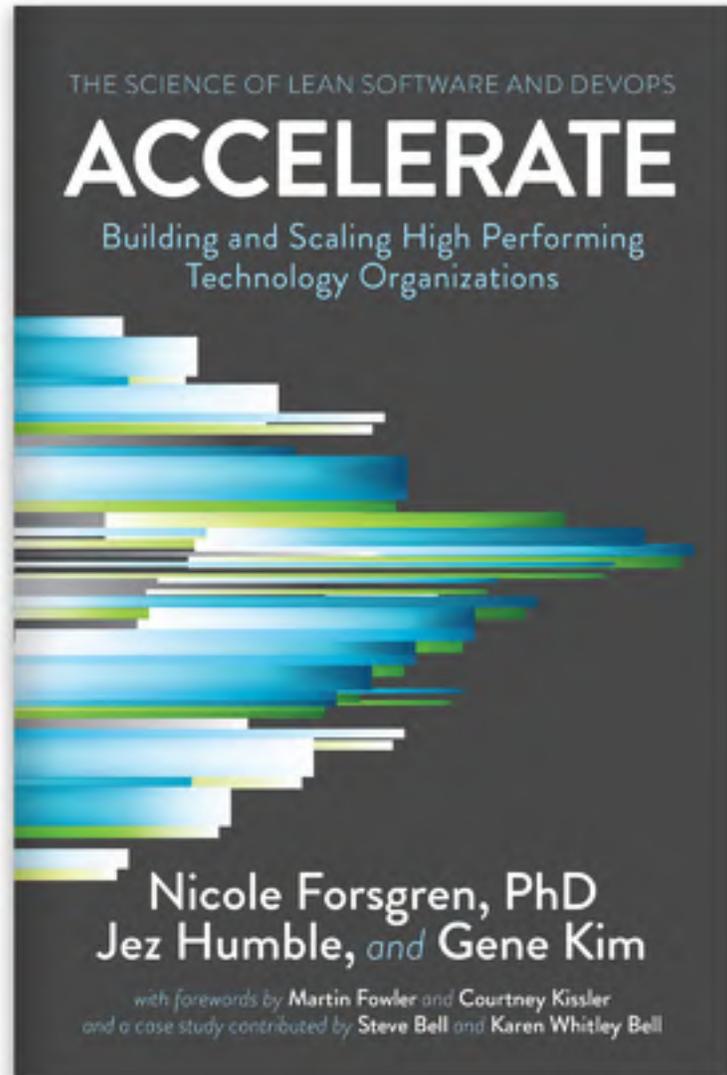


Secrets and Surprises of High Performance: What the Data Says

Nicole Forsgren, PhD





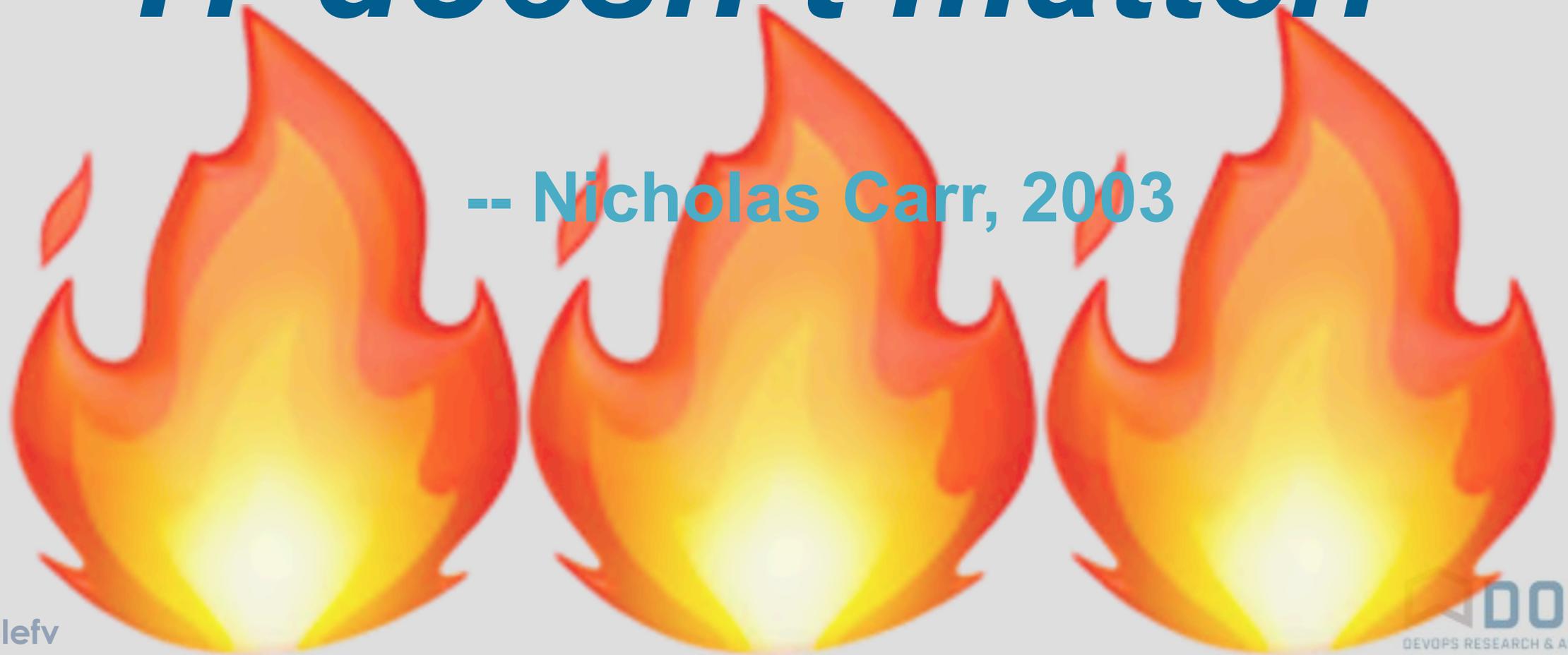
Harvard Business Review

“IT doesn’t matter.”

-- Nicholas Carr, 2003

“IT doesn’t matter.”

-- Nicholas Carr, 2003



Technology matters



You're doing it wrong.

There is no
"DevOps in a box"

The background image shows a conference stage. On the left, a man in a dark shirt is seen in profile, looking towards the right. On the right, a man in a dark suit is standing behind a podium, speaking into a microphone. The podium has a yellow sign with the text 'O'REILLY Velocity' on it. The overall scene is dimly lit, typical of a conference presentation.

10 Deploys per day Dev & ops cooperation at Flickr

**John Allspaw & Paul Hammond
Velocity 2009**

DevOps is

Technical Practices

and

Lean Processes

and

Culture

These drive performance outcomes

But intuition falls short

So we need data

DevOps is good for Technology

Software delivery performance

- Deploy frequency (when business demands)
- Lead Time for Changes
- Mean Time to Recover (MTTR)
- Change Fail Rate

High Performing DevOps teams

More *agile*

46x

**More frequent
Code deployments**

**That's the difference between multiple
times per day and once a week or less.**

440x

**Faster lead time from
commit to deploy**

**That's the difference between less than
an hour and more than a week.**

High Performing DevOps teams

More *reliable*

96x

**Faster mean time to
recover from downtime**

**That means high performers recover in
less than an hour instead of several days**

1/5x

**As likely that changes
will fail**

**That means high performer's changes fail 0-15%
of the time, compared to 31-45% of the time.**

**DevOps is
good for organizations**

**High Performing tech organizations are
twice as likely to meet or exceed**

2x

Commercial Goals

- Productivity
- Profitability
- Market Share
- # of customers

High Performing tech organizations are twice as likely to meet or exceed

2x

Commercial Goals

- Productivity
- Profitability
- Market Share
- # of customers

Non-commercial Goals

- Quantity of products or services
- Operating efficiency
- Customer satisfaction
- Quality of products or services
- Achieving organizational or mission goals

High Performing tech organizations are twice as likely to meet or exceed

2X



50%

Commercial Goals

- Productivity
- Profitability
- Market Share
- # of customers

Higher market cap growth over 3 years

Non-commercial Goals

- Quantity of products or services
- Operating efficiency
- Customer satisfaction
- Quality of products or services
- Achieving organizational or mission goals

Software Delivery Performance is
comprised of **throughput** and **stability**,
and **both are possible without tradeoffs**



How do we get there?

Maturity Models

Maturity Models don't work

Maturity models are for CHUMPS



Maturity models are for CHUMPS

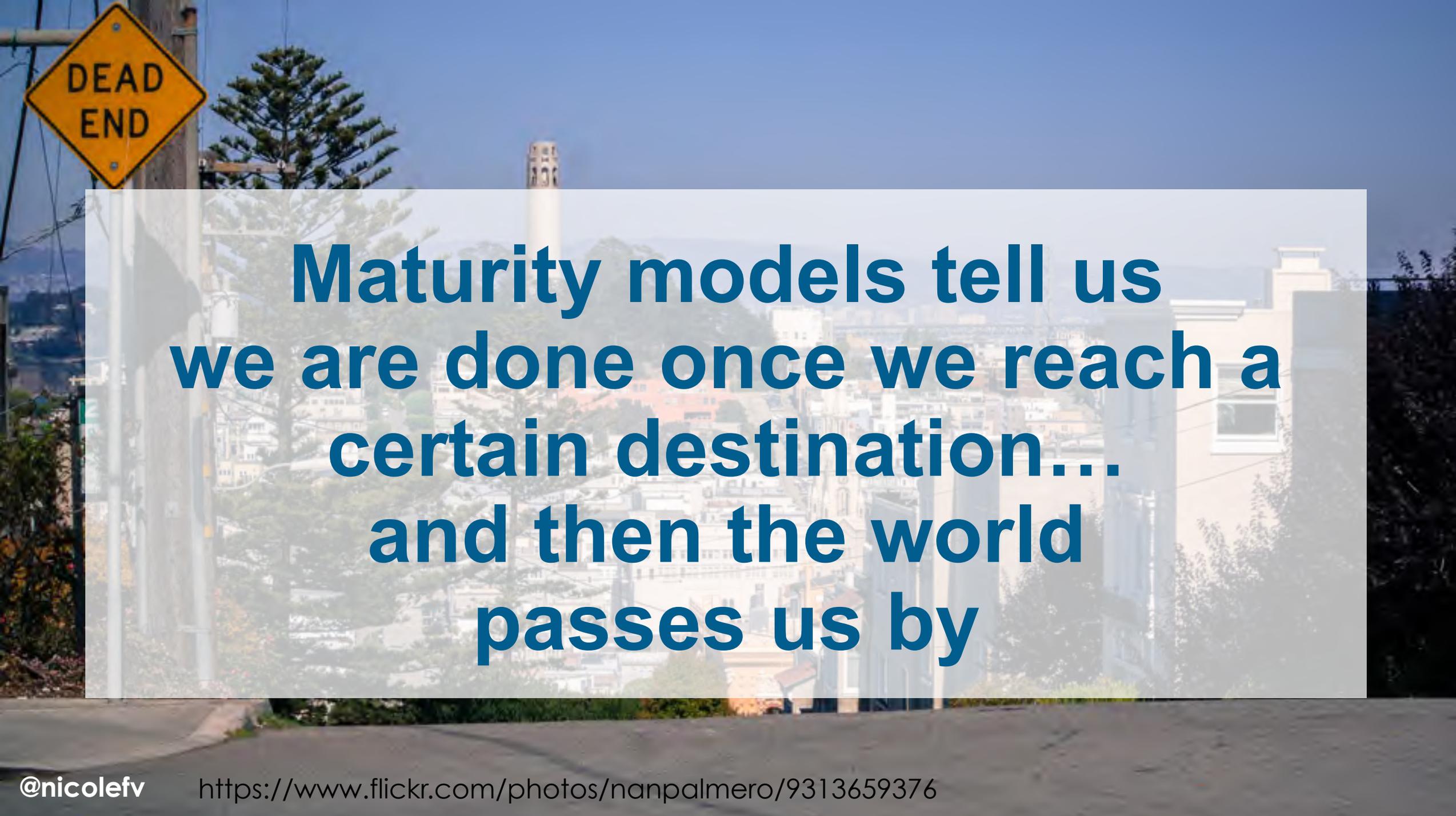
NORTHREND

BROKEN ISLES

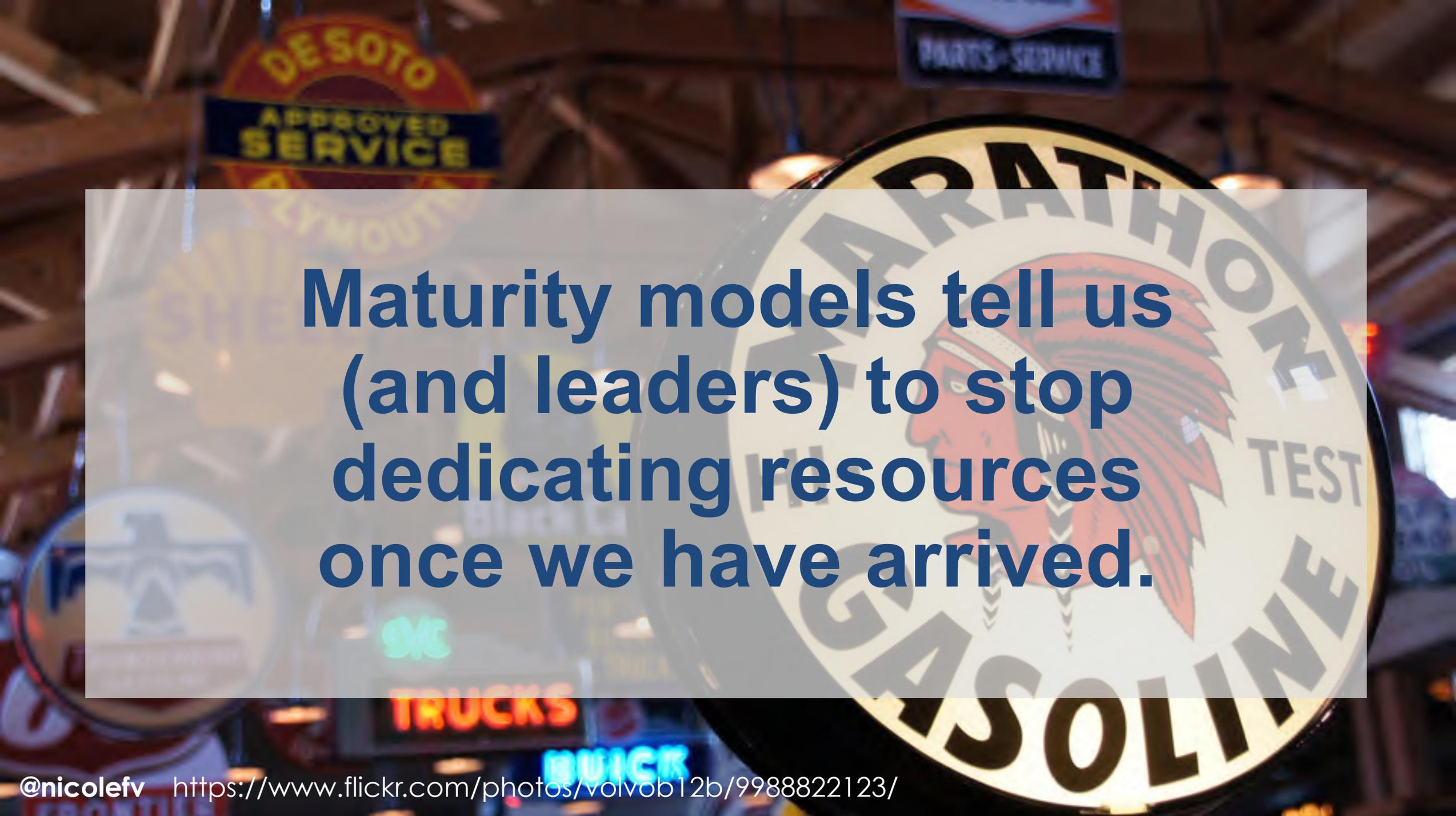
EASTERN KINGDOMS

KALIMDOR

PANDARIA

A photograph of a street with a yellow diamond-shaped sign that says "DEAD END". In the background, there is a tall, white, cylindrical tower (the Campanile di San Marco) and a cityscape with buildings and trees. The sky is clear and blue.

**Maturity models tell us
we are done once we reach a
certain destination...
and then the world
passes us by**

A collage of vintage car dealership signs. In the foreground, a large, circular sign for 'MARATHON GASOLINE' is prominent, featuring a Native American figure in a red headdress. Other signs include 'DE SOTO APPROVED SERVICE', 'BUICK', 'TRUCKS', and 'PARTS-SERVICE'. The background is a warm, dimly lit interior with various other signs and lights.

**Maturity models tell us
(and leaders) to stop
dedicating resources
once we have arrived.**



**Maturity models tell us
we all follow the same
path to success**

A futuristic white sports car is shown driving on a road that curves into the distance. The scene is set against a dramatic sunset sky with vibrant orange and pink clouds. The car is sleek and aerodynamic, with a prominent front grille and headlights. The overall atmosphere is one of speed and technological advancement.

Maturity models tell us technology is a checklist to be completed and not an exciting journey to continually explore and improve.

**Architecture matters...
technology doesn't**

COMMAND ==>

SCROLL ==> PAGE

Technology stack doesn't matter

- Low performers are more likely to:
 - be working with **outsourced software**
 - be working on a **mainframe system**

BUT

- Working on a **mainframe system** was *not correlated* with performance.
- Working on **greenfield or brownfield** (or any other system) was *not correlated* with performance, either.

Architectural outcomes matter

Can my team

- **Change the design** of its system
- **Test** the system
- **Deploy** the system

... without communication and coordination with people outside the team?

Conway's Law

“organizations which design systems ... are constrained to produce designs which are copies of the communication structures of these organizations”



Leadership matters

Dimensions of transformational leadership

Vision

- Understands organizational direction.
- Understands team direction.
- Understands 5-year horizon for team.

Intellectual stimulation

- Challenges team status quo.
- Challenges team to constantly ask new questions.
- Challenges team on basic assumptions about the work.

Personal recognition

- Commends team for better-than-average work.
- Acknowledges improvement in quality of work.
- Personally compliments individuals' outstanding work.



Inspirational communication

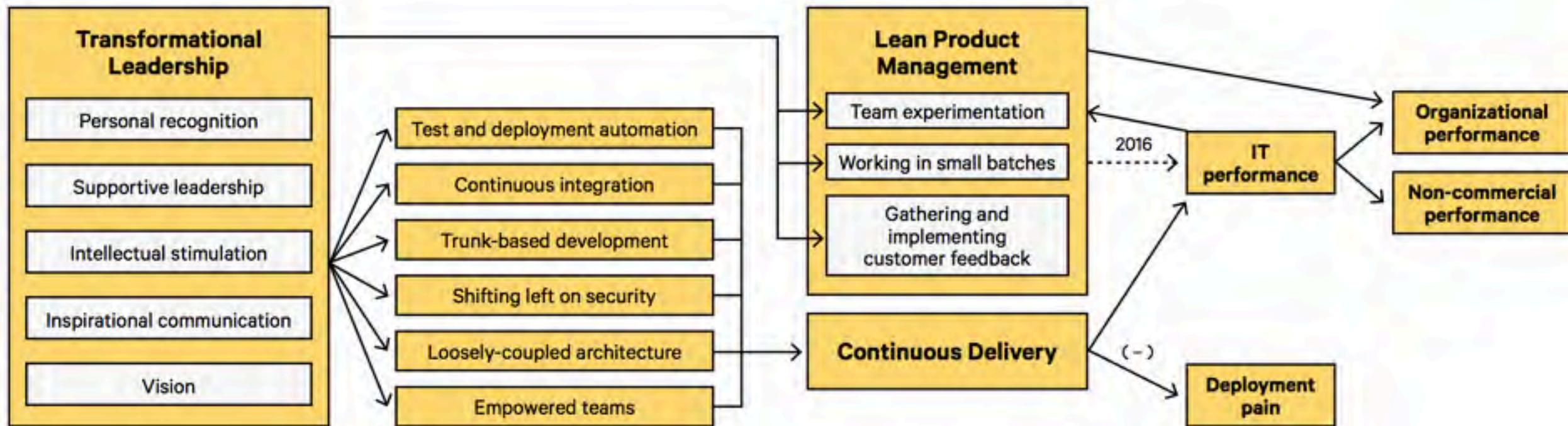
- Inspires pride in being part of the team.
- Says positive things about the team.
- Inspires passion and motivation; encourages people to see that change brings opportunities.

Supportive leadership

- Considers others' personal feelings before acting.
- Is thoughtful of others' personal needs.
- Cares about individuals' interests.

Relationship between transformational leadership and performance

Figure 1. Structured equation model showing relationships between constructs



We can make work better

WORKED FINE IN DEV



OPS PROBLEM NOW

memegenerator.net

Smart investments in tech and practices make our work better

- The **work**?
 - Less deployment pain
 - Less burnout
 - Higher employee Net Promoter Score

Microsoft Engineering

Thiago Almeida -- DevOps Days London, 2016

Work/Life Scores

Before CD:

38%

After CD:

75%



Employees in high performing organizations are 2.2 times more likely to recommend their organization as a great place to work

2.2x

The background features a dynamic, abstract composition of light streaks and bokeh effects. The colors range from warm oranges and yellows to cooler blues and purples, creating a sense of motion and energy. The streaks are most prominent in the upper right and lower right areas, while the center is dominated by a semi-transparent white rectangle.

**Some of my other
favorite data findings!**

Some of my other favorite data findings!

- Change advisory boards are **useless***
- Integration times and branch lifetimes **lasting hours are better than days**

You can help

Intuition is good, but we need to
confirm with data & science

bit.ly/DORA-ASODR

TL;DR

- Technology matters
- Maturity models don't work
- Architecture > technology
- We can make work better
- You can help! bit.ly/DORA-ASODR

Thank you!

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