DevOps Theory vs. Practice: A Song of Ice and Tire Fire


Thought Leader, Disruptive Innovator
Senior SRE Leader at Google
Senior Software Engineer at Netflix
SVP of Thoughts at Facebook
Obviously better than you
Disclaimer: absolutely none of the above is true
ALUMNI

William Manning

Official Hiptech Translator

- Native proficiency in English and Bad English
- Fluent in Thought Leader gibberish
- Has a secret bunker for the robot apocalypse
- Professional Tinfoil Hat Haberdasher

Disclaimer: absolutely none of the above is true.


Baruch,
Thought
Leader Away!

Everybody's software must be releasable at absolutely any time

Everyone must have 100% test automation

We do Continuous Security well.

Your greatest
threat is an outage.

Not an employee.

VMs are the enemy of DevOps. This is where you must focus your innovation.

You are a beautiful unique snowflake, as are your problems.

No vendor could possibly understand them.


Our company is based in SF because that's where the best engineers are.

@williammanning @jbaruch #DevOpsWorld jfrog.com/shownotes

William Manning

Senior Solutions Architect

@williammanning

BARUCH SADOGURSKY

CHIEF STICKER OFFICER

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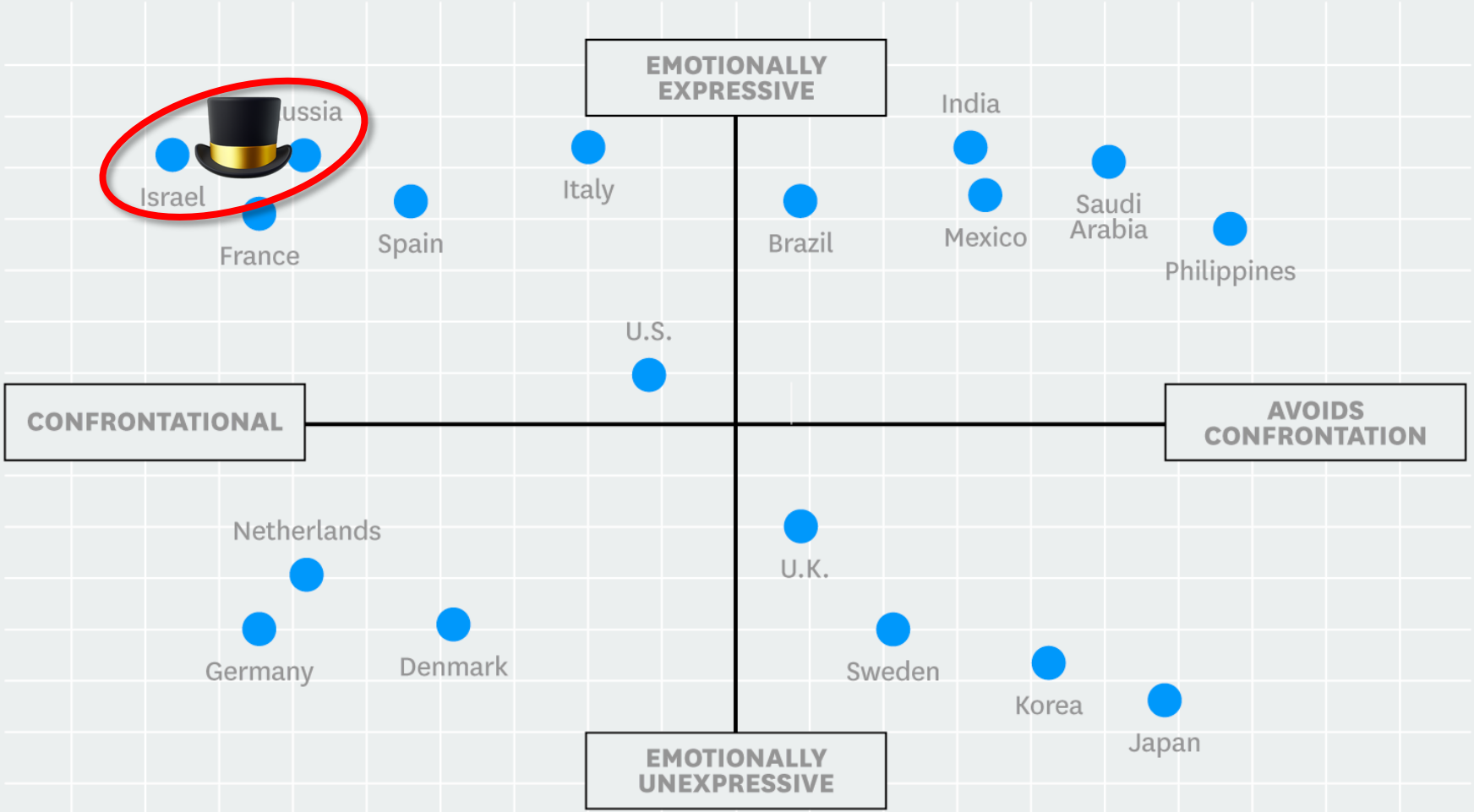
JFrog



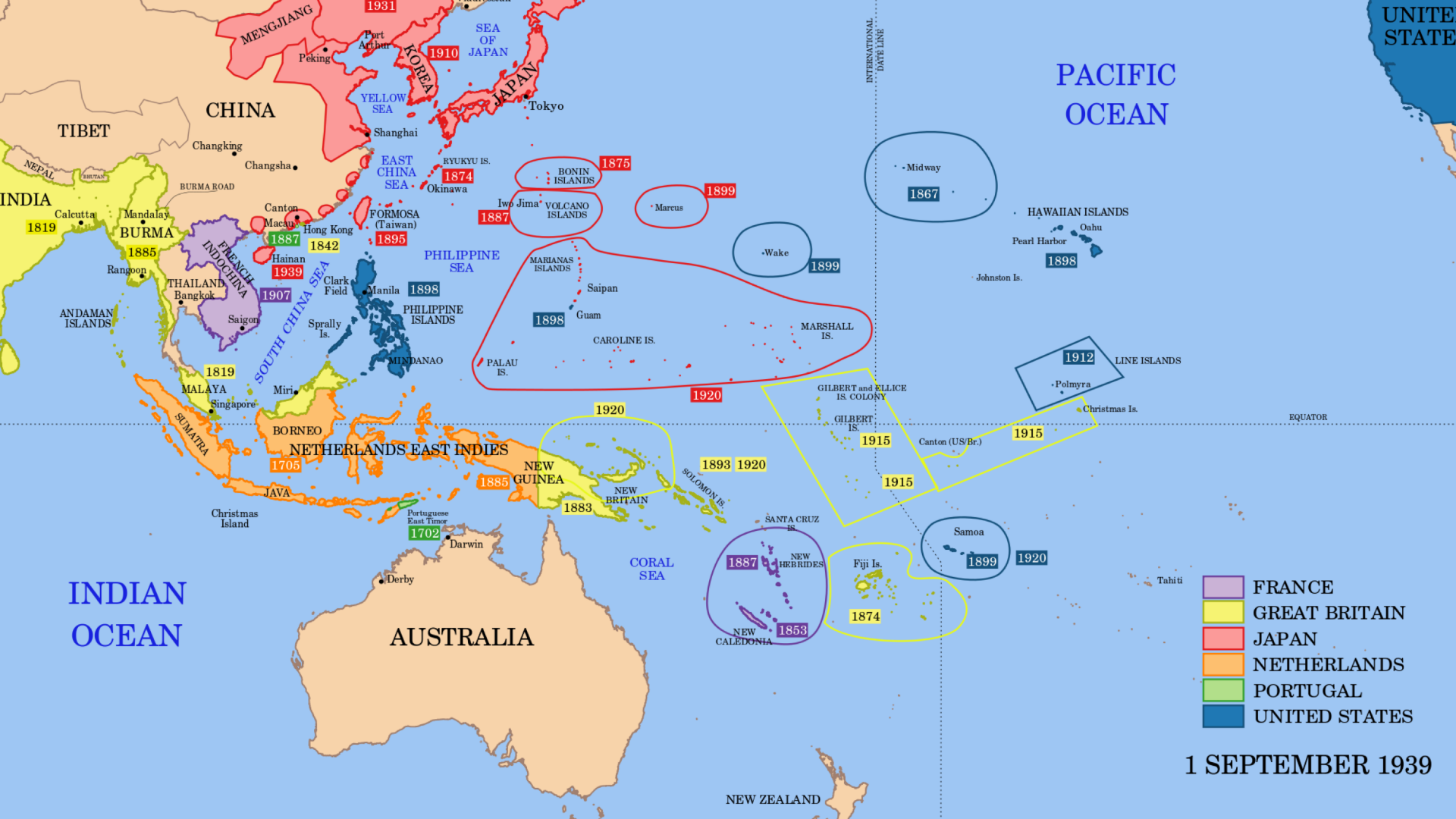
@ErinMeyerINSEAD's "Culture Map"

Shownotes!

jfrog.com/shownotes
Slides
Video (by tomorrow)
All the links!
Comments, Ratings
Raffle!


How did we get here?


Hong Kong
Macau S.A.R.
S.A.R.
Kao-hsiung
Okino-tori-shima (JAPAN)
Luzon Strait
Philippine Sea
Northern Mariana Islands (U.S.)
Saipan
Hagåtña
Guam (U.S.)
Challenger Deep (world's greatest ocean depth, -10924 m)
Wake Island (U.S.)
Johnston Atoll (U.S.)
Honolulu
Oahu
Kauai
Maui
Hawaii
HAWAIIAN ISLANDS
CLARION FRACTURE ZONE
North Pacific Ocean
South China Sea
Manila
Luzon
PHILIPPINES
Panay
Iloilo
Cebu
Samar
Bacolod
Negros
Cagayan de Oro
Palawan
Sulu Sea
Mindanao
Davao
Zamboanga
Melekeok
PALAU
FEDERATED STATES OF MICRONESIA
Entwetak
MARSHALL ISLANDS
Kwajalein
Majuro
Polimpei
Palikir
CAROLINE ISLANDS
Kingman Reef (U.S.)
Palmyra Atoll (U.S.)
CLIPPERTON FRACTURE ZONE
Kiritimati (Christmas Island) (KIRIBATI)
Bandar Seri Begawan
BRUNEI
MALAYSIA
Celebes Sea
Borneo
Manado
Halmahera
Ternate
Tarawa
KIRIBATI (GILBERT ISLANDS)
Howland Island (U.S.)
Baker Island (U.S.)
Jarvis Island (U.S.)
Equator
Samarinda
Balikpapan
Palu
Celebes
Sorong
Biak
Yaren District
NAURU
Banaba
Banjarmasin
Kendari
Ceram
Buru
Ambon
Jayapura
Wewak
New Ireland
Bismarck Sea
RAWAKI (PHOENIX ISLANDS)
KIRIBATI
LINE ISLANDS
Makassar
Molucca Sea
PAPUA NEW GUINEA
Madang
Mount Hagen
Lae
Bougainville
New Britain
Java Sea
Banda Sea
Surabaya
Java
Bali
Sumbawa
Flores
Lombok
Sumba
Denpasar
INDONESIA
Dili
TIMOR-LESTE
New Guinea
Solomon Sea
SOLOMON ISLANDS
Honiara
Guadalcanal
Awara
Port Moresby
Torres Strait
Arafura Sea
Timor Sea
Kupang
Ashmore and Cartier Island (AUSTRALIA)
Darwin
Gulf of Carpentaria
SANTA CRUZ ISLANDS
TUVALU
Funafuti
Tokelau (N.Z.)
Swains Island
Rotuma
Wallis and Futuna (FRANCE)
SAMOA
Mata-Utu
Apia
Pago Pago
American Samoa (U.S.)
Cook Islands (N.Z.)
ÎLES MARQUISES
SOCIETY ISLANDS
Papeete
Tahiti
ARCHIPEL DES TUAMOTU
Indian Ocean
Coral Sea Islands (AUSTRALIA)
Coral Sea
VANUATU
Port-Vila
Vanua Levu
FIJI
Suva
Viti Levu
TONGA
Alofi
Niue (N.Z.)
Avarua
Cairns
Townsville
New Caledonia (FRANCE)
Noumea
Ceva-i-Ra
Nuku'Alofa
Tropic of Capricorn
French Polynesia (FRANCE)
Mururoa
ÎLES TUBUAI
Minerva Reefs
Adamstown
Pitcairn Islands (U.K.)
KING LEOPOLD RANGE
MACDONNELL RANGE
GREAT DIVIDING RANGE
Port Hedland
HAMMERSLEY RANGE
GREAT SANDY DESERT
Mount Isa
Mackay
Rockhampton
Gladstone
Alice Springs
GIBSON DESERT
AUSTRALIA
SIMPSON DESERT
Toowoomba
Brisbane
Gold Coast
Geraldton
GREAT VICTORIA DESERT
Lake Eyre (lowest point in Australia, -15 m)
Kalgoorlie
DARLING RANGE
FLINDERS RANGE
Broken Hill
Perth
Rockingham
Bunbury
Whyalla
Esperance
Adelaide
Canberra
Mount Kosciuszko (highest point in Australia, 2229 m)
Newcastle
Sydney
Wollongong
Lord Howe Island (AUSTRALIA)
NEW CALEDONIA BASIN
LORD HOWE RISE
Kingston
Norfolk Island (AUSTRALIA)
KERMADEC ISLANDS (N.Z.)
KERMADEC TRENCH
LOUISVILLE RIDGE
South Pacific Ocean
Great Australian Bight
Melbourne
Geelong
Tasman Sea
North Island
Auckland
Hamilton
Tauranga
NEW ZEALAND
Palmerston North
Hastings
Wellington
Bass Strait
Launceston
Tasmania
Indian
Scale 1:41,000,000


PACIFIC OCEAN
INDIAN OCEAN
CHINA
TIBET
INDIA
BURMA
AUSTRALIA
NEW ZEALAND
JAPAN
KOREA
MENGJIANG
1931
1910
SEA OF JAPAN
YELLOW SEA
EAST CHINA SEA
PHILIPPINE SEA
SOUTH CHINA SEA
CORAL SEA
Port Arthur
Peking
Tokyo
Shanghai
Changking
Changsha
Canton
Macau
Hong Kong
1842
1887
Hainan
1939
FORMOSA (Taiwan)
1895
KYUKYU IS.
1874
Okinawa
BONIN ISLANDS
1875
Iwo Jima
VOLCANO ISLANDS
1887
Marcus
1899
Midway
1867
HAWAIIAN ISLANDS
Oahu
Pearl Harbor
1898
Johnston Is.
Wake
1899
MARIANAS ISLANDS
Saipan
Guam
1898
CAROLINE IS.
PALAU IS.
MARSHALL IS.
1920
1912
LINE ISLANDS
Polmyra
Christmas Is.
EQUATOR
GILBERT and ELLICE IS. COLONY
GILBERT IS.
1915
Canton (US/Br.)
1915
1915
INTERNATIONAL DATE LINE
BURMA ROAD
NEPAL
BHUTAN
Calcutta
1819
Mandalay
1885
Rangoon
THAILAND
Bangkok
1907
FRENCH INDOCHINA
Saigon
Clark Field
Manila
1898
PHILIPPINE ISLANDS
Sprally Is.
MINDANAO
ANDAMAN ISLANDS
1819
MALAYA
Singapore
Miri
BORNEO
SUMATRA
JAVA
1705
NETHERLANDS EAST INDIES
1920
NEW GUINEA
1885
1883
NEW BRITAIN
1893
1920
SOLOMON IS.
Christmas Island
Portuguese East Timor
1702
Darwin
Derby
SANTA CRUZ IS.
1887
NEW HEBRIDES
NEW CALEDONIA
1853
Fiji Is.
1874
Samoa
1899
1920
Tahiti
FRANCE
GREAT BRITAIN
JAPAN
NETHERLANDS
PORTUGAL
UNITED STATES
1 SEPTEMBER 1939

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Cargo Cult


The Four Questions

The Four Questions

1. Is my organization/team ready to adopt a new tech?
2. Is it even a good tech?
3. ~~What problem do I solve by using this tech?~~
4. ~~Will solving this problem help my organization?~~

1. *Is my organization /team ready to adopt a new tech?*

Introducing maturity models

"A maturity model is a tool that helps people assess the current effectiveness of a person or group and supports figuring out what capabilities they need to acquire next in order to improve their performance.

In many circles maturity models have gained a bad reputation, but although they can easily be misused, in proper hands they can be helpful."

-

Martin Fowler

Introducing maturity models

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Introducing maturity models

While maturity models are very popular in the industry, we cannot stress enough that maturity models are not the appropriate tool to use or mindset to have. Instead, shifting to a capabilities model of measurement is essential for organizations wanting to accelerate software delivery.

Nicole Forsgren, Jezz Hamble, Gene Kim

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Nicole Forsgren, Jezz Hamble, Gene Kim

Bad Maturity Models are Bad.

Bad Maturity Models	Good Maturity Models
Goal	Process
Prescribed by the book	One size doesn't fit all
Checkboxes for tools	Focus on outcomes
Write and forget	Constantly evolve

Maturity model components

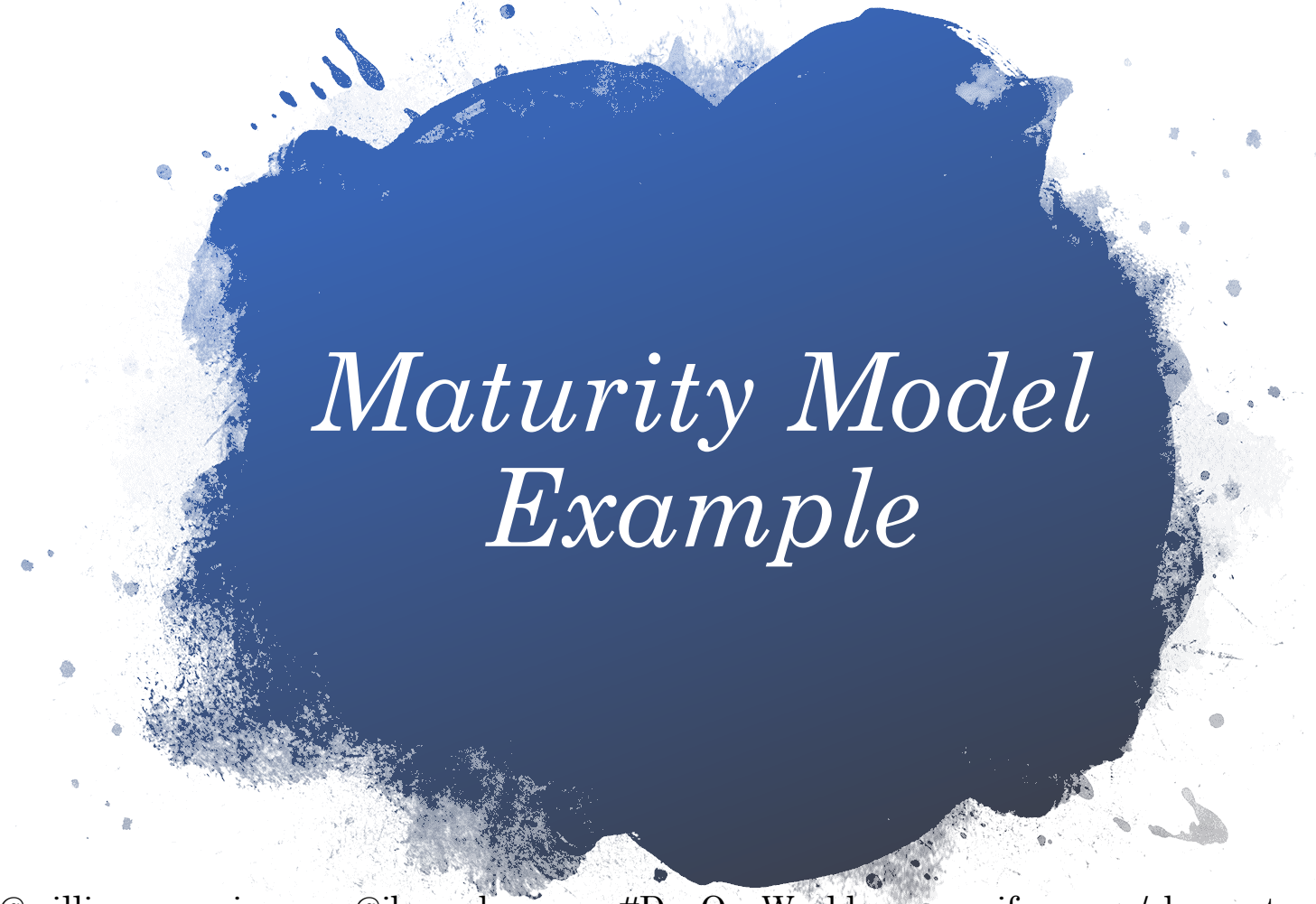
Evaluation factors

Scoring methodology

Self assessment vs 3rd party assessment capability

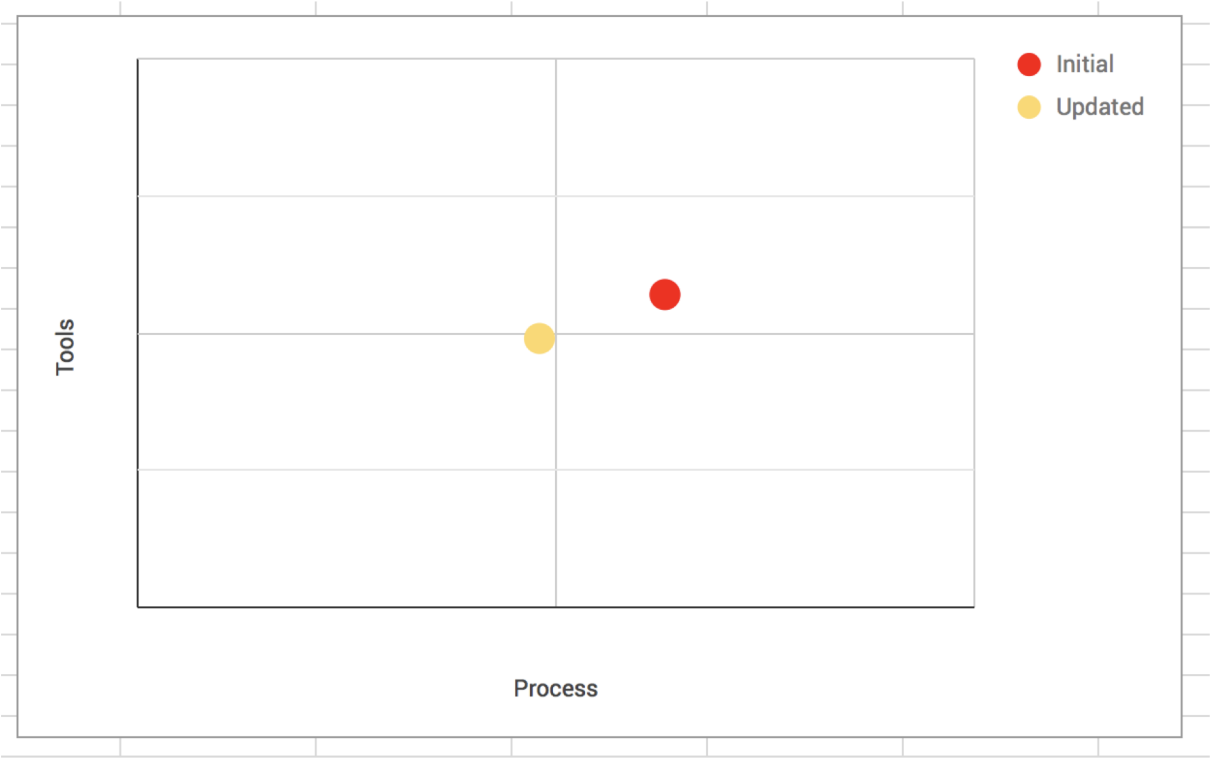
Progress tracking

Visualization

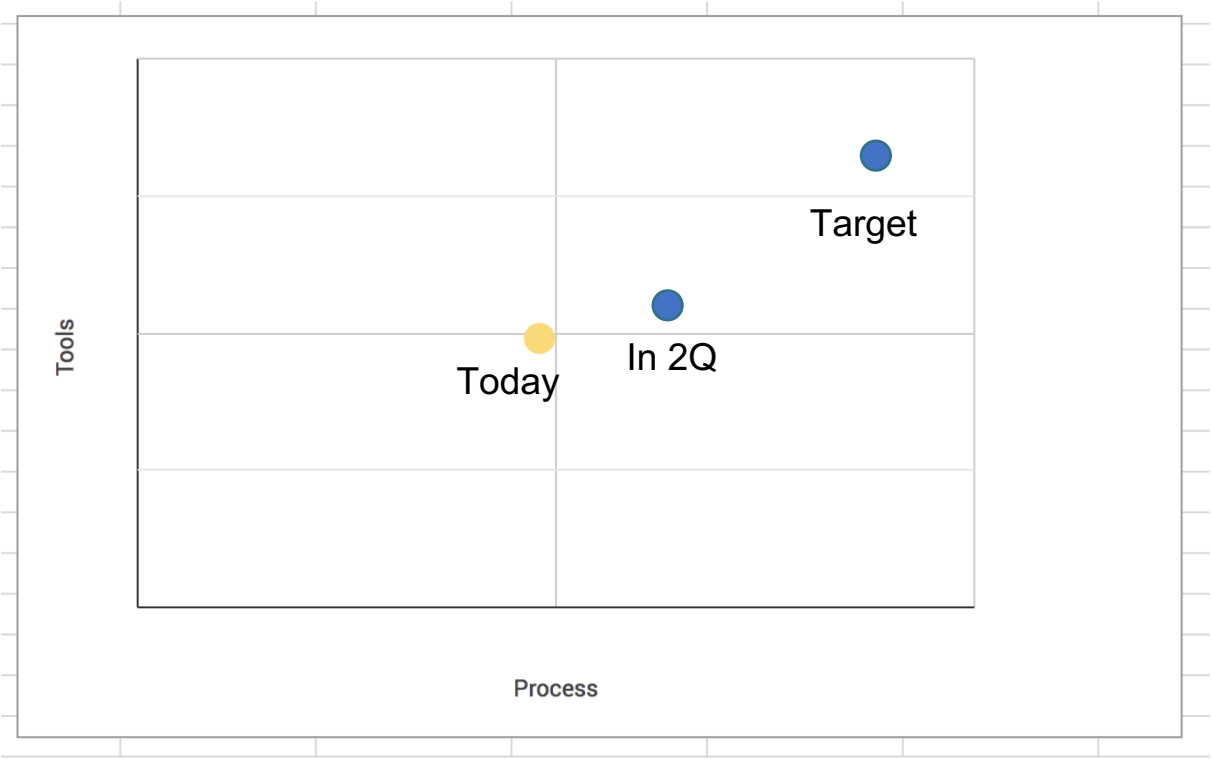

Maturity Model
Example


C*O Level

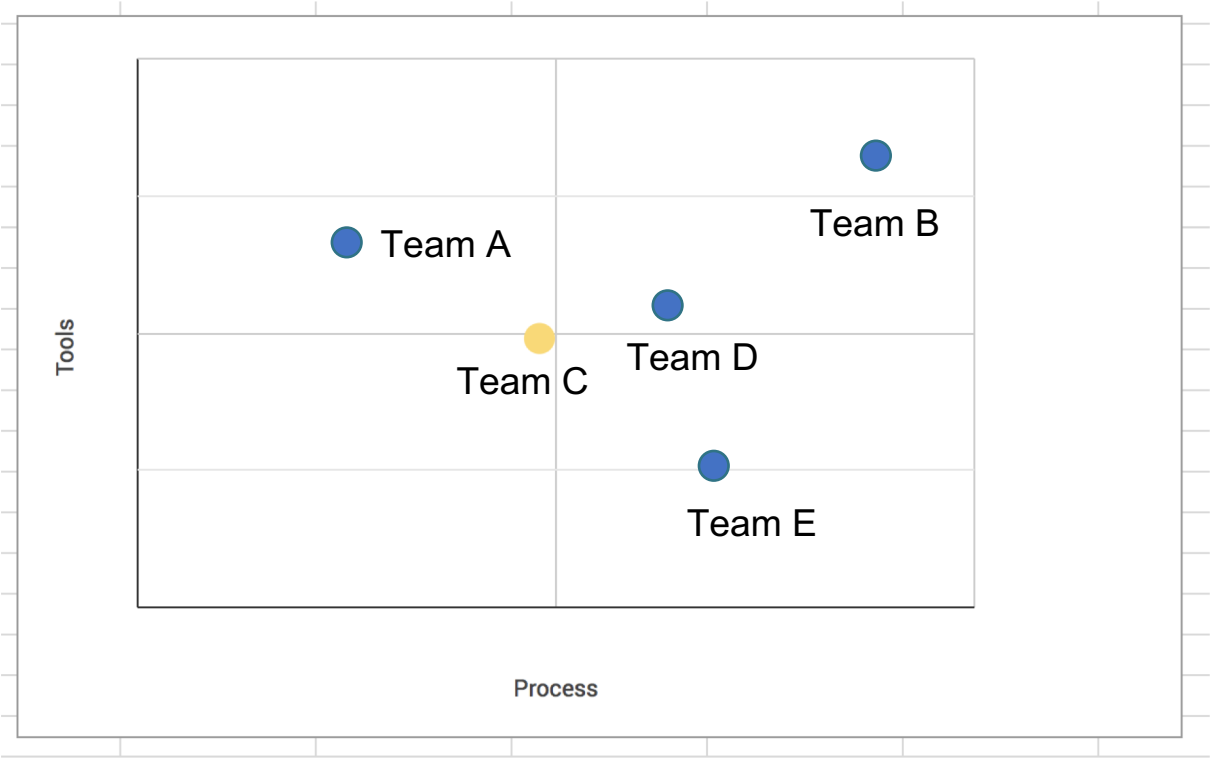
Simple model



Progress planning



Leader board




Random placing colored dots?!

D01	DevOps	On Demand Releases	Tool	Builds are configured to publish and consume artifacts from a artifact management system in a consumable format	▪ Artifacts are being published to a controlled environment (backed up, secured, allows for versioning, integratable)	**Partial**
					▪ Artifacts are published in a way where intermediate artifacts can be aged and managed, and final artifacts are preserved within required policy guidelines	**Yes**
					▪ Artifacts are published in a standard consumable format (e.g. Maven 2, Docker Registry, ...)	**Yes**
					▪ Artifacts when published are associated with sufficient meta data that can provide consumers with information about the build record/environment/tools and country of origin used during publishing	**Yes**
					▪ Build dependencies of artifacts that originated from a controlled environment are consumed from a local cache on the build machine	**Yes**
					▪ Remote artifacts are hosted/proxied from a network friendly location that introduces limited latency when artifacts can't be pulled from local cache	**Partial**
					▪ Artifacts that originate from outside the company are preserved, with sufficient meta data to verify source and validity of the artifact	**Partial**

D04	DevOps	On Demand Releases	Process	Build artifacts that are released to customersare managed and governed	▪ Artifacts pass all necessary quality checks and tests prior to promotion to release	Yes
					▪ Release artifacts are the same artifact that was tested in the continuous delivery process, and not new builds specifically intended for release	**Partial**
					▪ Release process has been modeled using cycle time analysis and unnecessary wait time has been eliminated	**Yes**
					▪ Releasing software to production is integrated intothecontinuous delivery processfollowing all applicable IT governance requirements	**Yes**
					▪ Release can be delivered to production within a timeframe that meets desired cycle time targets	**Yes**


Too high-level,
too low-level?

Category	Criticality	Benchmark	TODAY	24 motnh from now
02. Organizational Effectiveness	Must Have	100	22	75
03. Architectural Alignment	Should Have	83	32	60
04. Continuous Integration	Must Have	90	36	86
05. Continuous Delivery of product feature	Should Have	92	35	86
06. Unit/Functional Test Automation	Must Have	100	25	72
07. Automated System Test & Health Check	Must Have	71	22	59
08. Everything as Code	Should Have	56	22	52
09. Brand-Directed Initiatives	Must Have	100	25	80
10. Infrastructure Delivery (IAAS, PAAS)	Must Have	98	27	82
11. SaaS Services (APAAS / OSS Backing Svcs)	Must Have	81	33	Incomplete
12. BSS Automation & Integrations	Must Have	93	22	49
13. Service Introduction	Must Have	100	25	37
14. Operating Model	Must Have	93	23	70
15. Compliance Elements	Nice to have	79	21	24
16. FedRAMP Elements	Nice to have	100	0	0
17. Container as Best Practice	Should have	96	23	100

Account for different teams' priorities

Feature Weight | V	Description of Category	Engineering Perspective	Ops Perspective	Company Perspsective
Description of Use Case ->				Single product, SaaS-native startup.
01. Agile Development	The team is able to deliver newly relevant (or differentiating) capabilities to the market quickly, regardless of any prior roadmap.	Must Have	Not relevant	Must Have
02. Organizational Effectiveness	The organization (Dev + Ops) works as a single virtual team, regardless of the actual reporting structure.	Must Have	Must Have	Must Have
03. Architectural Alignment	Product / Service is aligned for efficient delivery as SaaS. (Includes multi-tenant architectures and/or multi-instance architecture; container support). How much architectural debt exists in the product/service	Must Have	Not relevant	Should Have
04. Continuous Integration	Ability to integrate development changes into a "deliverable" component. As defined in "Modern Software Factory as a Service"	Must Have	Not relevant	Must Have
05. Continuous Delivery of product feature	Ability to deliver features into production with minimal impedence by process	Not relevant	Must Have	Should Have
06. Unit/Functional Test Automation	Unit est coverage of code is comprehensive enough to allow for functionality to be delivered into production. Poor code quality/high technical debt drives cost of Ops and CX. Functional test coverage of code is comprehensive enough to allow for functionality to be delivered into production. Poor code quality/high technical debt drives cost of Ops and CX.	Must Have	Not relevant	Must Have
07. Automated System Test & Health Check	Quality automation includes disciplines that are not "functional", such as security, usability, performance, etc. Poor code quality/high technical debt drives cost of Ops and CX. Acquisition and construction of test data is automated and comprehensive. Heavyweight test processes such as security scanning and IAST are automated as much as practical.	Must Have	Not relevant	Must Have

Model definition example

System config as Code	The infrastructure configuration is managed as code - e.g. no manual processes for configuring/setting up/ infrastructure. Differentiating: Infrastructure operates without any manual processes. All changes to the infrastructure or infrastructure capabilities are done through automation and policy only. Complete: Infrastructure operates without any manual processes. Some infrequent administrative activities may be initiated manually (although the activities themselves must be automated). Partial (Most): Infrastructure operates without any manual processes. Some infrequent administrative activities may be manual, pending automation. Partial (Much): Infrastructure operates with significant automation. Some processes still manual; pending automation. Partial (Some): Infrastructure requires significant care and feeding. Many processes still manual; pending automation. No Support: While some functions may be automated, they are generally kicked-off manually; and many functions are still fully manual. Large backlog of automation items.

Applying maturity models: DOs and DONT's

Only use primary colors

Involve your teams in the model definition

Let team self assess first and then assess together

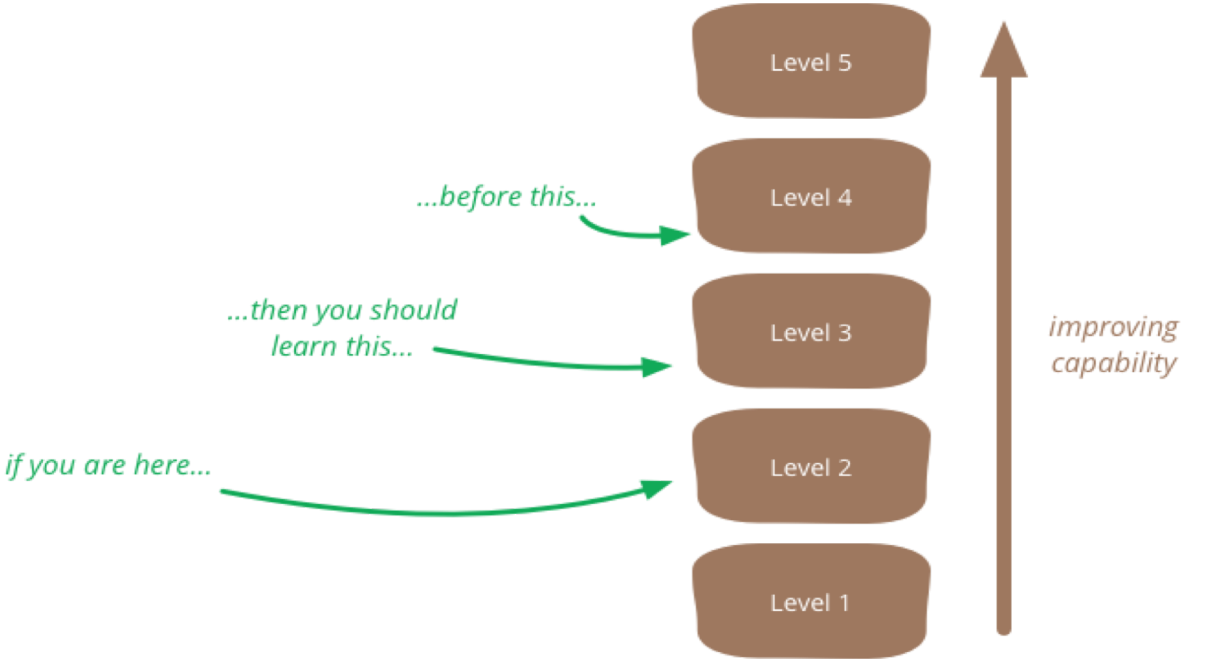
Partner with forward looking teams first

Remember being at 100% is not a goal the model has to have a stretch goal

Evolve the model from time to time

And ….

Our message is:



https://martinfowler.com/bliki/MaturityModel.html


2. Is it even a good tech?


FORRESTER®


IDC


Gartner


IHS Markit®

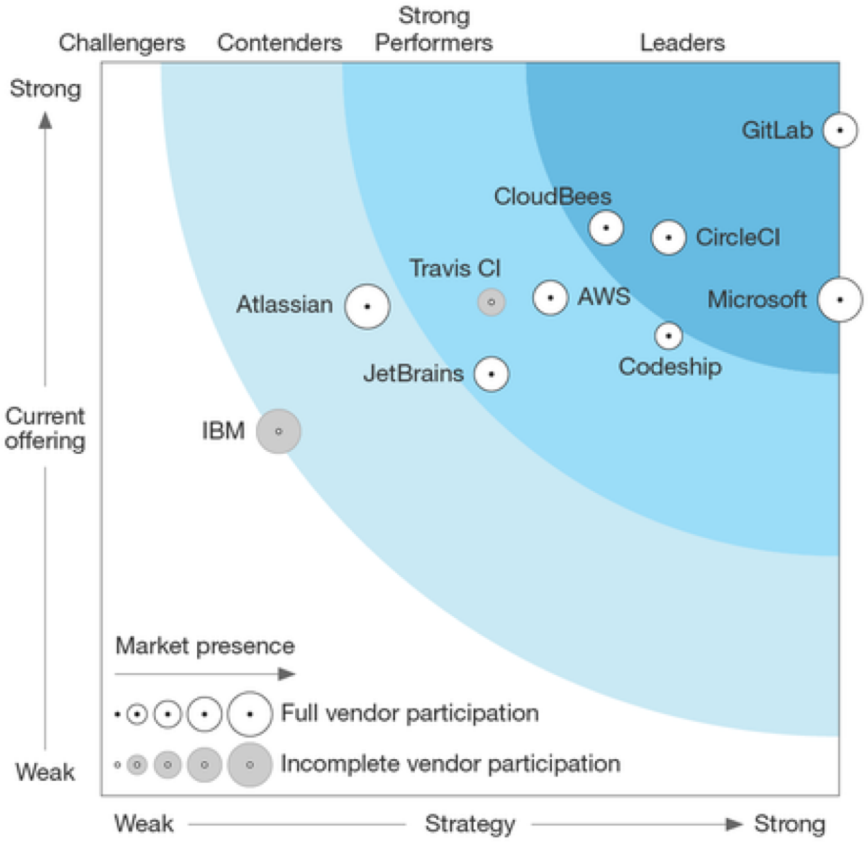
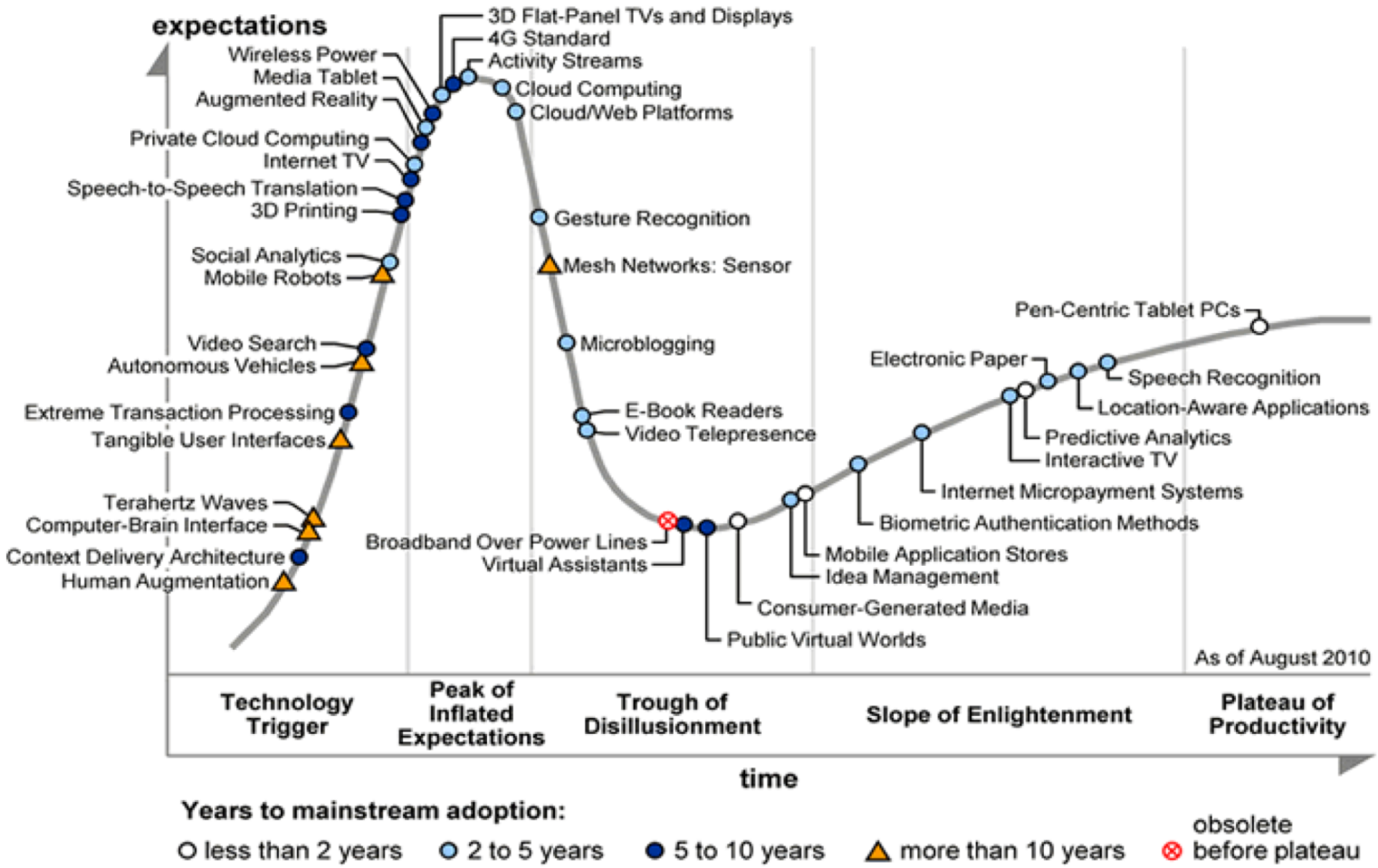


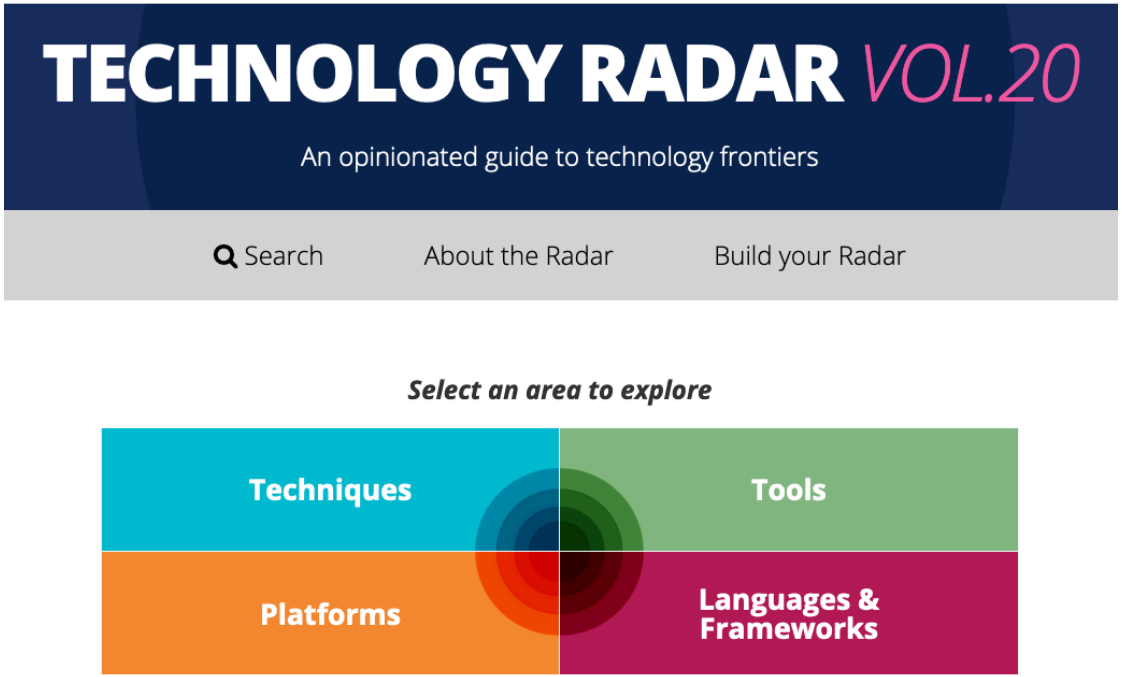
Figure 1. Magic Quadrant for Public Cloud Infrastructure Managed Service Providers, Worldwide

As of March 2017

Source: Gartner (March 2017)


expectations
3D Flat-Panel TVs and Displays
4G Standard
Activity Streams
Wireless Power
Media Tablet
Augmented Reality
Cloud Computing
Cloud/Web Platforms
Private Cloud Computing
Internet TV
Speech-to-Speech Translation
3D Printing
Gesture Recognition
Social Analytics
Mobile Robots
Mesh Networks: Sensor
Pen-Centric Tablet PCs
Video Search
Autonomous Vehicles
Microblogging
Electronic Paper
Speech Recognition
Location-Aware Applications
Extreme Transaction Processing
Tangible User Interfaces
E-Book Readers
Video Telepresence
Predictive Analytics
Interactive TV
Internet Micropayment Systems
Terahertz Waves
Computer-Brain Interface
Biometric Authentication Methods
Broadband Over Power Lines
Virtual Assistants
Mobile Application Stores
Idea Management
Context Delivery Architecture
Human Augmentation
Consumer-Generated Media
Public Virtual Worlds
As of August 2010
Technology Trigger
Peak of Inflated Expectations
Trough of Disillusionment
Slope of Enlightenment
Plateau of Productivity
time
Years to mainstream adoption:
less than 2 years
2 to 5 years
5 to 10 years
more than 10 years
obsolete before plateau

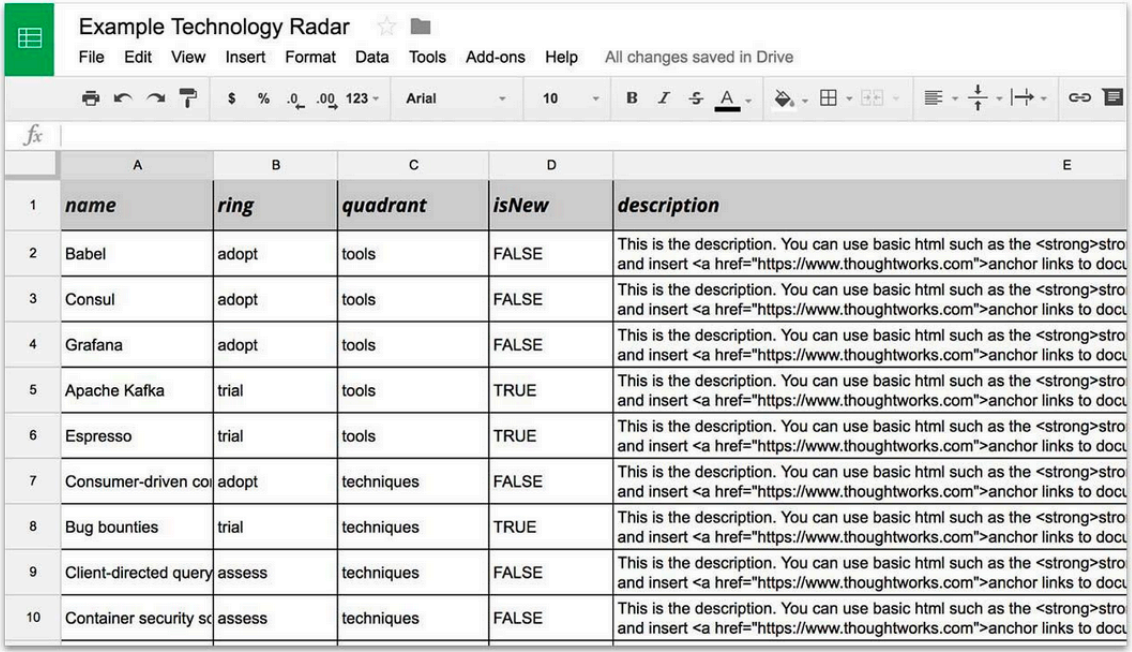
ThoughtWorks®



Build your own Radar

1. ~~Is my organization/team ready to adopt a new tech?~~
2. Is it even a good tech for our team?
3. What problem do I solve by using this tech?
4. ~~Will solving this problem help my organization?~~

Build your own radar!



Example Technology Radar

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

	A	B	C	D	E
1	***name***	***ring***	***quadrant***	***isNew***	***description***
2	Babel	adopt	tools	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
3	Consul	adopt	tools	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
4	Grafana	adopt	tools	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
5	Apache Kafka	trial	tools	TRUE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
6	Espresso	trial	tools	TRUE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
7	Consumer-driven co	adopt	techniques	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
8	Bug bounties	trial	techniques	TRUE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
9	Client-directed query	assess	techniques	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu
10	Container security s	assess	techniques	FALSE	This is the description. You can use basic html such as the stro and insert <a href="https://www.thoughtworks.com">anchor links to docu

Thank you very much!

Shownotes!
@jbaruch
@williammanning
#DevOpsWorld