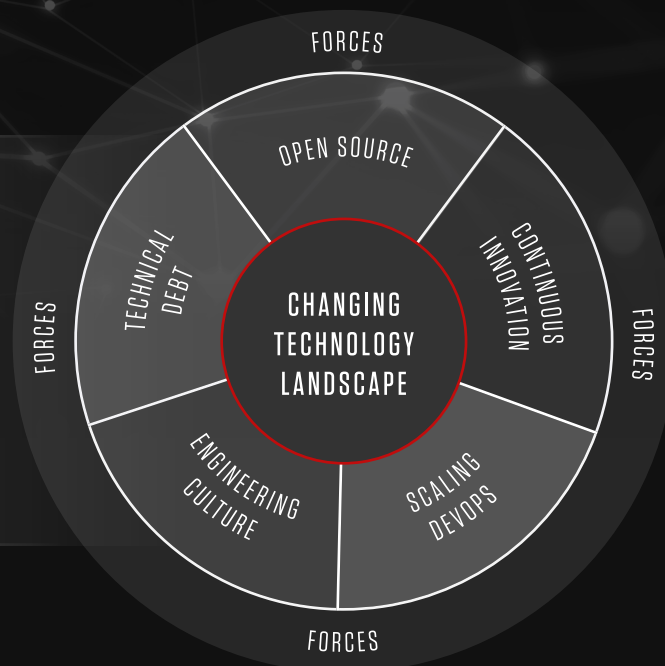# CAPCO

RE-ENGINEERING 2021

There are FIVE key forces shaping the technology that underpins financial services. While not unique to financial services, harnessing these forces takes deep experience of financial services. Capco know how to harness these forces, so they become tools for sustainable transformation.

The content below explores practical ways to turn these challenges into advantages.

FORCES

FORCES

FORCES

FORCES

OPEN SOURCE

CONTINUOUS INNOVATION

TECHNICAL DEBT

CHANGING TECHNOLOGY LANDSCAPE

ENGINEERING CULTURE

SCALING DEVOPS

1. ENGINEERING PEOPLE AND CULTURE

Great engineering starts with hard to hire people, but once they're in, they provide huge value. At Capco, we believe great engineers, combined with a strong culture, create better business.

YOU NEED GREAT ENGINEERS, BUT SO DOES EVERYBODY ELSE

"Access to developers is a bigger threat to success than access to capital. This underscores the most important point about developers as force-multipliers: It's not just how many developers companies have; it's also how they're being leveraged."

GREAT ENGINEERS ARE NOT STEREOTYPES

40% of engineers only need one cup of coffee a day, and 2% drink Soylent. Many are early birds and nearly half would rather work in an office every day. Their most dreaded database is IBM DB2 (but they love Redis). They collaborate on open-source projects in their spare time and prefer electronic music. They don't think leadership prioritizes technology. They are the heart of modern business.
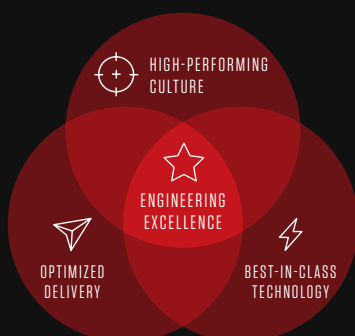
THEIR MOTIVATIONS ARE DIFFERENT TO YOURS

When looking for a job, 70% said better compensation was the motivator, but for job priorities, 51.3% said 'languages, frameworks, and other technologies I'd be working with'. Less than 12% said financial performance of the organization.

GREAT ENGINEERS + STRONG CULTURE = BETTER BUSINESS

HIGH-PERFORMING CULTURE

ENGINEERING EXCELLENCE

OPTIMIZED DELIVERY

BEST-IN-CLASS TECHNOLOGY

CAPCO.COM/ENGINEERING

HOW YOU BUILD A STRONG ENGINEERING CULTURE

ENGINEERING SPECIFIC CAREER PATHS

EFFECTIVE COMMUNITIES OF PRACTICE

STRONG ENGINEERING LEADERSHIP

FOCUS ON CONTINUOUS LEARNING
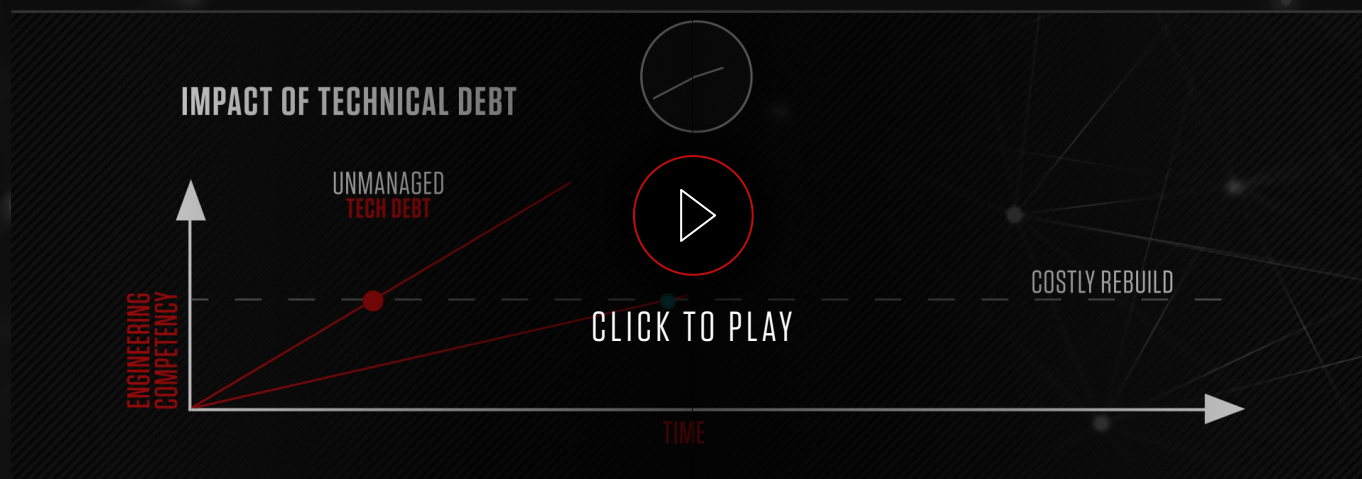
44% SAID COMPANY CULTURE WAS THE MOST IMPORTANT FACTOR

Hiring great engineers requires a different approach and a cultural shift.

2. LEVERAGING TECHNICAL DEBT

IMPACT OF TECHNICAL DEBT

UNMANAGED TECH DEBT

ENGINEERING COMPETENCY

COSTLY REBUILD

CLICK TO PLAY

TIME

3. EMBRACING OPEN SOURCE

A POSITIVE ENGINEERING CULTURE IS GOOD FOR BUSINESS, AND OPEN-SOURCE COLLABORATION IS AT THE HEART

IT'S GROWING EXPONENTIALLY

GITHUB FOR EXAMPLE, HAS OVER 50MILLION DEVELOPERS COLLABORATING

10 MILLION NEW DEVELOPERS A YEAR ARE JOINING GITHUB[1]

$7.5BN
MICROSOFT PAID FOR GITHUB ON THE 4TH JUNE 2018

BIG TECH
ALL FIVE OF THE FASTEST GROWING PROJECTS ON GITHUB WERE DRIVEN BY BIG TECH COMPANIES

GITHUB STATE OF THE OCTOVERSE 2019

DEVELOPERS LOVE OPEN SOURCE

IT'S A COMMUNITY THEY WANT TO BE INVOLVED IN

41% DEVELOPERS WHO WOULD LIKE TO CONTRIBUTE TO OPEN SOURCE BUT CURRENTLY DON'T

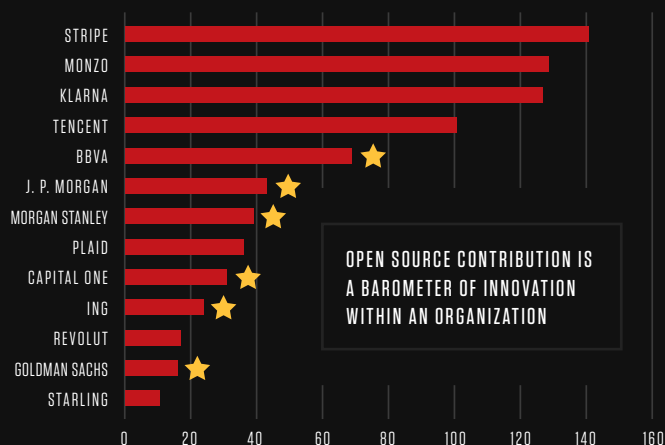JETBRAINS THE STATE OF DEVELOPER ECOSYSTEM 2019

34% DEVELOPERS PRIMARY MOTIVATION FOR CONTRIBUTING TO OPEN SOURCE IS FUN!

2020 HIRED STATE OF SOFTWARE ENGINEERS

NOT JUST NEW PLAYERS

WHILE CHALLENGER BANKS AND FINTECHS HAVE A LARGER PUBLIC FOOTPRINT, INNOVATIVE FINANCIAL SERVICES ORGANIZATIONS ARE CATCHING UP

Organization	Value
STRIPE	142
MONZO	128
KLARNA	126
TENCENT	100
BBVA	68
J. P. MORGAN	44
MORGAN STANLEY	40
PLAID	37
CAPITAL ONE	33
ING	25
REVOLUT	18
GOLDMAN SACHS	16
STARLING	10

(x-axis: 0, 20, 40, 60, 80, 100, 120, 140, 160)

OPEN SOURCE CONTRIBUTION IS A BAROMETER OF INNOVATION WITHIN AN ORGANIZATION

GITHUB PUBLIC REPOSITORIES FEB 2020

OPEN SOURCE IS A COMMUNITY – ARE YOU A GOOD CITIZEN?

BIG TECH LEADS THE WAY IN OPEN SOURCE. FINANCIAL SERVICES ORGANIZATIONS HAVE BEEN SLOWER TO EMBRACE IT BUT SOME FIRMS ARE EXCELLING

HOW TO LEVERAGE OPEN SOURCE

BASELINE
ESTABLISH YOUR BASELINE BY AUDITING EXISTING OSS USE AND REMEDIATING ANY HIGH PRIORITY ISSUES E.G. OSS LICENSE ISSUES

EDUCATE TEAMS
EDUCATE YOUR TEAMS ABOUT YOU OSS STRATEGY, OSS CONSIDERATIONS & BEST PRACTICES, AND CONTRIBUTING EFFECTIVELY TO OSS

LEAN OUT
LEAN AND AUTOMATE YOUR PROCESSES FOR OSS ADOPTION & CONTRIBUTION REDUCING FRICTION AND IMPROVING RISK & COMPLIANCE

WE HELP CLIENTS TO MOVE FROM A CONSTRUCTION TO COMPOSITION SOFTWARE DELIVERY APPROACH, REDUCING CUSTOM BUILD BY LEVERAGING OPEN SOURCE TO DELIVER GOALS FASTER
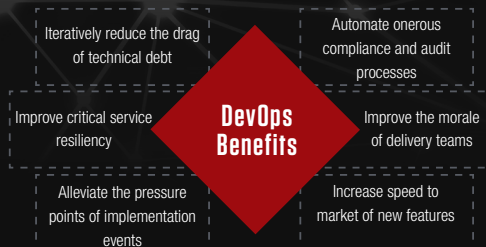
4. INDUSTRIALISING DEVOPS

FINANCIAL SERVICES ORGANIZATIONS ARE NOT HOMOGENOUS, THEY OPERATE DIFFERENTLY DEPENDING ON BUSINESS AREA. DEVOPS IMPROVES ALIGNMENT ACROSS TEAMS THROUGHOUT THE DELIVERY CYCLE. IT IS BEING USED IN FINANCIAL SERVICES TO ROLL OUT VALUE TO THE MARKET WITH GREATER PACE, EFFICIENCY, AND SECURITY ... IF DONE CORRECTLY.

DRIVERS WITHIN FINANCIAL SERVICES

- Efficiency
- Standardisation
- Compliance
- Zero downtime
- Minimise production failure

DEVOPS WITHIN FINANCIAL SERVICES

Iteratively reduce the drag of technical debt

Automate onerous compliance and audit processes

Improve critical service resiliency

DevOps Benefits

Improve the morale of delivery teams

Alleviate the pressure points of implementation events

Increase speed to market of new features

HOW TO SCALE DEVOPS IN FINANCIAL SERVICES

INVEST IN YOUR PEOPLE

From basic training and effective coaching, through to establishing effective communities of practice

FORGET ONE SIZE FITS ALL

In a complex and traditional environment there will NOT be a one size fits all. Focus on principles, patterns, and practices - get creative to solve unique challenges

FOCUS ON DEVELOPER EXPERIENCE (DX)

It's categorically not about tools, it is about enabling delivery teams and removing the frustration of getting from idea to production

ADDRESS COMPLIANCE, ELEGANTLY

Systemize as many of the compliance steps as possible by bringing the control functions (e.g. InfoSec) into the co-creation and solve challenges together

SCALING DEVOPS BRINGS HUGE BENEFITS

ELITE PERFORMERS

208 TIMES MORE
frequent code deployments

106 TIMES FASTER
lead time from commit to deploy

2604 TIMES FASTER
time to recover from incidents

7 TIMES LOWER
change failure rate
(changes are 1/7 as likely to fail)

■ Throughput

■ Stability

Source - State of DevOps 2019 - Accelerate

DEVELOPERS WORKING WITHIN A MATURE DEVOPS ENVIRONMENT ARE **3.6X** MORE LIKELY TO PAY ATTENTION TO SECURITY
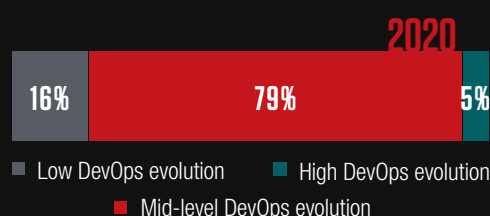
CHALLENGES TO SCALING IN FINANCIAL SERVICES

Many financial services organizations are applying DevOps principles, but few are yet able to compete with the world's best

64% of firms take **more than six months** to bring a new software product to market

58% of financial services organizations rate their DevOps maturity **two or three out of five**

The most commonly-cited barriers to rapid software releases are **last-minute security tests and regulatory and compliance concerns***

More than half find it **"very" or "extremely" difficult** to find the right talent

EXISTING ARCHITECTURE	Mature applications typically have not been developed with DevOps principles and practices as first-class citizens.
DYNAMIC INFRASTRUCTURE	Lack of dynamic (cloud or non-cloud) infrastructure significantly constrains CI/CD and "path to production".
OPERATING MODEL & PEOPLE	Organizations are not generally making the necessary changes to reach higher levels of DevOps of maturity.
ENTERPRISE TOOLING	Traditional approaches to enterprise tooling may not be optimal within the fast-evolving field of DevOps.

Source: The State of DevOps in Financial Services Report 2019 - Contino

OUR DEVOPS SERVICES

Leveraging industry leading financial services capability and extensive DevOps experience to make your transformation journey a success

DEVOPS MATURITY ASSESSMENT

SCALING DEVOPS

REIMAGINE PRODUCTION OPERATIONS

IT'S EASY TO GET STUCK IN THE MIDDLE

"… most organizations struggle to move beyond the middle stages of their DevOps evolution. They are rarely able to scale DevOps ways of working beyond the development, operations, and security teams. "
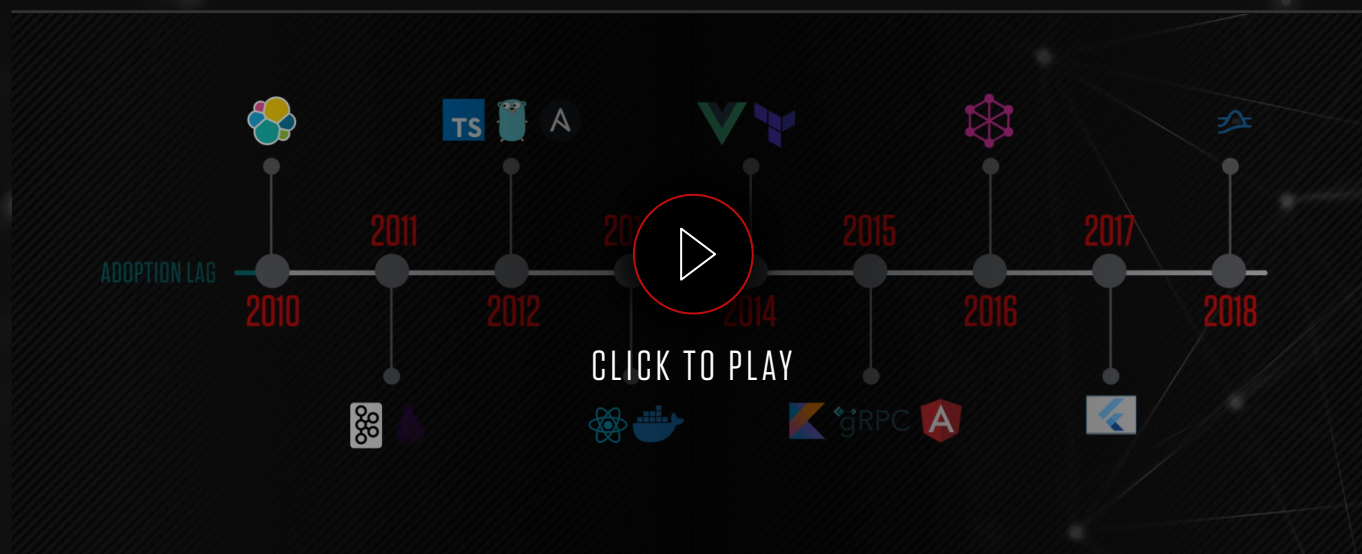
Google State of DevOps report 2020

2020

16% 79% 5%

■ Low DevOps evolution   ■ High DevOps evolution
■ Mid-level DevOps evolution

Source - State of DevOps 2019 - Accelerate

5. CONTINUOUS INNOVATION

CLICK TO PLAY

ADOPTION LAG

2010 · 2011 · 2012 · 2014 · 2015 · 2016 · 2017 · 2018

WE'VE HARNESSED THESE FORCES FOR IMPACT

DEVOPS ACCELERATION PROGRAMME

GLOBAL TIER 1 PRIVATE BANK

Capco delivered a DevOps acceleration programme focusing on cloud migration and use of DevOps best practices across people, processes, and technology. The result was a fast flow of changes for their digital products in a secure and reliable manner, with minimum risk, to achieve sustainable, stable, and predictable delivery.

FORCES: DEVOPS | PEOPLE | INNOVATION | TECHNICAL DEBT

KEY TECH:

AGENCY BANK PAYMENT PUBLIC APIS

UK TIER 1 CORPORATE BANK

Capco were engaged by a UK clearing bank to securely deliver public facing payment APIs to enable the expansion of it's payments clients, including agency banks. Capco delivered the solution in 7 months on AWS enabling one of the largest banks in the world to be the first customer to integrate with the payment service.

FORCES: OPEN SOURCE | INNOVATION | TECHNICAL DEBT | DEVOPS

KEY TECH:

WEALTH MANAGEMENT PORTAL

SWISS WEALTH MANAGEMENT

Capco delivered a wealth management client portal to enable our client's staff to manage and service their end clients – in just four months The solution was integrated into their existing back-end systems and Office 365, for tight integration with collaboration tools such as document management, back office workflow and emails.

FORCES: OPEN SOURCE | INNOVATION | DEVOPS

KEY TECH:

WHY CAPCO?

We leverage our industry leading Financial Services capability and far reaching partner alliances to make your development journey a success.

WE HAVE SUCCESSFULLY DESIGNED, BUILT AND SCALED FS APPLICATIONS

FS engineering is **ALL** we do. We know what it takes - from risk to regulation, governance, ops and technology.

We have battle-tested experience delivering technology into production in the most complex environments.

WE HAVE THE ABILITY TO ACCELERATE YOUR DELIVERY

We accelerate development with a trusted network of technology vendors, and our own developed solutions.

Our global presence enables us to draw insights from markets worldwide, to challenge ideas and make future trends tangible.

WE INVEST IN OUR TEAM TO PROVIDE THE BEST-IN-CLASS ENGINEERING PRACTICES

Investing heavily in our people is more than important to us. Coming from multiple backgrounds, smart engineers are trained to exploit their broad expertise, from SME banking, Open Banking & Finance, as well as large-scale delivery and partner integration.

SKILLS TRANSFER AND ENABLEMENT

Not only do our accredited front-end consultants, architects and engineers deliver cutting edge solutions, we also work with our clients to increase their Mobile and Web skills and capabilities through integrated training and change delivery.

ENGINEERING FORCES – CHALLENGE OR OPPORTUNITY

We help financial services firms accelerate change by exploiting these opportunities

PILLARS OF CAPCO ENGINEERING

Taking the design of technology services and putting them in the hands of real end-users. Providing high quality technology services across the entire stack to design, develop and deploy performant, secure and scalable solutions.

1. MOBILE & WEB DEVELOPMENT

Delivering high quality end-user experiences by building and deploying into the app store and providing cross channel experiences with web applications.

- Application architecture assessment
- Mobile & web application development
- Mobile app quality specific solutions

4. DATA ENGINEERING

Implementing large-scale, secure, and effective data platforms and event-driven solutions – delivering improved digital experiences, through to meeting data intensive regulation.

- Delivery of event-driven architectures
- Near real-time data analytics
- Cloud-hosted data warehousing

2. API DESIGN & DEVELOPMENT

In a connected world clients need to provide their services to consumers and consume the services of others to innovate and get to market faster.

- API design and development
- API integration of third party services
- API gateway and developer experience (DX)

5. CLOUD NATIVE ENGINEERING

Designing and building new cloud native solutions on top of relentless cloud innovations (e.g. containers, serverless, service meshes etc).

- Domain driven design
- Building microservices development
- Platform modernization and engineering

3. DEVOPS & DEVSECOPS

Applying proven DevOps principles and practices at scale to significantly increase the speed, quality (incl. security) and sustainability of delivering technology services to production.

- DevOps maturity assessment
- DevOps pipeline implementation
- DevOps coaching

6. QUALITY ENGINEERING

Unreliable services lose users quickly. Primarily through automated testing, assure quality across both functional and non-functional (e.g. accessibility, security) requirements.

- Automation framework implementation
- API contact testing & verification
- Non-functional testing

WE DELIVER ON THE KEY PLATFORMS

Google Cloud Partner

aws partner network

Select Consulting Partner

Gold Microsoft Partner
Microsoft

We sit in a unique sweet spot combining engineering and world-class consulting, and we're rooted in financial services: it's all we do. We're big enough to do genuinely impactful work, but not so huge that we can rest on our laurels.

"Impactful and sustainable technology delivery that delivers outcomes is difficult in any context. Add in the multipliers of scale, legacy and complexity in a highly regulated industry and the challenges are exponential.

"You need a step change in mindset, approach and technical competency. The challenge of this can't be underestimated and to be successful you need highly motivated, deeply technical problem solvers, that can bring engineering thinking, to continuously improve the technology stacks that power financial services today."

- Jonathan Fenwick, Managing Principal, Head of Digital Engineering at Capco.

CONTACTS

Jonathan Fenwick
Managing Principal
Head of Digital Engineering, UK
E Jonathan.Fenwick@capco.com

Sam Larsen
Managing Principal
Head of Development & Quality Engineering, UK
E Sam.Larsen@capco.com

Laura Wassink
Principal Consultant
Head of Engineering Strategy & Delivery, UK
E Laura.Wassink@capco.com

WWW.CAPCO.COM

CAPCO

JN_2665