

Technology Application Design and Prototyping

Perspective of a Software Vendor



Agenda

1. About Regnology
2. The Regulator 3 Story
3. Self-Service for Content
4. Client Case Study: Finansinspektionen
5. Rapid Prototyping: FDIC & MAS
6. SupTech Challenges
7. Q&A





About Regnology

About Regnology

A global reach

950 staff

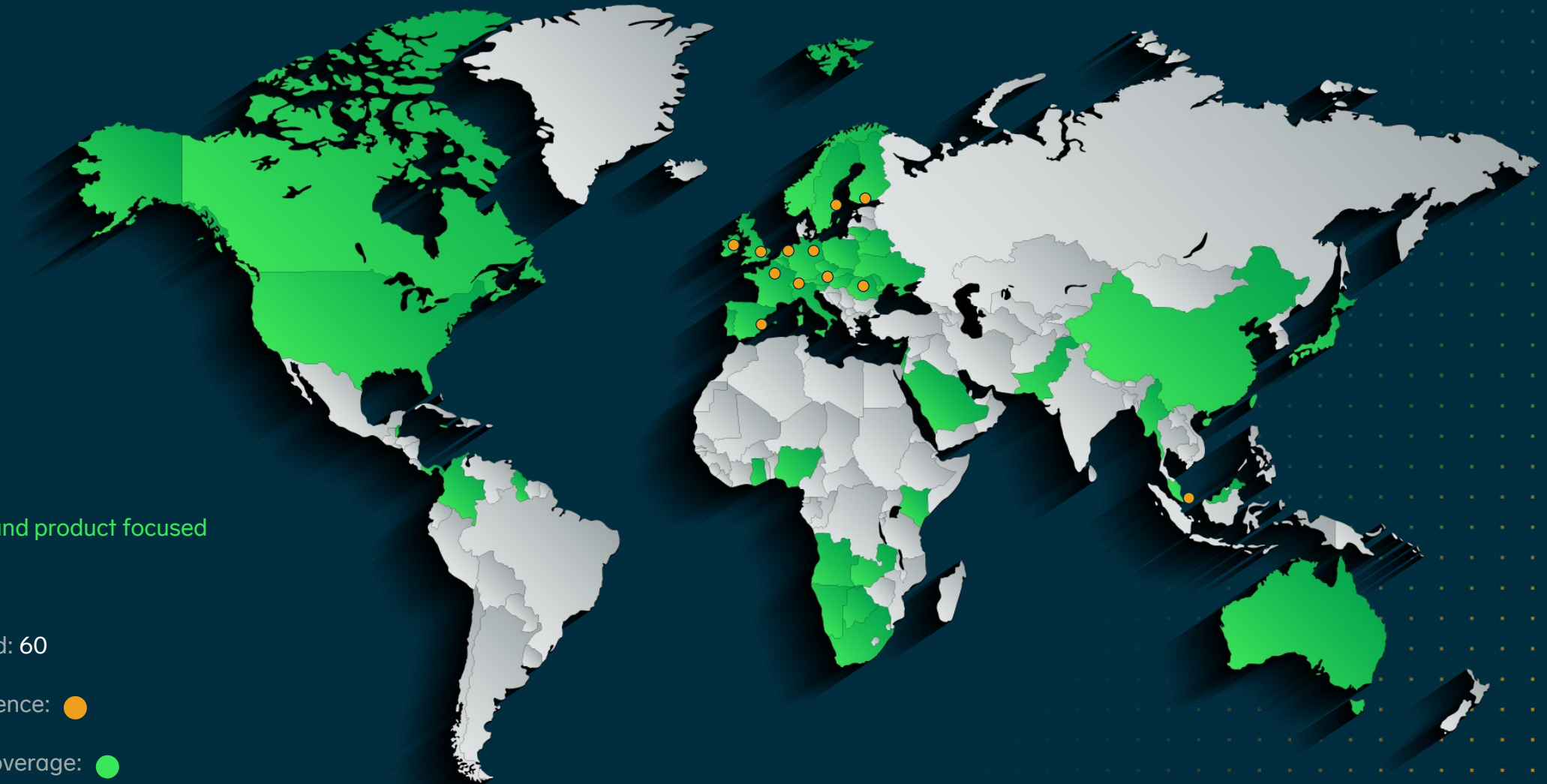
90% customer and product focused

Offices: 15

Countries served: 60

Regnology presence: ●

Geographical coverage: ●



We Are Regnology

We provide the global platform connecting regulators and the industry

Vision/Mission

Our Vision: Empowering regulators with the right data to ensure financial sector stability

Our Mission: We provide a SupTech platform connected with industry where regulators create and share regulatory content and use data on demand to act when needed.

Client Base

7,000+

Firms reporting with our solutions

50+

Regulators & tax authorities collect data from...

... 34,000

firms across the globe

1

Global RegTech & SupTech powerhouse

12

Countries with local presence

~850

RegTech and tax reporting experts

~150

SupTech experts

25+ years

RegTech, SupTech and tax reporting expertise



A Unique Perspective Serving Regulators and the Regulated

50+ REGULATORS

Financial Regulators and Tax Authorities



7,000+ REGULATED

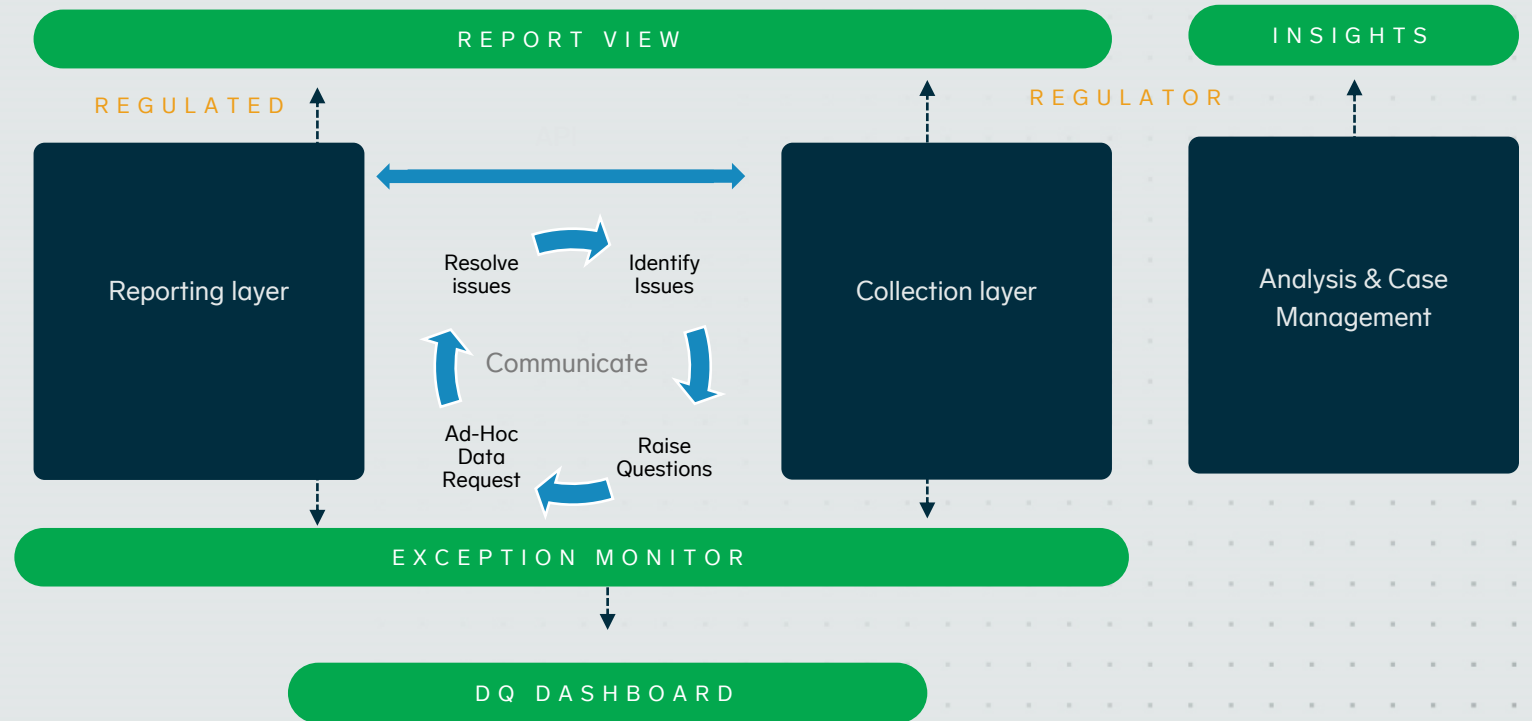
Financial Institutions and Insurance Companies



A joint platform for Regnology's RegTech and SupTech solutions that unifies workflows across regulators and the regulated and enables the sharing of services.

Unique regulatory data model for reporting synergy.

Low TCO through platform synergies (shared components and services).



Introduction

Dr. Robert Binder

■ Regnology

- Joined (a predecessor of) Regnology beginning of 2020 in the SupTech product management team
- Focus on emerging technologies and regulation in the ESFS
- Product manager mainly responsible for Regnology's next generation SupTech platform since 2021

■ Educational Background

- B.Sc. and M.Sc. in chemistry at the Goethe University, Frankfurt
- 7 years of experience as a research associate (PhD student and postdoctoral researcher)
- Research focus: quantum dynamics of energy transport phenomena in novel functional materials
- (Co-)Author of 15+ peer-reviewed scientific contributions
- Purview: modelling of complex systems, software development, data analysis, teaching, science management

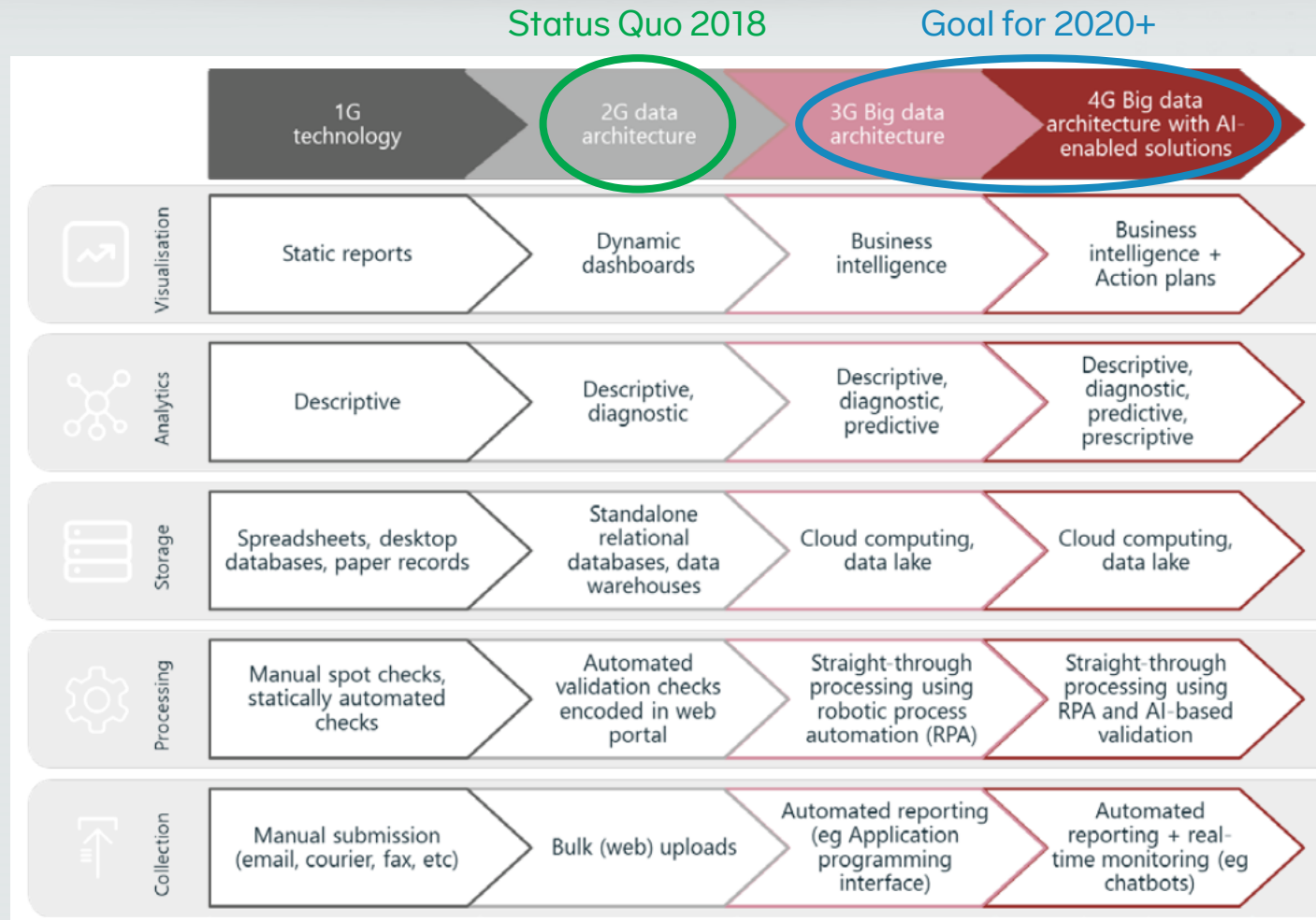




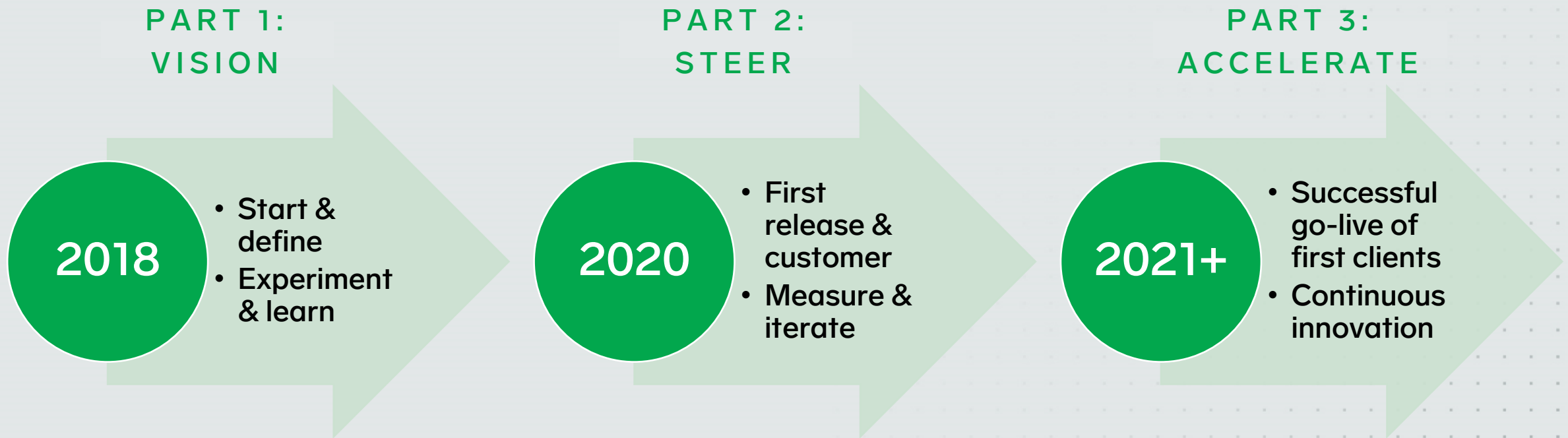
The Regulator 3 Story

A Lean Startup

SupTech Status Quo 2018/2019



Regulator 3 – A lean startup



Why Cloud-Native Software Architecture?

Growing data volumes/granular data → Scalability & Elasticity

- Fully modularized and containerized, Kubernetes for container orchestration.
- Distributed data lake for (transparent) operational data storage.

Accelerating regulatory change → Flexibility & Agility

- API- and microservices-driven design.
- Self-Service for content.

Need for better data insights → Business Intelligence & Advanced Analytics

- Making data collected readily available for downstream data analysis.



The Core Principles of Our Lean Approach

The Start-Up Mentality, but with production-level support, security and quality.

BUILD FAST & AUTOMATE

Leverage existing open-source technology

Cloud-based DevOps

CI/CD pipelines: automated build and spawning of test deployment for each merge request

Utilize CI/CD pipelines for automated testing: unit tests, end-to-end tests, user interface tests, manual smoke tests via automated deployments

Automated content creation for ESFS content directly from source artifacts

BEST PRACTICE

Adopt agile working methodology

End-to-end responsibility of developers: backend, frontend, build, testing & documentation

Establish high test coverage

Ensure code quality: four-eyes principle, code quality standards, linting, etc.

Fight Tech Debt Actively

PEOPLE & PROCESSES

Get incubators on board

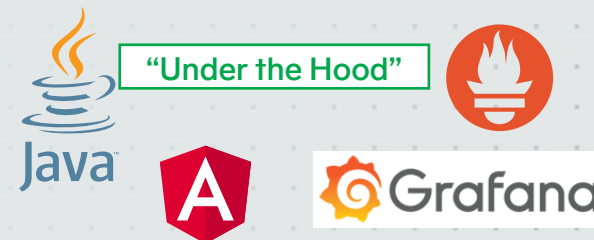
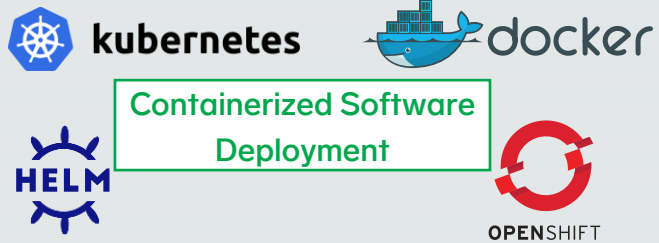
Adapt agile methodology (slightly) to situation on the ground

Involve engineers actively in business analysis, feature scoping and design (incl. directly with stakeholders)

Have real (!) stakeholder reviews



Avoid “Not Invented Here”!



People & Processes – Our Release Process

For an on-premises SupTech solution, we consider quarterly scheduled releases most adequate.

- Scheduled feature release once per quarter, i.e., after 6 biweekly sprints.
- Milestone release every month, i.e., every 2 biweekly sprints. → Test versions for new/revamped features, not for productive use.
- Actively encourage clients to test with milestone releases and gather their feedback.
- Keep capacity available for required patches/hotfixes within one sprint.



Have your say!

Where are you today on your SupTech journey?

<https://forms.office.com/e/bdzyaQZAYz>



Your Responses





Self-Service for Content

Let Business Take Ownership!

Why Self-Service is Important

Let Developers Focus On Actual
Development Work

Shorter Turn-Around Times

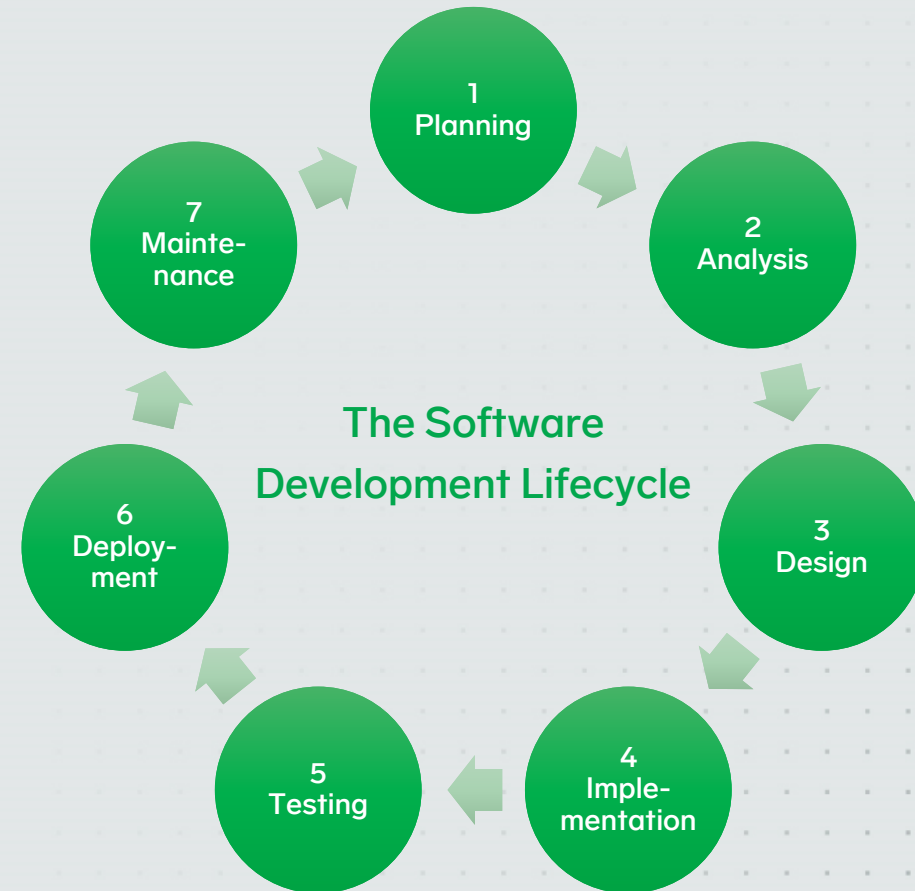
Lower Total Cost of Ownership



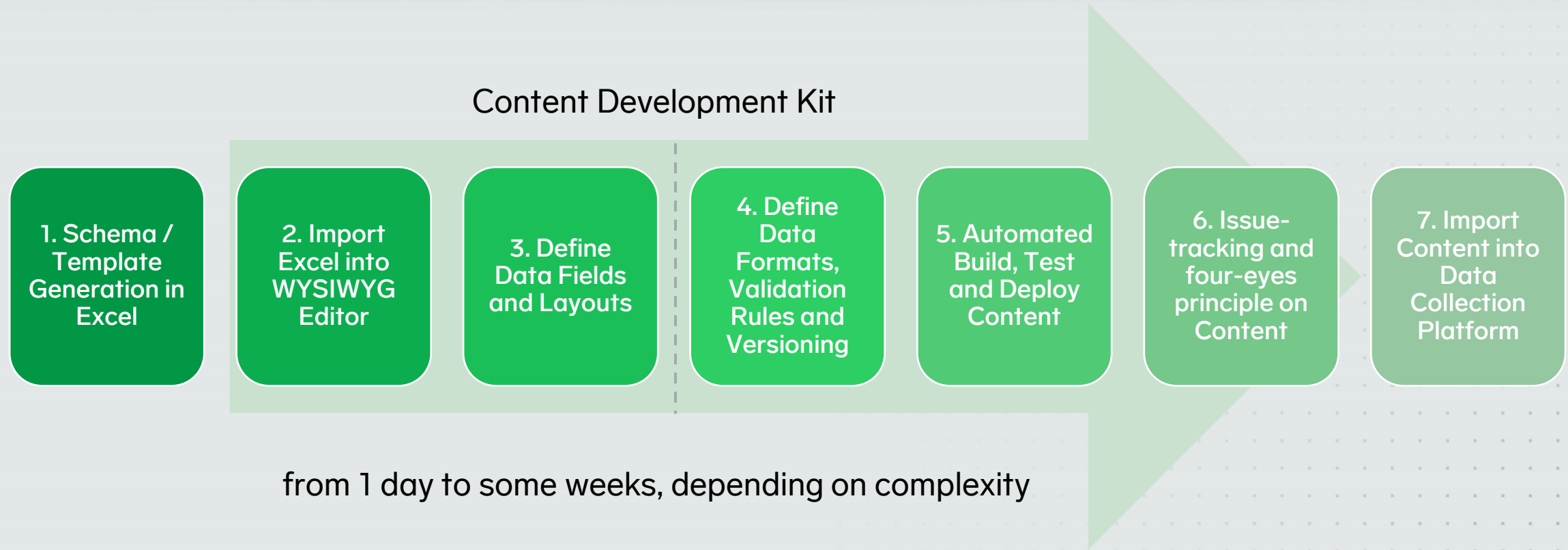
Provide End-to-End Self-Service for Content!

The lifecycle of SupTech content is conceptually very similar to the software development lifecycle.

“Eat your own dog food”: Our content creators (in R&D or Professional Services teams) use the same approach, platform, tools and processes as our customers.



Rapid Change Management on Regulatory Content using the CDK



GitLab



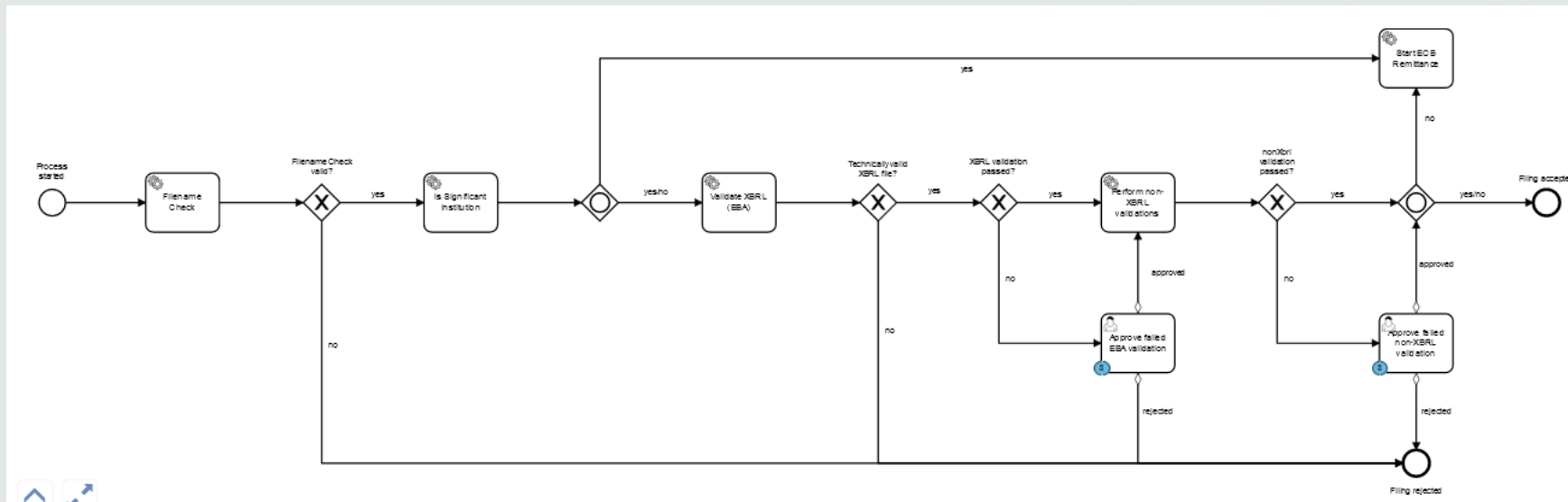
The Content Development Kit (CDK) utilizes proven open-source technology and industry standards.



The Enablers: Workflow Engine & Microservices

A BPMN-compliant workflow engine combined with use-case-specific microservices allow tackling of a plethora of use cases:

- Processing of custom file formats
- Bespoke postprocessing of reported data
- Data dissemination within complex IT landscapes
- Etc.



Excursion: AI & ML

PoC with existing client:

- Status quo: collection of unstructured annual statements from the insurance industry in PDF format
- Definition of a minimal data model for values reported therein
- PDF parsing and natural-language processing of the file content
- Matching of encountered reported values to minimal data model and persistence of individual data points
- Querying of data from annual statements on a data point level



Engage With Your Content Creators!

After some time, your content creators will know your self-service facilities better than you. Engage with them!

- Where do you need more flexibility?
- Which are the most repetitive/error-prone tasks?
- Where would you like to see more automation?
- Where would you need more user guidance or direct feedback by the solution?
- Which types of novel content do you plan for the future?





Client Case Study: Finanzinspektionen

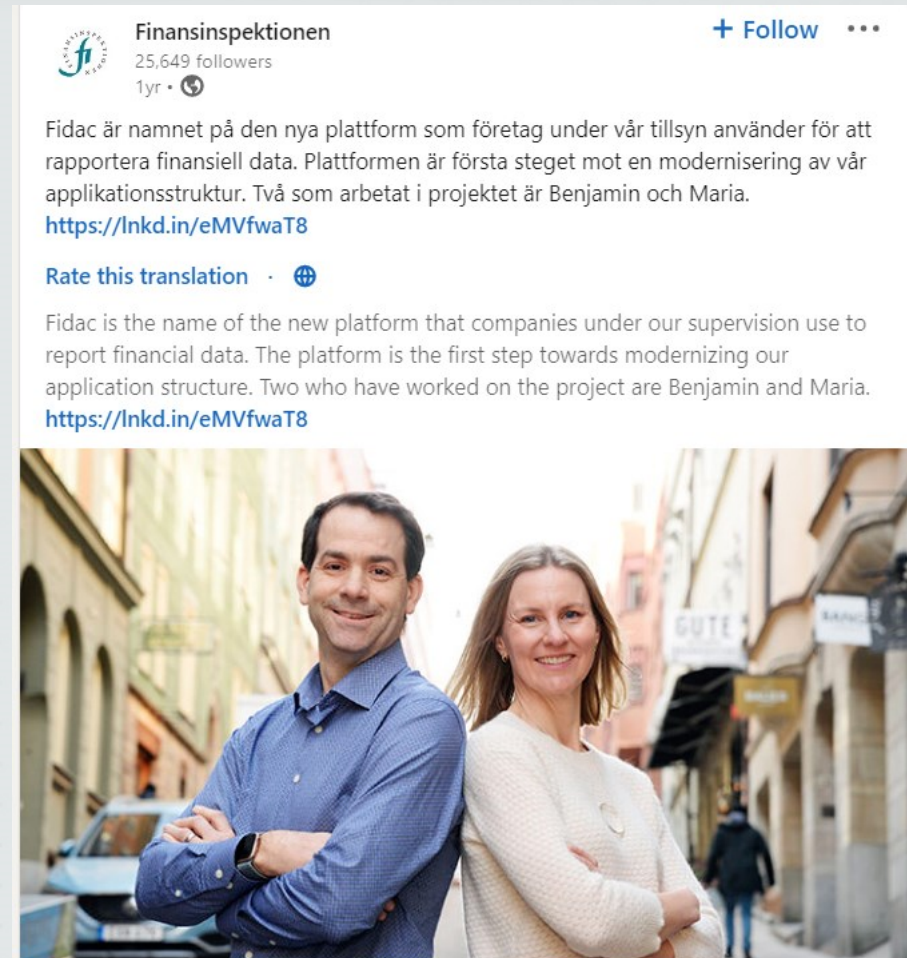
Focus your skilled team on what matters

Finansinspektionen decided to invest their SupTech team's capacity in upskilling on building regulatory content and in deriving insights rather than in rebuilding software infrastructure and platform.

Hence, Finansinspektionen have opted for Regnology's configurable out-of-the-box SupTech platform with dependable self-service capabilities.

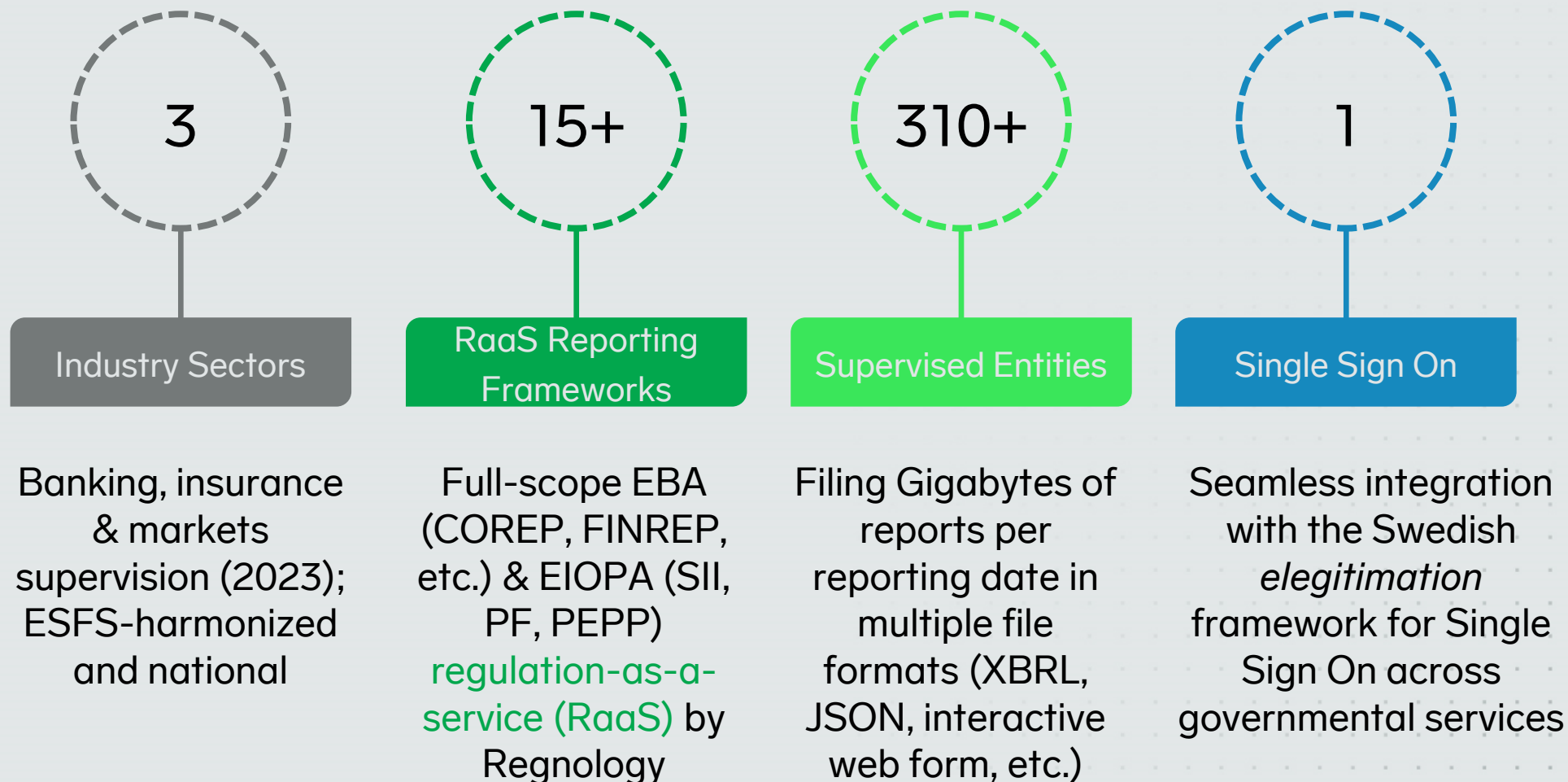
It's not "Buy or Build?", but "Buy and Build (What Matters)!".

Read a testimonial from Finansinspektionen [here](#).



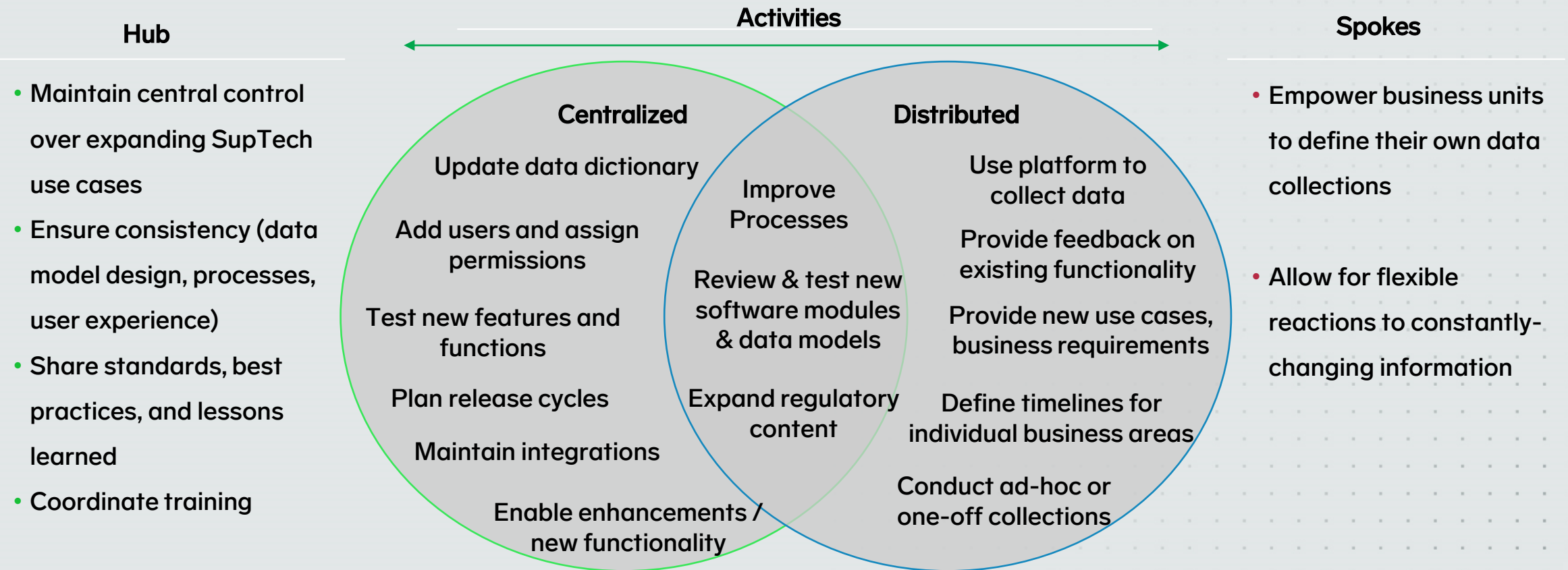
Finansinspektionen – Platform Approach

[Read more here...](#)



Consider a Hub & Spoke model

Move the **activities** between the two circles to indicate how the roles and responsibilities are distributed across the broader organisation



A Wide Variety of Self-Built Content

IORP2 Reporting

- Template-based, aggregate data
- Scheduled
- JSON file format

Household Loan Reporting

- Granular data
- Scheduled
- JSON file format (file sizes in the range of several gigabytes)

Insider Trading Reporting

- Survey type
- Event-driven/unscheduled
- Interactive web forms for use by natural persons
- Disclosure on website (planned)



Regulation-as-a-Service

Regnology provide Regulation-as-a-Service for Standard Regulatory Content packages for Regulator 3 to Finansinspektionen:

- EBA XBRL Reporting, EIOPA Solvency II & Pension Funds, ESMA AIFMD & CSDR9 (planned for Q4 2023)
- Usable out of the box
- Scope: taxonomies/schemas, validation rules, visualization in template format, etc.
- Support for historic, current and future data (point) model versions
- Goal: outsourcing and streamlining regulatory change

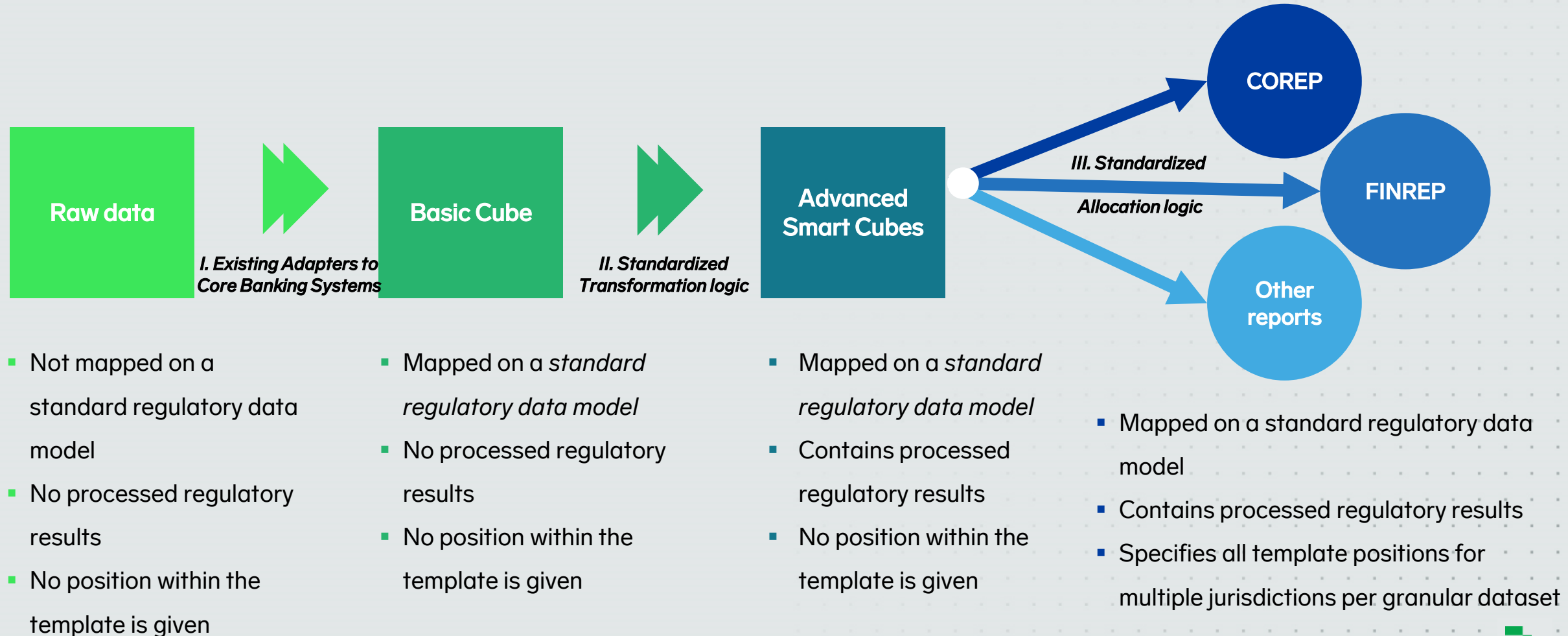




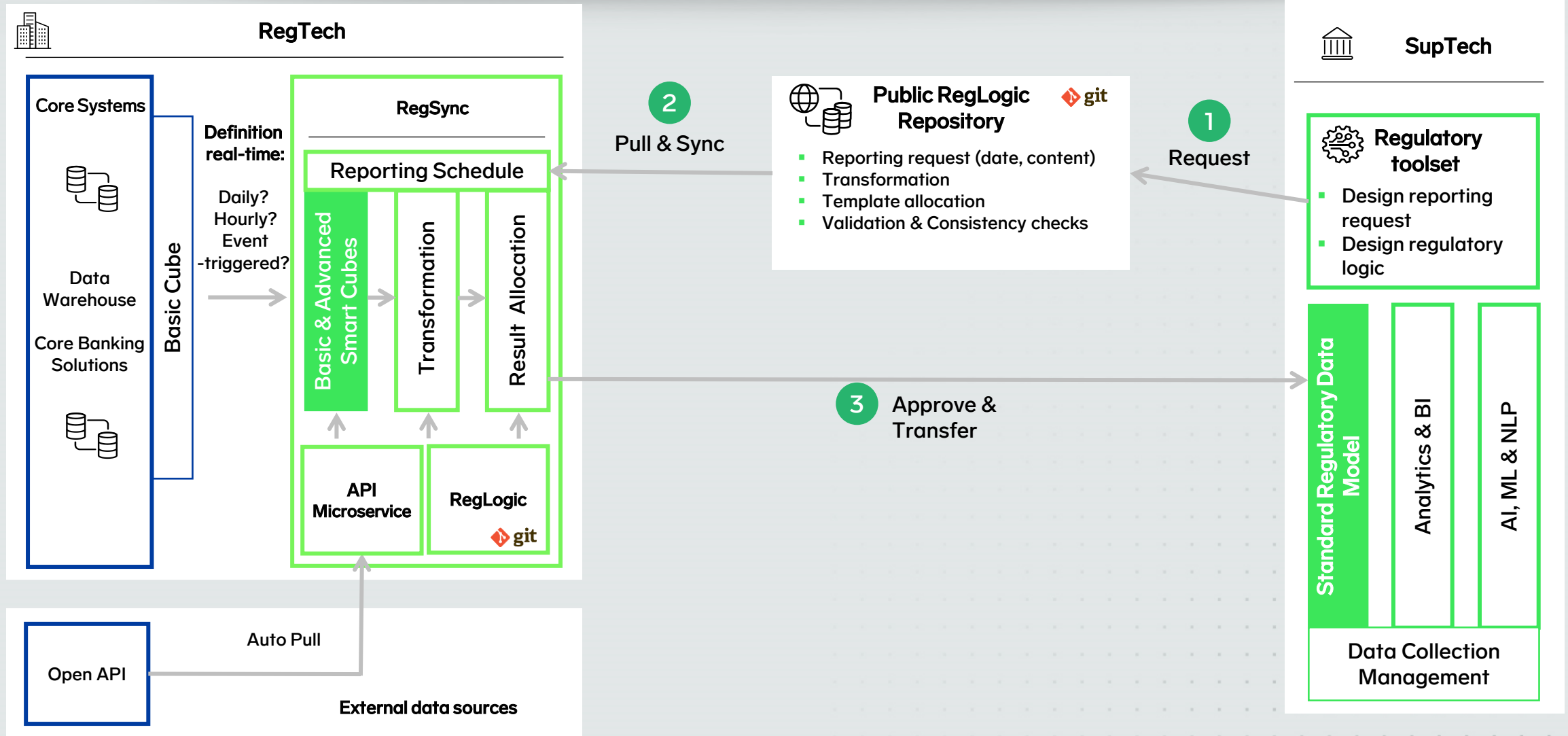
Rapid Prototyping: FDIC & MAS

Agility & Flexibility

Current RegTech Solutions: Granular Data Flow into Templates



Our Idea for the Future of Granular Data Exchange: RegOps



Federal Deposit Insurance Corporation (FDIC) – Rapid Phase Prototyping

- Successful alumni of the Rapid Phase Prototyping (RPP) of FDIC with the concept of RegOps
- Only non-US entrant to reach the final phase
- Duration: 6 months (incl. requirements engineering, conceptualization, implementation, etc.)
- Goal: improve insights in capital, credit and liquidity risks by leveraging granular data
- Granular regulatory data model and data delivery format based on FDIC-specific requirements
- Integration with third-party weather data via API to link credit risk in the agricultural sector to weather phenomena



Monetary Authority of Singapore (MAS) – Proof of Concept

- Proof of concept with existing clients MAS and Clearstream Singapore
- Duration: 6 months (incl. requirements engineering, conceptualization, implementation, etc.), headcount: 3.5 FTE
- Status quo: Clearstream submit MAS610 reports with template-based/aggregate data to MAS, as derived from granular data by Regnology's RegTech solutions
- Goal: prove that MAS is able to derive MAS610 reports on their end based on granular data delivery by the industry (see next slide)
- Outcome: MAS610 reports provide familiar anchor values, while granular data permits direct drilldown
- Regnology's Integrated Data Dictionary (initially developed for RegTech) utilized as granular regulatory data model

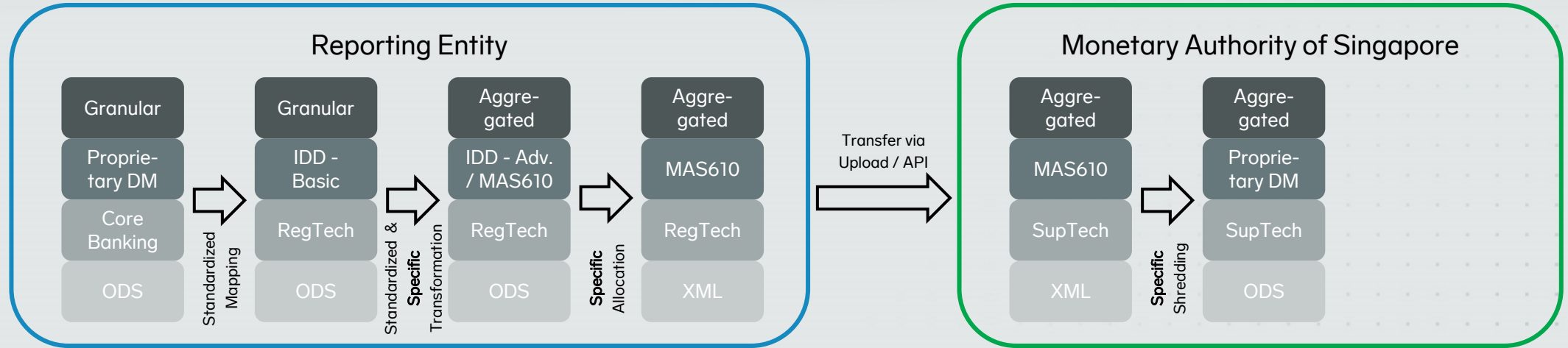


Monetary Authority
of Singapore

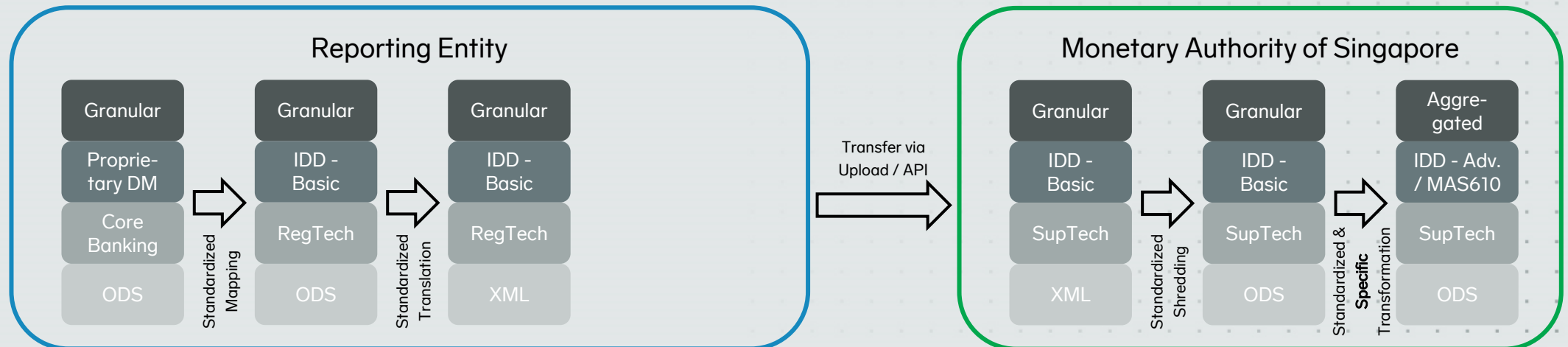


MAS PoC – Data Flow

Current Approach



PoC Approach





SupTech Challenges

Have your say!

What are your main challenges when it comes to designing & implementing SupTech solutions?

<https://forms.office.com/e/bdzyaQZAYz>



Your Responses



Our Experience – Problematic Procurements

Software Requirements

- Specifying the “How” and not the “What/Why” (particular case: technology stack)
- Looking for a unified “god solution” for all SupTech business needs of a competent authority at once

Scope – Conflating procurement of software and associated services, for example, with:

- Consulting services for institutional change management, for regulatory requirements, for IT infrastructure, etc.
- Provisioning of hardware, third-party software, IT services, etc.

Project/Implementation Requirements

- Timelines – Requiring a big-bang go-live
- Resourcing & Responsibilities
 - Requiring configuration of *all/most* regulatory content required in the foreseeable future by the vendor
 - Requiring significant on-site availability of (local) resources when remote work would be sensible/feasible

Contractual terms & conditions – most software vendors have standard license agreements, which conflict, for example with:

- IP ownership clauses
- Non-standard SLAs (e.g., 24/7 support, resolution times, etc.)



Our Experience – How to Make Procurements Simpler and More Successful

Software Requirements

- Focus on the “Why/What” instead of the “How”
- Look for a SupTech solution that serves clearly outlined and related use cases

Scope

- Keep your procurement clean: software and associated services, nothing else

Project/Implementation Requirements

- Timelines – Allow a phased go-live with multiple value-add stages
- Resourcing & Responsibilities
 - Ask for being taught in self-service for regulatory content instead of having it all built by the vendor
 - Allow remote work for the implementation project

Contractual terms & conditions

- Allow applicability of standard license agreements



The EPCO Process

Participants of the Eurosystem Procurement Coordination Office (EPCO, <https://epco.lu>) can procure software with an EPCO listing “directly” without a lengthy procurement process. EPCO is responsible for coordinating joint procurement activities for the benefit of its member central banks plus NCAs:

- Decide for a software (plus optional modules) listed on EPCO
- Launch an EPCO tender for this software specifically
- Resellers for this software will respond with pricing quotes, either directly for fixed-price software or after alignment with the vendor in case of flexibly priced software
- Select one of the reseller responses
- Close the licensing agreement based on standard T&Cs



Summary & Q&A

Summary

Embrace cloud-native and proven technologies

Consider people & process, not just technology

Self-Service for business users

Mixture of Buy & Build – use your skilled resources wisely



Thank you very much for your attention!