

# What you need for IoT: Smarter Methods

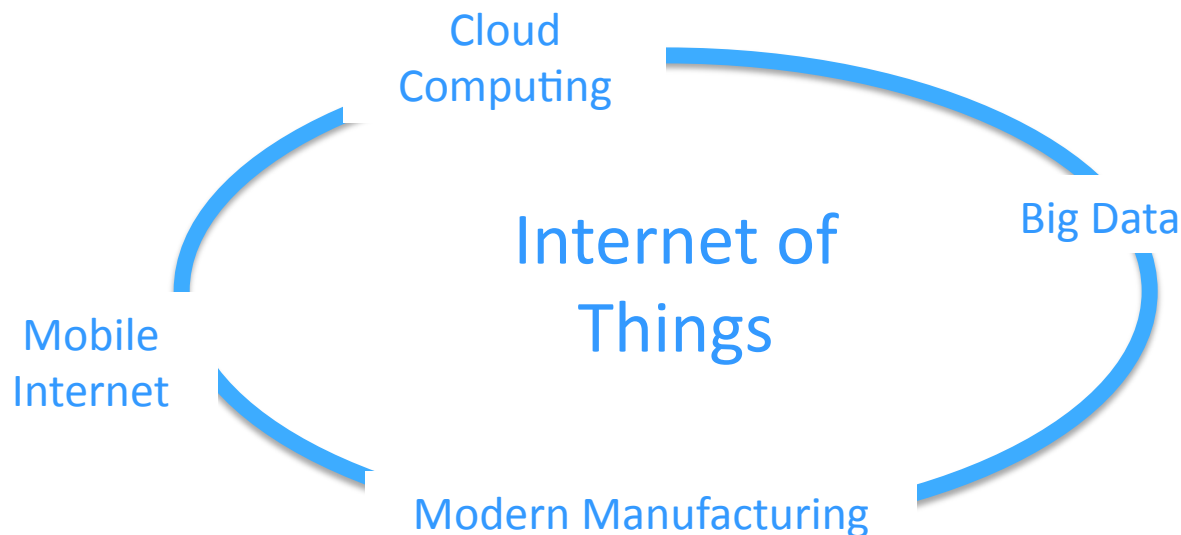
Ivar Jacobson

# Agenda

1. IoT and Methods
2. Existing Methods puts you in Method Prisons
3. How to get out of your Method Prison?
4. Essentialization of Existing Methods
5. Essentialization of Ignite
6. What is the Value Proposition?
7. Next: It is Futurized
8. The Expectation Today

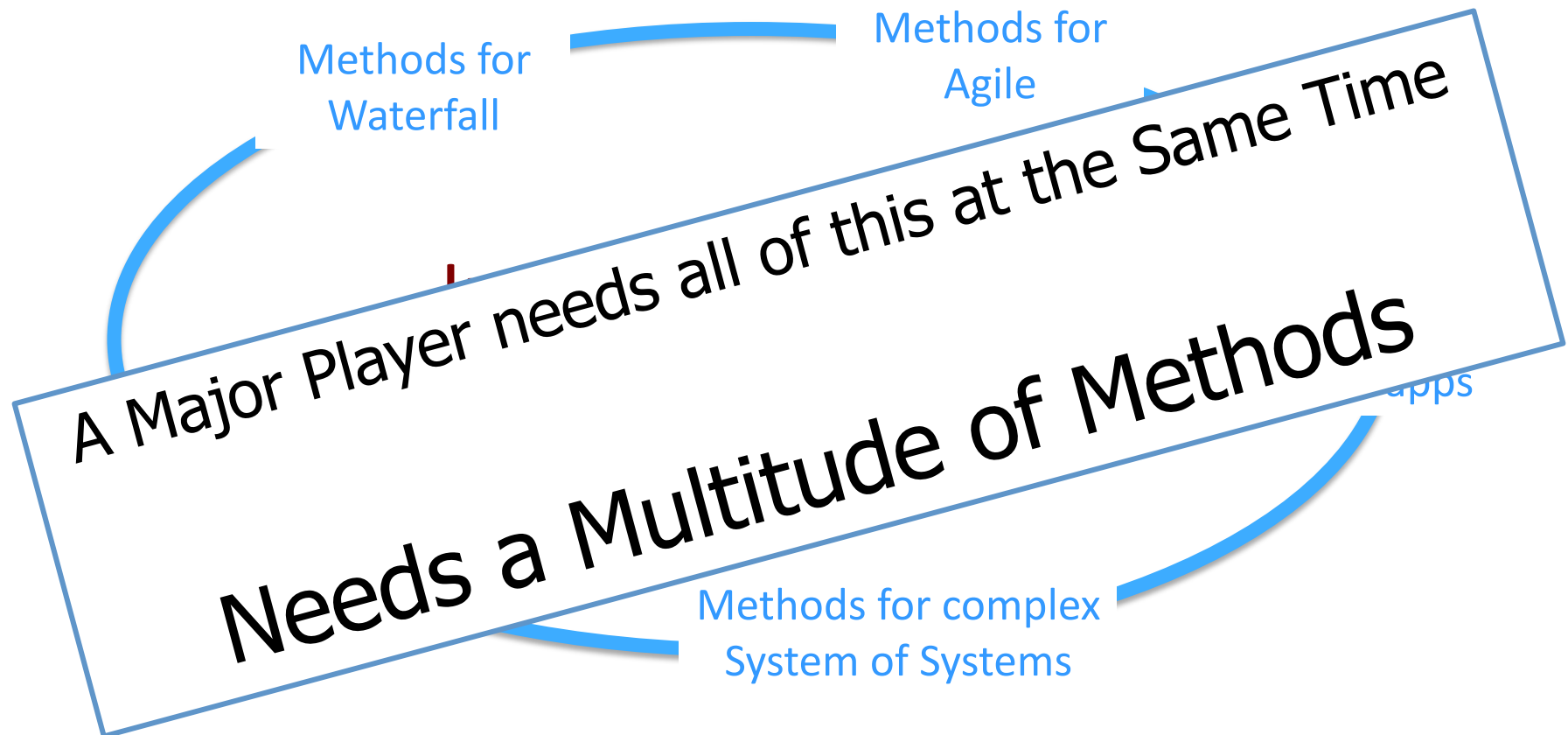
# What's so special about the Internet of Things?

- Internet of Things touches all kinds of products, services, functionality
- All levels of complexity
  - from very simple software running on basic sensors and other simple devices through to
  - the high-performance, highly reliable, highly governed, secure, resilient, scalable systems needed to process, analyze and respond to the vast amounts of data they produce and
  - everything else in between.

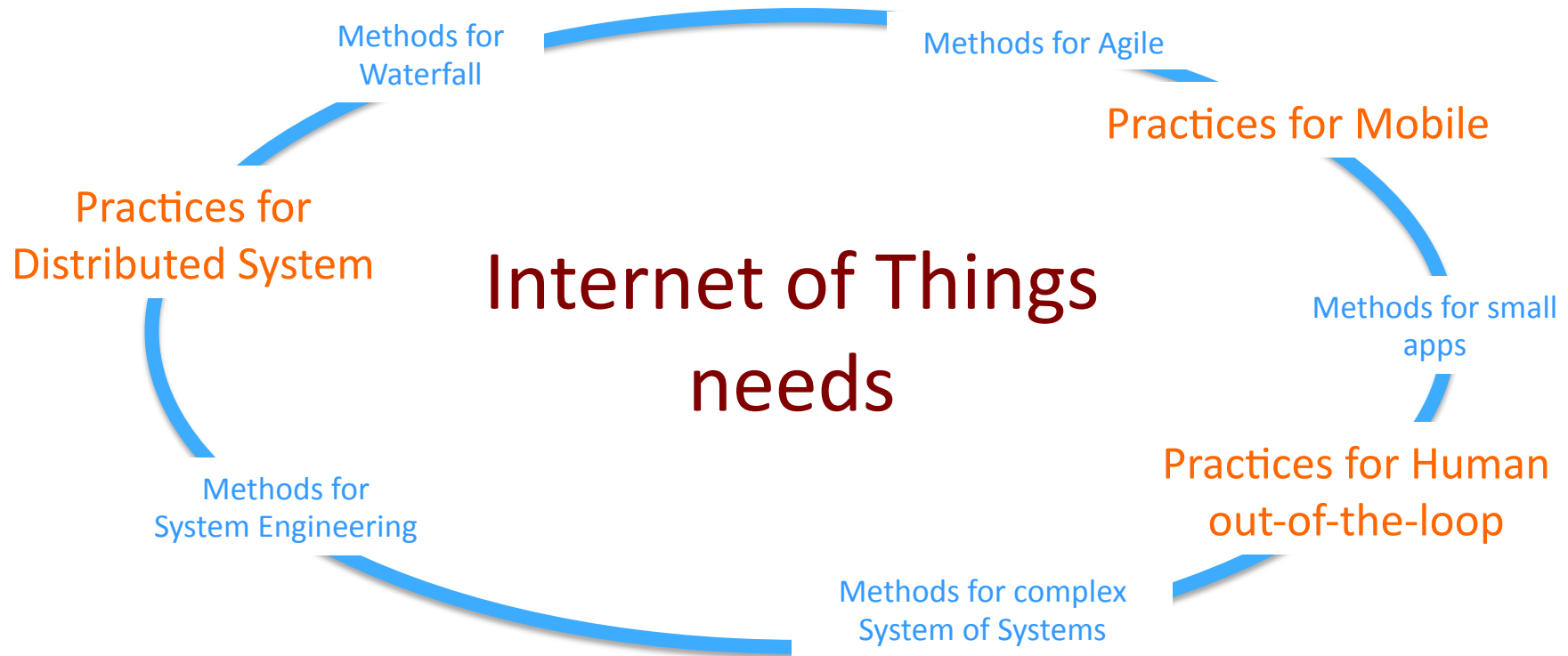


# The Internet of Things needs everything

- The Internet of Things doesn't lack methods.



# And New Domain-Specific Practices are needed



What aren't needed are new management practices.

# Summary of IoT needs

## A single vendor needs a multitude of methods

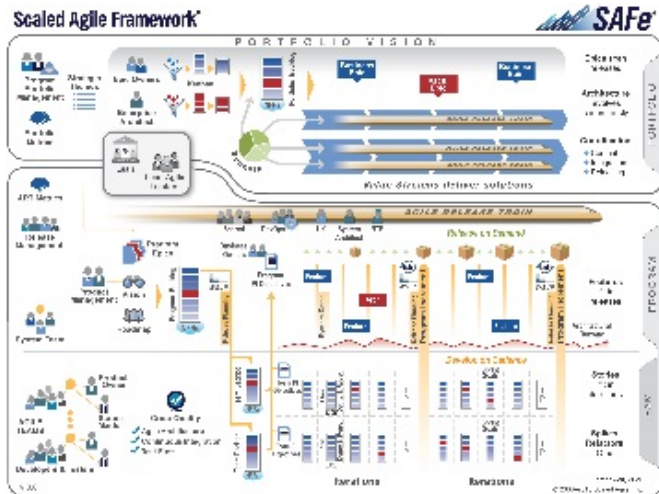
- Teams need to be able to select their own method from a **library of practices**
- Methods need a **new user-experience** – developers don't read books
- Methods need to focus on the **essence** – 5% of what an expert knows
- Methods need to guide in **every day usage**, not guide by reading a book
  - The method needs to help you monitor progress & health of the project

# Agenda

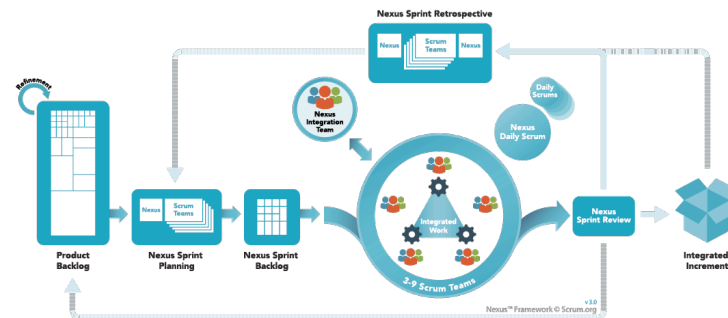
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# Let's look at Methods for Agile at Scale

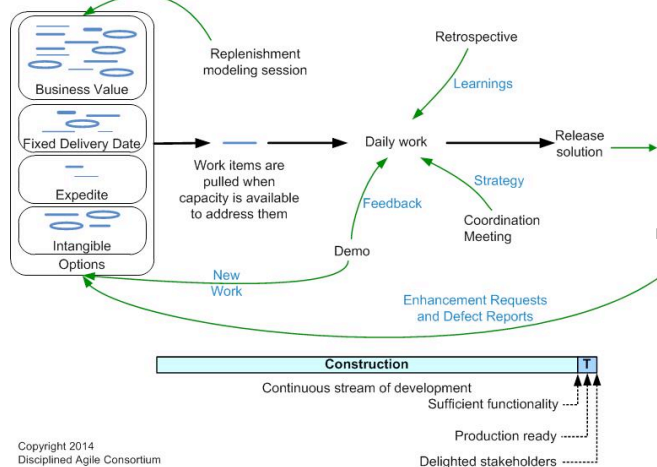
## SAFe



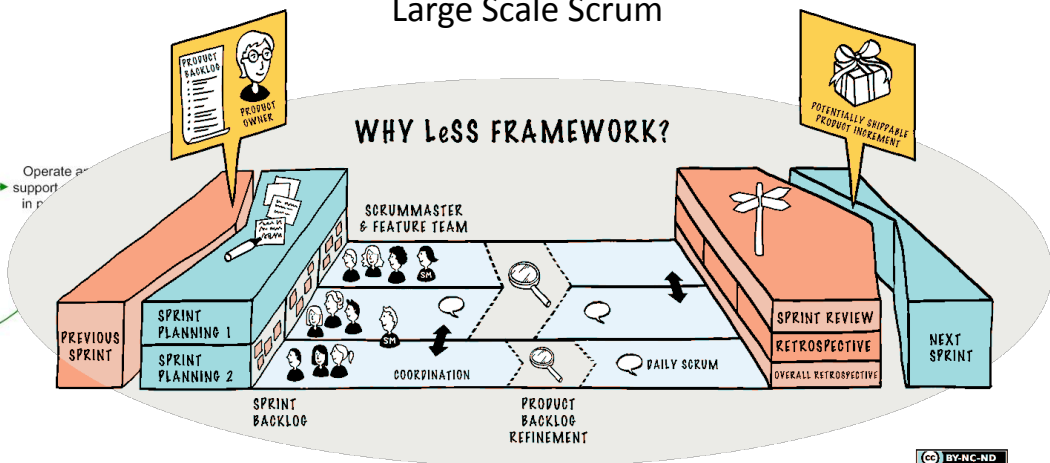
## Scaled Professional Scrum



## Disciplined Agile Delivery



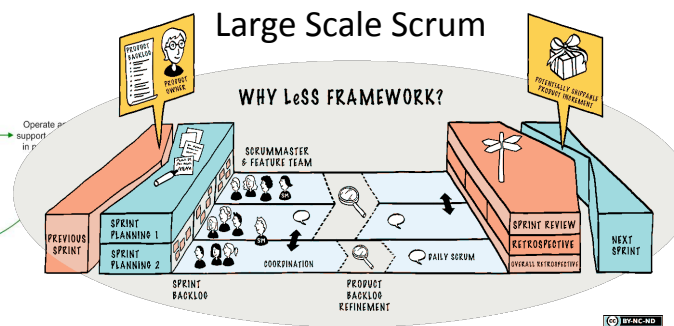
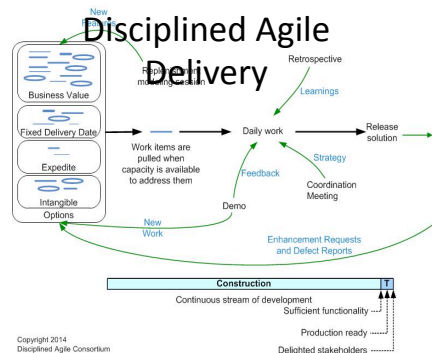
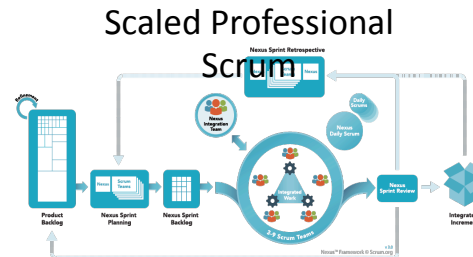
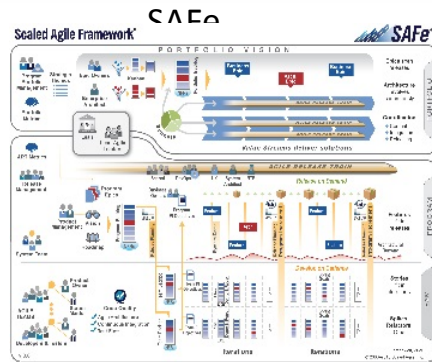
## Large Scale Scrum



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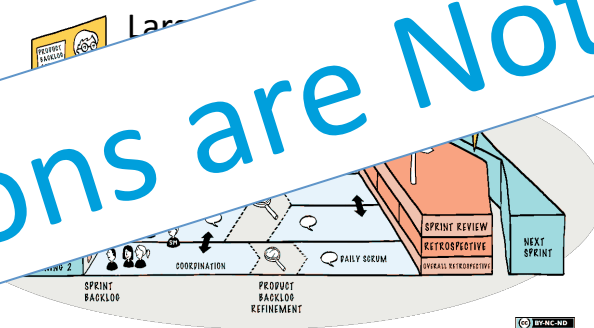
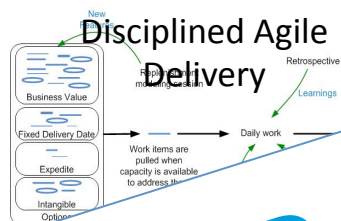
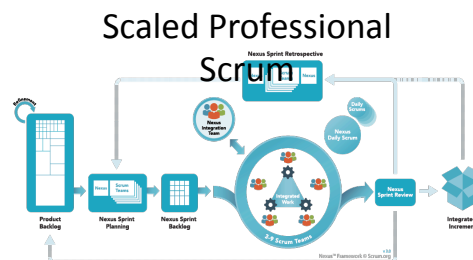
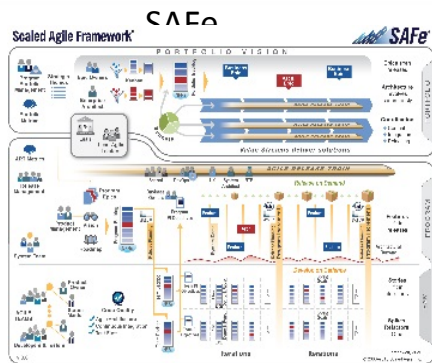


# Let's look at Methods for Agile at Scale



- They are all monolithic – non modular
- They have a lot in common (but you can't easily see it)
- They all have unique own practices, but you cannot mix and match practices from them
- If you select one, you are in a “Method Prison” controlled by the guru of that Method
- And, there are many more other methods that also are monolit

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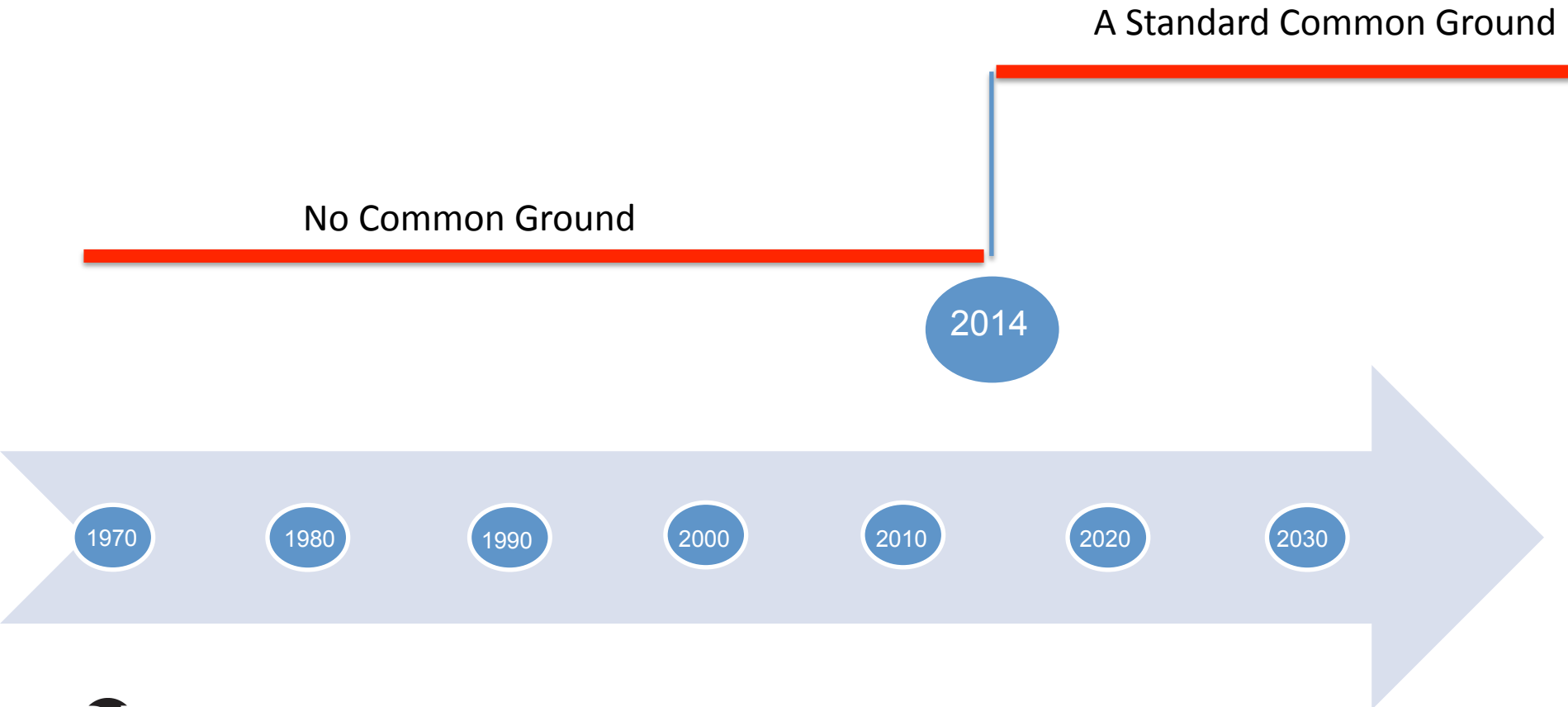
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# Start getting a Common Ground

## What is a Common Ground?

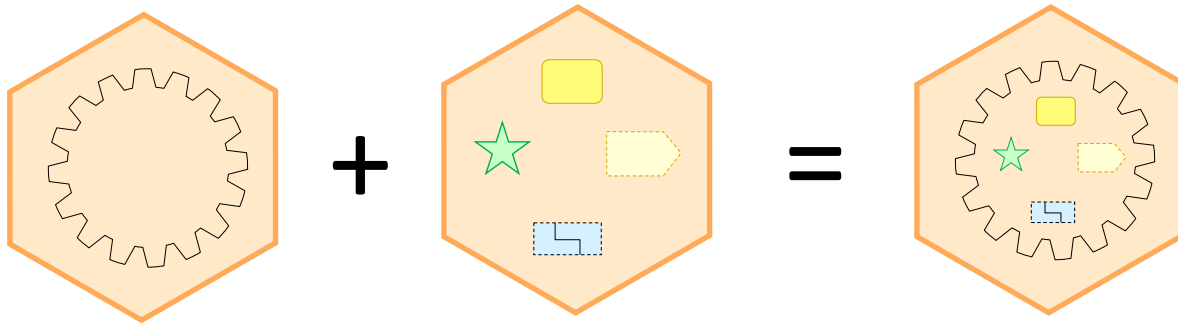
- It includes elements that every method has, what every method produces, what you do always, etc.
- It is a starting point to understand software engineering



# There is a standard Common Ground: Essence

For the first time in the 60+ year history of software engineering, we have got a Common Ground

## Kernel      Language      Essence

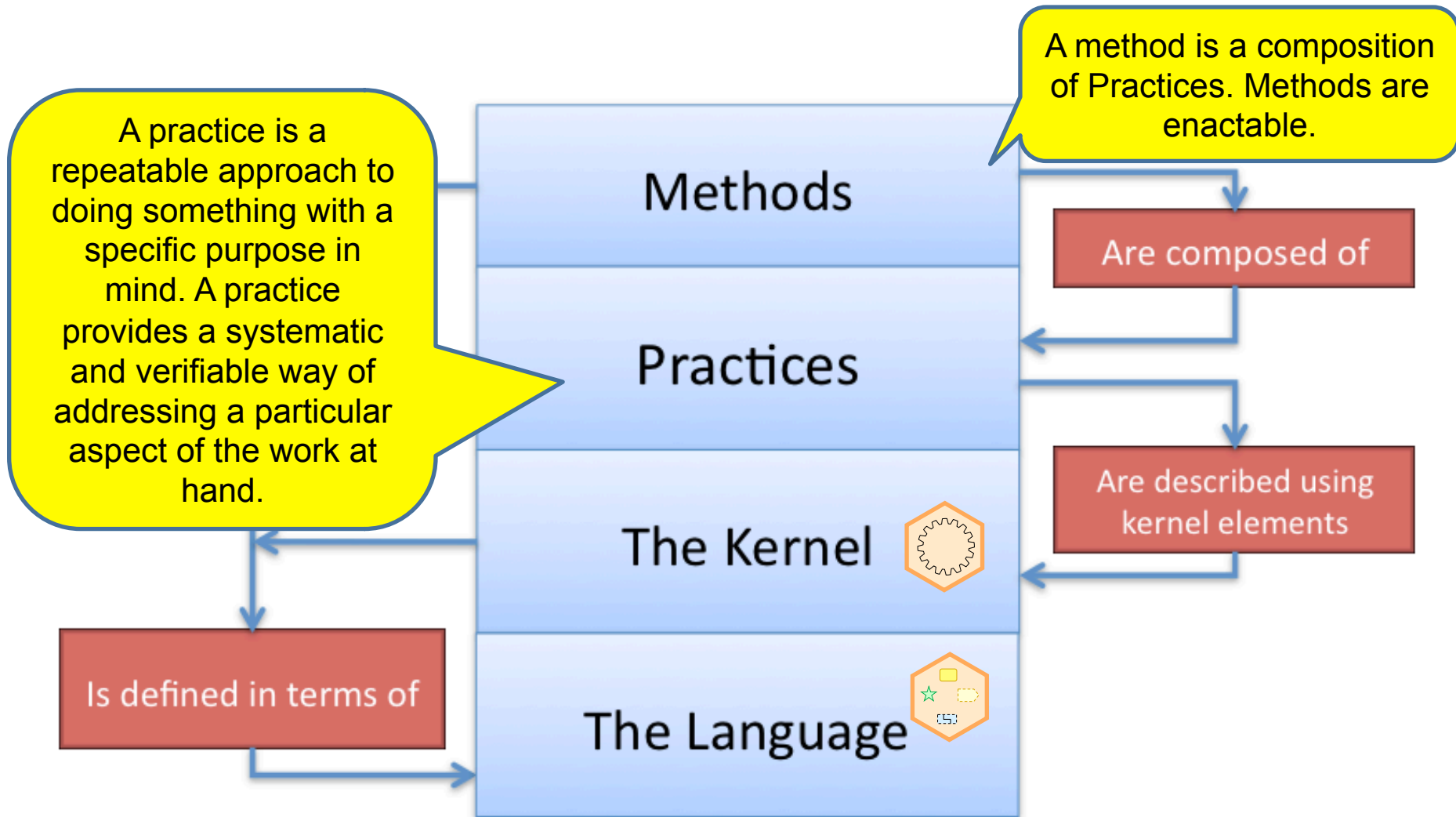


- Essential Things to Work with
- Essential Things to Do
- The Essential Competencies you need

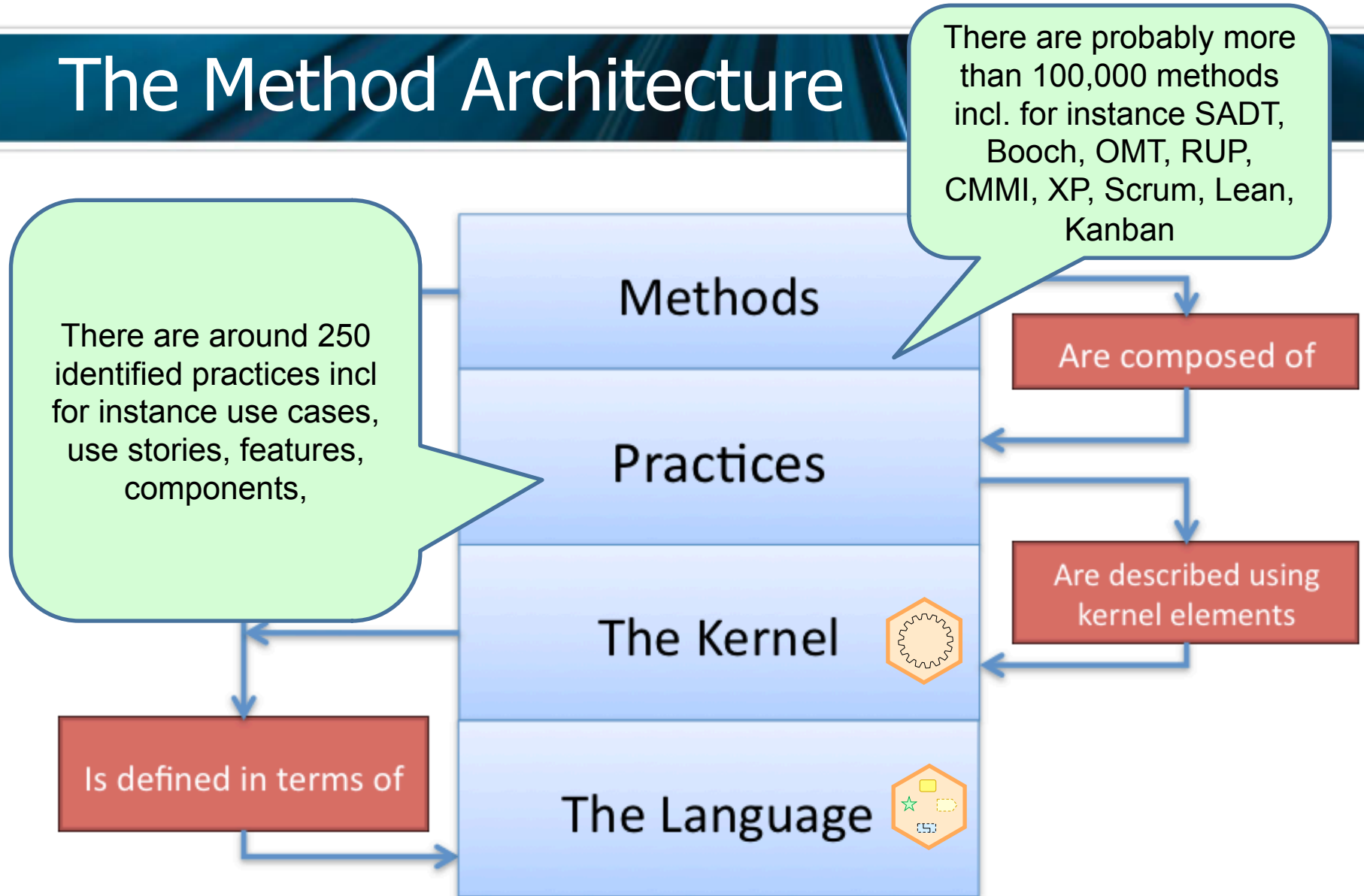
- Visual language
- Simple
- Intuitive

THE COMMON  
GROUND

# Essence is the common ground to build Practices and Methods upon

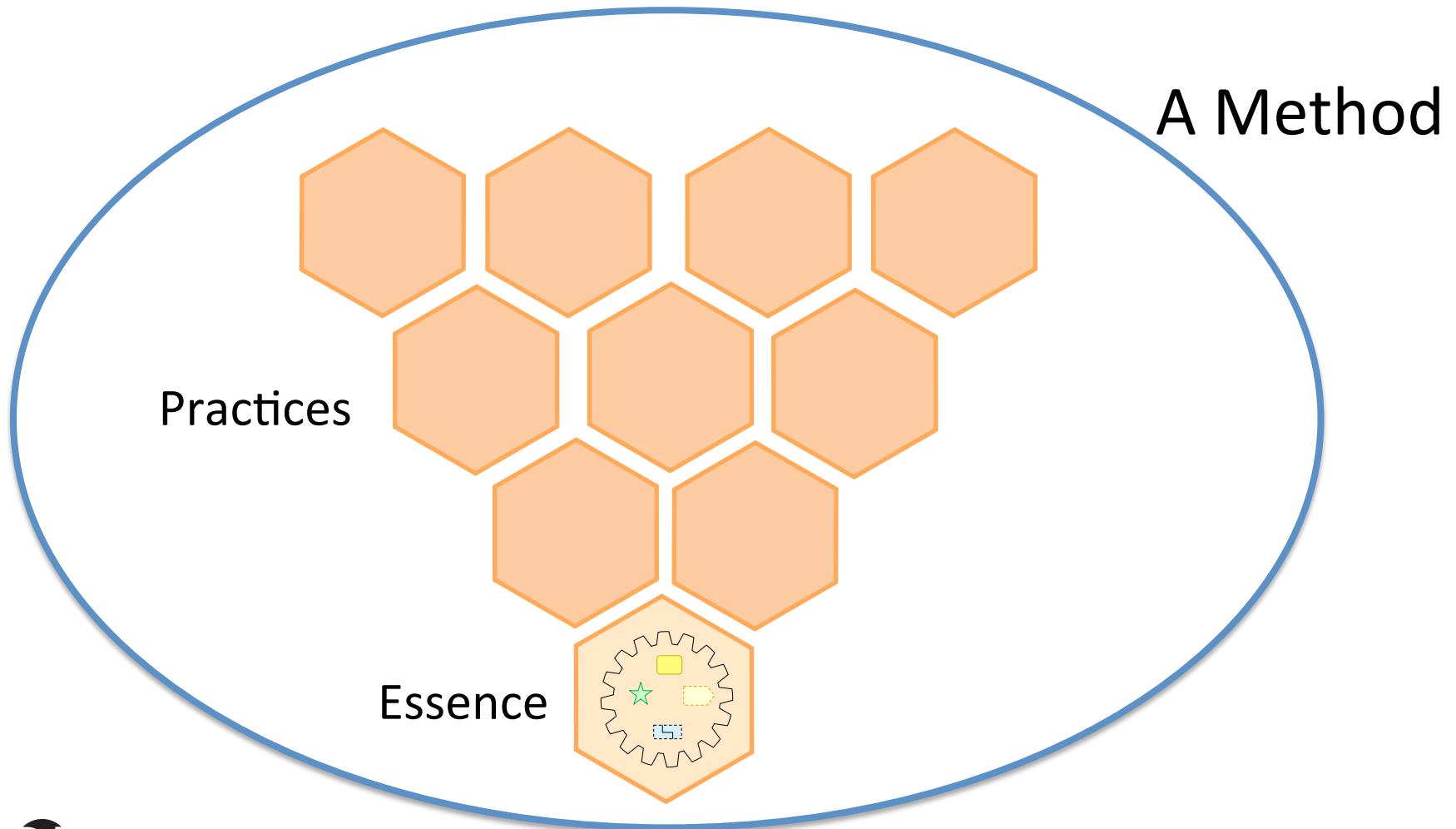


# The Method Architecture



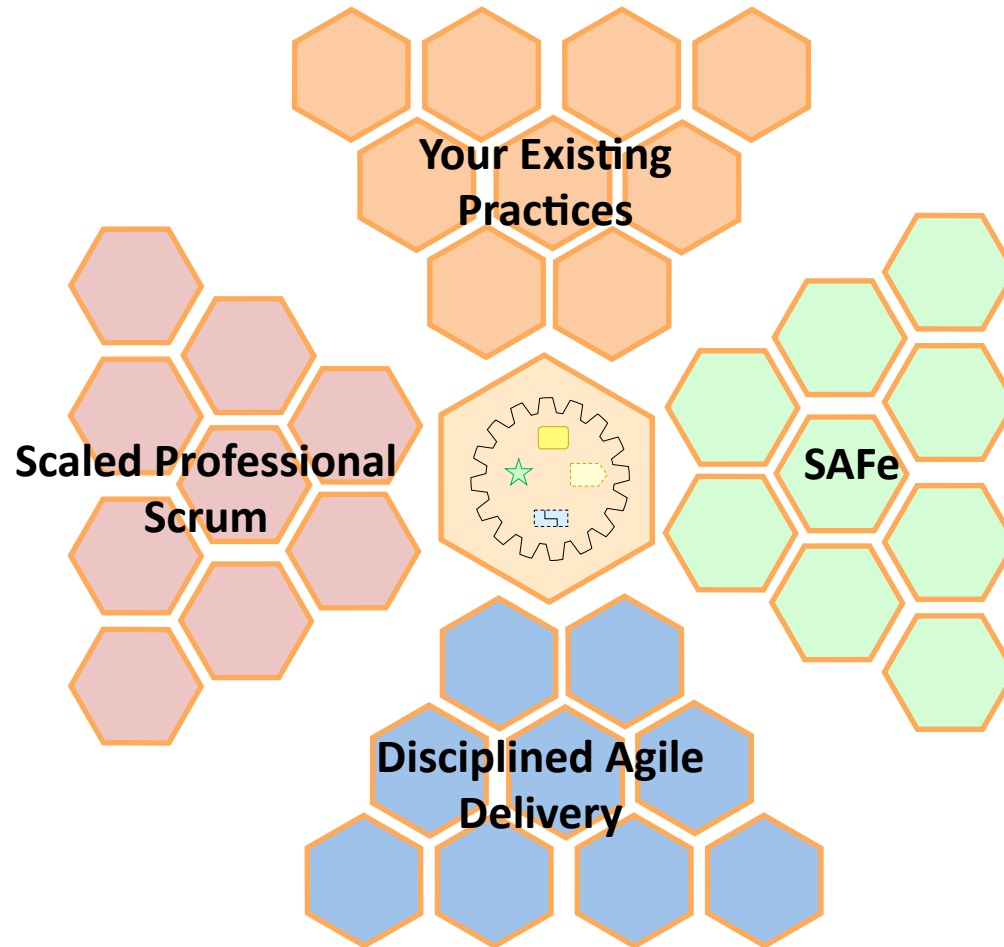
# Then Add Practices on Top of Essence

- Essence makes Methods Modular – not Monolithic

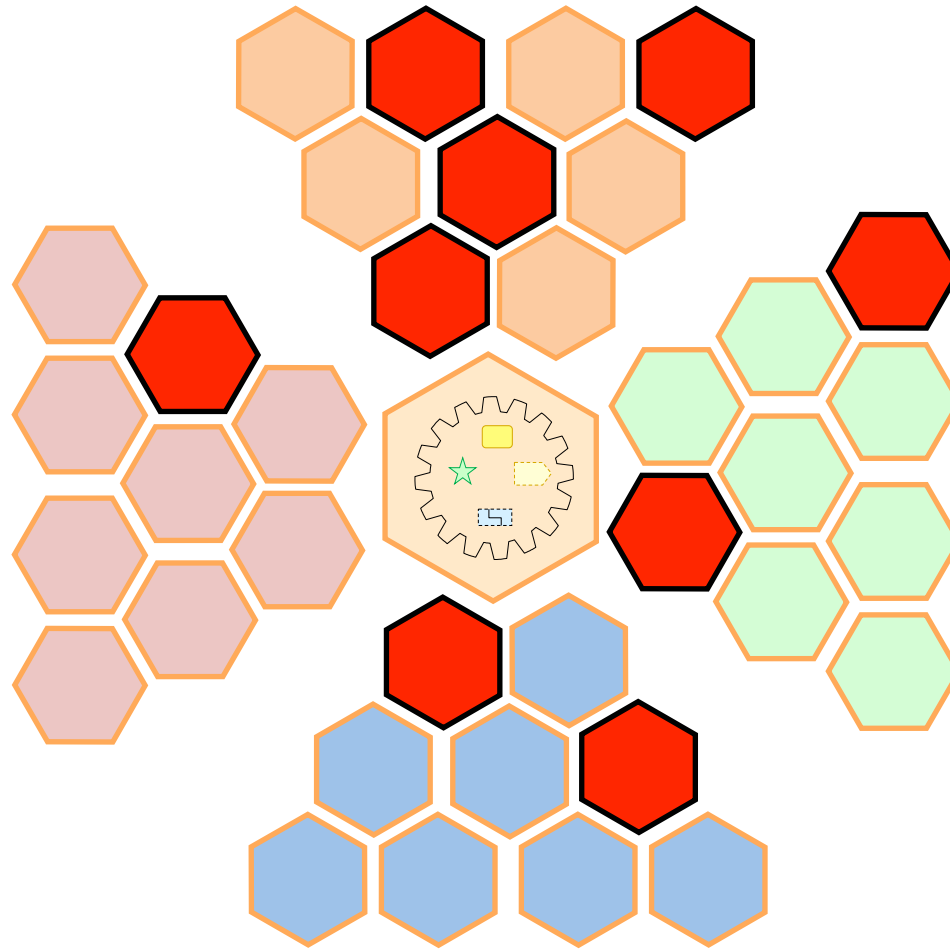




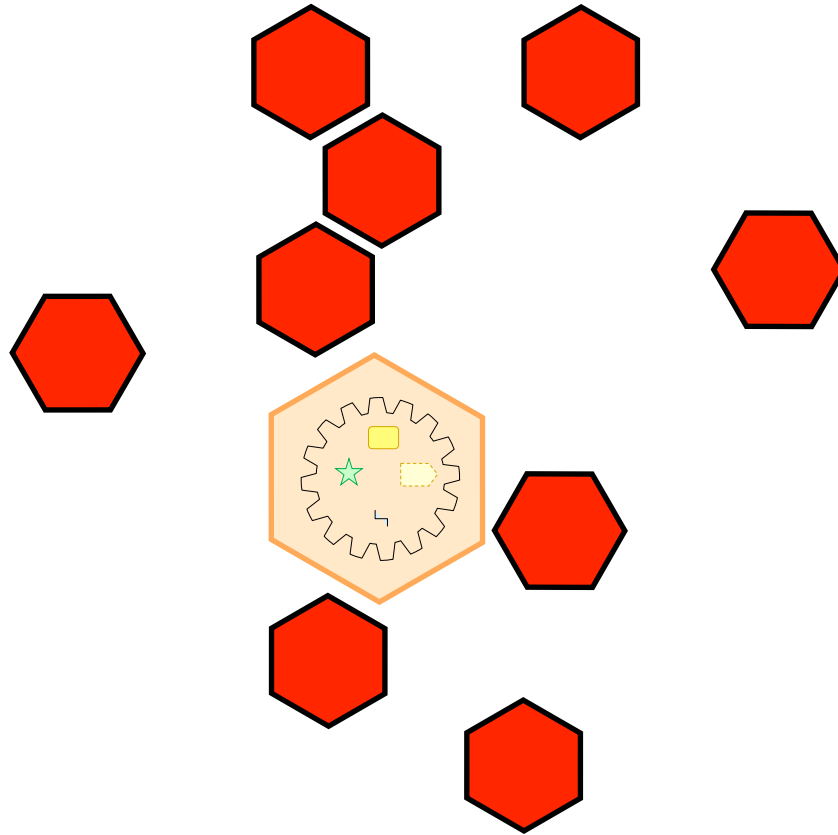
# Imagine a Practice Library



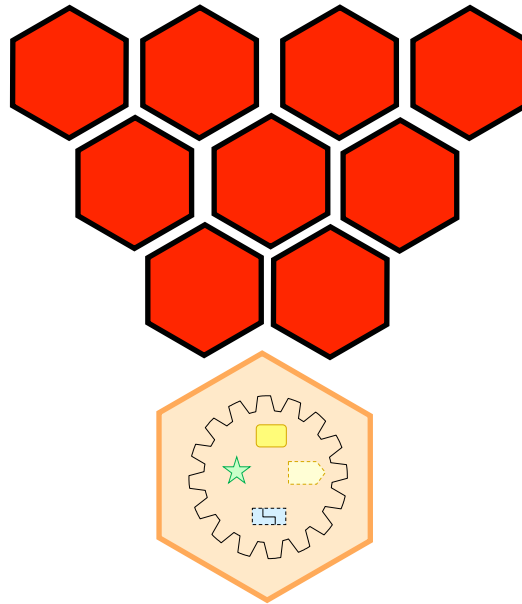
# And you select the practices you like



# And ignore the ones you don't need



# To create your own method

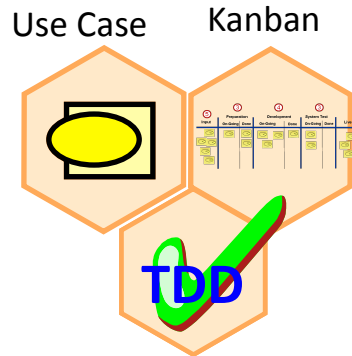


...to get flexibility

# Mix and Match Practices to Empower your Teams



Team B

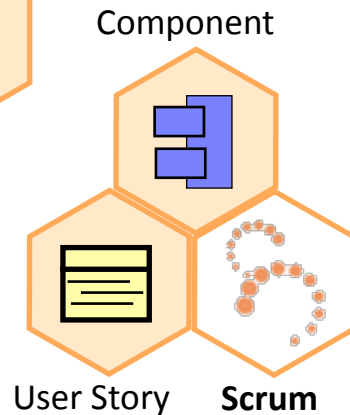
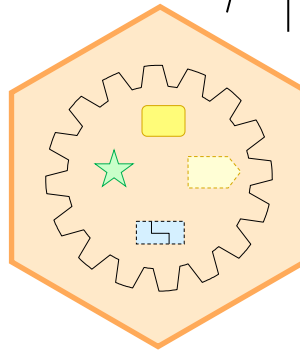
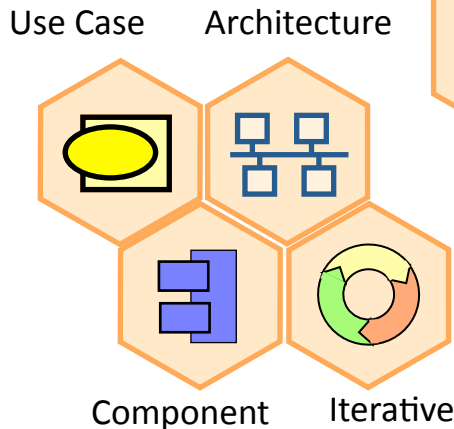


Test Driven Development

Team's build their way-of-working on top of pre-defined common ground and in-line with organizational principles and policies.



Team A



Team C

Practices enable teams to work the way that works for them

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# Agile Essentials

Agile Essentials

pex.ivarjacobson.com/sites/default/files/practice/52/367/preview/index.htm

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Agile Essentials

- Things to Work With
- Things to Do
- Competencies
- Patterns
- Areas of Concern
- Practices
- Resources
- Glossary of Terms
- Key
- Description Levels
- Notices

The Agile Essentials practices provide a basic starter kit toolbox that covers all the common and critical aspects of team-based development.

Agile Essentials - Big Picture (Click to navigate)

Agile Essentials - Overview of Practices (Click to navigate)

Contents (Top)

- References
- Recommended Reading
- Resource Links

Method Description Level

- (UNSTRUCTURED)
- OUTLINED
- CHECKABLE
- DETAILED

**Browsable  
Web-Site**



# Agile at Scale

Agile at Scale Essentials

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Agile at Scale Essentials

The Agile at Scale Essentials practices provide a basic starter kit toolbox that covers all the common and critical aspects of scaled agile development.

Agile at Scale Essentials - Big Picture (Click to navigate)

Agile at Scale Essentials - Overview of Practices (Click to navigate)

## Product Management Essentials

Manage the progress of product ideas value, given limited development capacity

- Product Management
- Product Idea
- Business Case
- Filter Ideas
- Evaluate Ideas
- Idea Ownership

PM

## Agile Architecture Essentials

Guide the evolution of a solution approach that adapts to changing needs and challenges.

- Evolve Architecture Roadmap
- Architecture Roadmap
- Skinny System
- Evolve Architecture
- Drive an Architecture Spike
- Prepare Architecture
- Architecture Enhancement
- Just-In-Time Architecture
- Architecture Ownership

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## Architecture Ownership

Who takes responsibility for the success of the technical solution?

There are two possible answers:

1. Everyone collectively or
2. A specific, dedicated individual architect or architecture team

For big, leading-edge or other high-risk technical endeavors, dedicated Architecture Ownership will be needed to guide the of the right technical solution should work collaboratively teams to reinforce collective responsibility and learning

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## Evolve Architecture

The team and the stakeholders continuously think about question and evolve the architecture approach learning.

- Software System: A
- Implement the System
- Stakeholder Representation
- Software System (contribution)

AA

## Architecture Enhancement

An independently buildable and testable extension to the architecture to support foreseeable needs / requirements.

- Goals Articulated
- Viable Approach Sketched Out
- Design Approach Firmed Up
- Design Guidelines Documented

Describes: Software

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Web-Site**

**"Poker  
Cards"**



# Add-Ins and Swap-Ins

The image is a collage of screenshots from the IVAR JACOBSON Agile Essentials website, highlighting various agile practices. The top left shows the 'Agile Essentials with User Stories' page, which includes a hexagonal diagram of essentials. The top right shows the 'Agile Essentials with Continuous Flow' page. Overlaid on these are three 'Poker Cards' for 'User Story Essentials', 'Continuous Flow Essentials', and 'Kanban Board'. A red starburst in the center says 'Browseable Web-Site'. The bottom left features the IVAR JACOBSON INTERNATIONAL logo.

**Agile Essentials with User Stories**

The Agile Essentials practices provide a basic starter kit toolbox that covers all the common and critical aspects of team-based development. In addition, user stories are used to capture what the users of a software system want it to do in an informal way as part of an agile way of working.

**User Story Essentials**

Capture what the users of a software system want it to do in an informal way as part of an agile way of working.

**Continuous Flow Essentials**

Progress the work as a continuous flow of work items, pulled from a queue and controlled with Work In Process (WIP) Limits.

**Kanban Board**

Shows the queues and work stations that work items progress through, the quality criteria for each progression and the Work In Process (WIP) Limit for each station.

**WIP Limit**

A Work In Process (aka Work In Progress) Limit restricts the number of items that can be worked on concurrently at a station. The motivation is to control the flow of work items, pulled from a queue and controlled with WIP Limits.

**Browseable Web-Site**

**"Poker Cards"**

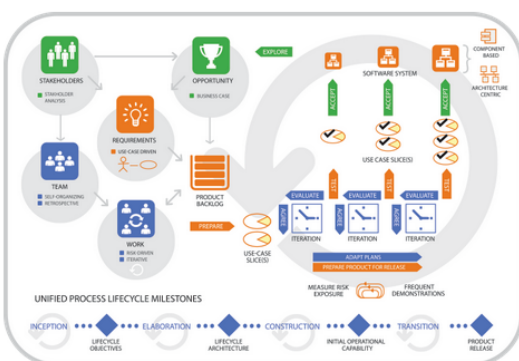
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Creating winning teams.

# Essentialized Practices/Methods (more coming ...)

Essential Unified Process

The Essential Unified Process (EssUP) is an agile, scalable, lightweight, iterative software development process suitable for use on most kinds of projects.



Essential Unified Process - Big Picture (Click to navigate)




Essential Unified Process - Overview of Practices (Click to navigate)

Use Case 2.0 Essentials

A scalable, agile practice that uses use cases to capture a set of requirements and drive the incremental development of a system to fulfill them.

Use this practice to capture requirements in an accessible form and drive the development of software.



Use Case 2.0 Essentials - Overview of Practice Elements (Click to navigate)

## Introduction

This practice allows teams to:

- Describe exactly what a software system must do
- Group parts of the requirements together
- Change the priority of what the customer wants at any time
- Produce a simple visual model and meaningful requirements that are understandable to developers and customers alike
- Take advantage of the benefits of iterative development.

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Use Case 2.0 Essentials - Overview of Practice Elements (Click to navigate)

Microservice Lite

Take advantage of microservices to enable rapid evolution of a software system.

Microservice Lite - Overview of Practices (Click to navigate)

DSDM Essentials

An Essence-Based presentation of the proven DSDM agile project management and delivery framework.

DSDM Essentials - Overview of Practices (Click to navigate)

**Work-In-Progress**

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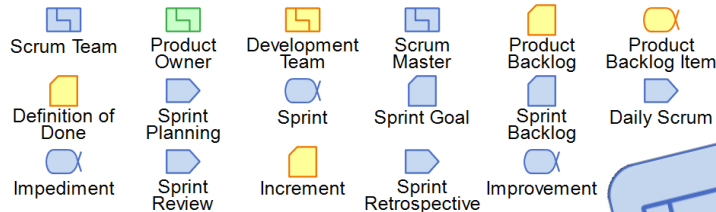
**Creating winning teams.**



# Essentializing Scrum

## Scrum Essentials

A framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value.



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## Sprint

A time-box of one month or less during which a "Done", useable and potentially shippable Product Increment is created. A new Sprint starts immediately after the conclusion of the previous Sprint.

**Proof-of-Concept**

## Scrum Team

The Scrum Team consists of a Product Owner, the Development Team, and a Scrum Master. Scrum Teams deliver products iteratively and incrementally, maximizing opportunities for feedback.

- Scrum Teams are:
- Self organizing
  - Cross-functional
  - Creative
  - Productive.



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## Product Owner

The Product Owner is the sole person responsible for managing the Product Backlog.

The Product Owner is accountable for ensuring:

- The Product Backlog items are clearly expresses
- The Product Backlog is ordered, transparent and visible to all
- The development team understand the Product Backlog items
- The value generated by the development team is optimized.

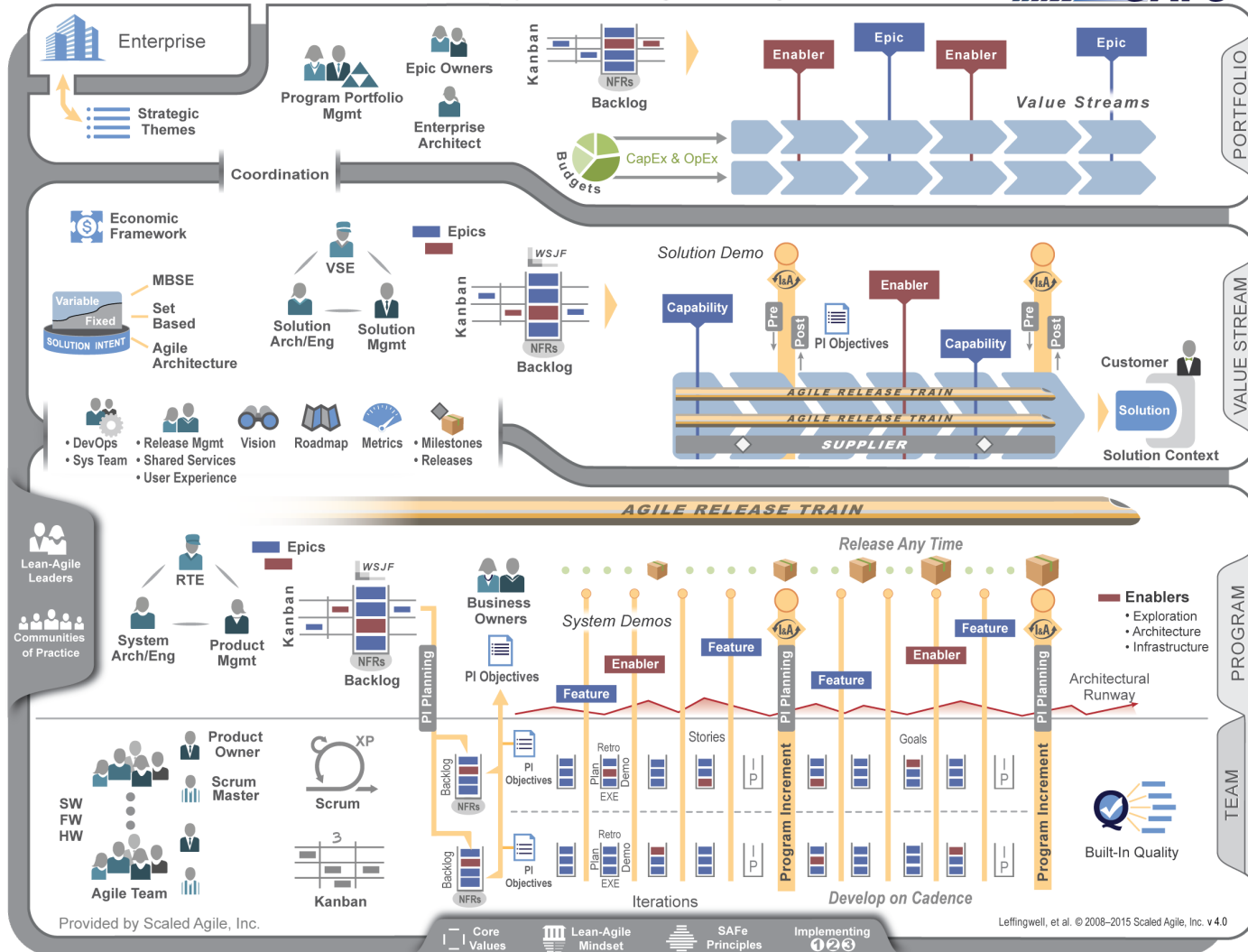


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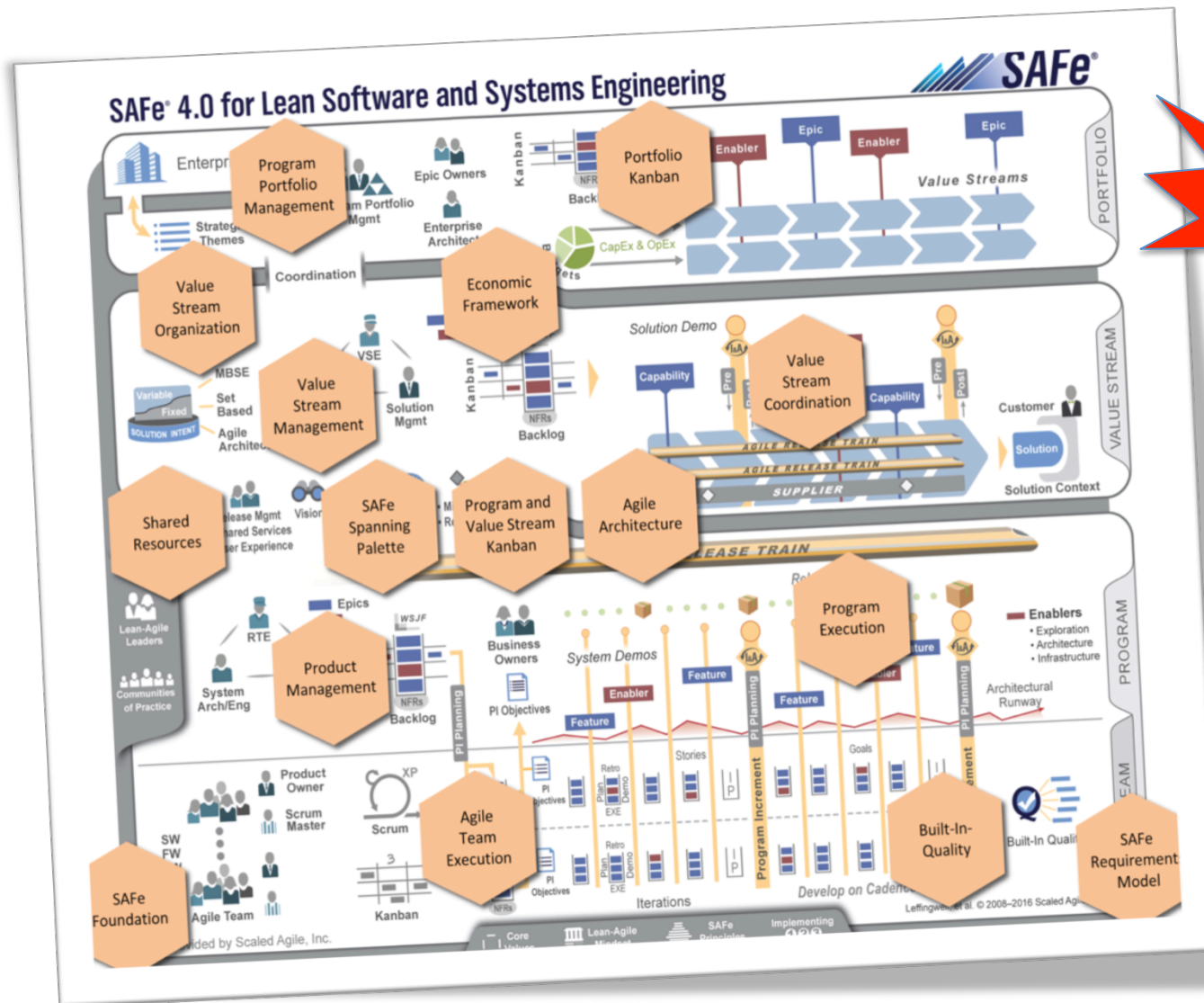
03.2015

# SAFe 4.0

## SAFe® 4.0 for Lean Software and Systems Engineering

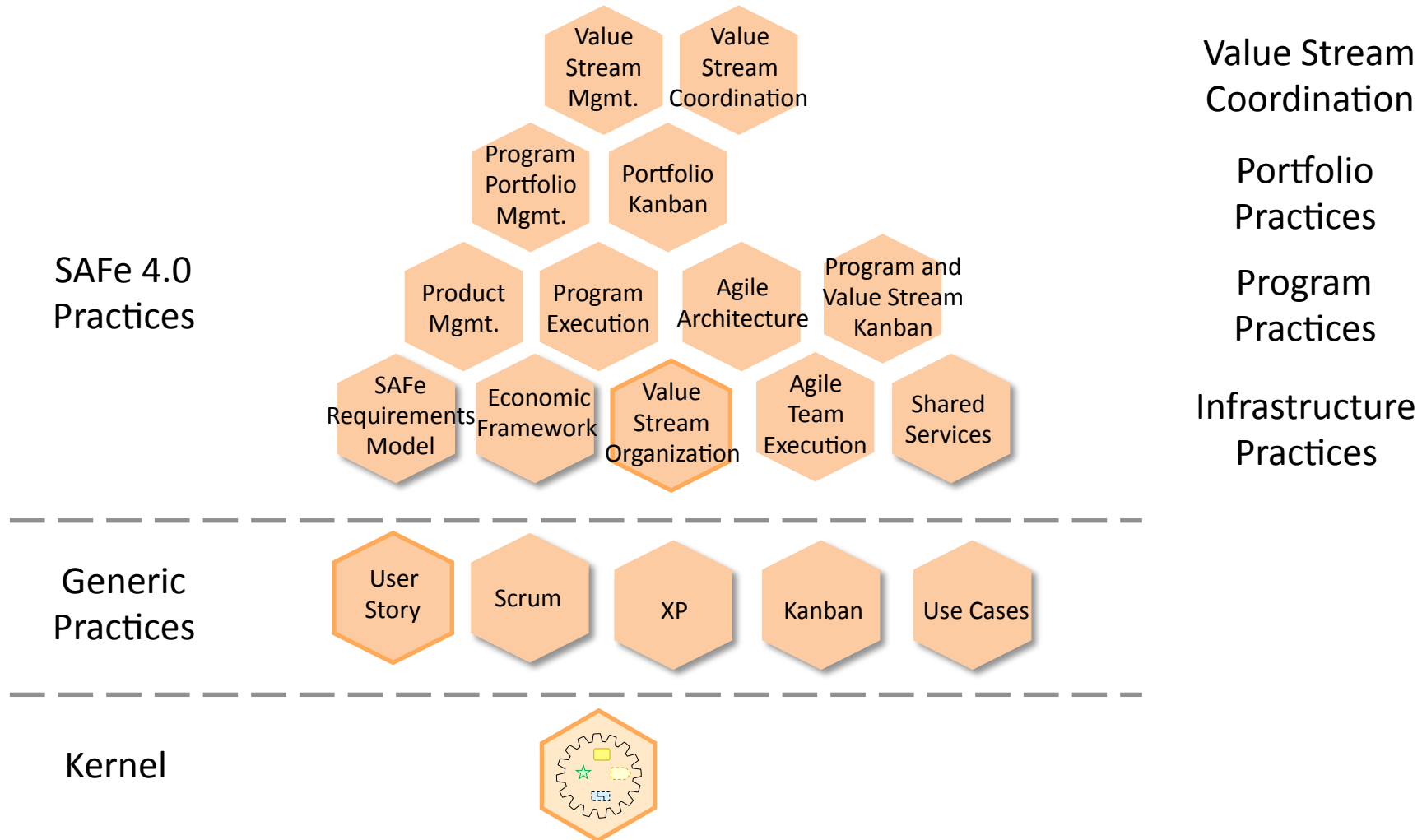


# Essentializing SAFe 4.0



*Proof-of-Concept*

# The Method SAFe4.0 Essentialized

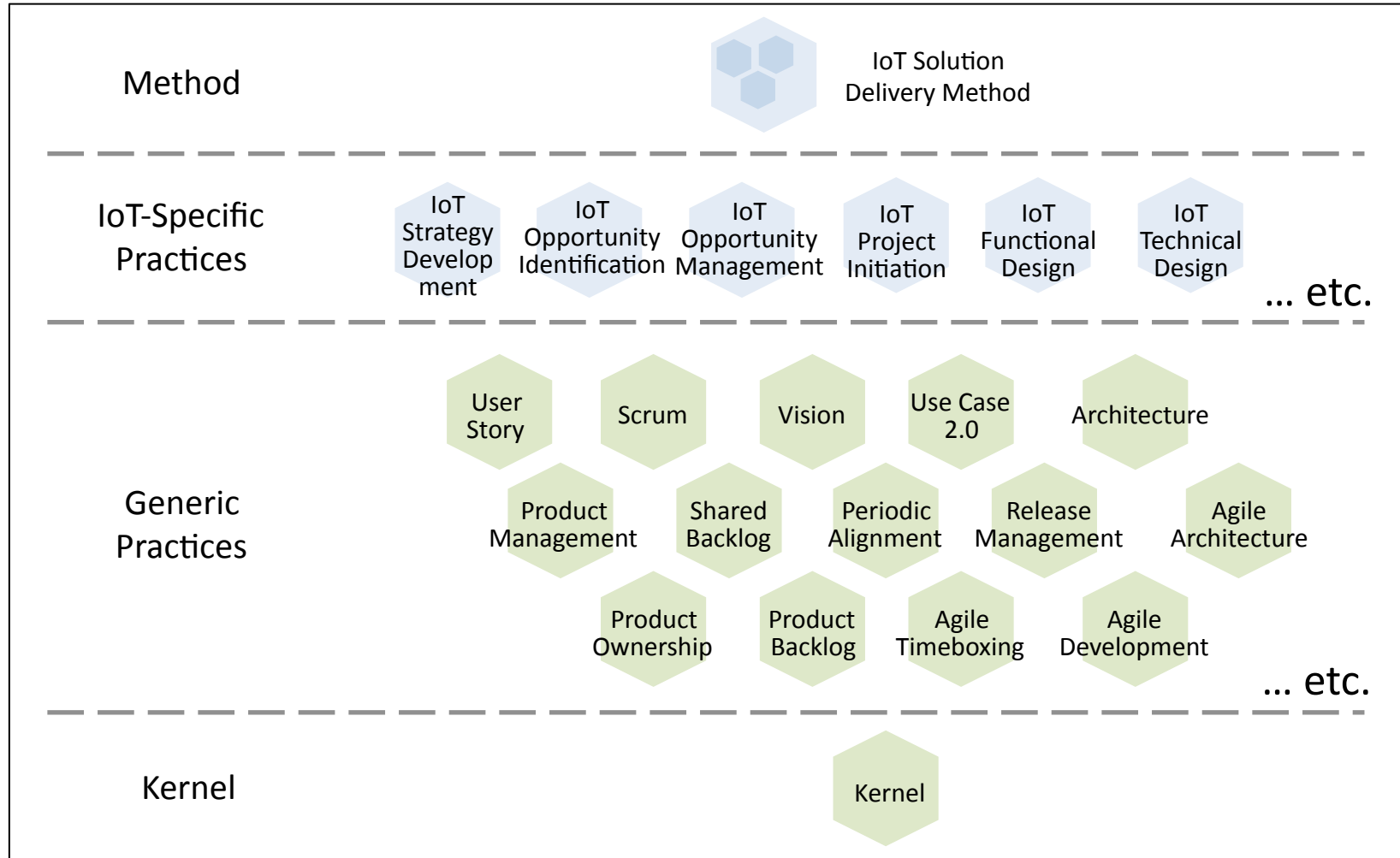


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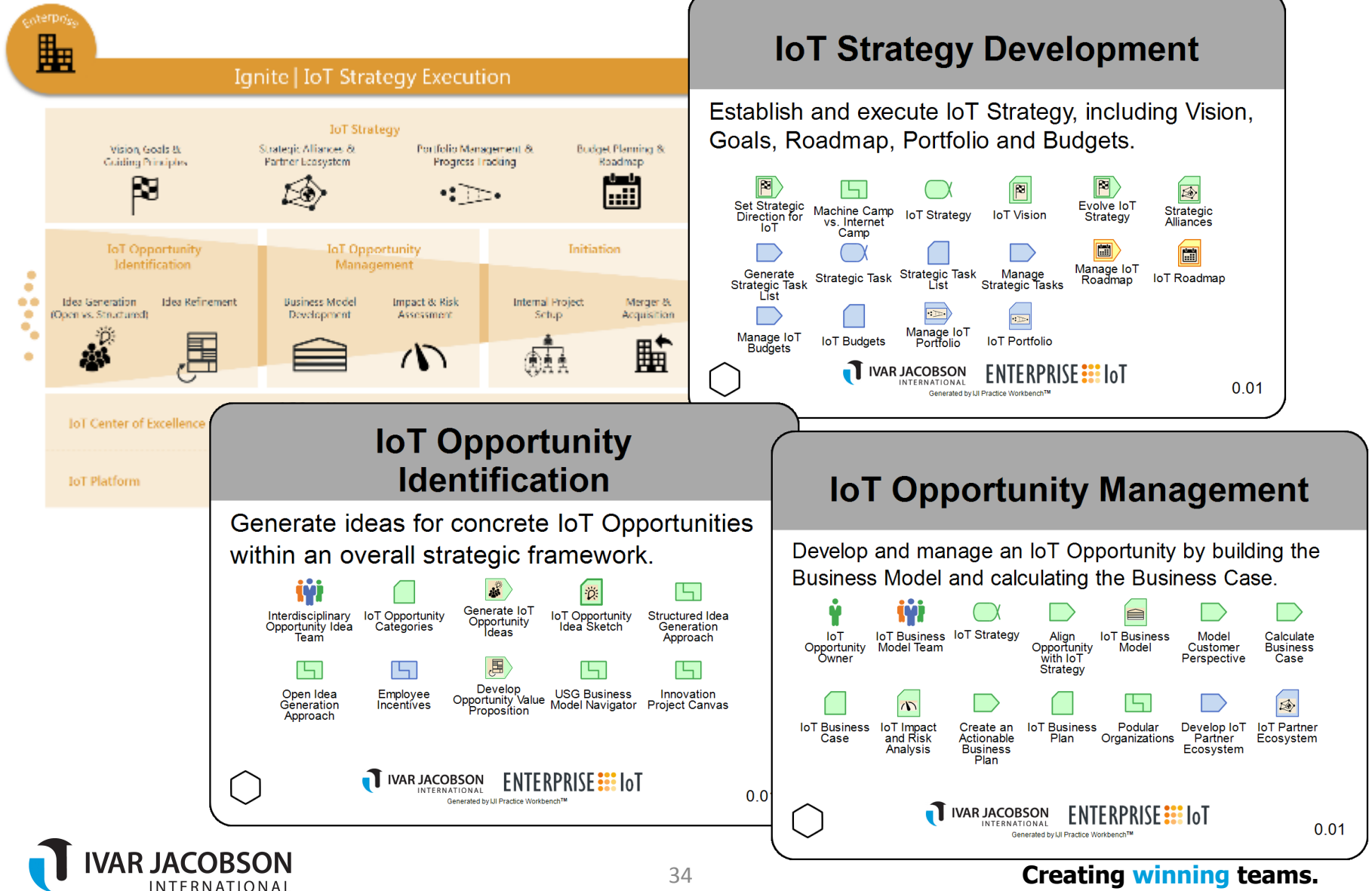
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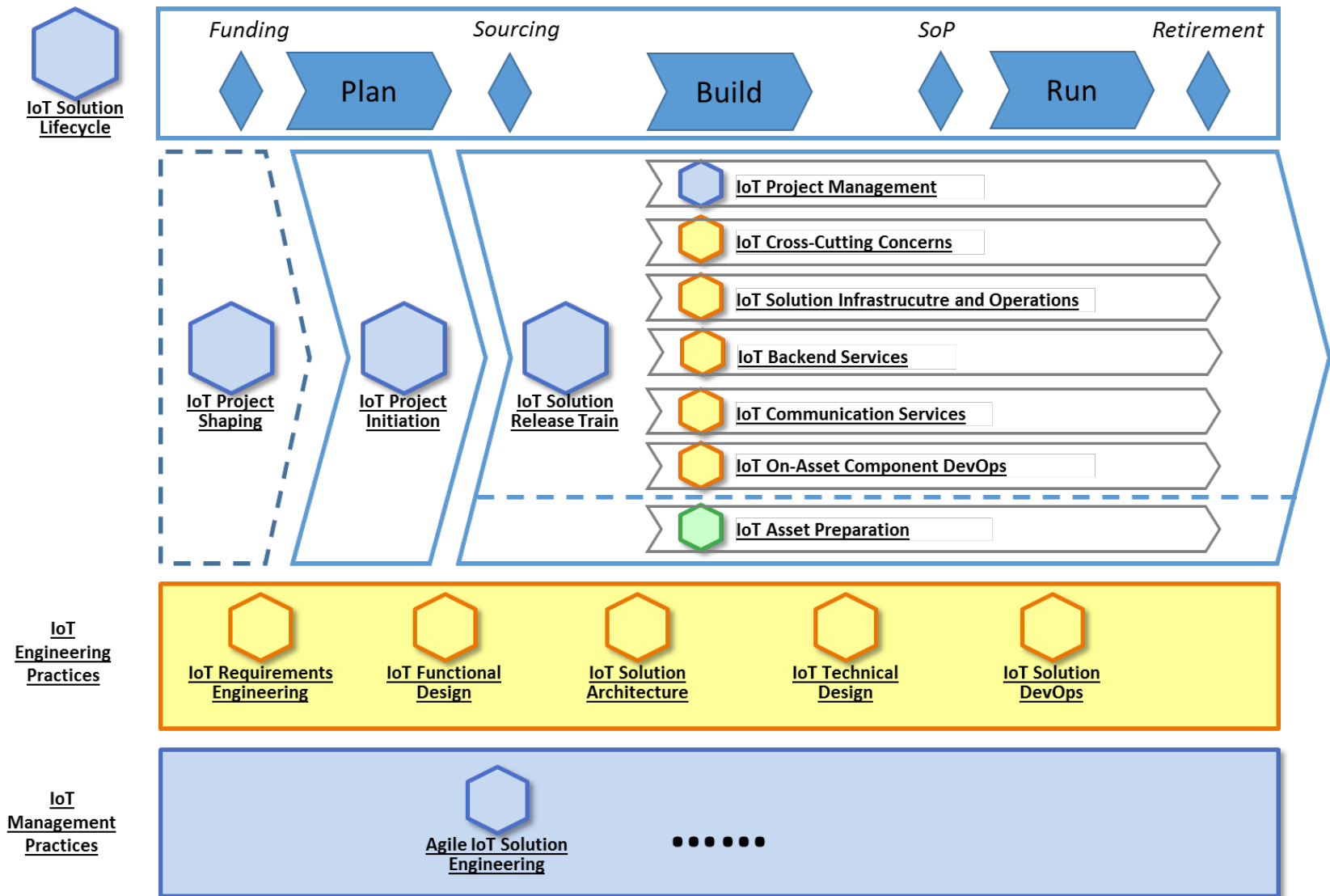
# Ignite expressed as a set of Essence Practices



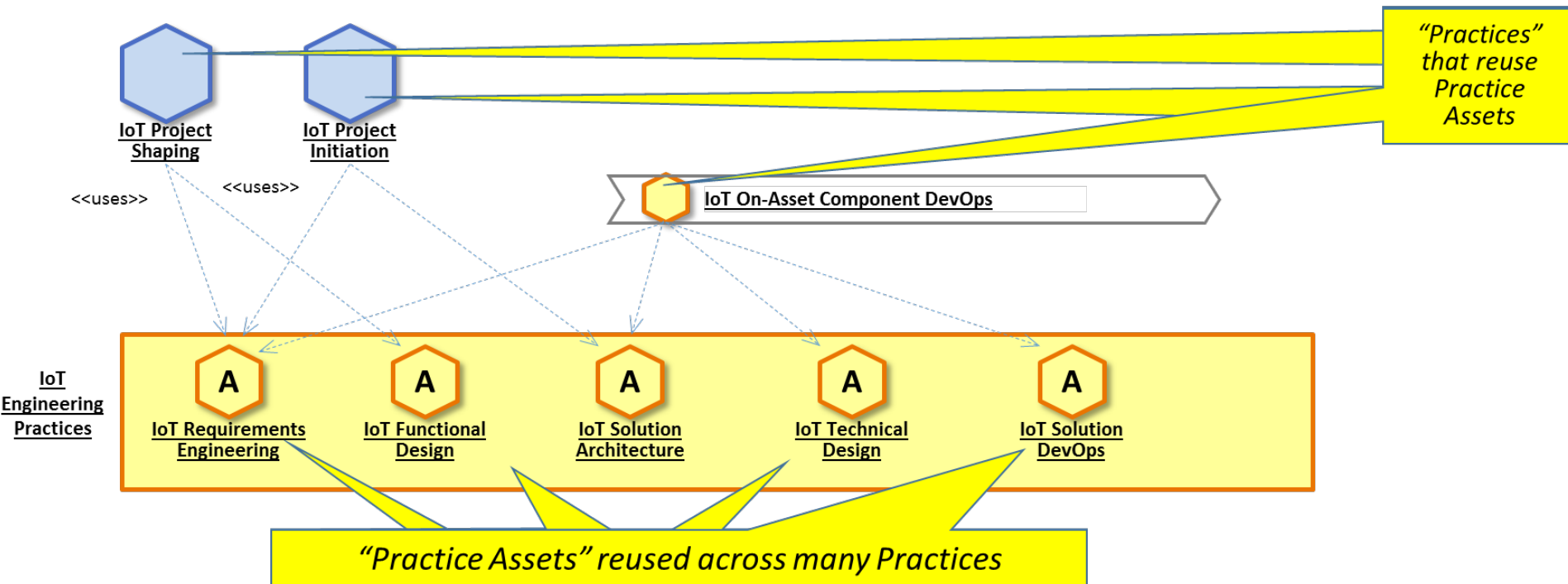
# IoT Strategy: Sample Practice Cards



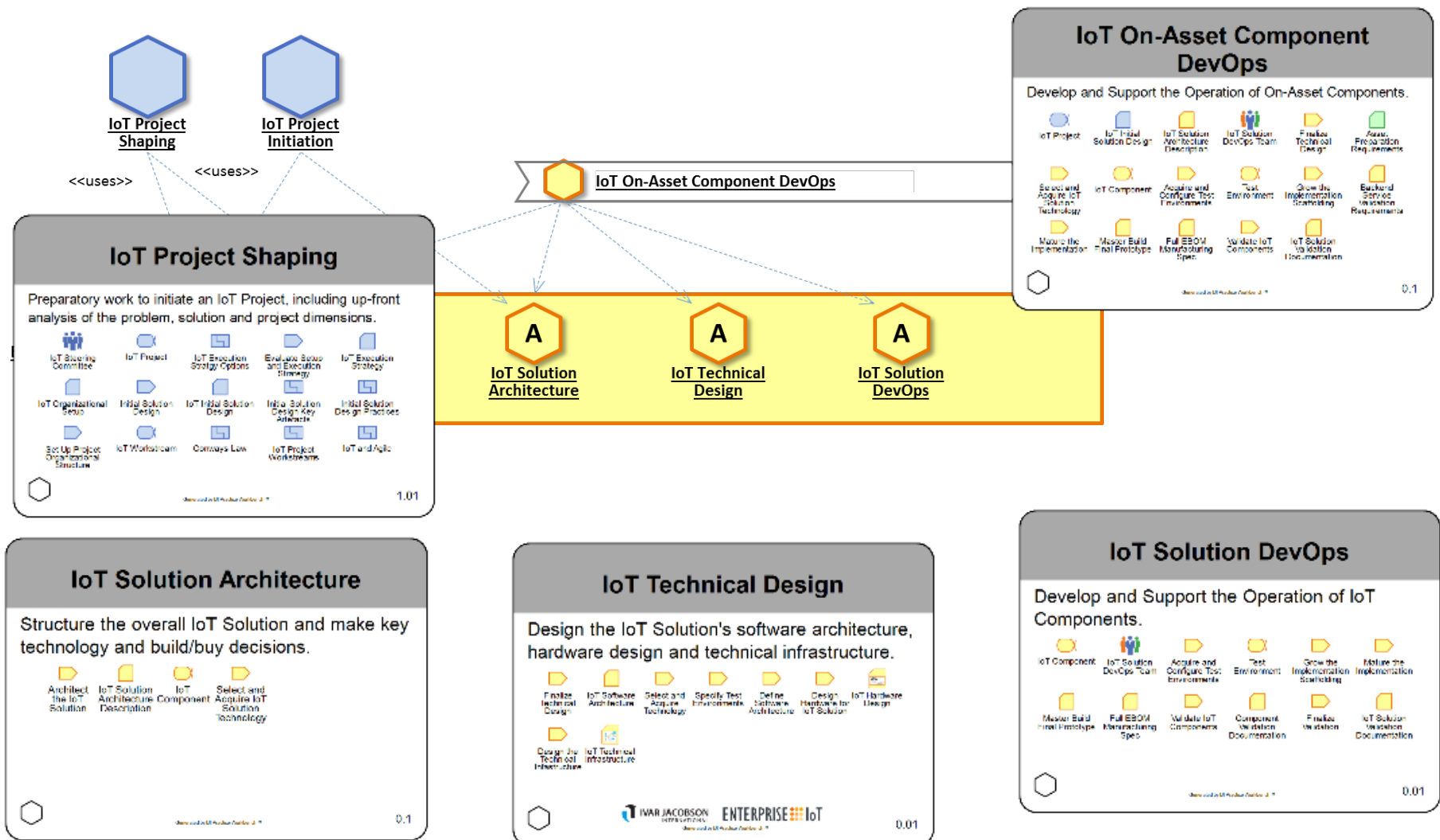
# IoT Solution Development “Big Picture”



# Approach to Reuse Across Practices



# IoT Solution: Sample Practice Cards

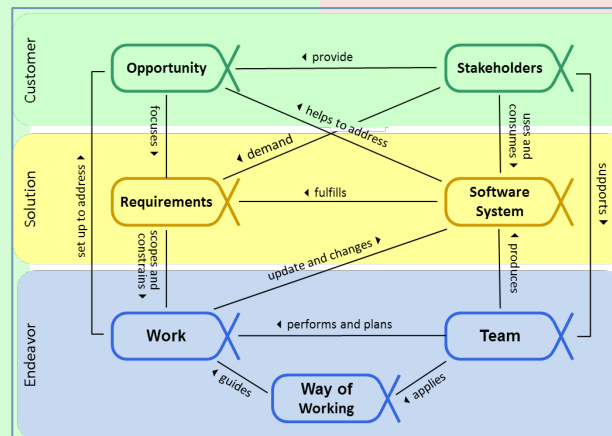


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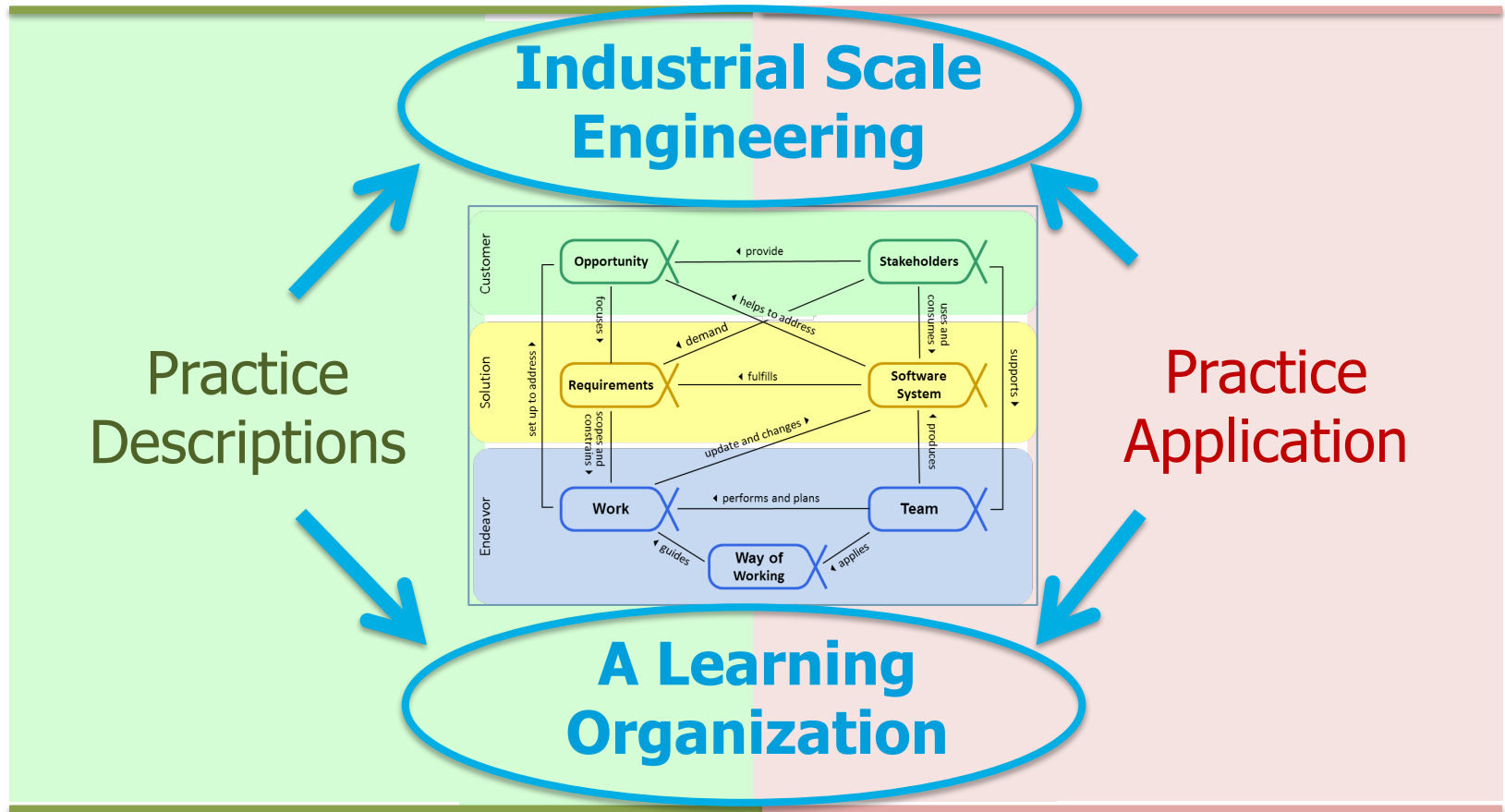
# Essence has Two Major Usages

Practice  
Descriptions



Practice  
Application

# The Major Impact of Essence





# Essence Value Proposition

## While preparing

- We have a Common Ground
- All methods can be modularized
- Build Practice Libraries with practices from many providers
- Safely Mix and Match practices best for you
- Easy to compose team's own ways-of-working
- Harvest and share the latest practices
- Just what you need – the Essence
- Easy to present and train, learn and apply
- Easy to compare and contrast
- Easy to get team's started
- Easy to continuously improve and keep up to date

## While working

Active guidance and gamification

Monitor progress and health avoiding catastrophic failures

Understand where you are and where you're going

Practice independent governance practices

Grow your way-of-working as you grow your team

# Essentialization moves us to....

## Industrial Scale Engineering

- Systematically address the methods to allow for dramatic efficiency and quality improvements through tooling and techniques
- Right size the applied methods to fit the problems at hand with minimum overhead, which shortens time to market
- Application of many engineering practices for
  - requirements such as use cases, features, user stories
  - design and architecture patterns, for developing components and services
  - testing complex, distributed systems
  - encouraging systematic reuse
  - helping engineers code with confidence
  - architectural concerns such as concurrency, security, user experience, micro-services, and data protection
- Application of practices with broader architectural concerns such as enterprise architecture, product-line architecture, service-oriented architecture and the architecture of systems of systems
- Working systematically instead of relying on heroics

## A Learning Organization

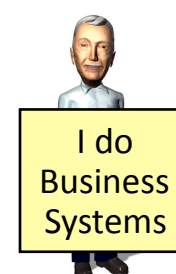
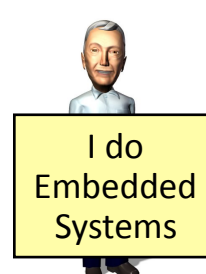
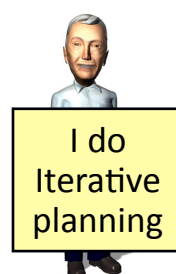
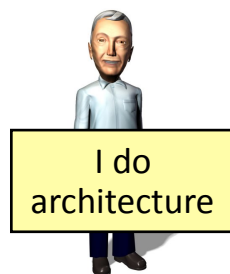
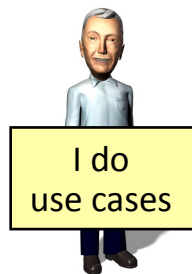
- Common language / common culture
  - Create your own kernel – if needed
  - Establish shared common ground for all teams
  - Exchange and share practices and experiences
- Increase the competency of every individual
  - Building practice libraries accessible to everyone
  - Continuously improve
  - Nurture communities of practices
  - Share practice
  - Directed coaching
  - Practice-based accreditation
- Create winning teams
  - Plug and play methods and practices
  - Track progress and health
  - Lightweight, practical governance
- More competent people will
  - develop better software faster and cheaper with happier customers
  - innovate more effectively

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# The Future is around the corner

- Less than 20% of software development work is really creative
- 80% is “no-brain” work following well-known patterns
- It is expected that at the least 50% of the “no-brain” work can be taken over by intelligent agents (expert systems)
- Developers can be liberated from some “no-brain” work to really innovate instead of solving the similar problem over and over again
- Practices are perfect candidates for intelligent agents
- We have extensive experience in designing intelligent agents through Waypointer



Virtual Pair

- Programmers
- Analysts
- Designer
- Tester
- Project Managers

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# Early Adopters' Expectations

- you can do **twice as good** a job...
- you can do the job **twice as fast**...
- you can do the job with **half the people**...
- you can do all that and still make your customer **happier**...



# Early Adopters' Expectations

- you can do **twice as good** a job...
- you can do the job **twice as fast**
- you can do the job with **half the resources**
- you can do the job **without your**

Welcome to the Future!

