THE SCIENCE OF IMPROVING INNOVATION

LEAN PRODUCT AND PROCESS DEVELOPMENT EXCHANGE

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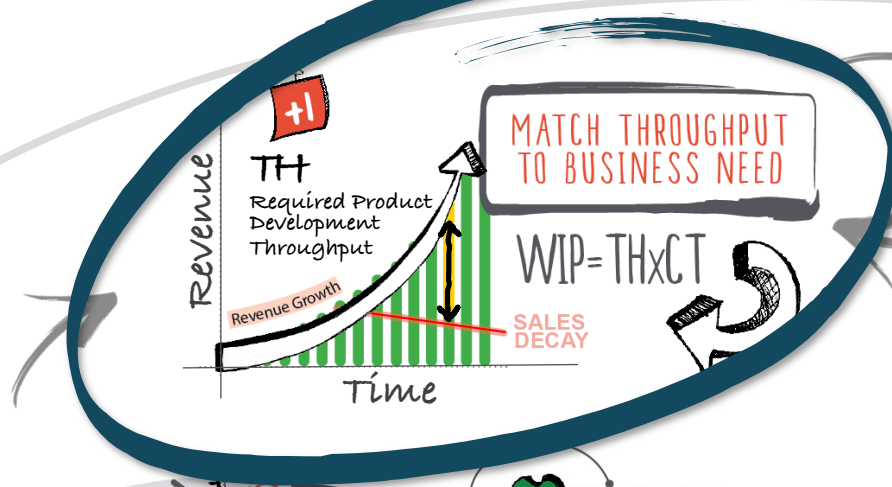
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In partnership with:

THE SCIENCE OF IMPROVING INNOVATION

AO Smith

Innovating to Drive Revenue Growth

Matching Throughput to Business Need

LEAN PRODUCT DEVELOPMENT (and match)

7 ESSENTIALS

+1

MATCH THROUGHPUT TO BUSINESS NEED

TH

Required Product Development Throughput

Revenue Growth

$WIP = TH \times CT$

SALES DECAY

Revenue

Time

Manufacture customers **1**

Ideas

ideas
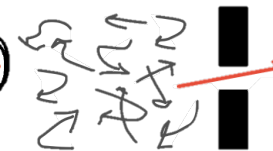
Bin 6   Bin 4   Bin 1
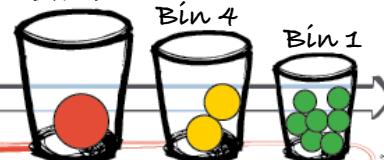
Portfolio cadence & flow **2**

Setbased **3**

ideas

INTEGRATION EVENTS

Detail, Mix, Match, Find more limits & Cull concepts

safe optimized design

REUSABLE KNOWLEDGE

LAUNCH ON CADENCE

FIND LIMITS (RESEARCH)

PROACTIVE LEARNING CYCLES

Visual management **5**

Reusable knowledge **4**

Limit and Trade-Off Curves
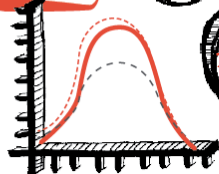
Causal Diagrams
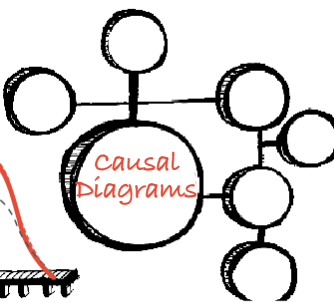
Lead with entrepreneur system designers **6**

Teams of responsible experts **7**

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MATCH THROUGHPUT TO BUSINESS NEED

$WIP = TH \times CT$

Revenue

TH

Required Product Development Throughput

Revenue Growth

SALES DECAY

Time

600M — Objective

545M

495M

450M

410M

387M

Gap

Sales Decay

Professional

Performance

Novice

Actual 2023 | 2024 | 2025 | 2026 | 2027 | 2028

■ Performance ■ Professional ■ Novice ■ Other ■ New Innovation
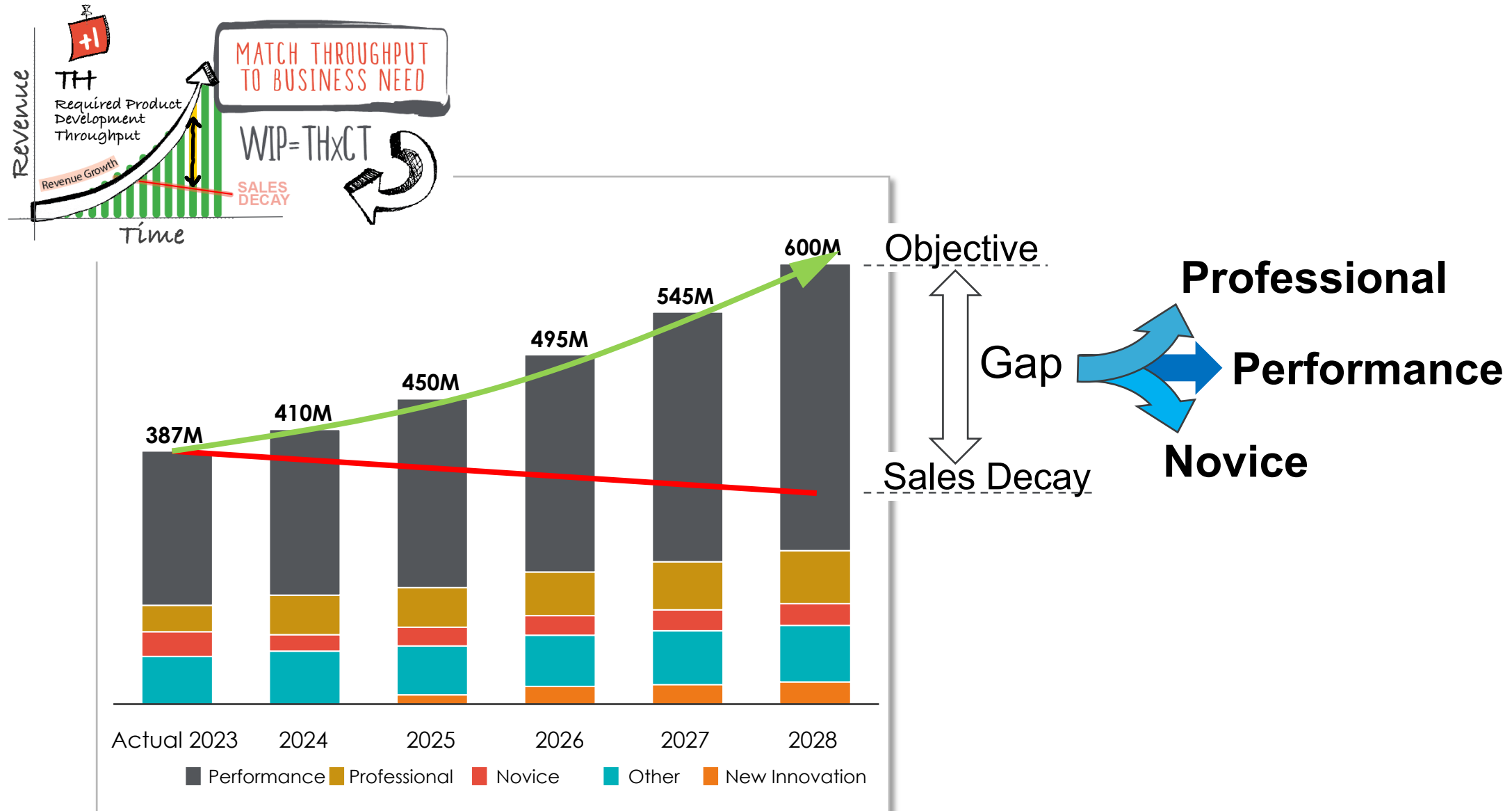
CONNECTION TO THE BUSINESS
Matching Throughput to Business Need

Performance Product Line

4-Year Trend

Business Growth Objective

Monthly Revenue (Millions): $0, $10M, $20M, $30M, $40M, $50M, $60M, $70M, $80M, $90M

Annual Revenue (Millions): $0M, $50M, $100M, $150M, $200M, $250M, $300M, $350M, $400M

2024, 2025, 2026, 2027, 2028

PRODUCT PLANNING: MATCHING THROUGHPUT TO BUSINESS NEED

Professional

Performance

COMPANY

Novice
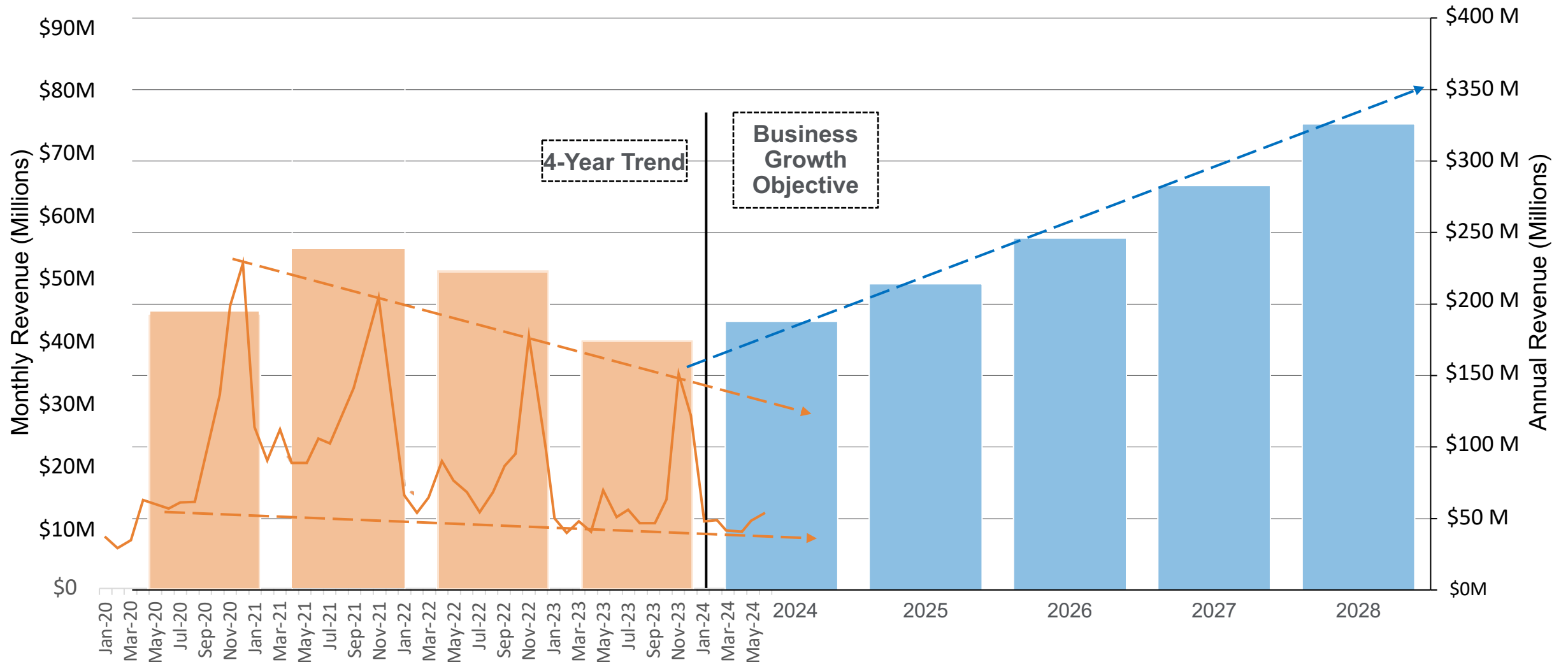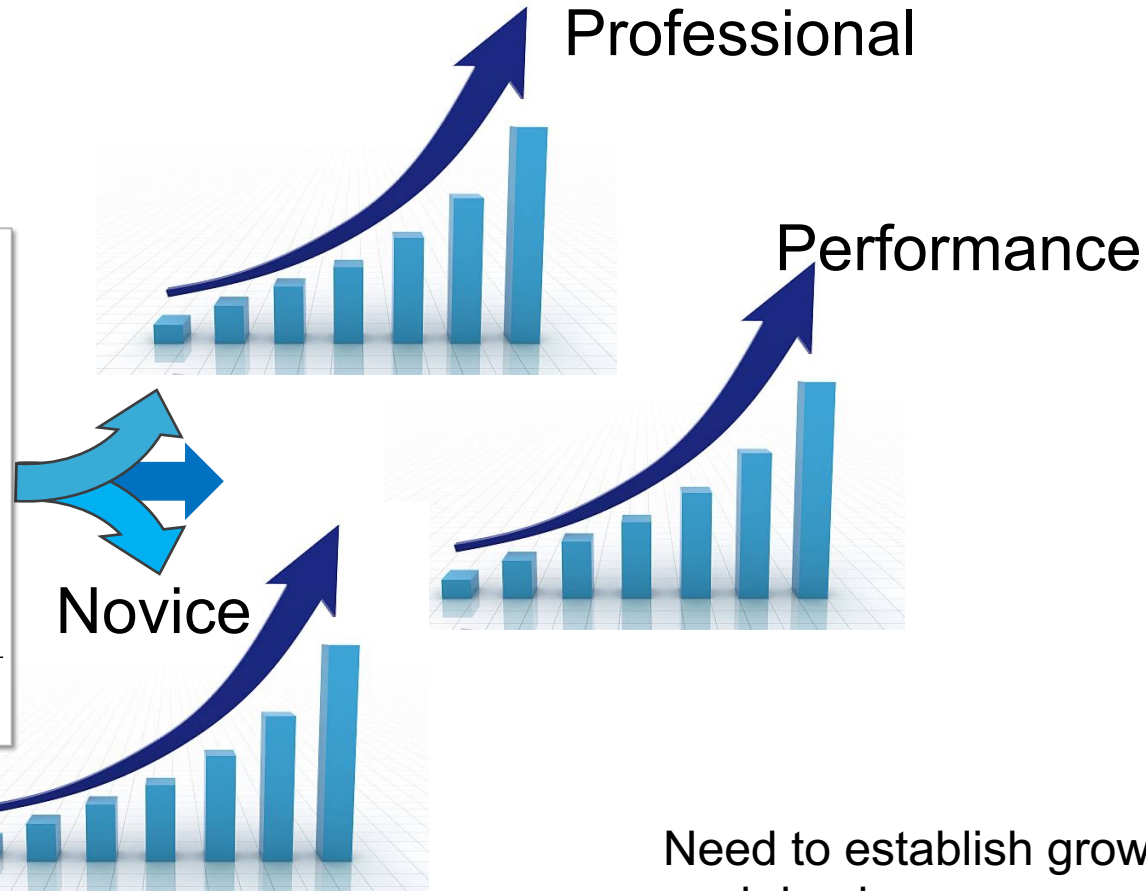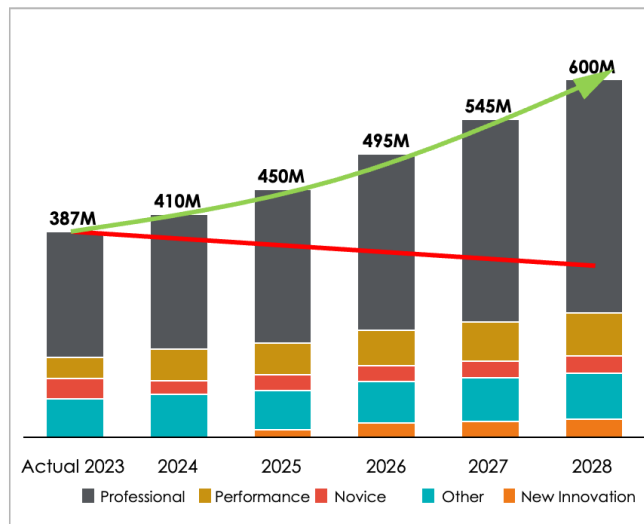
Need to establish growth objectives by each business segment based on overall revenue and profit goals for the company

Company chart values: 387M (Actual 2023), 410M (2024), 450M (2025), 495M (2026), 545M (2027), 600M (2028)

Legend: Professional, Performance, Novice, Other, New Innovation

Professional

Performance

Novice

Once we understand the revenue needs, we can identify the number and type of projects (products) needed to deliver the objectives.

BINs identify standard project types based on Scope, Schedule, & Resources. Each bin type should deliver a specific revenue range.

Based on the revenue needs, the BINs can be mixed and matched to optimize the portfolio based on the revenue objective, the resources, the strategy, & cadance.

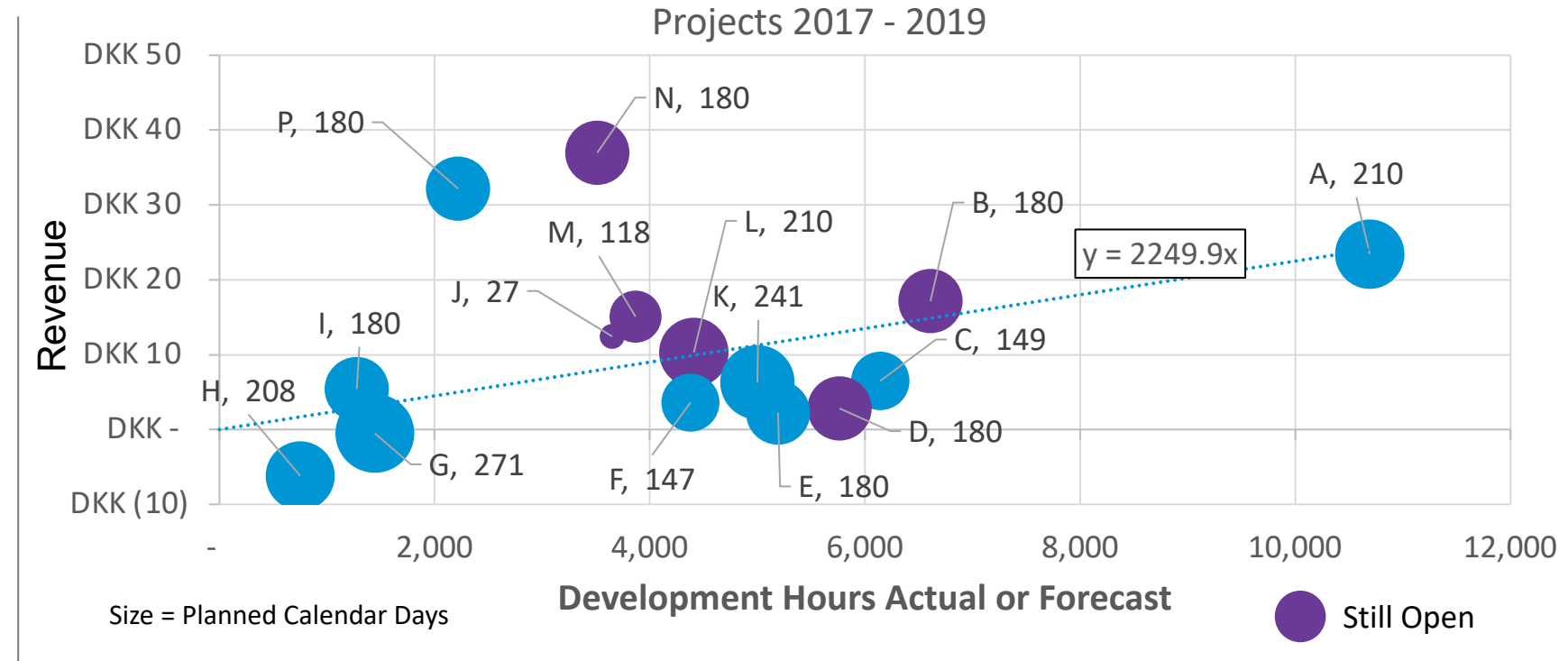© Dantar Oosterwal   D.Oosterwal@ArgoConsulting.com

LINK TO THE BUSINESS – BINs

This customer from Denmark illustrates the grouping of historical projects, and the relative revenue generation associated with each grouping to identify and establish BINs.

The data indicates that on average every development hour produces DKK 2,250 of revenue

Based on the development hours data, the natural project groupings are roughly 1,000, 5,000, and 10,000 hours

Projects 2017 - 2019

Chart: Revenue (y-axis: DKK 50, DKK 40, DKK 30, DKK 20, DKK 10, DKK -, DKK (10)) vs Development Hours Actual or Forecast (x-axis: -, 2,000, 4,000, 6,000, 8,000, 10,000, 12,000)

Data points labeled: P, 180; N, 180; A, 210; B, 180; M, 118; L, 210; J, 27; K, 241; C, 149; I, 180; H, 208; G, 271; F, 147; E, 180; D, 180

y = 2249.9x

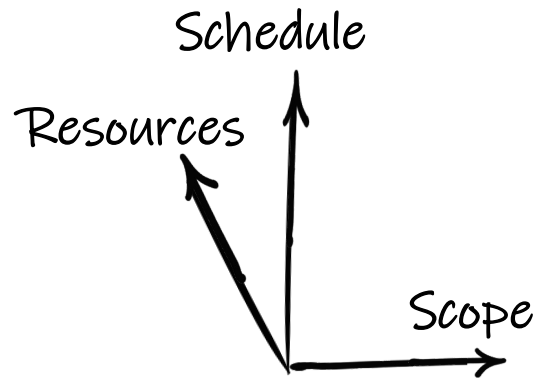Size = Planned Calendar Days

● Still Open

A Small BIN project should take 1,000 development hours and deliver DKK 2.25 M in annual revenue
A Medium BIN project should take 5,000 development hours and deliver DKK 11.25M in annual revenue
A Large BIN project should take 10,000 development hours and deliver DKK 22.5M in annual revenue

Schedule

Resources

Scope

There are 3 elements to a project which delivers Lift (revenue):
- Scope (How much change)
- Schedule (The calendar time or Time-to-Market)
- Resources (Development hours is a good metric but could be converted to $)

So far we have identified the Lift (Revenue contribution) and the Resources (hours for a standard project). To determine the scope and schedule, we also look from a historical basis – how much time (calendar time) did it take to deliver projects of specific scope in the past. This becomes our basis for planning and our starting point for improvement. When actual data is not available, we take the best estimate based on the people involved in previous projects.

To continue the previous example, lets assume that the small projects take 12 months, a medium project takes 18 months and a large project takes 24 months. Note that the times are multiples of 6 months to allow shifting resources and adjusting in the planning process we'll review later. This should also align with the industry *cadence*. For example, this cadence could be a spring and fall sell-in or from the previous example I showed, it had a large Christmas selling component to it. These become the standard **BINs**.

EXAMPLE: To illustrate the principles

Small BIN
Revenue: DKK 2.25M
Scope: Product Extension or Product Variant
Schedule: 12 months
Resources: 1,000 Development hours
Burn Rate: 84 hours / month or ½ FTE

Medium BIN
Revenue: DKK 11.25M
Scope: New Product or Platform Refresh
Schedule: 18 months
Resources: 5,000 Development hours
Burn Rate: 278 hours / month or 1.75 FTE

Large BIN
Revenue: DKK 22.5M
Scope: Breakthrough product or New Platform
Schedule: 24 months
Resources: 10,000 Development hours
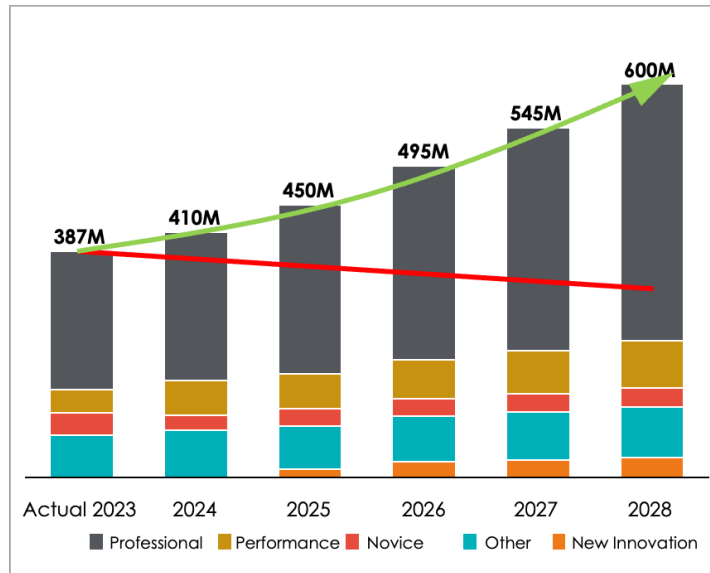Burn Rate: 417 hours / month or 2.75 FTE

Schedule

Resources

Scope
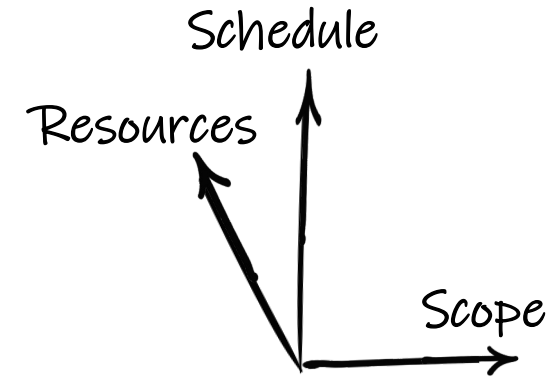
This example would require a steady state of 5 developers to deliver.

They would deliver:
- 1 product extension every 12 months
- 1 New Product every 18 months
- 1 Breakthrough every 24 months

How do we determine the portfolio?

By now, each of the business segments should have identified roughly the gap they have for achieving their share of the Company revenue goal in terms of revenue and BINs

Each business segment should have a strategic plan for where the business is going. They should have a wish list for the product extensions, the new products, and the breakthroughs each business segment wants to deliver the revenue and grow their segment according to their cadence.

All projects are delivered through shared resources

The development portfolio is negotiated across the business segments through product planning and controlled via a 'Firewall' which separates the ambiguous, creative front end from the deliberate, structured execution.

FIREWALL

Project Discovery & Definition
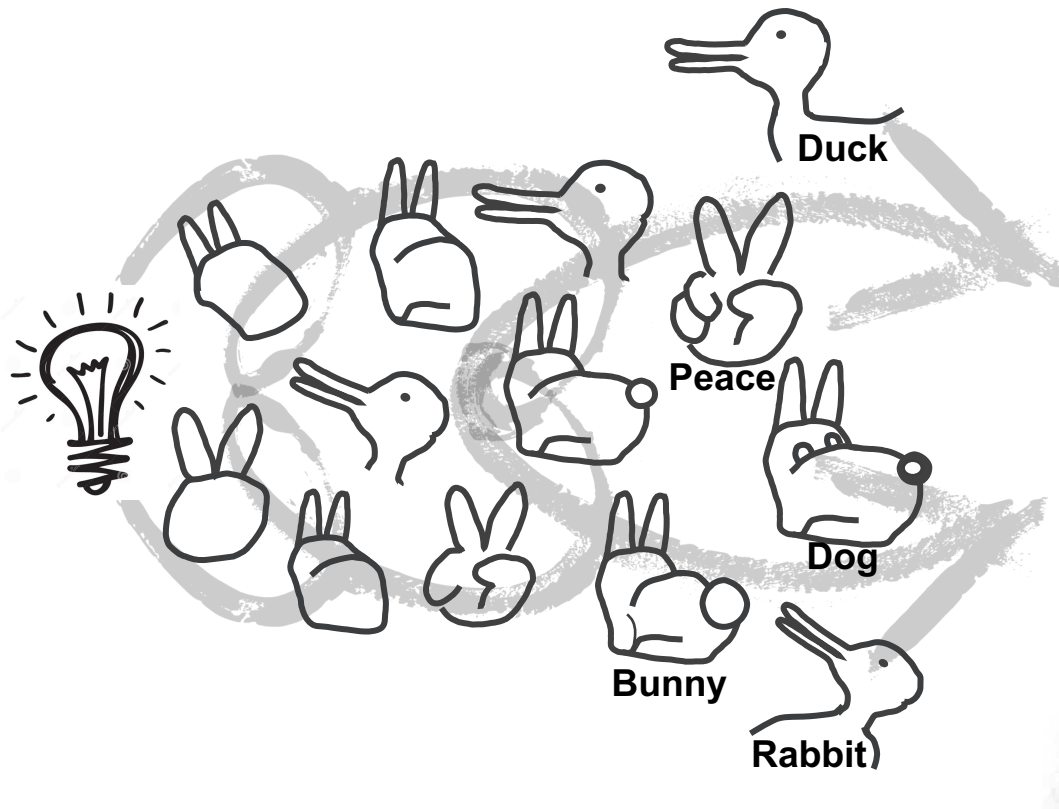
Project Learning & Execution

Duck

Peace

Dog

Bunny

Rabbit

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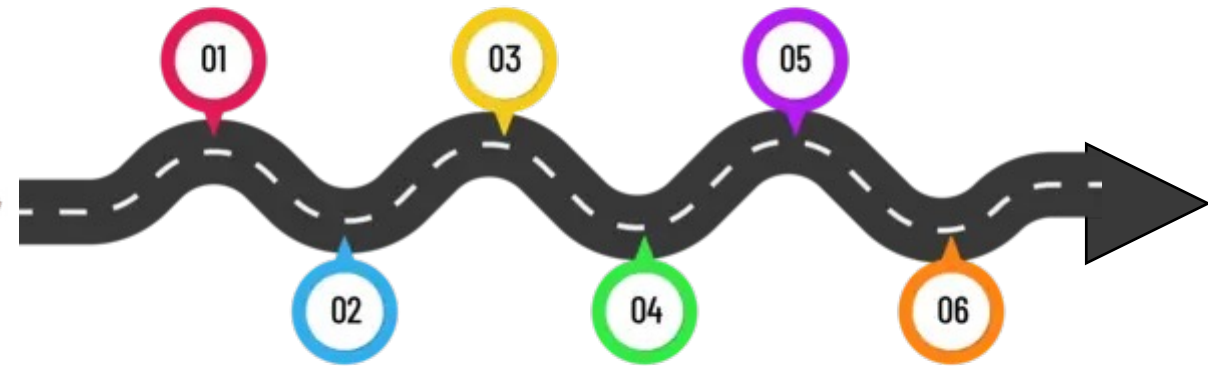
The 'SWIRL'

Project Discovery & Definition

FIREWALL

Duck

Peace

Dog

Bunny

Rabbit

GAS   LIQUID   Solid
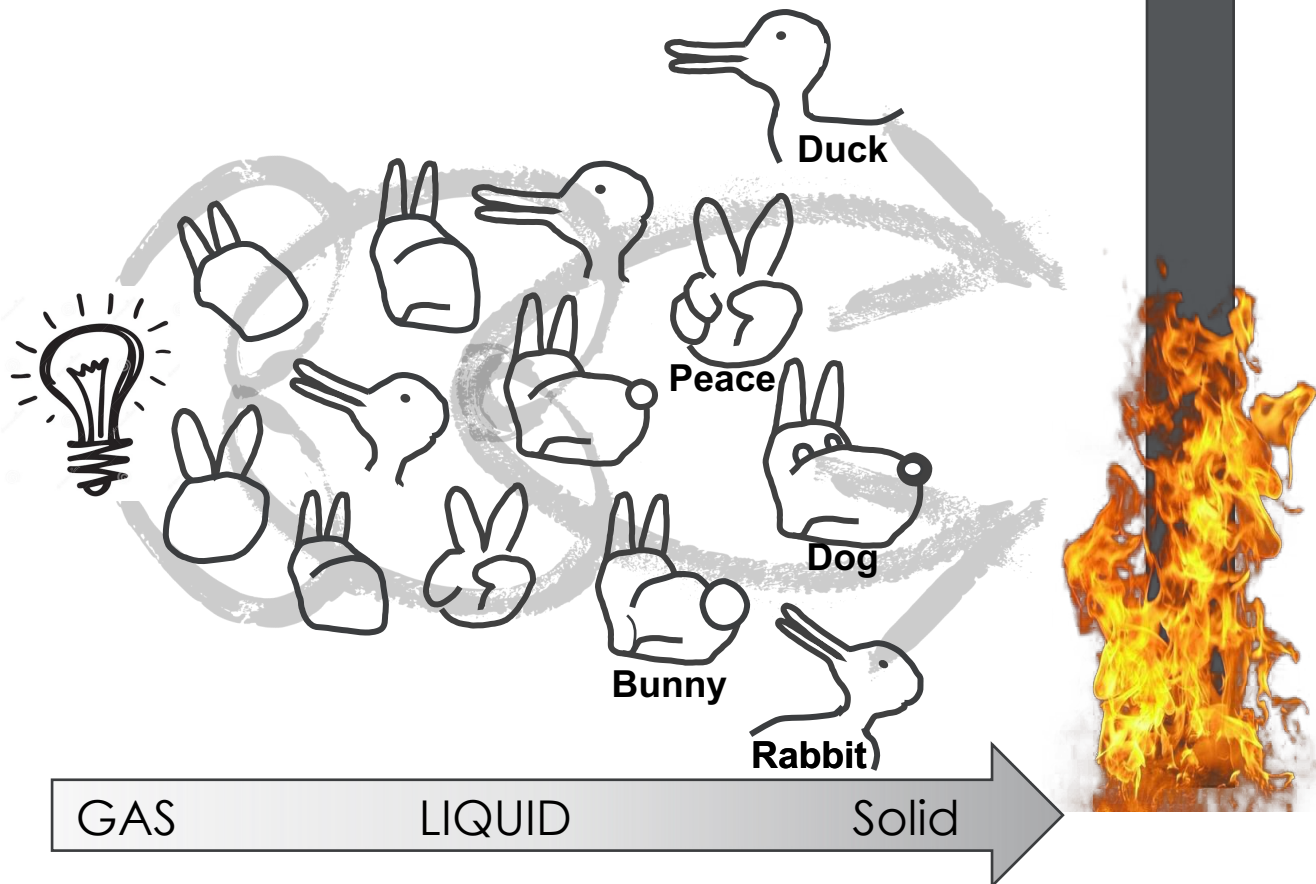
In the Swirl . . .

- Learning about the idea
- Coalition building
- Assessment against financial cost and effort
- Assessment of "the common good" of the company versus the good of just one fraction (Segment)
- Assessment against other ideas in the swirl – proposals are always considered in context of the whole
- Identification of a high-level champion emerges
- Affection for the idea grows . . . or not We don't need to 'kill' ideas, we focus on promoting better ideas. Good ideas eventual morph into something useful

PASSING THE FIREWALL UTILIZES TWO SUPPORTING DOCUMENTS

Project Discovery & Definition

CTM

FIREWALL

Portfolio Perspective

Project Perspective

Concept Brief

Consumer / Technology Matrix (CTM)

The Lean Machine | ARGO Consulting

Enabling Technology (vertical axis)

- Disruptive
- Radical — *Breakthrough*
- Next Generation — *Platform*
- Incremental — *Derivative*
- Base — *Brand Support*
- Sustaining

Customer Value Perception (horizontal axis)

- New Core Product
- New Benefit
- Improvement
- Variant
- No Change

Cost Savings

Improved Efficiency

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Consumer / Technology Matrix (CTM)

The LEAN MACHINE | ARGO CONSULTING

Disruptive

Enabling Technology

Radical
Breakthrough

Next Generation
Platform

Incremental
Derivative

Base
Brand Support

Sustaining

Highly competitive entry barrier, but high risk
Aggressive: win share or expand category
Scope for new Product ranges

Technical benefits generally unsupported by consumer communication
Scope for new core process including regulatory driven and cost reduction projects

Cost savings

Balanced technology and brand strength

Scope for product lines and line extensions

Improved efficiency

Value based or brand image projection
Vulnerable to competition imitation or fashion change
Scope for new brand or Product range creation

Defensive: Share maintenance
Scope for product relaunches and incremental process improvement

New Core Product   New Benefit   Improvement   Variant   No Change

Customer Value Perception

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LEGEND CTM-STANDARD FRAMEWORK

5-10   **10-25**   **>25**

What is the 'lift' - the scalable attribute defining the opportunity? (*margin, growth, share, revenue, etc.*)

Current fiscal

next

2 yrs

3 yrs

Launch Date (Fiscal Year)

How will the resources required and investment to create the opportunity be rationalized? (BINs)

As opportunity clarity increases, engineering scope of work becomes quantifiable, allowing for Bin selection (size and timing assessments) prior to passing thru the firewall

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CONSUMER TECHNOLOGY MATRIX -

EXAMPLE

Consumer Value Perception

| New Core Product | New Benefit | Improvement | Variant | No change |

Enabling Technology

- Radical
- Next Generation
- Incremental
- Base

Breakthrough

Platform

Derivative

Brand Support

Sustaining

Project A

Project B

Project C

Project D

Project E

Project F

Project G

Project H

Project I

COG saving

COG saving

FY05
FY06
FY07
FY08

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PRODUCT PLANNING: MATCHING THROUGHPUT TO BUSINESS NEED

The current plan with all the leadership input is unbounded – it does not take into account the development capacity and does not indicate the resource loading for each of the projects proposed.

This is where the BINs come into play as each BIN designates the standard Lift, Resources, Scope, and Schedule for each project. The role of the Product Planning Committee (PPC) is to negotiate across the various options to optimize the full company portfolio. It should be expected that projects compete with each other both within a segment as well as across segments for the optimal mix to create the portfolio. The first product plan is the most difficult to create, each update builds on the initial and is easier to do.

The role of the Product Planning Committee is to negotiate across the various options to optimize the full company portfolio and approve the projects through the firewall to execution.

The Firewall ensures only projects agreed by the PPC are worked on.

The PPC Firewall review and approvals should be done at a portfolio level, not individual project level. The cadence for the approvals should coincide with the launch cadence dictated by the industry backed up by the standard timing of the bins

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Essential for:

- Discussing incremental value of projects
- Selection of concepts
- NPD strategy setting vs strategic intent of the category
- Checking NPD strategy vs reality
- Focusing idea generation
- Ensuring better technology link to consumers
- Check versus competition
- Provides for themed consolidation of similar concepts/ideas
- Determining the value of opportunities available supporting strategic consolidation

The CTM is essential for properly negotiating and loading the system to deliver the business objectives

QUESTIONS?

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THANK YOU

ARGO ≡ EFESO
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