Agile at Scale @ ING Belgium

BAEA – EA Café 28

Leo Slegers, Phil Bowker & Kenneth van Rumste
Brussels • 23 October 2015

think**forward**

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Agenda

- Context - why does ING go Agile at scale?
- Agile at Team level
- Architecture at program level
- Architecture at portfolio level
- Challenges and outlook to the future

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Why does ING go Agile at Scale?

… looking back

- 90s : we applied agile principles …. but not at scale

- Since 2000 : the big change
  - Bank : merger ING Group
  - Market : internet, unbundling
  - Organization: empowerment
  - Banking industry: crisis

- INGs reaction
  - 2008 : Focus on Governance
  - 2013 : AGILE !

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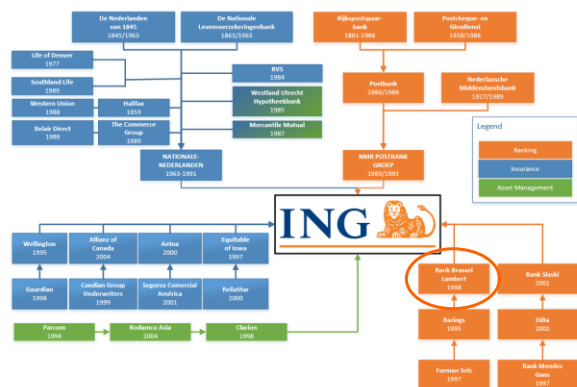
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Unbundling of a European Bank

Startups mapped on Product/Services for HSBC's website
https://www.cbinsights.com/fintech-trends-overview

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  - 2008 : Focus on Governance
  - 2013 : AGILE !

Reinventing Organizations
by Frederic Laloux

- Emergent <u>new management</u> paradigm
- Empowered workers, all voices are heard
- Decisions rooted in collective intelligence
- Lean & adaptable organization
- Total transparency: salaries, profits

ReinventingOrganizations.com

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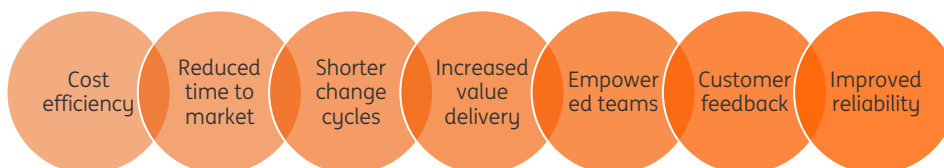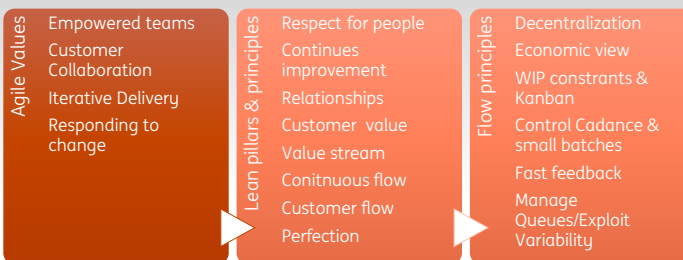- INGs reaction
  - 2008 : Focus on Governance
  - 2013 : AGILE !

http://www.dailymail.co.uk/news/article-2424285/

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Benefits we want to achieve

Program mission → Deliver more value, faster, through engaged people

Looking for a combination of Agile, Lean, Flow

Agile Values	Lean pillars & principles	Flow principles
Empowered teams	Respect for people	Decentralization
Customer Collaboration	Continues improvement	Economic view
Iterative Delivery	Relationships	WIP constrants & Kanban
Responding to change	Customer value	Control Cadance & small batches
	Value stream	Fast feedback
	Conitnuous flow	Manage Queues/Exploit Variability
	Customer flow	
	Perfection	

- Cost efficiency
- Reduced time to market
- Shorter change cycles
- Increased value delivery
- Empowered teams
- Customer feedback
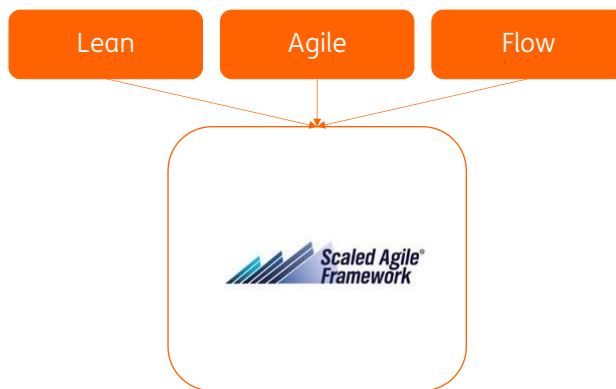- Improved reliability

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Enterprise Agile Framework

ING BE has chosen for Scaled Agile Framework (SAFe)

- Numerous frameworks exist
- SAFe is most widely used and best documented
- No one size fits all. Choose what best fits your organization
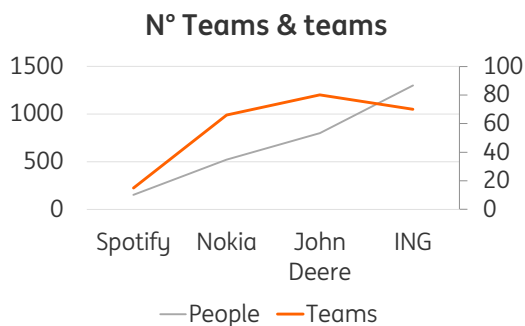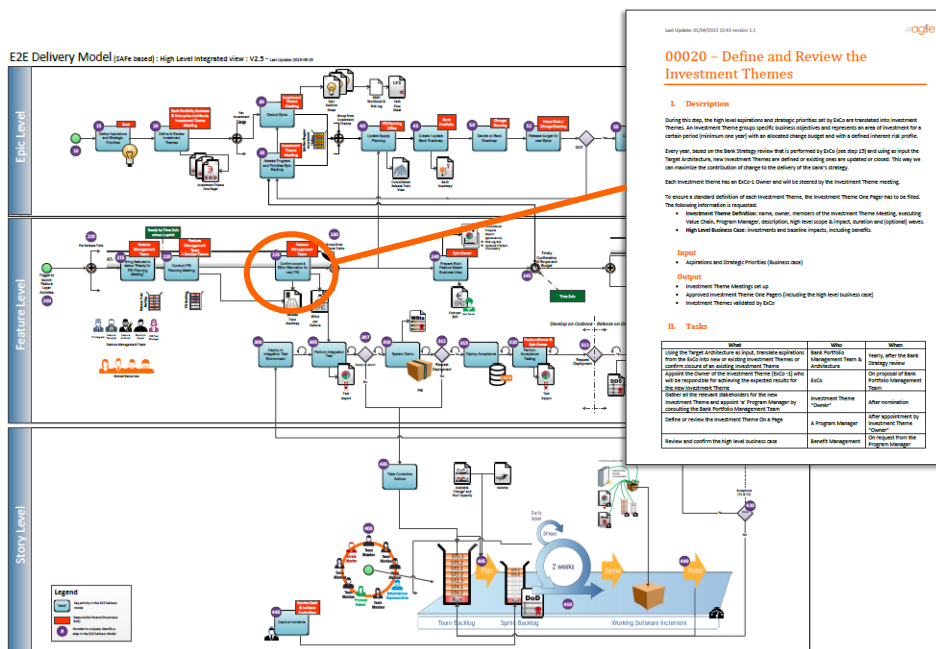- Framework is only starting point.
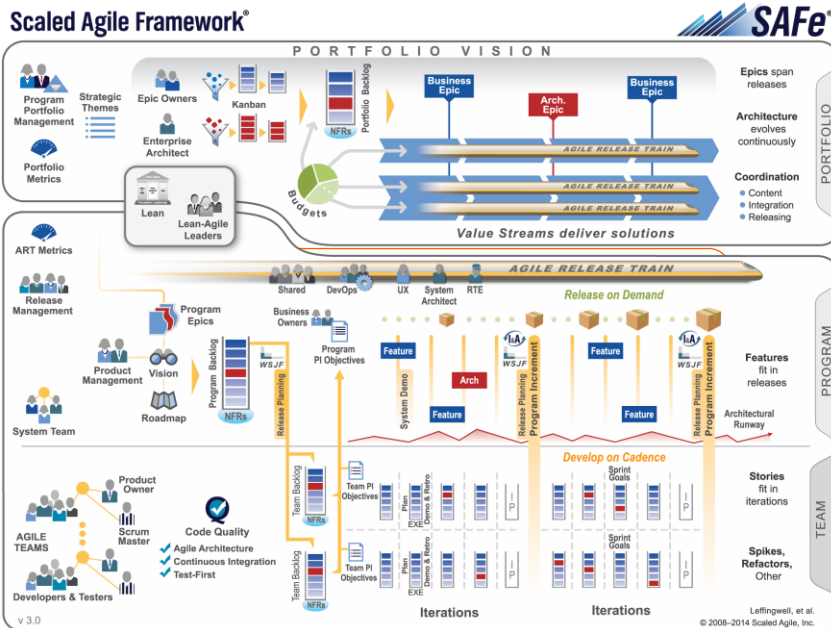- Learn and continuously adapt.

Lean	Agile	Flow

Scaled Agile Framework

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Application of SAFe at ING Belgium is @Scale !

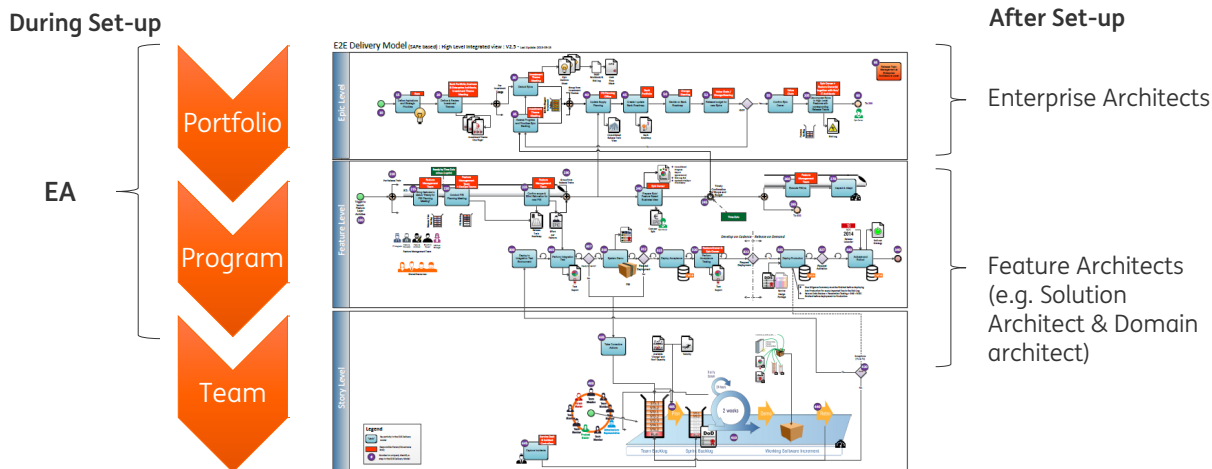**SAFe is applied to full IT Department:**
70 Teams – 1300 people

- ING BE IT landscape is one big IT system: strongly interwoven applications
- No 2 different delivery models coexisting
- Big change needed

N° Teams & teams

People — Teams

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Main focus areas of architects on the E2E Delivery model

During Set-up

After Set-up

EA

Portfolio

Program

Team

Enterprise Architects

Feature Architects
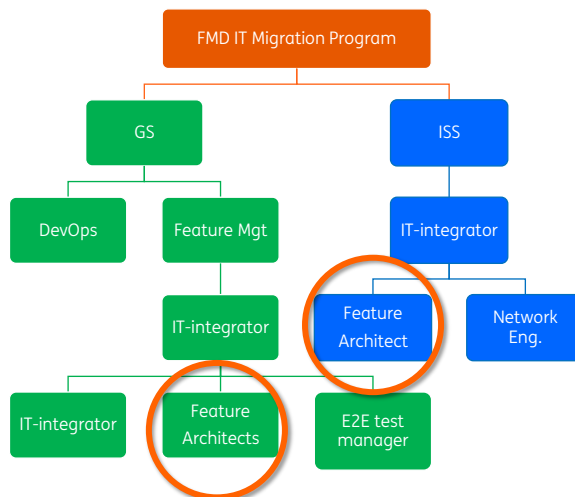(e.g. Solution
Architect & Domain
architect)

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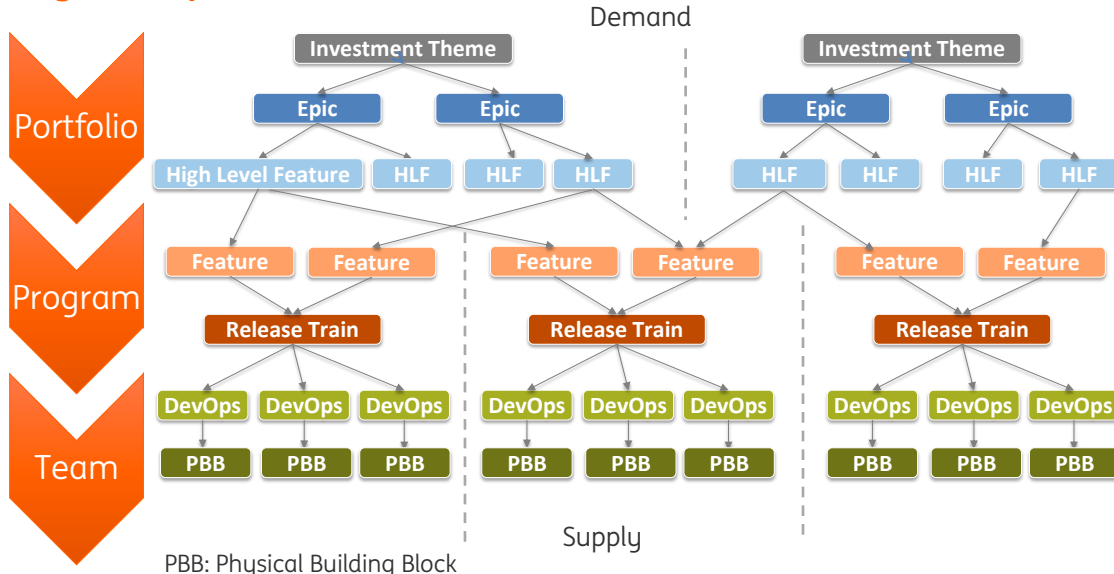---

Introduction to the migration program

- Migration program – migrating a set of applications (10 over 2 years) from the facility department to the general ITS department of ING

- Examples of applications:
  - Monitoring of power supply
  - Video surveillance
  - Access management & security of ING and branches

- Program started in 2013 till 2017

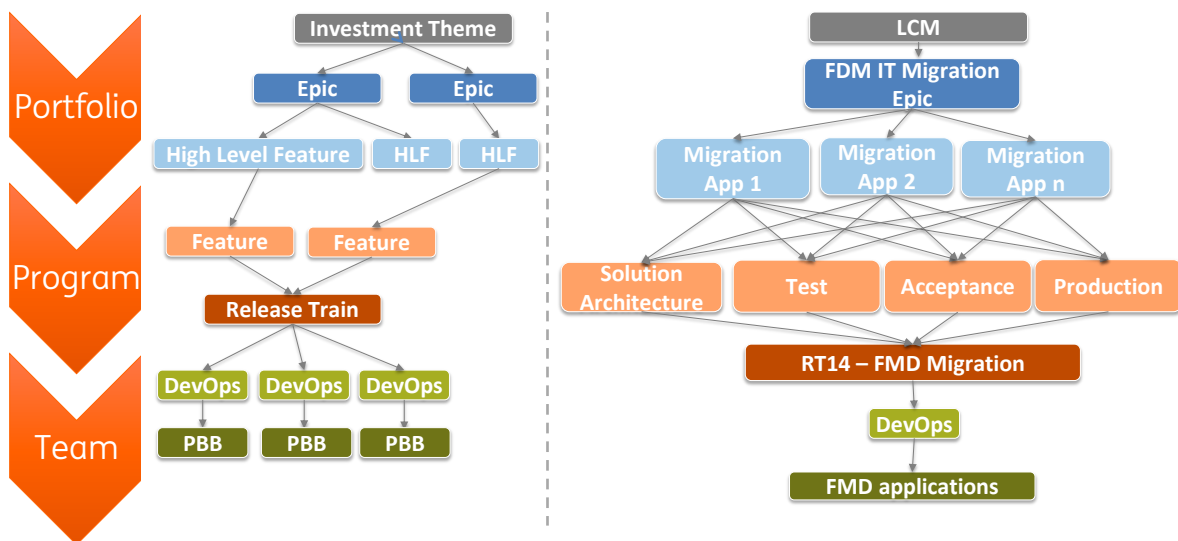- Subject to Agile transition @ ING

FMD IT Migration Program

GS

ISS

DevOps

Feature Mgt

IT-integrator

IT-integrator

Feature Architect

Network Eng.

IT-integrator

Feature Architects

E2E test manager

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Key Concepts for Architecture Discussion

Demand

Supply

PBB: Physical Building Block

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Migration Program – Mapping the levels

LCM

FDM IT Migration Epic

Migration App 1 · Migration App 2 · Migration App n

Solution Architecture · Test · Acceptance · Production

RT14 – FMD Migration

DevOps

FMD applications

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- Architecture at program level
- Architecture at portfolio level
- Challenges and outlook to the future

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# Agile at Team level

Key aspects on this level

- Predictability
- Traceability up to Strategy
- Resilience
- Resource planning and control
- Bank wide roadmap, dependencies
- Value delivery
- Time to market
- Team synchronisation
- Empowered, self organizing teams
- Valuable, fully-tested software
- Continuous incremental delivery
- Short business feedback cycle
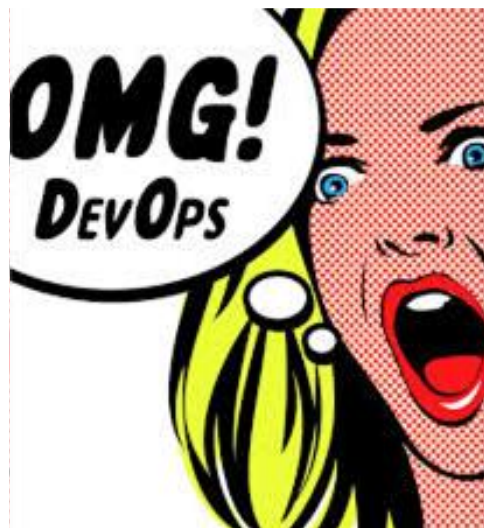- Clear Team scoping

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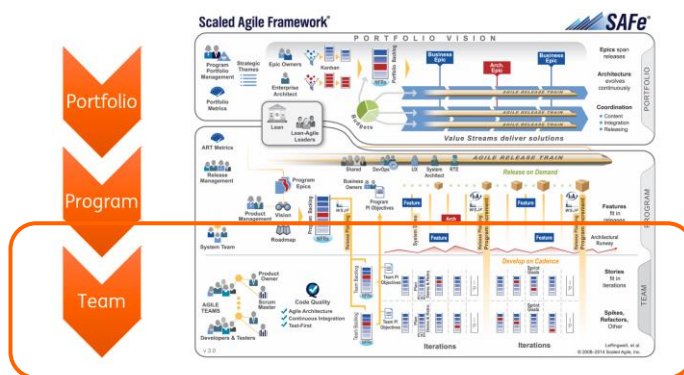
A recap on basic agile notions
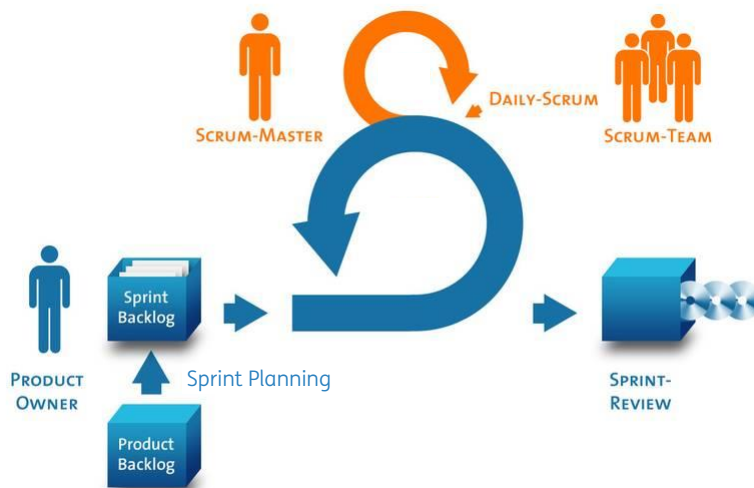
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DevOps @ ING

- DevOps teams: 7 - 8 people

- Multi-skilled, T-profile, self-organising

- Able to analyse, define, estimate, implement, test and deploy as far as Production (DTAP)

- Use the Scrum framework

- Aim to provide a continuous improvement ecosystem in which the DevOps teams can thrive

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Daily DevOps

- DevOps teams follow Scrum;
  - not ScrumBut,
  - not WaterScrumFall or any other variation

- Sprints are 2 weeks long (sometimes 3)

- All sprints deliver a Working Shippable Increment to sprint cadence

- Tooling in place
  - continuous testing (JUnit)
  - build (Jenkins)
  - deployment/release (Nolio)

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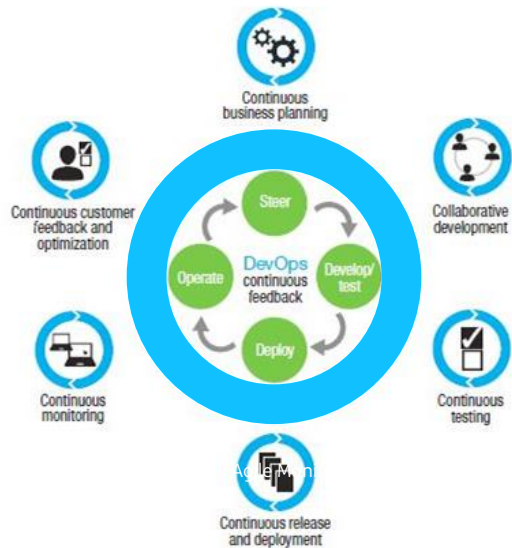
Architecture Governance for the DevOps team

- The Feature Architect is not part of a DevOps team but invited to all the Scrum ceremonies

- Design Authority (DA) session,
  - at least once per sprint, for all DevOps teams in the Release Train
  - architectural and design issues – agenda driven by architects and teams, <u>two-way information flow</u>

- Urgent architecture or design issues arising during a sprint are addressed as they arise

- Teams can identify architectural needs and propose designs

Emergent Design

The best architecture requirements and designs come from self organizing teams
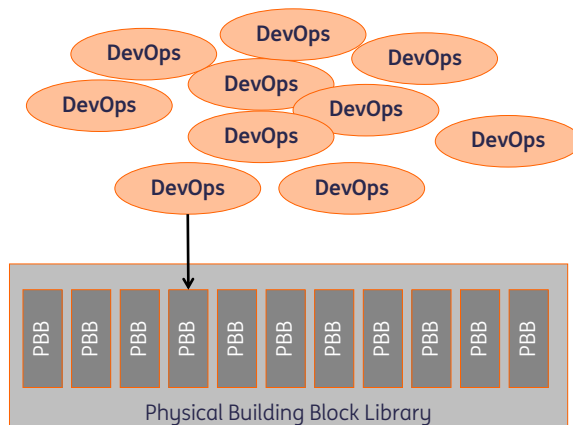
Agile Manifesto Principle #11

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Minimize Team interdependencies through asset based approach

Large number of Agile teams: need for structuring mechanism

- Choice for Asset based DevOps teams
  - Physical Assets can be unambiguously identified
  - Knowledge related to asset at 1 place
  - Dev + Ops in 1 team
  - Non overlapping

- Physical Building Block = set of Physical Assets that are managed together and evolve as a whole.
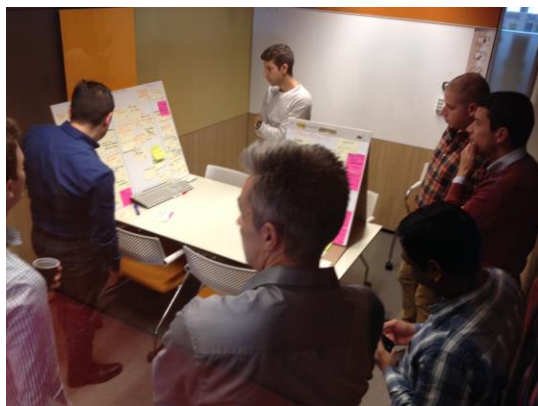 - List of PBBs managed by EA to insure alignment with architecture roadmap

DevOps · DevOps · DevOps · DevOps · DevOps · DevOps · DevOps · DevOps · DevOps · DevOps

PBB PBB PBB PBB PBB PBB PBB PBB PBB PBB PBB

Physical Building Block Library

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FMD IT Migration DevOps

Daily Scrum

Sprint review, retrospective & planning

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Agile at release train (program) level

Key aspects on this level

- Predictability
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- **Value delivery**
- **Time to market**
- **Team synchronisation**
- Empowered, self organizing teams
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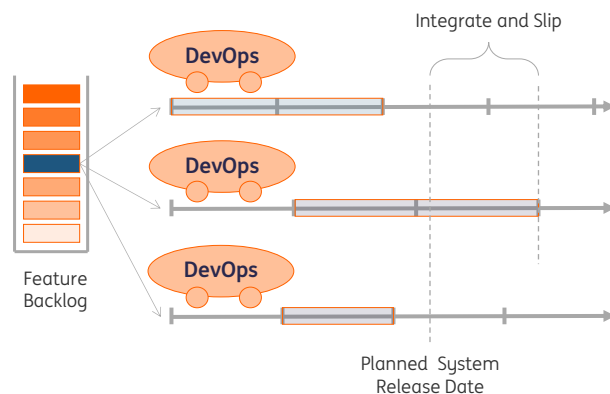- Clear Team scoping
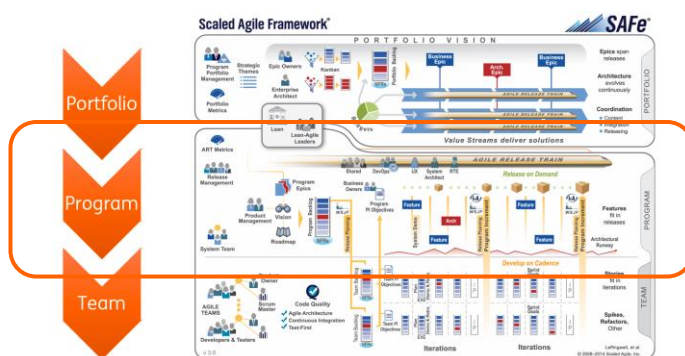
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Independent DevOps – synchronisation issue

- How to synchronize multiple DevOps teams that work on same Feature?
  - Iteration lengths are different
  - Continuous integration at system level is not achievable

Integrate and Slip

DevOps

DevOps

DevOps

Feature Backlog

Planned System Release Date

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Synchronised DevOps – Release train

- How to synchronize multiple DevOps teams that work on same Feature?
  - Iteration lengths are different
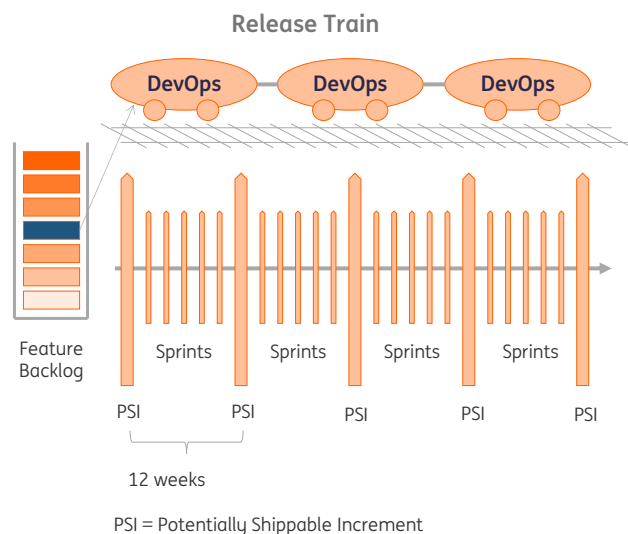 - Continuous integration at system level is not achievable

- Release Train
  - Multiple DevOps teams form a larger, long-lasting team: a Release Train
  - Every 12 weeks, the Release Train delivers a PSI
  - Planning happens at the start of each PSI
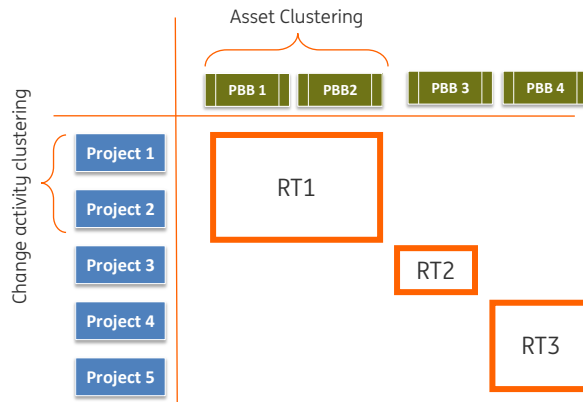 - All DevOps teams are involved
  - Not Waterfall!

Release Train

DevOps   DevOps   DevOps

Feature Backlog

Sprints   Sprints   Sprints   Sprints

PSI   PSI   PSI   PSI   PSI

12 weeks

PSI = Potentially Shippable Increment

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Contribution of EA in construction of Release Trains

- A Release Train should satisfy the following criteria:
  - Deliver business value
  - Support strategic objectives
  - Use optimally the capacity of all DevOps teams in the train
  - Be as independent as possible

- Portfolio wide analysis of the usage of assets vs change initiatives
  - Clustering identifies candidates for Release Train
  - EA provides reference models for structuring assets and change

Asset Clustering

PBB 1 | PBB2 | PBB 3 | PBB 4

Change activity clustering

Project 1
Project 2
Project 3
Project 4
Project 5

RT1
RT2
RT3

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Feature Management Team

IT Integrator: coordinates, with Program Manager and E2E Test Manager the E2E delivery of Features in the Feature Backlog.

Feature Owner: business representative, defines and prioritizes the Feature backlog of the Release Train.
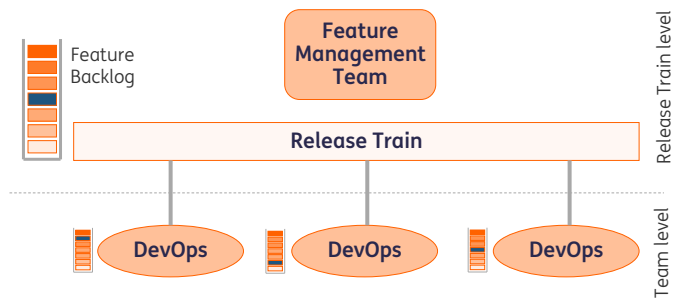
Feature Architect: creates feature architecture, validates feature development, maintains building block roadmap and baseline documentation, handles exceptions and waivers, participates in epic architecture

E2E Test Manager: manages and drives the E2E Tests

Blueprint Expert: domain expert with knowledge of business and IT , translates between demand & supply

Feature Backlog

Feature Management Team

Release Train

Release Train level

DevOps   DevOps   DevOps

Team level

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FMD IT Migration – Feature Management team

|	
IT-integrator	**Kenneth van Rumste (That's me! ☺)** Coordination Customer contact Epic owner/Business spoc
Feature owner	**Business representative**
Feature Architect	**Jacques Colle** (Solution architect) **Ewa Olow** (Infra architect) More time consuption on follow up than traditionally because of: • More follow up of the progress & issues • More updates on documents are required • Strongly dependend on expertise of the DevOps
E2E test manager	**1 E2E test manager** - Input for feature backlog - Execution and participation in DevOps
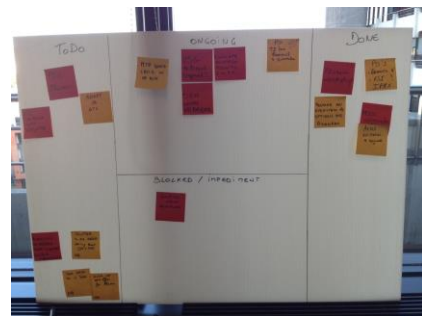
feature level Board

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The challenging role of the Feature Architect

The Feature Architect acts on multiple fronts

- Develop the Feature architecture for the upcoming PSI
- Attend PSI planning meeting where architectural issues of upcoming PSI are addressed
- [Attend Scrum Ceremonies of DevOps team to provide architecture support of current PSI]
- Attend the Scrum of Scrum to ensure solution consistency
- [Attend the System Demo]
- Attend the Retrospective where solution is validated by the stakeholders
- Manage Waivers and Escalations
- Update architecture baseline of previous PSI

PSI = Potentially Shippable Increment

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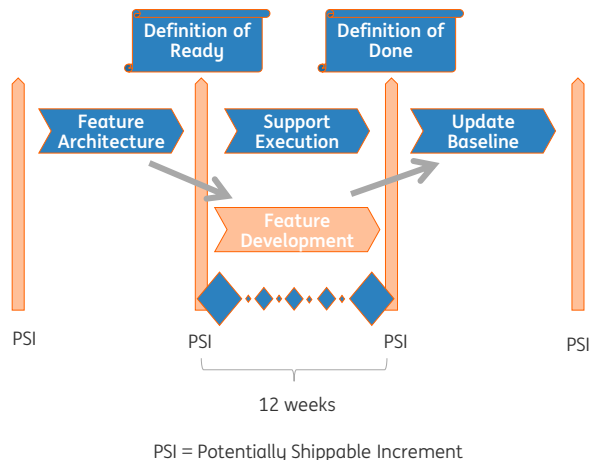
The challenging role of the Feature Architect

The Feature Architect faces multiple hurdles

- The Agile engineering style is bottom-up, architect thinks top-down
- DevOps team feels mandated to take autonomous decisions
- Natural inclination of architect for completeness and detail
- Feature owner has business focus: non functional requirements
- MBTI profile for architects is often INTP (Introvert, iNtuitive, Thinking, Perceiving)

INTP (Myers-Briggs personality type)

INTPs are marked by a quiet, stoic, modest, and aloof exterior that masks strong creativity and enthusiasm for novel possibilities. Their weaknesses include poor organization, insensitivity to social niceties, and a tendency to get lost in abstractions. Keirsey referred to INTPs as Architects, one of the four types belonging to the temperament he called the Rationals. INTPs are relatively rare, accounting for 1–5% of the U.S. population

https://en.wikipedia.org/wiki/INTP

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The evolving skills of the Feature Architect

Effective functioning in Agile@scale context requires maturity jump for most architects

- Hard skills remain the same
- Development of soft skills
- Architects do not work in isolation, should be (physically) with DevOps
- Cadence also applies to architecture: time boxing
- Change management !

Iterative
No hand-overs
Face to Face
Fail fast
Time boxing
Lean
Just enough

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- Architecture at program level
- **Architecture at portfolio level**
- Challenges and outlook to the future
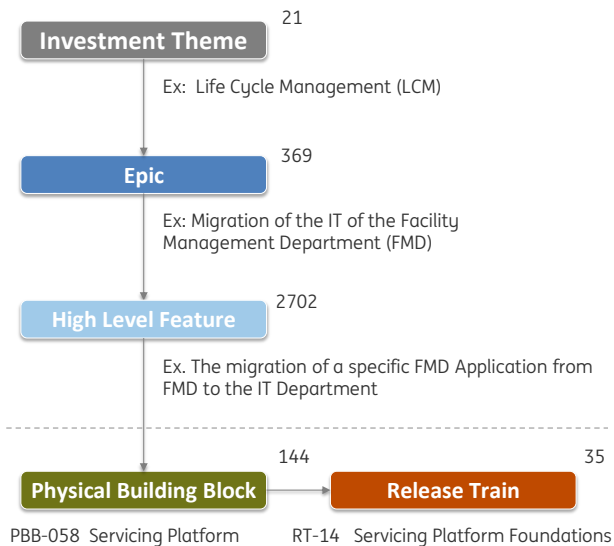
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Agile at Portfolio level

Key aspects on this level

- Predictability
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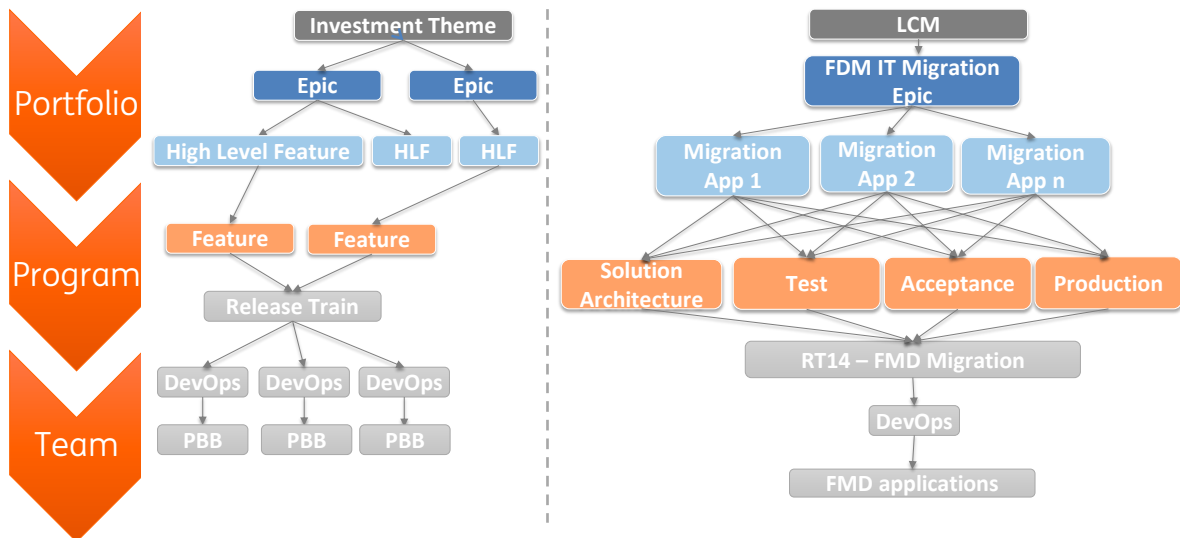- Clear Team scoping

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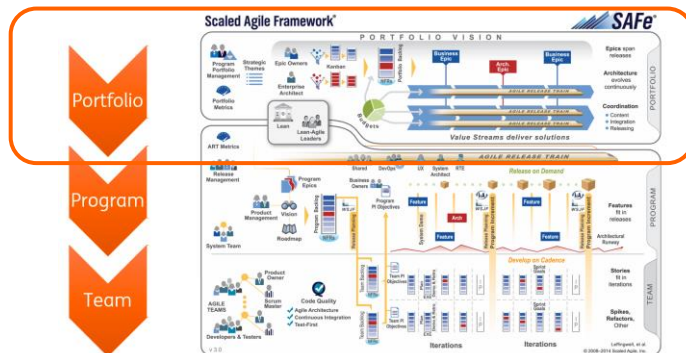
Portfolio Level Concepts

- Investment Theme
  - Key investment area that drives the strategic vision
  - Not based on organizational structure

- Epic
  - Big initiative that realizes value across supply organization (Release Trains) across time boundaries (Releases)

- High Level Feature
  - Smallest decomposition of an epic that still delivers recognizable E2E value to the epic owner.

Investment Theme — 21
Ex: Life Cycle Management (LCM)

Epic — 369
Ex: Migration of the IT of the Facility Management Department (FMD)

High Level Feature — 2702
Ex. The migration of a specific FMD Application from FMD to the IT Department

Physical Building Block — 144
PBB-058 Servicing Platform

Release Train — 35
RT-14   Servicing Platform Foundations

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Migration Program – Mapping the levels

Portfolio

Program

Team

```
Investment Theme
   ├── Epic ── Epic
   │
High Level Feature ── HLF ── HLF
   │
Feature ── Feature
   │
Release Train
   │
DevOps ── DevOps ── DevOps
   │
PBB ── PBB ── PBB
```

```
LCM
   │
FDM IT Migration Epic
   │
Migration App 1 ── Migration App 2 ── Migration App n
   │
Solution Architecture ── Test ── Acceptance ── Production
   │
RT14 – FMD Migration
   │
DevOps
   │
FMD applications
```

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Preliminary – Setting the scene

Architecture Roadmap

Strategy

Business Outcomes

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

Extremely Digital & Extremely Personal

think**forward**

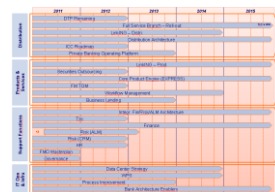**Investment Themes**

ING
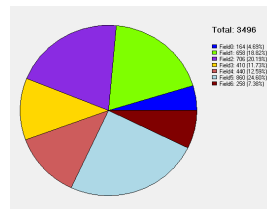
Quarterly Rolling Planning

PBB		Release Train

Collect demand: Epics & HLF
Budget appetite
Business Case

Epic & HLF Architecture:
Slicing of HLF per PBB
Roadmap alignment

Supply matching:
Identifying leading RT
Estimation and Sizing

Prioritize backlog
Validate supply capacity
Approve Masterplan
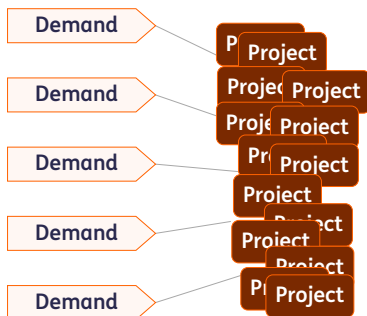
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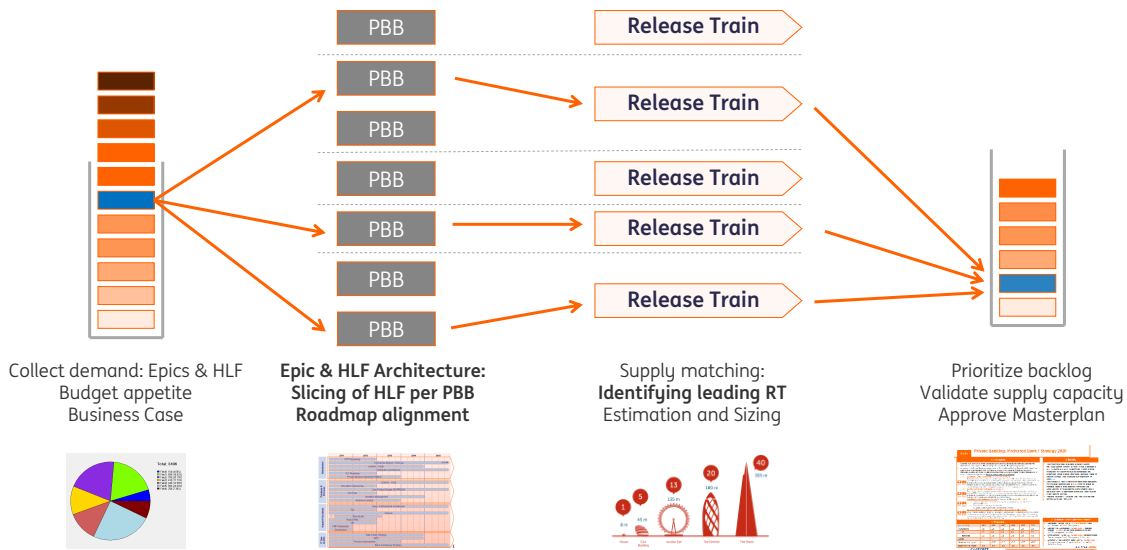
Agility at portfolio level: From Projects to Epics and Features

How to manage agility@scale with projects?

Demand — Project

Fixed Supply. Agile management of Epics and Features in Enterprise Portfolio

Investment Theme		Release Train

ING
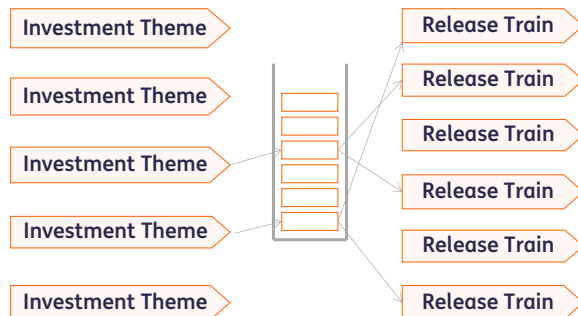
Agility at portfolio level: Slicing Features for E2E Value

Biggest mind shift is to learn slicing according to end-to-end value, not according to layers.
Benefits (quick time to market, short feedback loop) outweigh the drawbacks (rework).
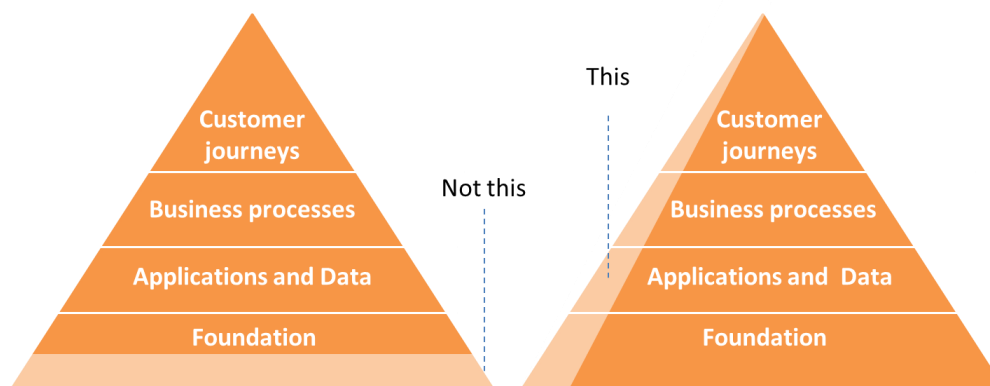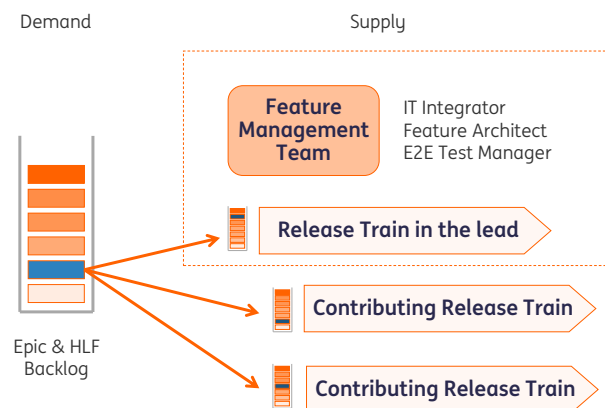
Addressing dependencies - Release Train in the lead

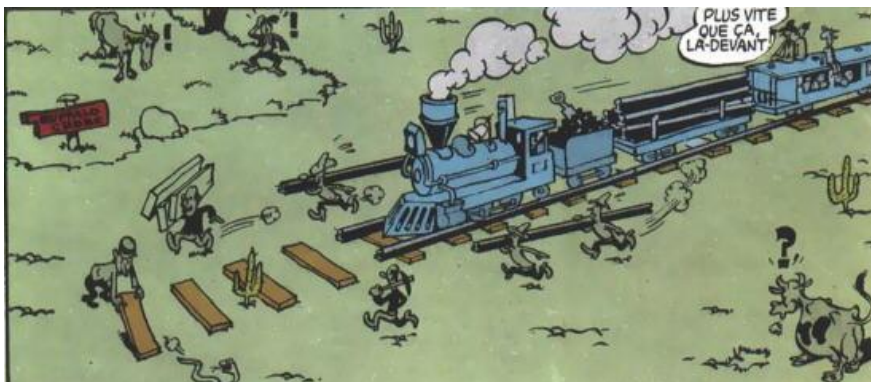Realizing business value often requires multiple Release Trains to contribute.

- For each High Level Feature, one of the Release Trains is assigned is leading
- Proposal of lead is done by EA

Making sure the trains never stops: Architecture Runways

SAFe definition:
A system that has architectural runway contains existing or planned infrastructure sufficient to allow incorporation of current and anticipated requirements without excessive refactoring.
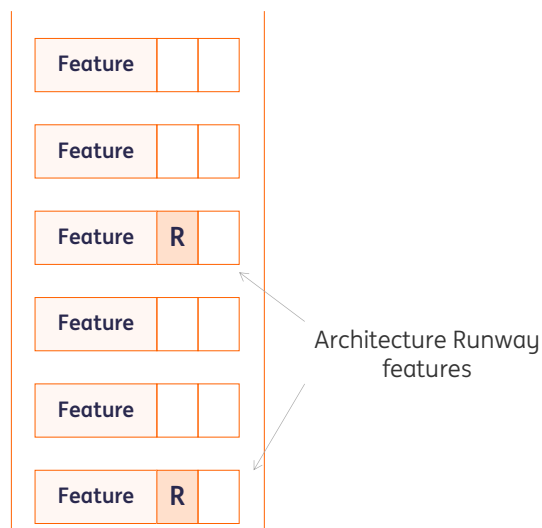
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Making sure the delivery never stops: Architecture Runways

Make explicit the (High Level) Features that are part of the Architecture Runways

• Under budget pressure, foundational features are more likely to be descoped because they do not generate immediate business value

Feature		
Feature		
Feature	R	
Feature		
Feature		
Feature	R	

Architecture Runway features

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Challenges & Outlook

Biggest challenges
- Change management: e.g. middle management not having control they had before, feature architects who have to mature soft skills, etc.
- Mind shift: agility at program and portfolio level, requiring giving up completeness and control, to gain quicker value.
- Complexity: handling successfully full complexity of SAFe model requires the organization to operate at a higher level of maturity.
- Automated Testing and Deployment: the full benefit of Agile at all levels can only be achieved and sustained if E2E testing and deployment are sufficiently automated.

Outlook
- Differentiation: SAFe model should be differentiated to accommodate at the same time strongly agile transformation initiatives and more predictable development activities to maintain the stable systems of the bank.

Get in touch!

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Enterprise Architect	Agile expert/PM	IT Integrator

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References

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