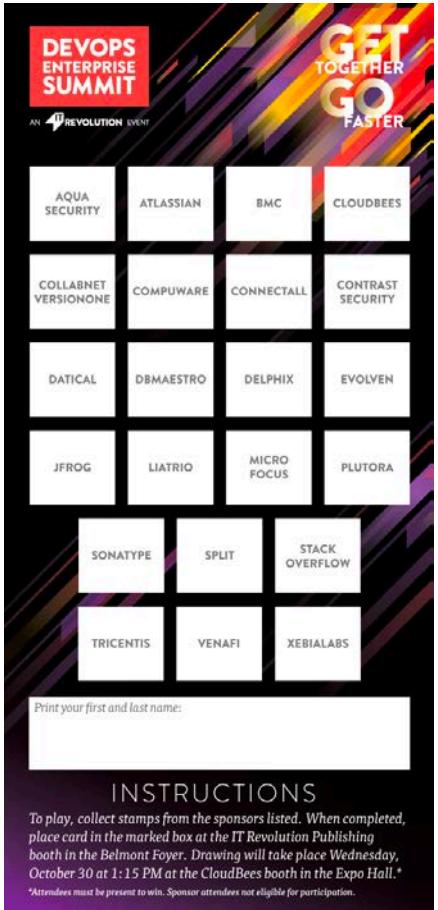
Once you upload all 23 selfies, you'll be entered into a drawing.

There will be six winners a day – one grand prize winner and five individual winners.



SPONSOR PASSPORT

GET TOGETHER GO FASTER



Important!

Get your card stamped.

Write your name on it!

Drop it off at the IT Revolution booth
before 1:10 pm today.

Go to the Unicorn stairs at 1:15 pm
today for the raffle!

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THANK YOU, SPONSORS!

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Sponsors
add *sparkle**
Thank You

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IT'S THE FINAL DAY!

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AUDITOR WORKSHOP: Q&A

GET
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Mont-Royal 2

Today | 1:50 pm – 3:00 pm

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THE UNICORN PROJECT OFFER

GET TOGETHER GO FASTER

1. Go to the Barnes & Noble website (bn.com)
2. Pre-order 10 or 25 copies of *The Unicorn Project*
3. Send the receipt to alexb@itrevolution.com
4. Get the bonuses!

See the bonuses at <https://itrevolution.com/unicorn-offer/>

The offer expires today at noon.



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SESSION SLIDES

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The slides are available for download!

Dropbox: <http://bit.ly/DOES19DB>

GitHub: <http://bit.ly/DOES19-git>

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VIDEOS

GET TOGETHER GO FASTER

The image shows the IT Revolution YouTube channel page. At the top, there's a blue header with the IT Revolution logo and tagline "identifying & amplifying best practices for IT organizations through events, publishing, and research". Below the header, the channel name "IT Revolution" is displayed with 2,797 subscribers. A red "SUBSCRIBE 2.7K" button is present. The main navigation bar includes links for HOME, VIDEOS (which is underlined), PLAYLISTS, CHANNELS, DISCUSSION, and AE. Below the navigation, there are two rows of video thumbnails. The first row contains three videos: "Build a Bigger Team (Matrixed Organization) -..." by #DOES18 (23:09), "How Value Stream Networks Will Transform IT & Business..." by #DOES18 (31:18), and "DOES18 Vegas - Tuesday DevOps Confessions" by #DOES18 (12:44). The second row contains three more videos: "Bank on Open Source for DevOps Success - Capital..." by #DOES18 (32:09), "Crowdsourcing Technology Governance - Target" by #DOES18 (26:30), and "DOES18 Vegas - Tuesday Opening Remarks" by #DOES18 (20:27).

Video Title	Length	Views	Last Updated
Build a Bigger Team (Matrixed Organization) -...	23:09	1 view	• 1 hour ago
How Value Stream Networks Will Transform IT & Business...	31:18	3 views	• 1 hour ago
DOES18 Vegas - Tuesday DevOps Confessions	12:44	No views	• 1 hour ago
Bank on Open Source for DevOps Success - Capital...	32:09	No views	• 1 hour ago
Crowdsourcing Technology Governance - Target	26:30	No views	• 1 hour ago
DOES18 Vegas - Tuesday Opening Remarks	20:27	No views	• 1 hour ago

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<https://www.youtube.com/itrevolution>

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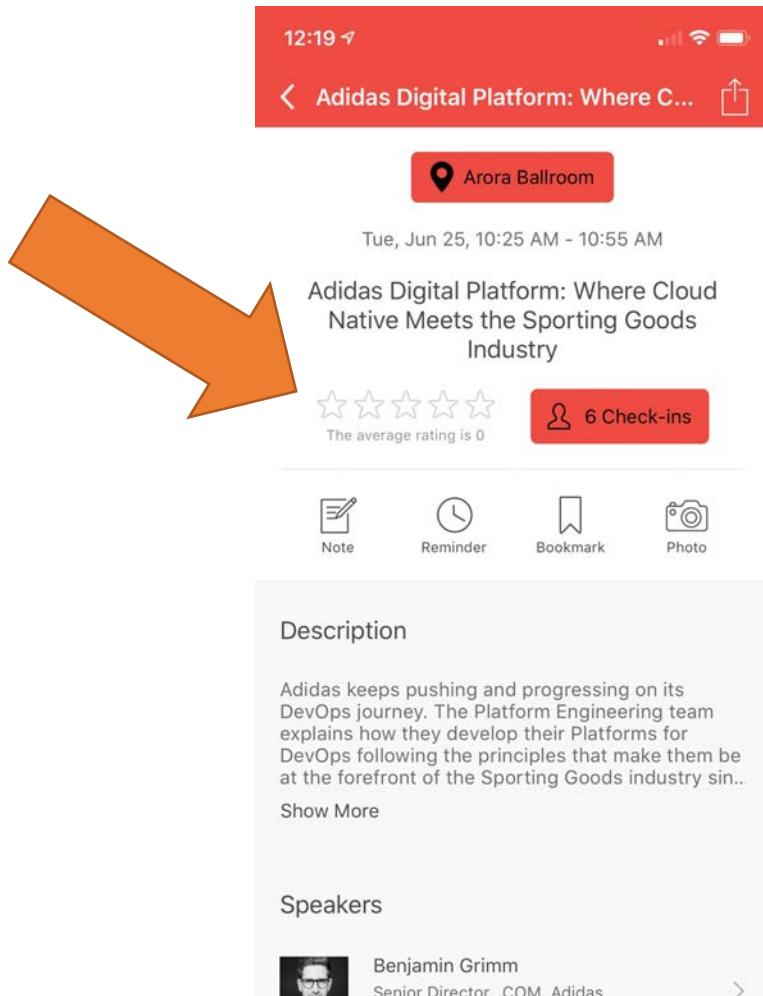
Your learning and stories.

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IT'S ABOUT COMMUNITY

GET TOGETHER GO FASTER



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VEGAS 2020

GET TOGETHER GO FASTER



September 21-23, 2020

The Cosmopolitan Hotel, Las Vegas

#DOES20

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SEE YOU NEXT YEAR!

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