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The Agile Operating System

A Comprehensive Guide to
Enterprise Agility



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Preface

"Essentially, all models are wrong, but some are useful."

— George Box, 1976

This booklet presents the Agile Operating System (AOS), an engagement model designed to transform how organizations work by fostering behavioral change aligned with Agile and Lean principles. The AOS aims to improve organizational operations through four fundamental pillars: **customer focus, self-organization, transparency, and continuous improvement.**

The AOS was developed for a business unit in pursue of agility as a means to organise its value streams and improve their business delivery as well as attending to team and individual welfare.

This booklet serves as a comprehensive guide for organizations seeking to implement the Agile Operating System as part of their agile transformation journey. The concepts presented here are meant to be adapted and contextualized according to each organization's specific needs and circumstances.

Chapter 1: Understanding the AOS

Definition of the AOS

The AOS is modelled by fit-for-purpose interactive workflows and accountable teams. It defines a system driven by agile/lean principles and practices, which are fit for context and aligned to an Enterprise vision and purpose, to deliver continuous value and quality to the market. It serves to bridge business agility with agile execution and provides a means to achieve the organization's vision of an agile transformation.

The value-focused, descriptive, and outcome-oriented workflows at the Portfolio, Product and Delivery levels, define the organization's value chain to deliver continuous quality to the market. It encourages behavioral change in line with Agile/Lean principles.

Use of the AOS

"Agile is about working smarter, rather than harder. It's not about doing more work in less time: it's about generating more value with less work."

— Steve Denning

The agile system is used to:

- Deliver value while embracing change and reducing waste
- Seek quality by building the right thing and building the thing right
- Produce value increments in an iterative manner allowing for continuous improvement
- Operate workflows within an agile/lean organization by cross functional teams
- Execute work on a pull system leveraging work capacity
- Prioritize the demand for work
- Promote cooperation and trust through commitment, ownership, visibility, and communication

Underlying Concepts

Three main concepts are at the heart of the AOS:

1. Lean Thinking

A business model and collection of methods that focuses on maximizing customer value and minimizing waste, while delivering quality products on time and at least cost.

2. Agile Software Development

A set of methodologies based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams.

3. DevOps

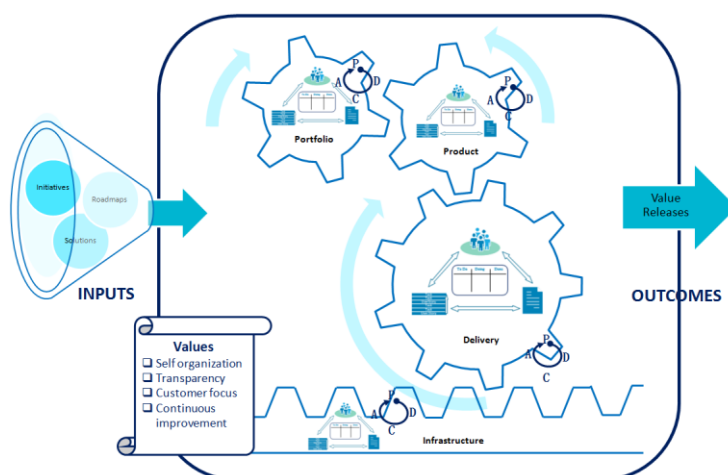
A cultural shift where Development and Operations function as one team, focused on delivering business value streamlining across the IT value chain.

Chapter 2: Core Components and Workflows

AOS Components Overview

The AOS consists of interactive workflows: Portfolio Management, Product Management, Delivery Management, and IT Infrastructure. These are aligned under a common vision and guided by the business. The AOS processes business and technical initiatives, product roadmaps, solutions, projects, etc., through the value delivery workflows that generate value added outputs such as the Enterprise backlog, Product backlogs and working tested software. Each workflow uses a defined agile delivery approach to deliver value inputs to the following workflow in the value chain. Feedback loops are installed at all levels of the system to facilitate direct communication and continuous improvement.

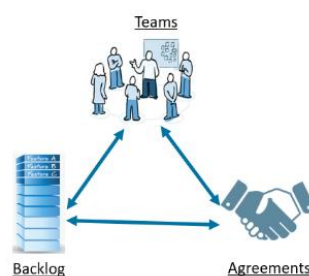
The IT Infrastructure service provides the technical platform that enables the value chain flow and agility. This unit, through agile/lean practices, seeks to secure a coherent technical architecture aligned with the organization's compliance and security rules.



Setting Up Workflows for Agility

Following Mike Cottmeyer's (Leading Agile) thinking, each workflow is set for agility by:

1. Defining what needs to be worked on (backlogs)
2. Choosing who does the work (teams)
3. Agreeing on how value is delivered (work agreements)



The Five Workflows

The AOS organizes the necessary workflows and outputs as follows:

Portfolio Management Workflow

- **Purpose:** To know what the organization needs to focus on to delight their customers and excel in the market. Plan for business increment (BI) funding.
- **Main Output:** Enterprise backlog and Risk backlog

Product Management Workflow

- **Purpose:** To drive value out of the delivery teams, having all the tools and skills needed to design BI's through a "just enough just in time" clear backlog for the delivery team to execute.
- **Main Output:** Product backlog and Release plan

Delivery Management Workflow

- **Purpose:** To deliver potentially shippable value increments aligned with business value needs, having all the autonomy, tools, and skills needed.
- **Main Output:** Working tested software

IT Infrastructure Management Workflow

- **Purpose:** To provide and ensure the smooth functioning of the technical infrastructure and operational environments that support application deployment to internal and external customers.
- **Main Output:** The technical platform

Release Management Workflow

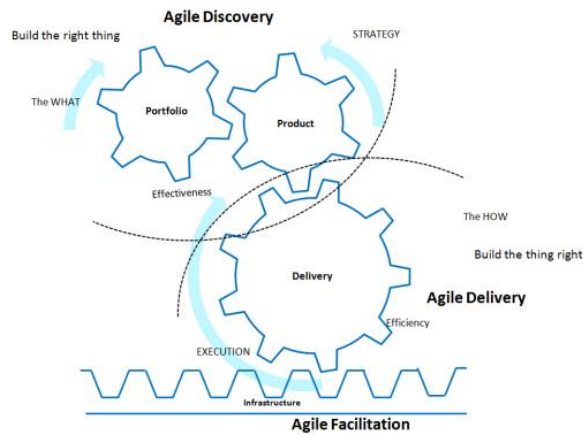
A fifth workflow spans across the previous ones:

- **Purpose:** To release regularly and frequently, leveraging user and client feedback to improve software solutions incrementally.
- **Main Output:** Risk free solution deployment

Most workflows support a flow management approach except for the Delivery workflow which supports a time boxed iterative approach.

AOS Summary Framework

The AOS is about Agile Discovery, Agile Delivery, and Agile Facilitation.



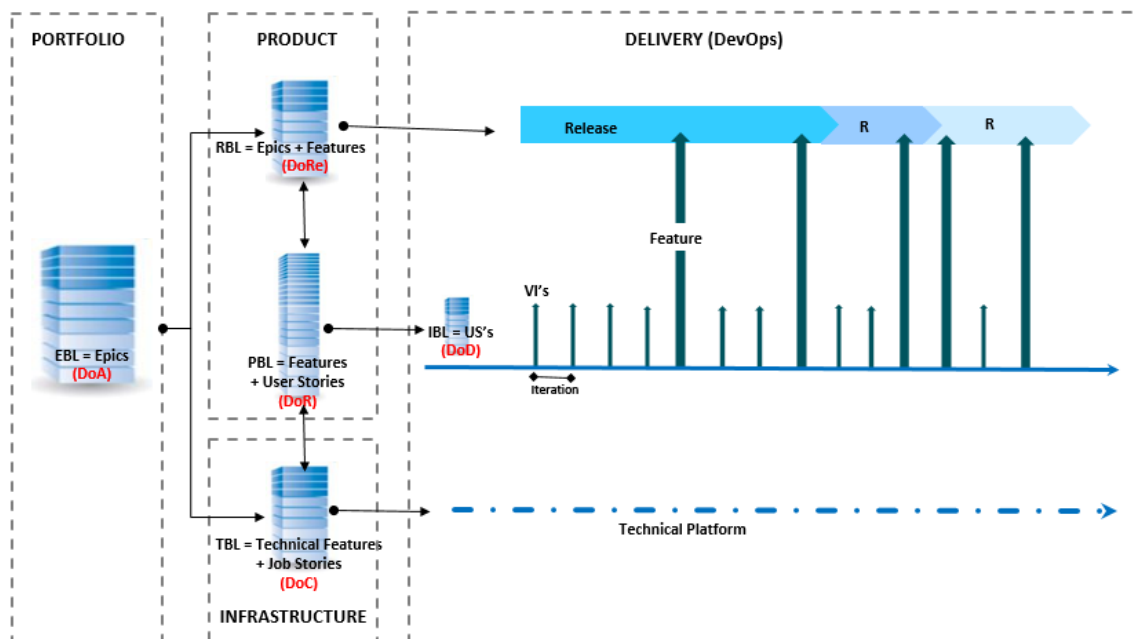
Agile Discovery concerns mostly Portfolio and Product Management, is about the Business Strategy, the WHAT needs to be done, building the right thing, being effective.

Agile Delivery and Facilitation concerns mostly Delivery and Infrastructure Management, is about outcome Execution, the HOW things are done, building the thing right, being efficient.

Chapter 3: Value Chain and Quality Gates

Value Chain Completeness Guide

The Agile Operating System value chain generates a series of backlogs, i.e. Enterprise BL, Product BL, Release BL, Iteration BL and Technical BL, all of these granting the cohesion of the value delivery. These backlogs compose a value system, they are interdependent, and governed by a series of completeness definitions. The definitions are only a guideline for teams to adapt according to their understandings and needs:



Definition of Accepted (DoA)

This is the first tollgate of the AOS value chain, which allows the acceptance of value epics that are aligned with the organization's vision strategy and goals.

- **Revenue** generating
- Acceptable and manageable **Risk**
- Available **Resources**
- **Relevance** with regards to Vision and Strategy

Definition of Ready (DoR)

The second tollgate in the value chain ensures that when epics are split into features and user stories, these are concise, complete, and clear for implementation execution.

- Business value is clear
- INVEST compliant
- Acceptance Criteria defined

- Prioritized

Definition of Done (DoD)

The third tollgate in the value chain, makes clear what needs to happen for a user story to be finished and implemented.

- Reviewed
- Tested
- Documented

Definition of Releasable (DoRe)

An additional (optional) tollgate provides a checklist of things to verify for releasing product features into Production (this list is not exhaustive and only serves as a discussion starter):

- All tests are conclusive (from unit to performance plus stress testing)
- Performance adjustments
- Security is validated
- Disaster recovery plan

Definition of Completed (DoC)

The focus is on the value work that IT Ops sends to service requestors. The work is defined in "job stories" and evaluated as the value/benefit the requestor pulls out of the work that is handed over to them:

- Identified work requestor
- Handover instructions completed and given to requestor
- Notify requestor of the intention to close the ticket, and check for any objection
- A security assessment has been conducted and approved

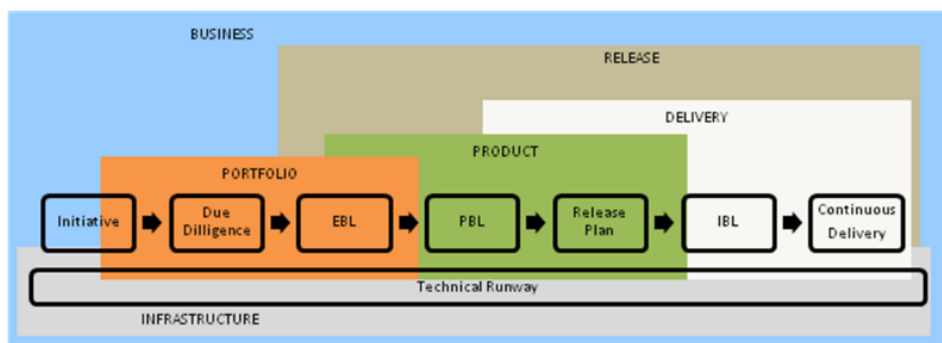
These are by no means complete definitions of each, however they provide the ground for discussion and are to be completed by each team according to their agreements and understanding of the value scope.

Chapter 4: Implementation and Transformation

Agile Transformation Through the AOS

The organization's reasons and motivation to follow the agile way will shape the transition towards agility, which in general is driven by some sort of business outcome. The AOS is a model designed to enable an organization's agile transformation. The model focuses on setting up an operating system that will support agility by encouraging organizational alignment -- agile discovery at portfolio and product level, followed by agile delivery at engineering and infrastructure level (DevOps).

The agile system is composed of several value creating processes (Portfolio Management, Product Management, Delivery Management, Infrastructure Management, and Release Management) that add up to the organization's value delivery chain, within the global business environment.



Each process functions following agile/lean values and principles, and to enable agility, practices are chosen in line with the organization's ways of work and the vision to achieve business goals. The recommended agile practices are time boxed iteration for delivery process, and flow management for all other processes.

In support of both the agile system and lean practices, people within the organization will begin to adapt to the lean-agile working ways, and a new work culture is likely to emerge.

The AOS Adoption Pattern

The Agile Operating System life span consists of three moments: learn and adapt; try and adopt; reflect and improve.

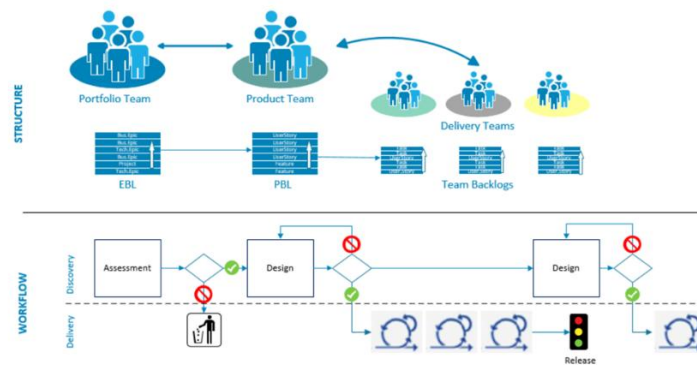
At first the organization and the teams learn the mechanisms of the AOS and the possible agile frameworks to use through a descriptive rather than a prescriptive approach. The teams try out and decide what agile approach to adopt: use it, understand it, and adapt it to their needs.

Then, as the organization and its teams get comfortable with the AOS flows, outcomes, and feedback loops, it begins to be agile. Agile/lean values and principles get adopted and internalized as a new way of work emerges.

Later, when the organization becomes independent and self-coaching, the operating system specifics become less important and it creates its own agile/lean ecosystem.

Agile Organization and Workflow

The AOS promotes a model in which structure and workflow are the main components. The **agile structure** consists of teams and backlogs, brought together by work agreements. The **agile workflow** consists of discovery and delivery functions, where, respectively, decisions are taken to "do the right thing" that makes business sense for the organization, and where decisions are made to "do the right thing right" that delivers value and delights the Customer.



- The **Portfolio team** is due to make the best production decision possible (assessment and decision phase)
- The **Product team** is meant to define a coherent product strategy (design phase)
- The **Delivery teams** are to show real impact (execution and release phase)

At all levels, teams need to consider uncertainty (risk evaluation), must engage all employees (clear communication, total transparency, understanding of company goals), and empower front line teams (decision making on doing the right thing right).

The **discovery phase** is where probing takes place and decisions are made as to pursue or bin business and production initiatives. The ones that get the green light will be designed for coherent value delivery and then probed for acceptance or re-work. The **delivery phase** is where approved design gets to be worked on by delivery teams and to be released on cadence (continuous delivery).

Chapter 5: Advanced Analysis and Perspectives

AOS Analysis Through Systems Thinking

Having followed Al Shalloway's (Net Objectives) thinking it appeared relevant to analyze the AOS through his lens. The AOS is a global enterprise model, powered by continuous improvement approach to both the how and why things are done, and launched by a collection of alternative lean-agile practices that drive the teams value delivery approach.

- The AOS takes a **system thinking** perspective: its parts (Portfolio, Product, Delivery, Infrastructure, and Release value workflows) are interconnected and their outputs interdependent (relationship). The behavior and uncertainty among these workflows are controlled by feedback loops implemented throughout the system. The constant value flow structure of the AOS determines the constant output behavior of the individual workflows.
- The AOS includes **transformational learning**: continuous improvement behavior is aimed not only at changing and improving the practices (the how things are done) but it also looks at the drivers of the workflows (why things are done). The essence of the AOS needs to be challenged and improved accordingly.
- The AOS is based on **probing practices**: each practice is not the final solution, we may take imperfect action, then we inspect and adapt with purpose, the goal is learning and evolutionary change towards a more satisfactory solution. Alternative practices may find their way into the model according to the team's needs and understanding of the value delivery chain.

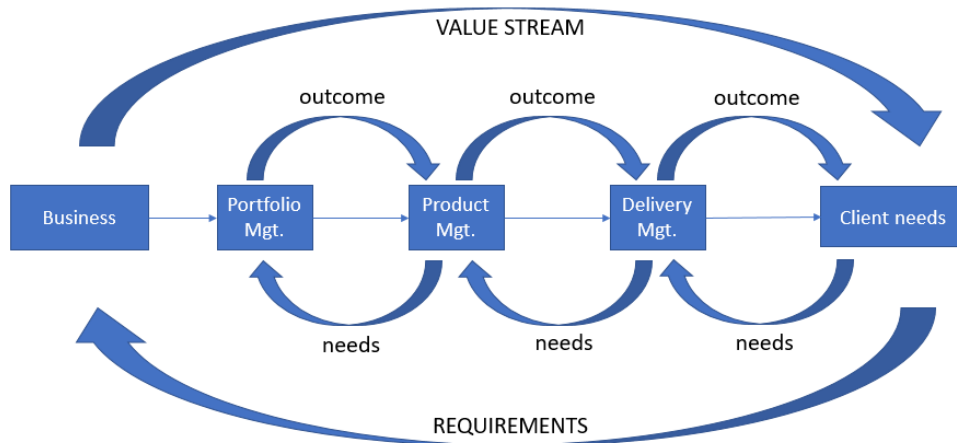
The AOS takes a systems-thinking approach instead of merely being a collection of components and practices, underlying the lean nature of the model. It is based on agile principles and no single practice is a requirement on its own, while there is an emphasis on continuous learning and adapting.

The AOS attends to the entire value stream making all work, workflow, capacity, and dependencies fully visible throughout. It explicitly manages work in process, while there is a focus on quality being built in.

Leadership & management are invited to create quality spaces within which people can work autonomously towards the goal of the organization. The work is based on a model which provides some predictability of the challenges to be encountered.

The AOS Right to Left

This analysis is inspired by Mike Burrows' Right to Left thinking, which I found pertinent to apply it to the AOS as the model is lean in nature and it focuses on the value outcome to the client.



Left to Right: The Sequence of Value Delivery

We deliver what we think is right (after a first round of understanding of customer needs)

The understanding of customer needs is represented by a series of business initiatives that are examined and approved for funding at the Portfolio Management level. The portfolio team work output are the business epics, which represent what is the right thing to do (minimum business increments).

These business epics are then broken down at the Product management level by a product team responsible for the solution design and ROI. The work outcome of the team is the Product backlog (PBL), a prioritized collection of features and user stories aimed at facilitating the delivery process.

A portion of the PBL is refined to be workable by the Delivery team. Items are chunked down into small functionality batches, with sufficient clearness to be worked on by the delivery team during the next iteration. The right thing is done right.

Right to Left: The Sequence of Understanding of Needs

We deliver what we know is right (after a series of iterations understanding customer needs)

The client needs are well understood by the Delivery team through the delivery of incremental functionality and corresponding feedback to the team which aligns and organizes itself for continuous delivery of value. The team chunks its work down into small functionality batches that are provided to them in the form of a well prioritized ready to work Product Backlog (PBL).

The PBL is created by the Product Management team foreseeing the delivery team needs and is responsible for facilitating their value outcome. The PBL is a collection of features and user stories that compose the design of business epics.

These epics constitute the Enterprise backlog (EBL) that has been accepted funding by the Portfolio Management team, the EBL contains the business initiatives that are the right thing to do in line with the understanding of the client needs.

The AOS and Handoffs

Handoffs are a sort of waste (they represent the transition from one ownership level to another, the equivalent to transportation as a sort of manufacturing waste) and the Lean nature of the AOS aims at preventing waste.

Are there any handoffs within the AOS, and how are they dealt with?

The answer is NO!

The AOS represents a value stream, where cumulative outcomes are aimed at delivering business initiatives to the market. The value produced by each interactive process is in response to a need manifested by its client or receiving process. There is no transfer of ownership, only a flow of value:

Portfolio Management responds to the Product Management need to have a valuable Enterprise Backlog (EBL) to work from. Portfolio management presents its EBL (value outcome) for revision and acceptance to its direct client and all other stakeholders (Business, Delivery Management, Release Management, Infrastructure Management ...)

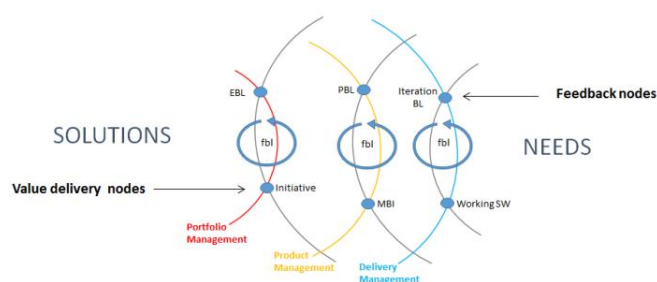
Product Management follows the same procedure towards Delivery Management whose need is a valuable prioritized Product Backlog (PBL) to produce value working business increments. The PBL is then presented for acceptance to all stakeholders.

Delivery Management does similarly by responding to the Release management needs by delivering valuable business increments which are reviewed and accepted for release.

Release Management will respond to the Business needs by packaging and delivering the requested value as indicated by the customer, in a continuous and predictable manner.

So handovers are not such, they become need satisfaction guided by an understanding through feedback loops.

Picture this as two sets of waves, needs and solutions waves interacting with each other, where the nodes represent the delivery and feedback loops.



- Business needs are met by Delivery Management, whose needs are met by Product Management, whose needs are met by Portfolio Management and through the Business.
- The Business serves Portfolio Management, that serves Product Management, that serves Delivery Management and onto the Business.

The AOS Through the Kanban Lens

In his blog Andy Carmichael defines **The Kanban Lens** as follows:

- See work as flow
- See workflow as a sequence of knowledge discovery steps
- See knowledge work as a service
- See the Organization as a network of services

The AOS can be then analyzed through this lens as follows:

Work as Flow

The AOS value delivery chain (Portfolio, Product, and Delivery management) is a continuous flow, where the outcomes of one process is the input for the next, and where continuous value delivery and improvement are facilitated through feedback loops.

Discovery Steps

From idea to cash, the AOS distills a business idea through its various phases, caring for the right thing done right at the right time. The discovery steps through the different knowledge areas -- business, design, and technical governance -- allow for early decision making and pivoting according to market and client needs. A right to left approach of the value stream allows for this.

Network of Services

The different processes that compose the AOS are all interactive and render services among themselves by attending to the specific needs. This service approach is extrapolated by the system to attend to the market and client needs.

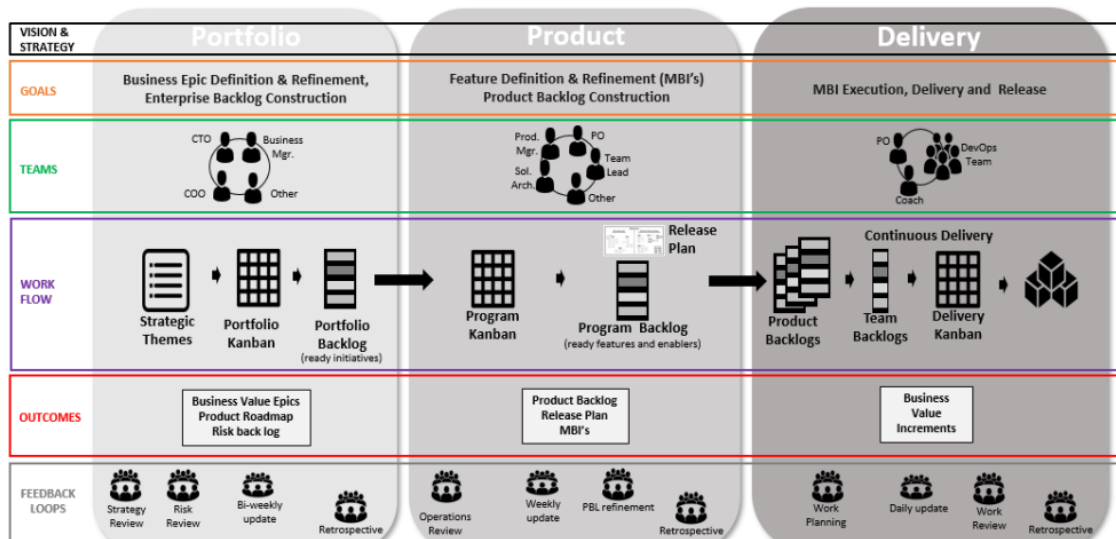
Knowledge Work as a Service

The AOS is a continuum of knowledge work to deliver a service that the end client benefits from, the materialization of an idea through fit for purpose value delivery in a timely manner.

Chapter 6: Supporting Business Agility

The AOS Revisited

The Agile Operating System (AOS) addresses the value stream of an organization by identifying the relevant workflows that intervene in the business value creation process.



Business value creation is guided by the organization's **vision and strategy**, providing a means for workflows to align by defining **goals** and the results needed to achieve these.

It also recommends the creation of **teams**, that possess all the necessary skills to execute the work items within the **workflow** and take full ownership of the delivery of desired **outcomes**.

The entire system is glued together through **dual feedback loops** which not only allow to inspect, learn and improve the way work is executed and delivered, but to clarify uncertainties and smoothen relationships among teams.

The AOS Supports Business Agility

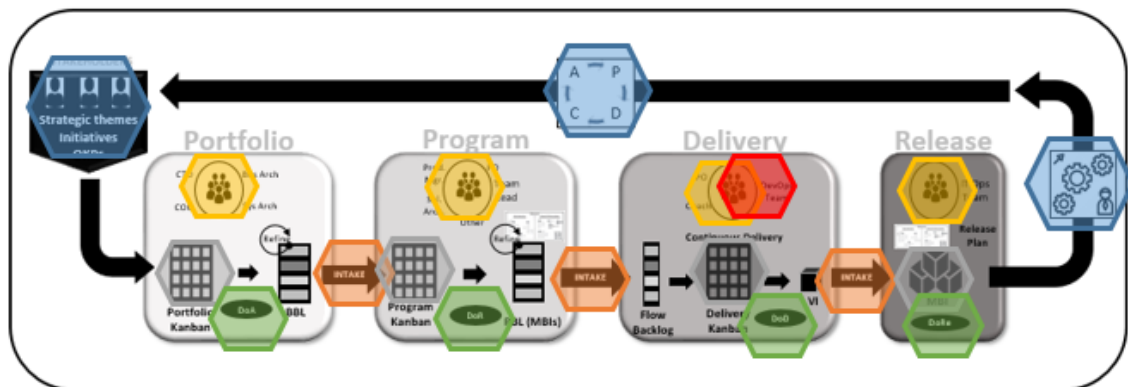
The Agile Operating System facilitates the scaling of an agile transformation by promoting sustainable business agility. Sustainable agility and meaningful change rely on an ecosystem that supports new ways of working that extend from the team level to the executive level.

Business agility (according to AI Shalloway, PMI agility thought leader) is about the quick realization of value in a predictable, sustainable, and high-quality manner. It is facilitated by six main actions:

1. The way work is accepted

2. The visualization of all work and workflow
3. The team structure that carries out the work
4. How these teams agree to deliver work
5. Work being delivered in a continuous manner
6. The management that facilitates the appropriate ecosystem

The AOS value stream is conceived to support business agility:



All work intakes are intended to handle the value inputs from the previous processes to facilitate the work of the incumbent process, making sure that work is explicit, valuable, prioritized and lined up with capacity.

All work is visualized either in a physical or electronic manner providing visibility to the specific workflow and its contribution to the value stream.

Team structures are defined and formed in such a way to handle all work intake and eliminate as many dependencies as possible.

The teams within the value stream make sure that they produce value outcomes by agreeing the work model and establishing a work charter to govern interactions.

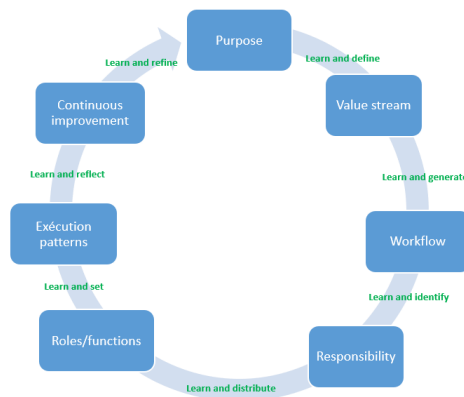
Work is processed and value outcomes delivered in a continuous manner through a DevOps approach.

Finally, the ecosystem that sustains business agility is facilitated by the structure, governance and strategy of management and work processing like initiatives management, setting OKR's, tech support and PDCA iterations.

The AOS guides the transformation at scale by identifying and evidencing the impediments that get in the way of the system. Getting rid of these obstacles means putting into place a trustworthy environment for business agility. Then, agility that is fit for purpose, fit for context, and fit for practice, will thrive across the organization.

The AOS as a Generative Agility Model

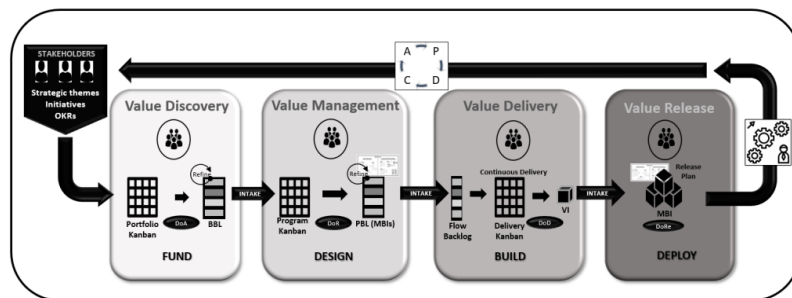
In a generative model we learn about needs by exploring the context, figuring out what knowledge will enable the right changes.



Through the purpose for agility, we learn and define the value stream, then learn to generate workflows, learning and identifying responsibilities and how to distribute roles and functions, to learn how to set delivery execution patterns, teaching us to reflect towards continuous improvement, that finally refines the initial purpose.

The AOS can be seen as a generative model, it is descriptive as for what workflows may be needed within the value stream to achieve the purpose of business agility.

The AOS does not tender to the WHY for agility as this reflection belongs entirely to the organisation in their quest for purpose. What the AOS does is help model the value streams and start the conversations around agility being fit for the business purpose.



There is a phase of learning around **value discovery** where acceptance and **funding** of initiatives happen, the Business Backlogs and Risk log are created.

Having decided on what is the right thing to deliver, the next round of learning involves conversations about **value management**, **designing** the right thing and when to deliver it, the release plan and the product backlog are the main outcomes of this activity.

These lay the foundations for **value delivery**, converse, learn and decide how to **build** the right thing right, to continuously deliver minimum value increments.

Learning, packaging and **deploying** MBI's is the main focus of the **value release** flow of the value stream, where the release plan is executed, where customer needs are satisfied, where business outcomes are materialized.

The generative learnings from the model are carried out within the AOS through the **work intake** processes that link the workflows of the value stream. Here is where the conversations happen, where needs are understood, outcomes agreed, where work is clarified and accepted.

Chapter 7: The AOS as a Service Network

The AOS Seen as a Loop Chain of Services

See the AOS as a consensual chain of inter-connected services:

- The AOS is a **chain**: sequence of services linked through feedback loops
- The AOS is **consensual**: work agreed is decomposed and handled by adjacent level service
- The AOS is **inter-connected**: blockers on work items affect other services



The network is balanced by adjustments to the workflow in timely manner through policies and resources.

From a service point of view: Portfolio Mgt. serves Product Mgt. that serves Delivery Mgt., that serves the business through Release Mgt.

From a needs point of view (right-2-left): Business needs are met through Release Mgt by Delivery Mgt., whose needs are met by Product Mgt., whose needs are met by Portfolio Mgt.

Another way of looking at value delivery: Business Mgt. through Release Mgt., delivers direct to the client, facilitated by both Product Mgt. and Delivery Mgt.

Key Takeaways

The AOS promotes four essential qualities of lean business agility:

- **EFFICIENCY:** Maximum productivity with minimum wasted effort
- **EFFECTIVENESS:** Success in producing desired results
- **PREDICTABILITY:** Behaving in expected ways
- **ADAPTABILITY:** Adjusting to new conditions

Remember,

The AOS does not fix problems—people do.

The system's function is to identify and expose operational challenges during agile transition and encourage adoption of corrective actions to solve exposed problems.

The key to successful value delivery lies in focusing management on work flow and workflow relationships through key principles and core practices. Organizations define their value streams, teams fit within workflows, and people add value to the stream flow.

About the Author

Mario Aiello is an agile transformation specialist with extensive experience in enterprise agility and lean practices. His work focuses on helping organizations build sustainable agile operating systems that deliver continuous value to customers and stakeholders.

