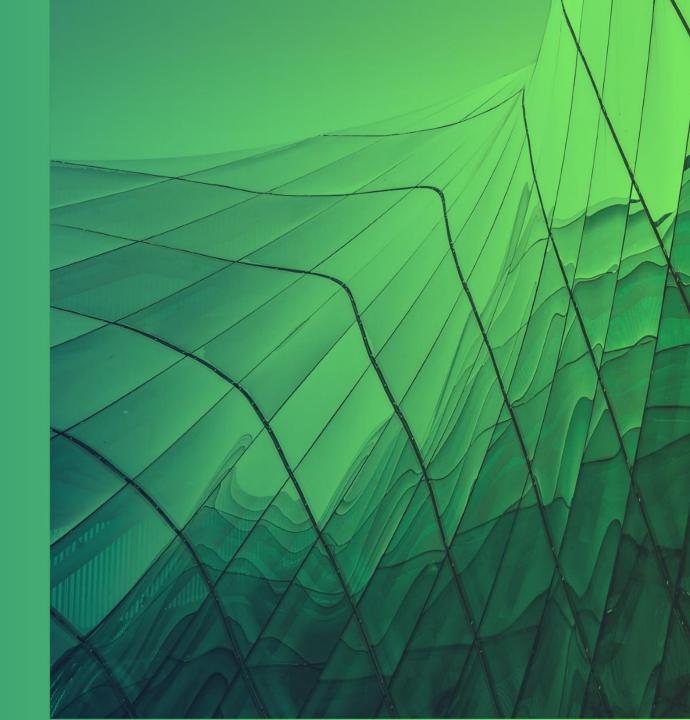
FIS

CONTINUOUS DELIVERY IN AWS

Mladen Vucicevic, Miroslav Milanovic

FIS Serbia

Belgrade, 10.5.2022



What FIS is doing?

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FIS empowers the financial world

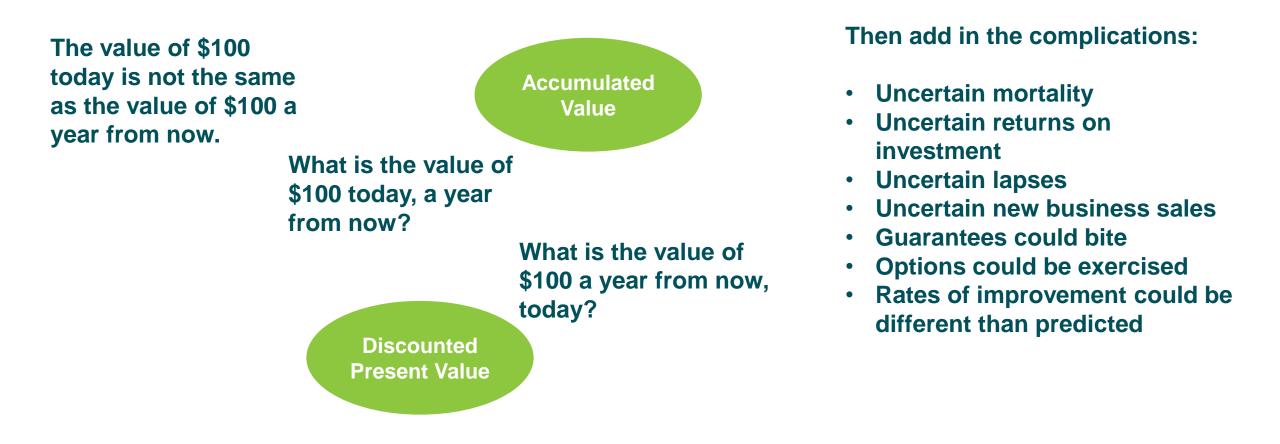
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400+ SOLUTIONS	\$9T+ MOVED GLOBALLY ANNUALLY	27B+ TRANSACTIONS PROCESSED GLOBALLY	+40 YEARS FINTECH EXPERIENCE
90% OF THE TOP 50 LARGEST GLOBAL BANKS ARE FIS CLIENTS	~\$1B INVESTED ANNUALLY IN R&D	80% OF THE TOP 50 LARGEST ASSET MANAGERS ARE FIS CLIENTS	80% OF THE TOP 50 LARGEST INSURANCE COMPANIES WORK WITH US

Actuaries – What do they need?

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Discounting Cashflows





So many models actuaries write will be some kind of discounted cashflow model; working out the current value of 'something', based on the future cash flows.

These could be...

- Valuation Models The current value of the company (for Regulatory or M&A purposes, for example), or the current value of assets and liabilities (for selling blocks of business)
- Pricing Models the current value of expected future profits of new insurance products, and how to
 maximise the present value of those profits.
- Capital Models The current value of the assets which need to be held to demonstrate solvency.
- Informational Models The current value of 'free assets' which could be used for opportunistic purposes.

And then you want to project these forward.



How big do these models get?

It's somewhere between Data and Big Data

But order of magnitude analysis:

- 10,000 variables
- For 40-120 year projection (say, 1,000 months)
- For 200 Products codes
- Say 200 Sub Products
- Testing maybe 30 scenarios

Then you might want to make your run Stochastic (maybe 10,000 sims).

So that's 1 EB

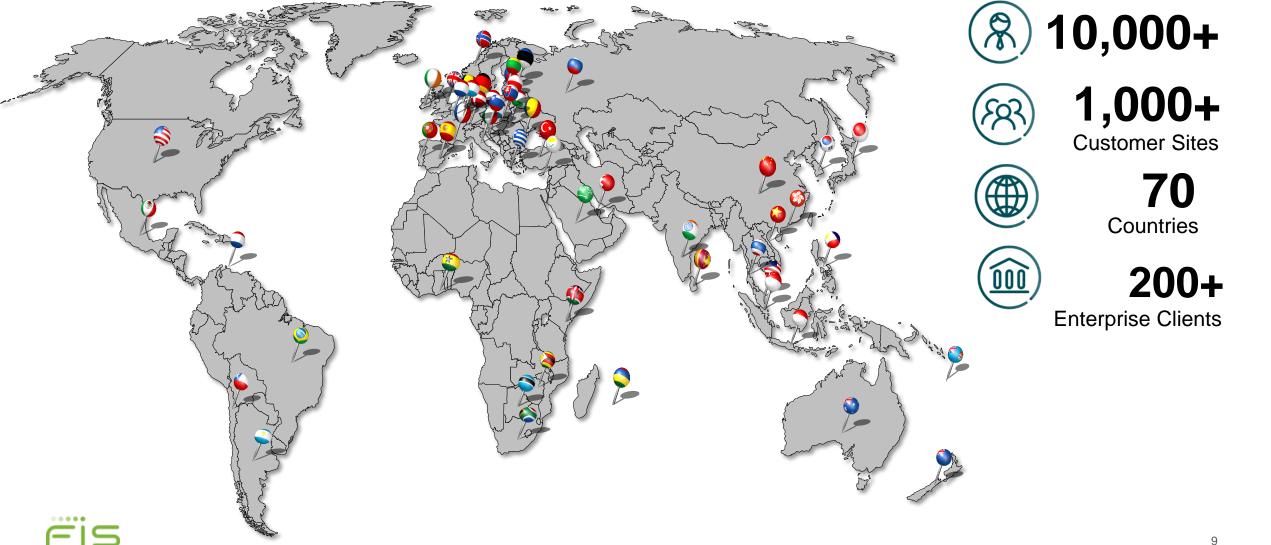
In practice, Clients have to compromise with Projection Term and Variables output to make this tractable for the output, but we've still got to be handling these numbers on the back-end



Insurance Risk Suite (Prophet)

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Prophet's global presence



Solution suite

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FIS Prophet Reference End to End Solution

PRE-PRODUCTION POST-PRODUCTION DEVELOPMENT Components **Enterprise Accounting Prophet Professional** Data Sources: of Prophet Data System Post journal entries Policy, Finance, etc. Model development from Prophet Promotes model to Management Generate financial **On premise Platform** integrate reports and installation with most known actuarial calculations Interface to IT platforms, corporate ledger across a variety of PRODUCTION deployment **Insurance Data Repository Prophet Modules:** models **Prophet Enterprise** Maps results to Data Conversion business context Executes runs using **Provides standard PP** models reporting schema Produces consistent Supports BI and auditable results dashboards and **Managed Cloud** Maintains execution external data load history Services **Prophet Modules: Business intelligence and** Assumption **Prophet Results Database** regulatory reporting Reporting Additional and data: finance. Prophet suite Holds metadata from model components Converts data to SQL format \sim External components/ sources Centralized / Automates Prophet jobs decentralized Prophet Maintains process audit trail • Manages data transfer between stages Control Centre deployments Enhances data lineage and traceability

What is continues delivery?

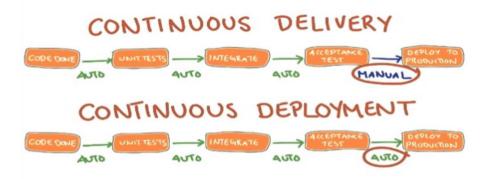
Continuous delivery (**CD**) is a software engineering approach in which teams produce software in short cycles, ensuring that the software can be reliably released at any time and, when releasing the software, without doing so manually. *



What continues delivery is not 🙂

- Continuous integration (practice of integrating code from different sources)
- Continuous deployment (automate the delivery aspect)
- DevOps (broader concept)
- Agile (methodology how to deliver product)
- Scrum (agile framework)
- Cloud
- Microservices architecture

But all above are needed to archive Continuous delivery.



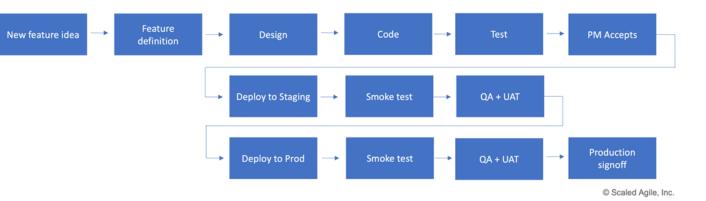


Why it is important for business?

- Release faster value to the customers
- Get early feedback from the market about features
- Reduce costs of deployment
- Force good engineering practices (like Agile, DevOps...)
- Increase the business understanding with development
- Increase the productivity



Typical life of functionality without CD

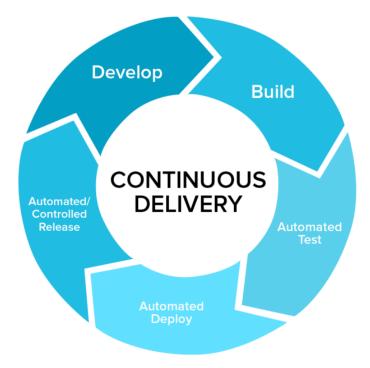






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CD process







Agile principles



Customer satisfactions



Support team member





Changing requirements



Measure

progress



Frequent delivery



Measure work progress







Development process

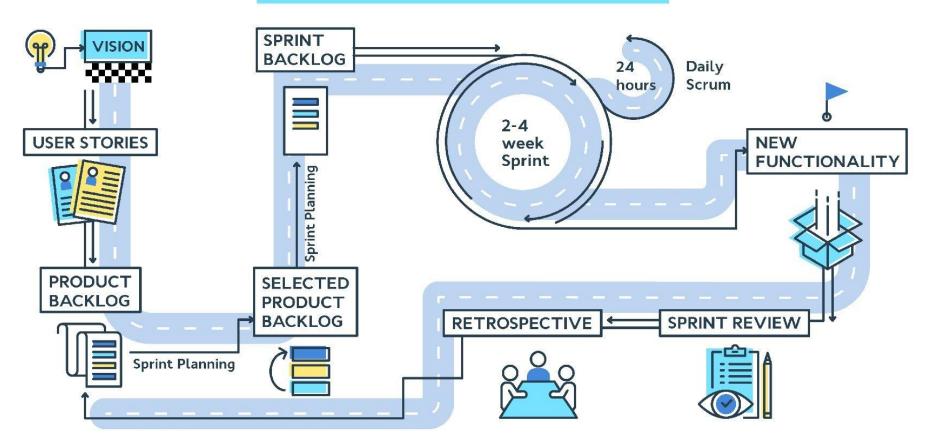






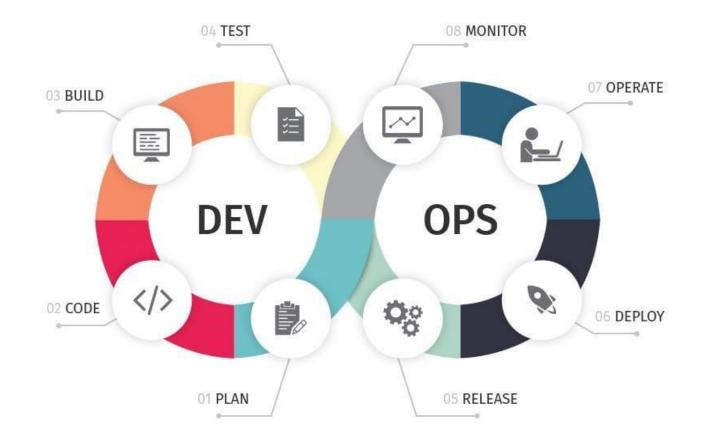
Scrum framework

SCRUM PROCESS



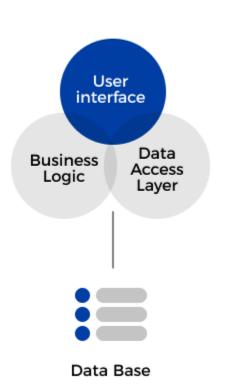








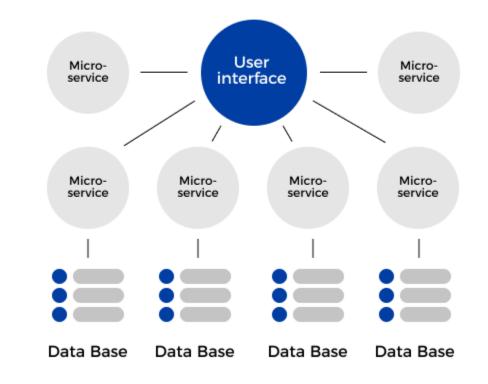
Microservices



MONOLITHIC

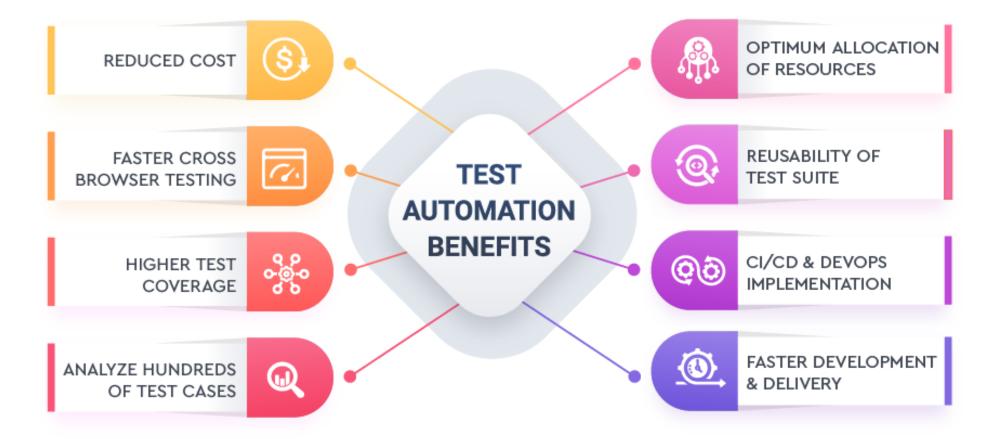
ARCHITECTURE

MICROSERVICE ARCHITECTURE





Test automation





In the clouds...

8 Cloud Computing Advantages.

1

2

3

4

5

Why Are People Flooding to the Cloud?

Cloud Computing Advantages:

Technical

Benefits

RESOURCE POOLING

Cloud service providers (CSPs) offer a highly scalable environment with access to all of the cloud computing resources you need...as long as you pay for it.

ON-DEMAND SELF-SERVICE

Organizations can add the resources they need, when they need it, without worrying about delays due to CSP processes or staffing.

RAPID ELASTICITY

Rapid elasticity of resources allows you to scale up and down when needed, eliminating the need to maintain additional infrastructure, which only gets utilized under peak workloads.

MEASURED SERVICES

Cloud services are metered, which means your usage is measured and you only pay for services you use, allowing your organization to adjust resources based on load changes and business needs.

BROAD NETWORK ACCESS

Broad network access allows for functionality across a range of devices and permitting remote connectivity from anywhere with an internet connection.

MOVEMENT OF IT EXPENSES FROM CAPITAL EXPENDITURES (CAPEX) TO OPERATIONAL EXPENDITURES (OPEX) With cloud computing, businesses can forego the initial investment of computer hardware and on-site-housing and even save on additional physical costs such as cooling, fire protection and security.

IMPROVEMENT OF SERVICE QUALITY Cloud data centers are run by IT experts who live and breathe infrastructure maintenance and support.

ACCESS TO NEW TECHNOLOGIES AND SERVICES Emerging tech requires large amounts of computing resources which can be accessed more easily and at a lower cost with cloud technology.





Public Cloud

Typically have massive amounts of available space, scalability. Recommended for collaborative projects.

Hybrid Cloud

Combine public clouds with private clouds to allow the two platforms to interact seamlessly. balancing big data analytics with

Private Cloud

Community Cloud

A collaborative, multi-tenant platform used by several distinct organizations to share the same applications. Users are typically operating within the same industry or field.

Top 10 Cloud Providers

Types of Cloud

Deployment



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In practice...

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Continuous Delivery earlier (10+ years ago)



individual teams works independently (when the modules are together for the first time, cannot be compiled)



weeks/months to test & stabilize release in development

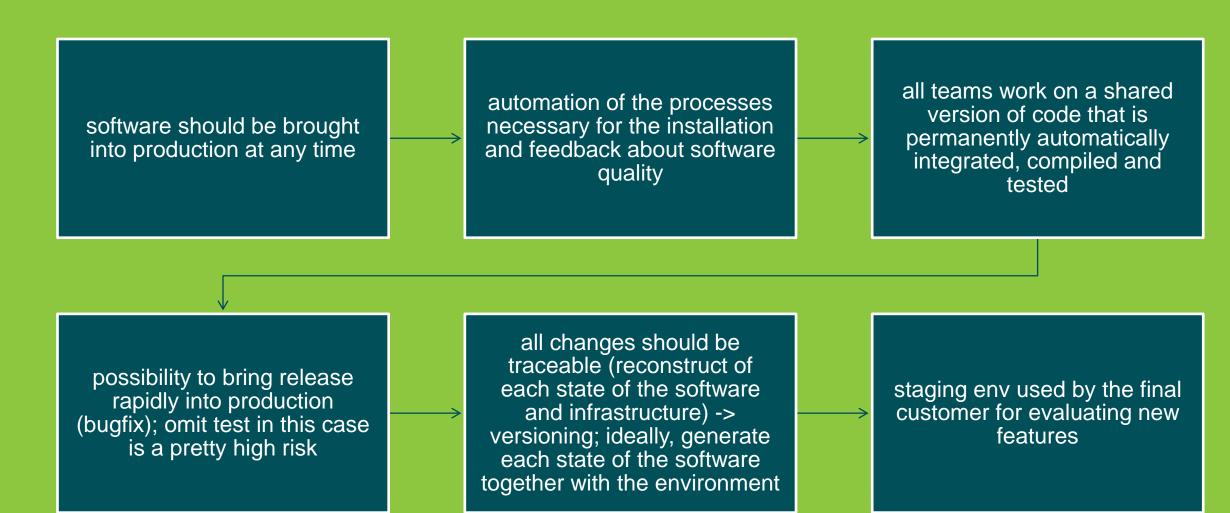


testing & installing in Production (months of work)



weeks/months of stabilizing in the production

Continuous Delivery today – ideas & challenges



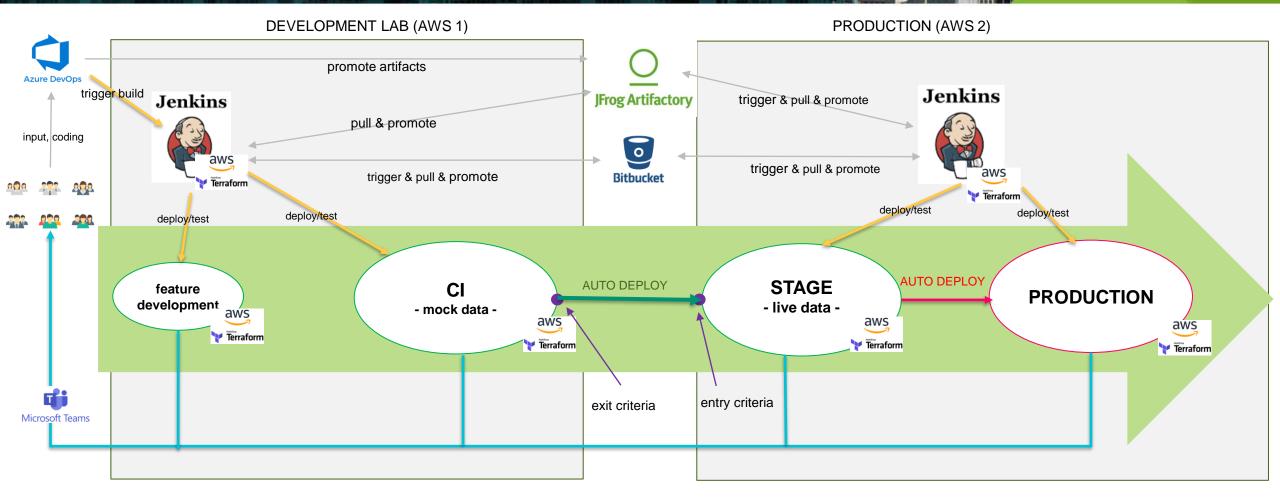
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Q: So, what do we need? A: End to End pipeline; means CI + CD



How have we implemented this in Prophet SaaS?

CI/CD process



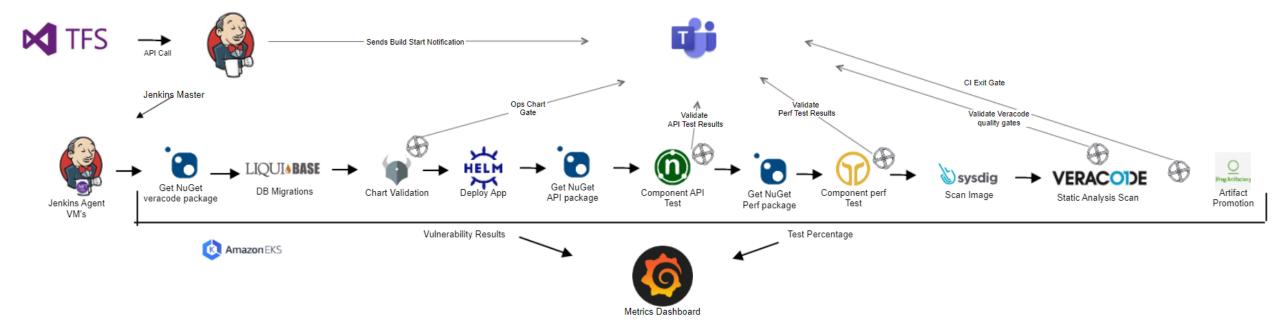








CI Jenkins flow





Fundamental principle of CD

If it hurts, do it more often and bring the pain forward!





You want to join FIS Serbia?

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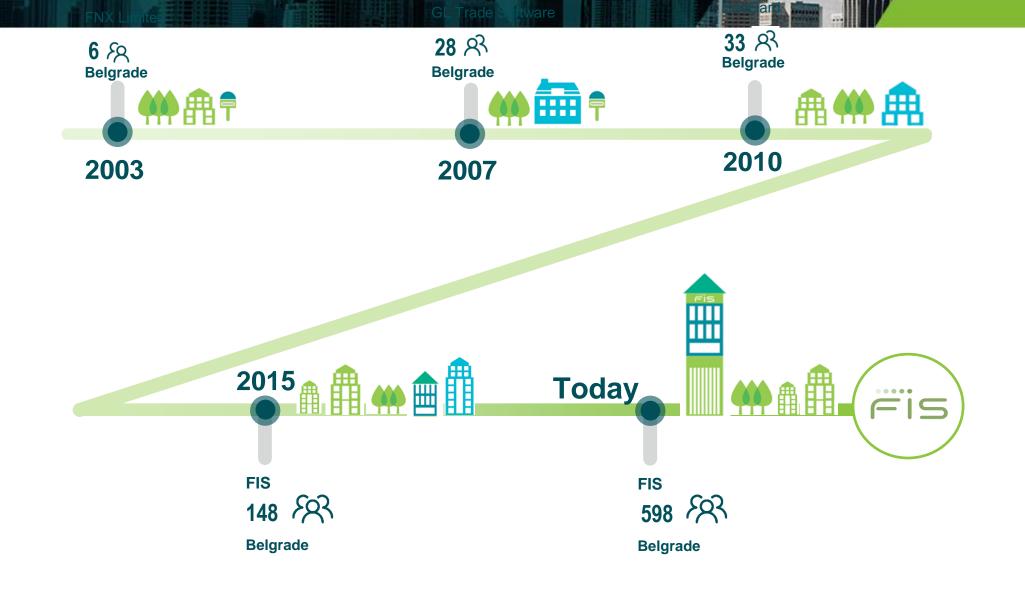
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FIS Serbia Retrospective



Our Benefits

Employee Stock Purchase Plan	Generali Private Medical and Accident Insurance	GeneraliPrivatePension Fund	100% Paid Maternity Leave
Vacation 27 vacation days in a calendar year (13.5 for interns).	to the second se	Flexible Flexible Working Schedule	Jう FitPass Membership
Back Massages	لې Fun Room & Fresh Fruits"	Referral Bonus	

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