Embracing the Service Consumption Shift in Banking

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Legacy of a systemic bank

- ING is more than 40 years old
- Basic banking services (customer information, payments systems) run on mainframe
- Mainframes are used by other applications hence making migration complex

Increasing demand for performance and scalability

- Internet Mobile load increases 25% per year
- Browser to Mobile migration showed a 7 fold increase of interactions.
- Open Banking : PSD2 and API's exposed to intermediaries (fintechs), scrape data on behalf of the customer.

- Our actual middleware integration results in 200-300 ms. latency.
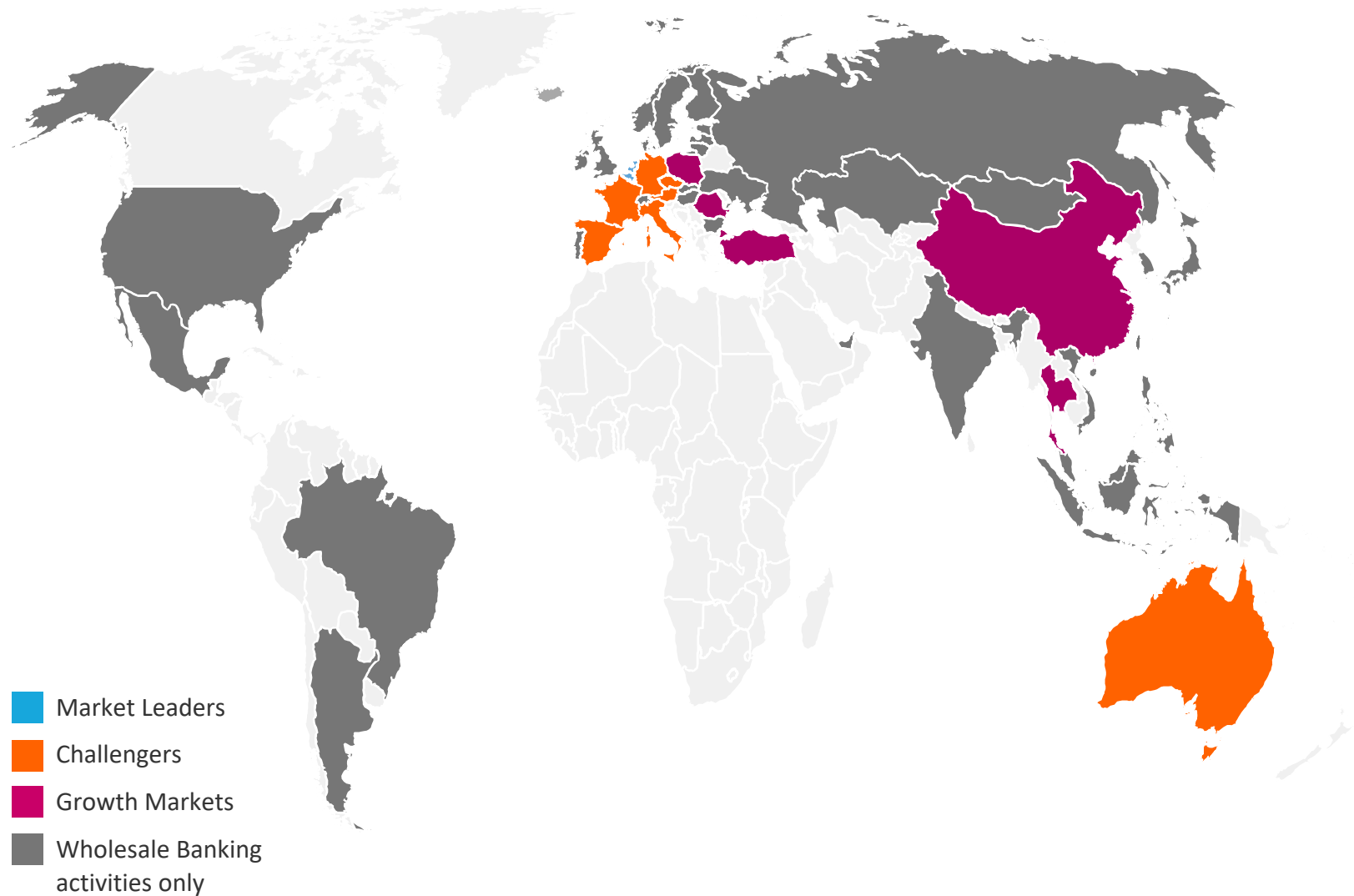- Attempts to scale up vertically failed.

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ING Group

"Empowering people to stay a step ahead in life and in business"

Customers : 36 Million
Primary relationships : 10 Million

Market Leaders
Challengers
Growth Markets
Wholesale Banking activities only

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Our strategy

Purpose ▶ Empowering people to stay a step ahead in life and in business.

Customer Promise ▶

Clear and Easy | **Anytime, Anywhere** | **Empower** | **Keep Getting Better**

Strategic Priorities ▶

Creating a differentiating customer experience

1. Earn the primary relationship

2. Develop analytics skills to understand our customers better

3. Increase the pace of innovation to serve changing customer needs

4. Think beyond traditional banking to develop new services and business models

Enablers ▶

| Simplify & Streamline | Operational Excellence | Performance Culture | Lending Capabilities |

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Why In-Memory platforms?

- Resilient
- Performant
- Scalable
- Open source (Apache Ignite) with professional support (Gridgain)
- Java
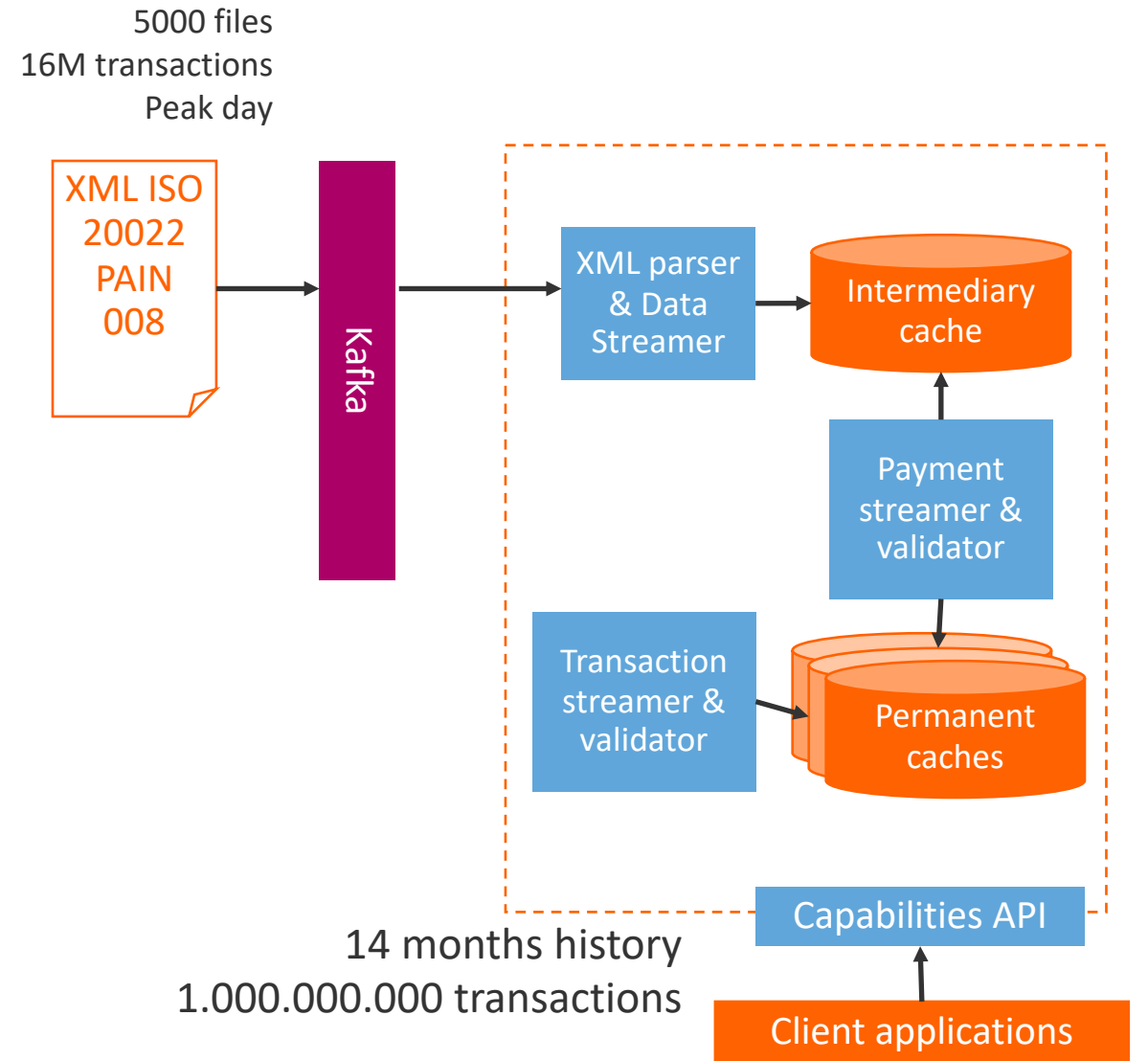- Promising
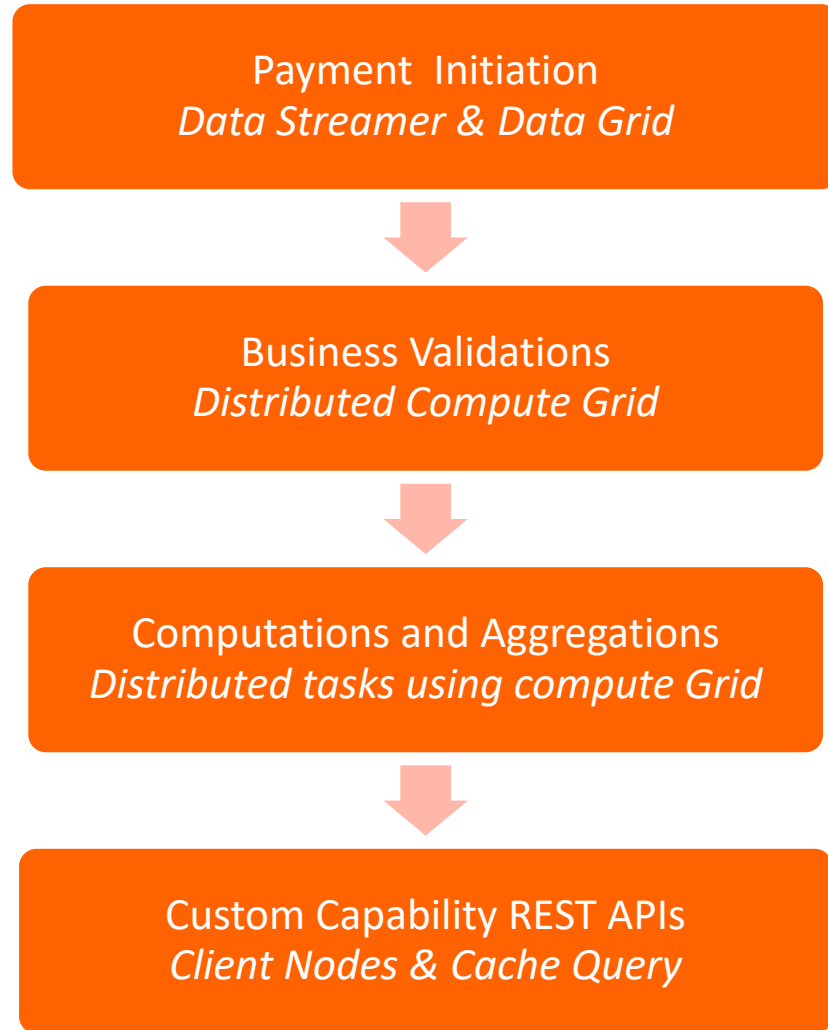
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IMC applications in ING

- SEPA Direct Debit (compute and data grid)
- MultiBank Customer Reporting (compute and data grid)
- Real Time Gateway (compute grid)
- ShieldING (data grid)
- GGaaS

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SEPA DD

- Europe-wide Direct Debit system
- Allows merchants to collect payments from accounts
- A Direct Debit authorizes someone (Creditor) to collect payments from your account (Debtor) when they are due
- Direct debits are typically used for recurring payments, such as credit card and utility bills

- Offer aggressive commercial cut-off times which also means more payments to be processed in less time
- Offering seamless and easy integration with different digital channels & platforms
- Offer services via PSD2 platform

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SEPA DD

Payment Initiation
Data Streamer & Data Grid

Business Validations
Distributed Compute Grid

Computations and Aggregations
Distributed tasks using compute Grid

Custom Capability REST APIs
Client Nodes & Cache Query

5000 files
16M transactions
Peak day

XML ISO 20022 PAIN 008

Kafka

XML parser & Data Streamer

Intermediary cache

Payment streamer & validator

Transaction streamer & validator

Permanent caches

Capabilities API

14 months history
1.000.000.000 transactions
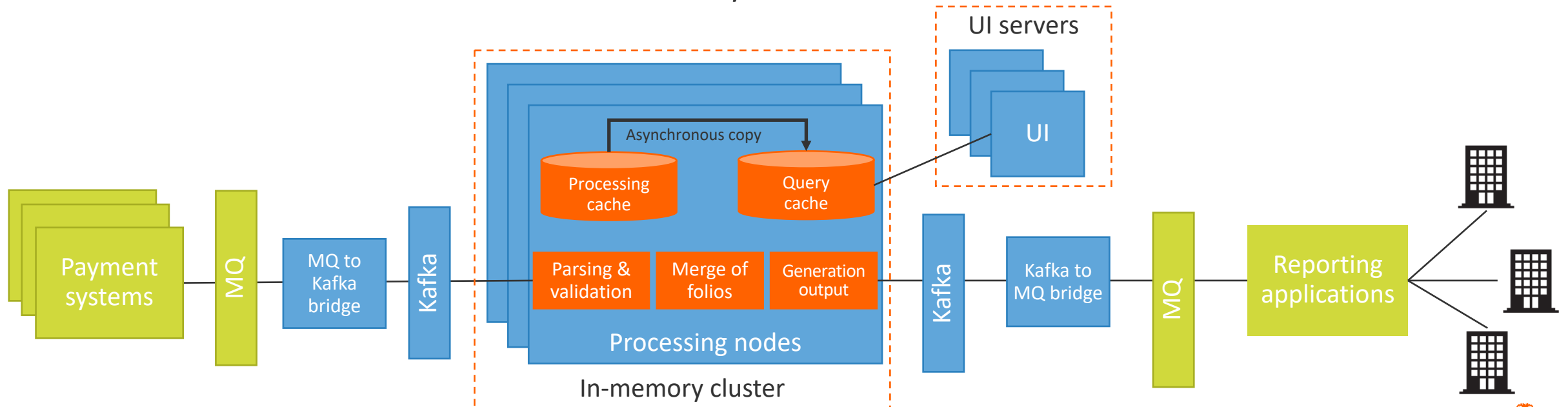
Client applications

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MBCR

Multi**B**ank **C**ustomer **R**eporting
- Sends to corporate customers the list of their daily transactions
- Full list of transactions received in several folios from payment engines (mt942)
- Folios need to be merged
- Summary of day received in final file (mt940)
- Existing application
  - Based on complex and deprecated vendor framework
  - Not originally designed for distributed processing
 - Not extensible/flexible

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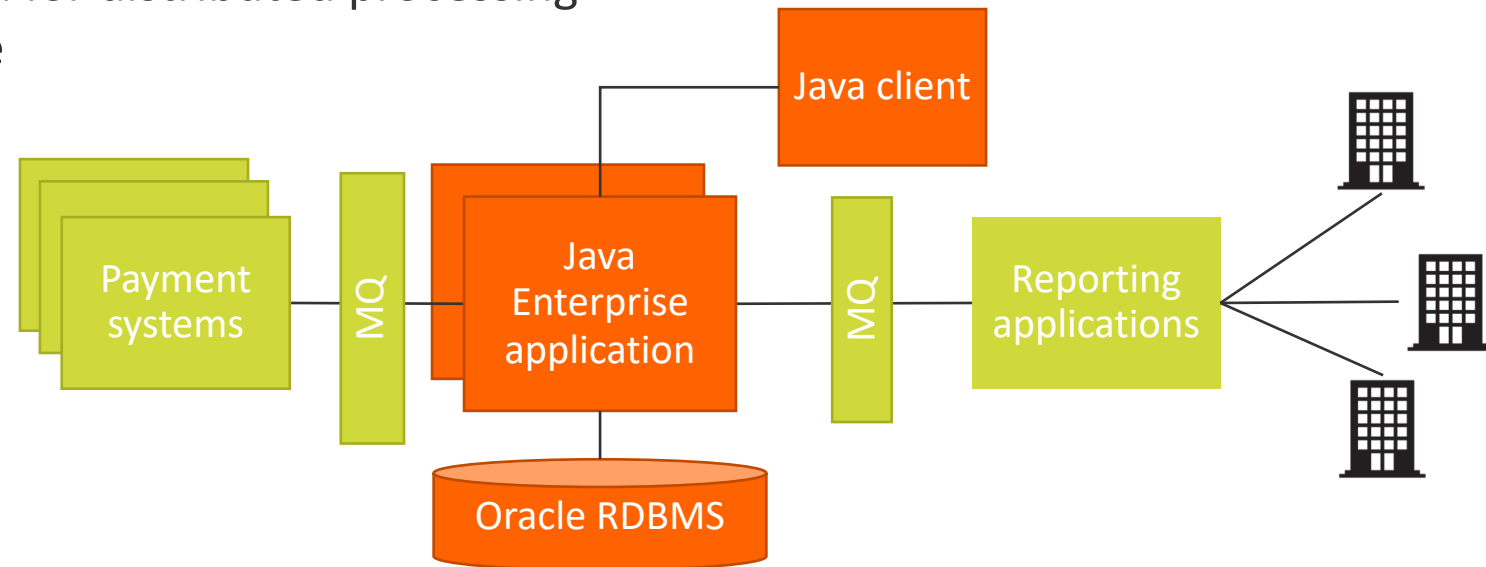
MBCR

- New version should not impact existing environments
- In-memory compute grid to parse, validate and merge folios
- In-memory data grid to store transaction information
- Caches with different roles
  - Data processing
  - Viewing data
- Reasonable load at start but will dramatically increase in short term

RTG

Real **T**ime **G**ateway

- Instant Payment initiative, real time (debit and credit have to be done within 5s)
- Banks need to connect to a new common router: STET
- No system to connect internal payment application to STET
- Transforms PACS (ISO 20022) into internal COBOL format and vice-versa

STET

Round trip < 5s

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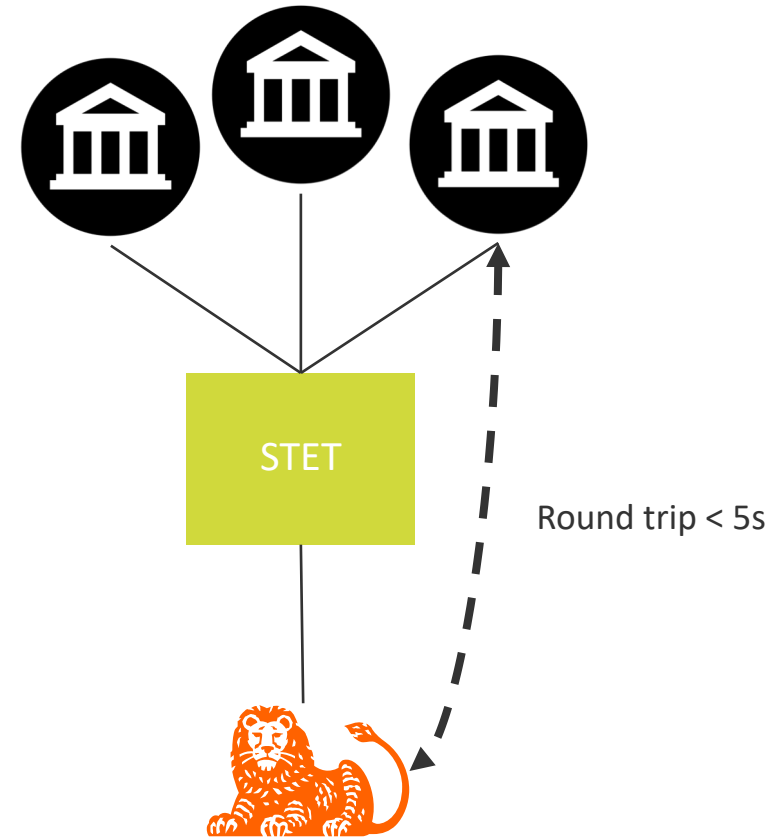
RTG

- Ignite event bus to move data from one state to the next
- Implementation based on Ignite topics
- Intensive use of affinity co-location
- In memory computations for message validation and transformation
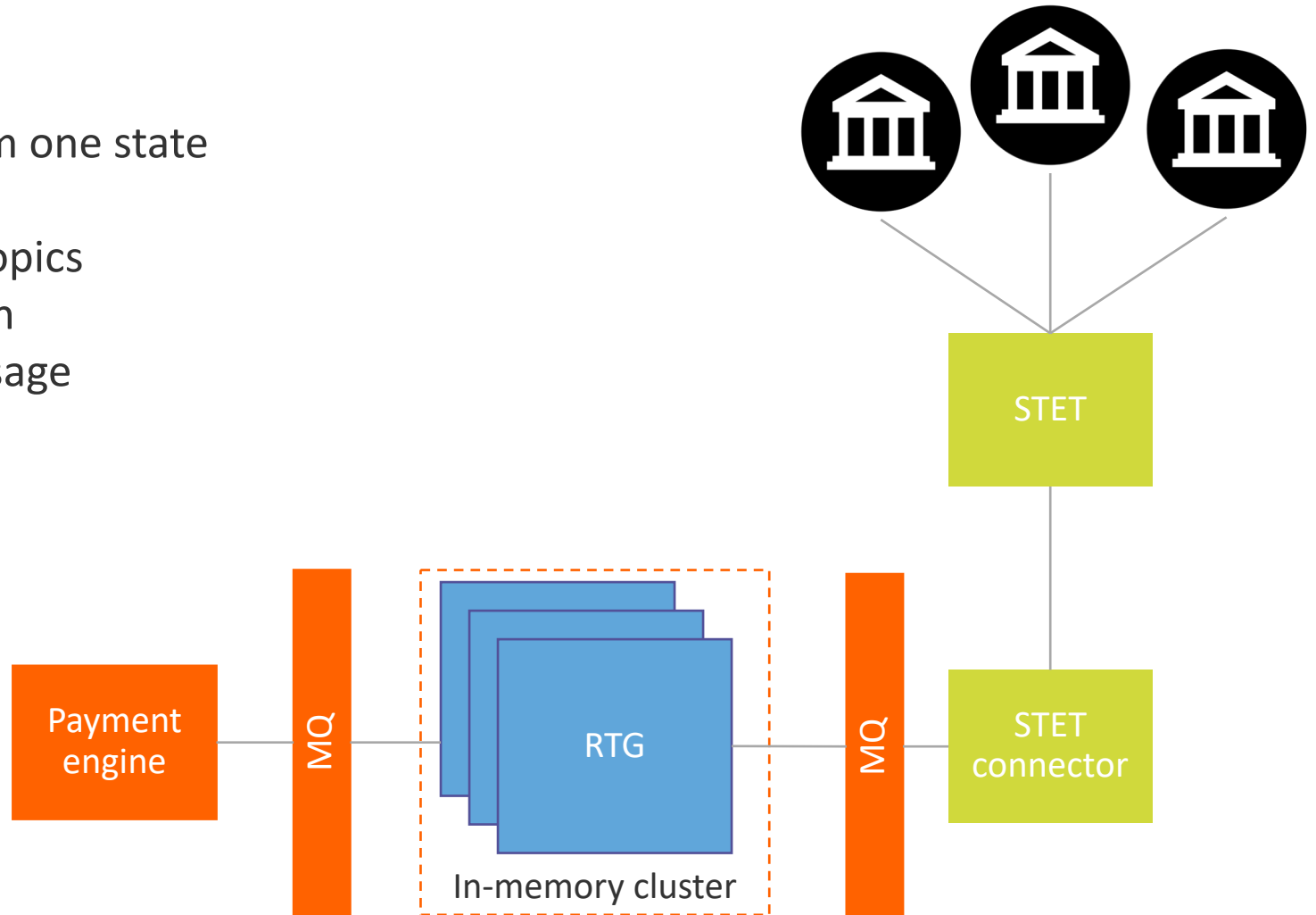
ShieldING

ShieldING is a set of standardized resilient data services with clear utility (fit for purpose) and warranty (fit for use)

ShieldING focuses on "creating information once (information centric), consuming information everywhere (service centric) on a shared platform

Layer in front of the mainframe with different patterns for different use cases

In depth presentation from Lieven Merckx
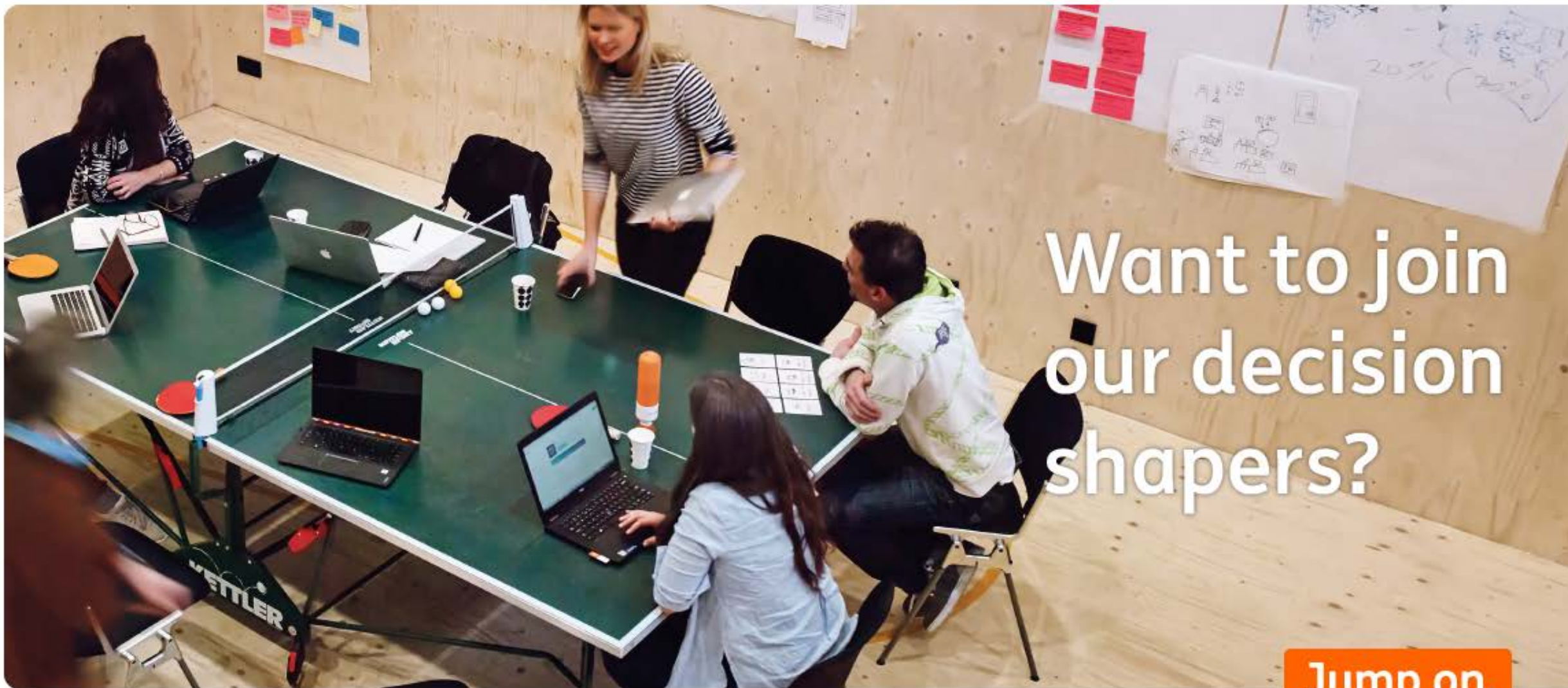https://www.youtube.com/watch?v=b0Cd52IGWyY

GGaaS

Grid**G**ain **a**s **a S**ervice

- ~~Ready made GridGain server node to be deployed in the ING private cloud~~
- Based on a docker
- Security
  - Secured Administrative Web Console
  - Default Encryption / Authentication / Authorization connections between nodes
- Monitoring
  - Logging send to ELK stack via Kafka
  - "is alive" services
  - Generic dashboard
- Native Persistence Store
  - SAN disk used by the grid

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Take away

- Change of mind-set compared to basic server & DB architecture
- Still new, not a lot of IMC engineers available on the job market
- Exploring different use cases
- Used also for applications with a low load
- Attractive technology
- Lots of potential

- Still evolving
  - Multi tenancy issues
  - Not adapted for orchestration
  - Service grid need improvements

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Want to join our decision shapers?

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