



MIDWEST ARCHITECTURE COMMUNITY COLLABORATION 2020

NOVEMBER 5, 2020

**MACC 2020: Adaptable architecture:
building resilience in a time of change**

MACC MISSION

- The Midwest Architecture Community Collaboration's (MACC) purpose is to bring all domains of architecture together to share information and techniques of interest to all of us. It is our shared belief that through collaboration, we can better understand and promote the significance of architecture to business success.

RESILIENCE

- The American Psychological Association (2014) defines **resilience** as “the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress
- **Resilience Theory** argues that it's not the nature of adversity that is most important, but how we deal with it. When we face adversity, misfortune, or frustration, **resilience** helps us bounce back. It helps us survive, recover, and even thrive in the face and wake of misfortune – but that's not all there is to it.

Agile Architecture – The Architecture Engagement Process

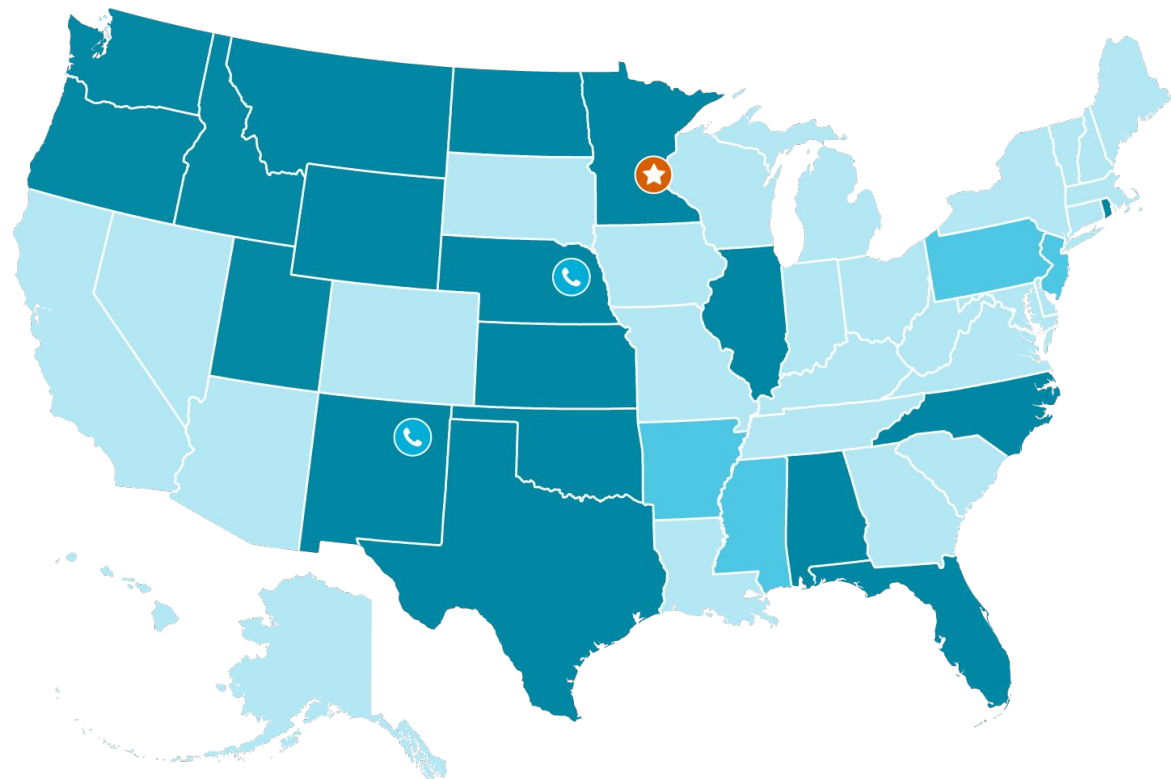
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MACC 2020

Sr. Solutions Architect

November 5, 2020

Prime is one of the largest pharmacy benefit managers in the U.S.



- Blue plan owner client
- Blue Plan client
- Servicing members
- Contact center
- Prime headquarters

Last updated 07/19

18 Blue Plan owners

23 Blue Plan clients

30+ million members

65,500+ network
retail pharmacies

362 million
annual claim volume (2019)

\$31 billion
drug spend managed (2019)

3,800+ employees

Our Brand Platform and Story

WHY WE EXIST

We make health care work better by helping people get the medicine they need to feel better and live well.

WHO WE CONNECT WITH



Member



Health Plan



Employer



Consultant



Pharmacist



Prescriber

THE SPACE WE'RE IN

Total Drug Management

OUR STRATEGY FOR SUCCESS

Lead the market in total drug management solutions that put people first.

OUR DIFFERENTIATION

Total Drug Management

Consumer-Centric Innovation

Superior Partnership Model

WHAT WE DO

- Drug and pharmacy benefit expertise
- Specialty drug and clinical management
- Care delivery and access
- Consumer-centric solutions
- Data and analytics
- Quality and compliance

OUR CULTURE

People

We are focused on serving our employees, members and clients.

Purpose

We are motivated to make health care work better.

Possibilities

We are empowered to look beyond today and define what's next.

Agenda

- Agile at Prime
- What is Agile Architecture?
- What is the Architect's Role in an Agile Environment?
- What is the Agile Manifesto?
- What are the Skills Required for an Agile Architect?
- What is Architecture Resiliency?
- What is the Agile Architecture Engagement Process?
- Summary

Agile at Prime

- Prime uses the SAFe® - Scaled Agile Framework¹ to guide our agile development processes
- To facilitate this organizational change, a dual operating system is used
 - Waterfall approach for projects
 - Organized around traditional organizational silos
 - Agile approach for products
 - Organized around the flow of value
 - Transformation to an Agile approach will transition over the next few years
- Delivering business value through reducing time to market is a key value proposition
 - Prime has been on this journey for the last two years

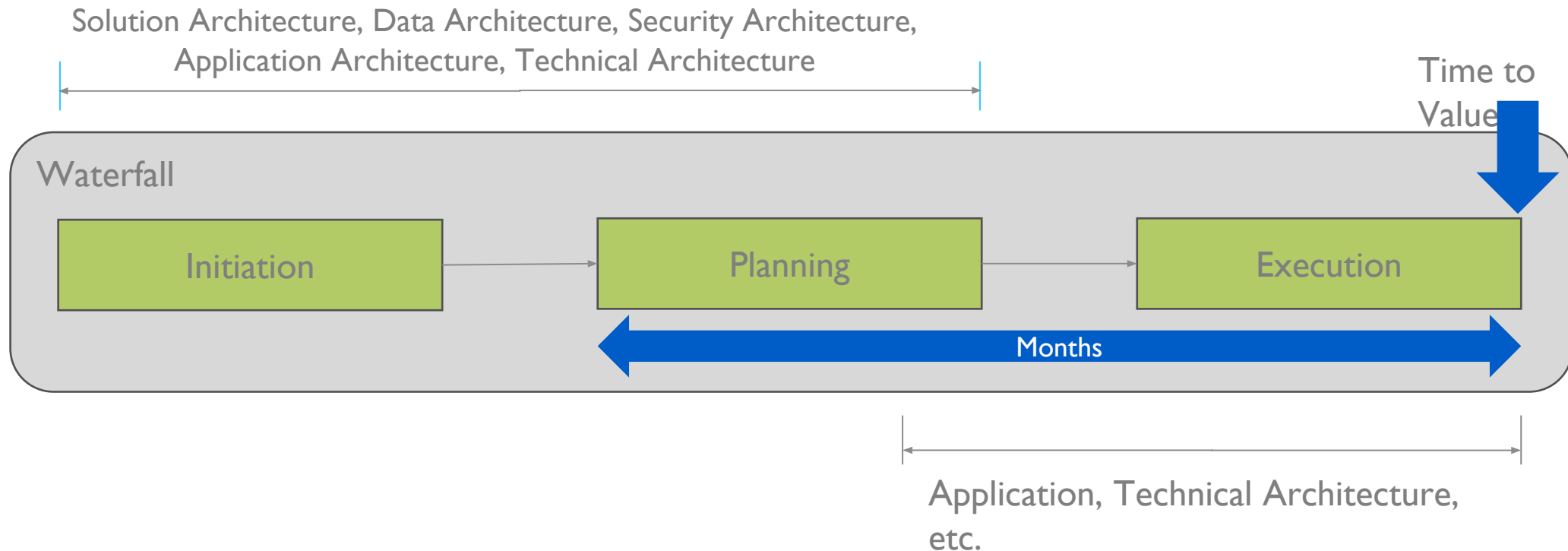
What is Agile Architecture?

- Agile Architecture¹ is a set of values, practices and collaborations that support the active, evolutionary design and architecture of a system
 - Embraces the DevOps mindset allowing the architecture of a system to evolve continuously over time while simultaneously supporting the needs of current users
- Agile Architecture means how architects apply architectural practice in agile software development²
 - There is a tension between traditional architecture and agile methods
 - Leaving architectural decisions until the last possible moment versus planning in advance
- The development of architecture artifacts, guidelines and solutions does not change significantly
- The process of delivering architecture artifacts, guidelines and solutions **does** change

What is Agile Architecture?

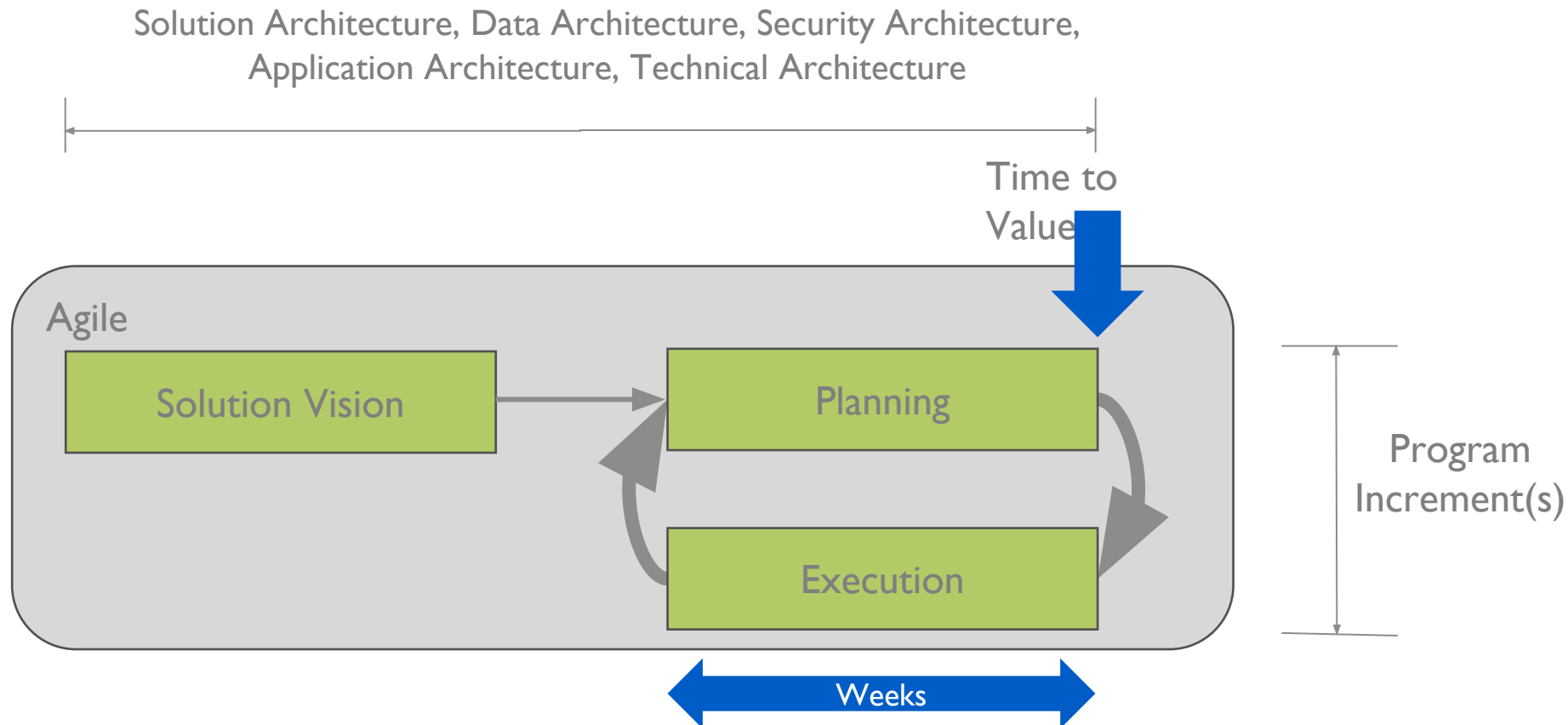
- The principles³ of agile architecture are
 - Design emerges. Architecture is a collaboration (intentional architecture)
 - The bigger the system, the longer the runway (architectural runway)
 - Build the simplest architecture that can possibly work (established design principles)
 - When in doubt, code or model it out (spikes, prototype, domain and use case models)
 - They build it, they test it (design for testability)
 - There is no monopoly on innovation (teams, hackathons)
 - Implement architectural flow (architectural epics and the portfolio Kanban)

Traditional Architecture



Typical Waterfall project approach consisting of SDLC phases of Initiation, Planning and Execution. It normally takes months to deliver and is oftentimes outdated by the time the project is completed and may not deliver any value at all
It is characterized by phase gate processes where nothing is delivered until the project end

Agile Architecture



A simplistic way of viewing Agile is that it is the delivery of a Product that is broken down into Program Increments that deliver "business value" at the end of a Program Increment delivered in weeks, not months.

Value of Agile Architecture

- It avoids the overhead and delays associated with the start-stop-start nature and large-scale redesign inherent with phase-gate processes and Big Up Front Design (BUFD)¹
 - Agile architecture supports Agile development practices through collaboration, emergent design, intentional architecture, and design simplicity
- It enables the delivery of business value incrementally over time and is a key measurement of success

What is the Architect's Role in an Agile Environment?

- The architect is responsible for defining and maintaining the structure of a solution and ensuring that it will meet requirements⁴
- An agile architect must help the team to work together in an agile fashion, to jointly own the solution, and to interface well with other parts of the organization
- An agile architect works with the product team to develop a conceptual architecture
- An agile architect works with the product team to develop incremental logical architectures as the product is built incrementally
- An agile architect works with the application architect to refine the architecture
 - Changes will occur and refinement of the architecture is key to the success of the product and business value delivery
- An agile architect collaborates with the appropriate architecture disciplines at appropriate times
- An agile architect understands that the architecture of a product is owned by the team
- An agile architect provides ongoing consulting as the product is built out over time and acts as a technical advisor to product teams

Comparing Common and Agile Architecture Practices

Common Practice ⁵	Agile Practice
Architects are held in high esteem and are often placed, or place themselves, on pedestals	Agile architects have the humility to admit that they don't walk on water
Architects are too busy to get their hands dirty with development	Agile architects are active members of development teams, developing software where appropriate and acting as consultants to the team
Architecture models are robust to enable them to fulfill future requirements	Agile architects have the humility to admit that they can't predict the future and instead have the courage to trust they can solve tomorrow's problem tomorrow
The goal is to develop a comprehensive architecture early in project	You evolve your architecture incrementally and iteratively, allowing it to emerge over time
Well-documented architectural model(s) are required	Travel light and focus on navigation diagrams that overview your architecture, documenting just enough to communicate to your intended audience
Architecture model(s) are communicated only when they are "suitable for public consumption"	Architecture model(s) are displayed publicly, even when they are a work in progress, to promote feedback from others
Architecture reviews are held to validate your model(s) before being put into use	Architectures are proved through concrete experiment(s)

Agile Manifesto – Values and Principles

- Agile Manifesto⁶
 - The Agile Manifesto is a collection of four values and twelve principles
 - Values
 - Individuals and interactions **over** processes and tools
 - Working software **over** comprehensive documentation
 - Customer collaboration **over** contract negotiation
 - Responding to change **over** following a plan
 - Principles
 - Early and continuous delivery of valuable software
 - Embrace change
 - Frequent delivery
 - Business and developers together
 - Motivated individuals
 - Face-to-face conversation
 - Working software
 - Technical excellence
 - Simplicity
 - Self-organizing teams
 - Regular reflection and adjustment

What are the Skills Required for an Agile Architect?

Essential Soft Skills⁷

- Relationship Skills
 - Gracious Behavior
 - Communication
 - Negotiation
 - Leadership
 - Politics
- Personal Skills
 - Transparency
 - Passion
 - Context Switching
- Business Skills
 - Business Knowledge
 - Innovation
 - Pragmatism
 - Vision



Principles, strategies and other skills such as interacting with executives to help more effective architectural relationship management



Essential personal skills for an architect



Ability to drive the business forward and grow in the context of business needs

What are the Skills Required for an Agile Architect?

Most often used skills – but all are important!

- Relationship Skills
 - Gracious Behavior
 - **Communication**
 - Negotiation
 - **Leadership**
 - Politics

Principles, strategies and other skills such as interacting with executives to help more effective architectural relationship management
- Personal Skills
 - **Transparency**
 - **Passion**
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Essential personal skills for an architect
- Business Skills
 - **Business Knowledge**
 - **Innovation**
 - **Pragmatism**
 - **Vision**

Ability to drive the business forward and grow in the context of business needs

What are the Skills Required for an Agile Architect?

- Communication
 - Executive communication
 - Communication strategies
 - Communication principles
- Leadership
 - Establish trust
 - Establish a common vision
 - Establish strategic partnerships
 - Clarity to risk
- Transparency
 - Self-transparency
 - Project/product transparency
 - Relational transparency

What are the Skills Required for an Agile Architect?

- Passion
 - Discovering it
 - Using it as a guide
 - Protecting it
- Context switching
 - Self-awareness context
 - Architecture awareness context
 - Elephant context
 - Decision awareness context
 - Conversational context
 - Audience context
 - Project context

What are the Skills Required for an Agile Architect?

- Business knowledge
 - Understanding the business
 - Understanding customers
 - Understanding the company
 - Understanding your domain
- Innovation
 - Establishing margins
 - Blending essential concepts
 - Developing an internal compass
- Pragmatism
 - Scope management
 - Communication
 - Risk management

What are the Skills Required for an Agile Architect?

- Vision
 - Compelling destination
 - Strategic roadmap
 - Aligned partners

Resilient Architectures

- Resiliency must be built into the systems that are built which means that your architecture must be resilient
- To manage systems at scale, the system must be pushed almost to a breaking point but still be able to recover⁹
- Agile architecture needs to address the following patterns noting that resiliency is not just about architecture but needs to include the infrastructure layer, network and application design along with people and culture
 - Redundancy
 - Autoscaling
 - Infrastructure as code
 - Immutable infrastructure
 - Stateless applications
 - Avoiding cascading failures
 - Timeouts
 - Idempotent operations
 - Service degradation and fall-backs
 - Rejection

Agile Architecture Terms

Solution Vision

- A description of the future state of the Solution that will be developed or is under development
 - What will this new solution do?
 - What problems will it solve?
 - What features and benefits will it provide?
 - For whom will it provide them?

Solution Roadmap

- A schedule of events and milestones that communicate planned Solution deliverables over a planning horizon

Significant Architecture Requirements

- Architecture requirements that result in the delivery of new infrastructure or technology capabilities to support the Product

Program Increment

- A timebox during which incremental value is delivered in the form of working, tested software systems

Program Increment Roadmap

- A series of planned PI's with milestones called out that support the Solution Roadmap

Agile Architecture Terms

Product Team

- The team consists of a Product Owner, Scrum Master and appropriate technical stakeholders (e.g. Architect, Developers, QA)

Product Owner

- Responsible for maintaining the conceptual and technical integrity of the features or components of the Product

Product

- Something that is created through a process and that benefits the company as a capability or capabilities

Epic

- A container for a significant Solution development that captures the substantial investments that occur within a Portfolio or Product

Feature

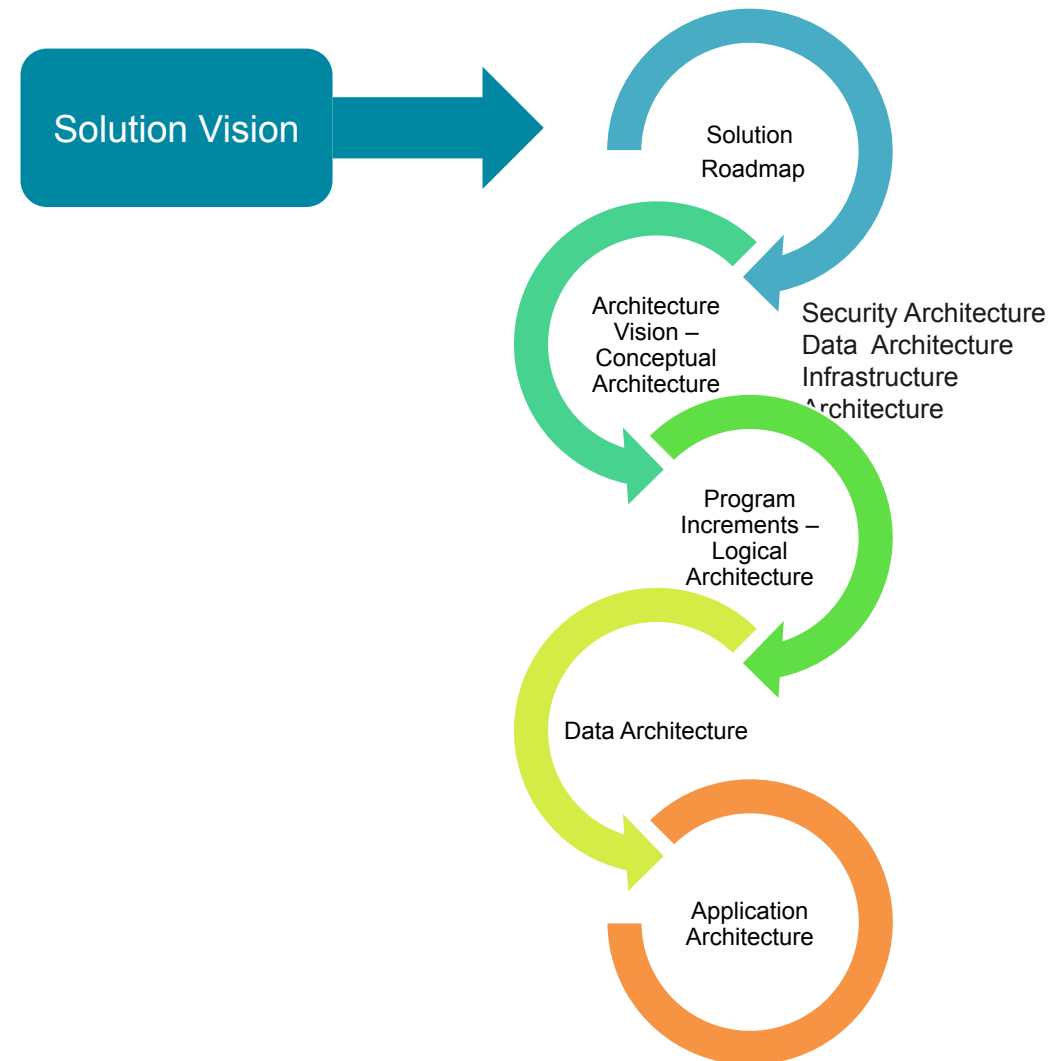
- Fulfills a stakeholder need and includes a benefit hypothesis and acceptance criteria

Stories

- A short description of a small piece of desired Product functionality that are vertical slices of system functionality that can be accomplished in a single iteration

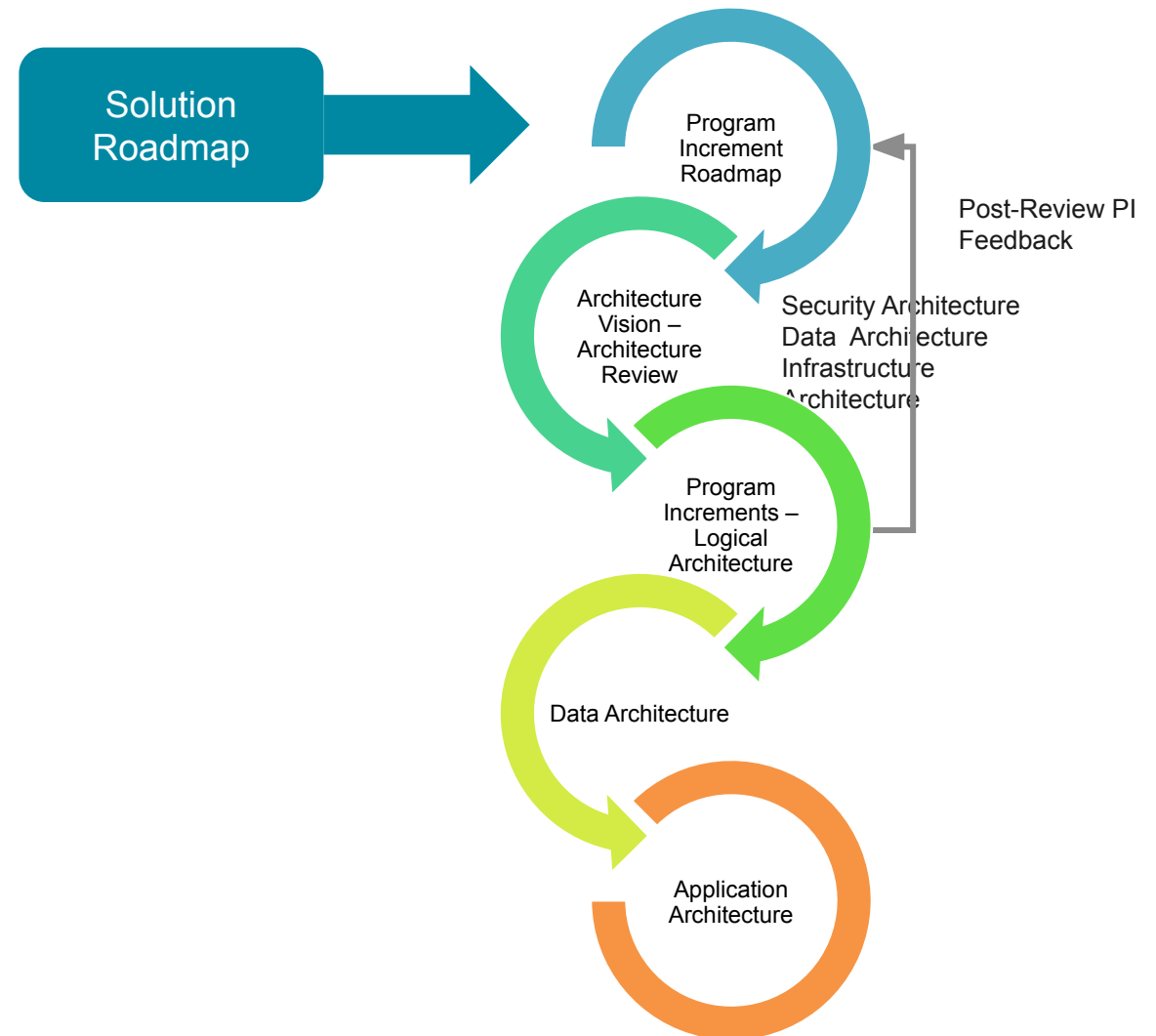
Initial Implementation of a New Product

- A Product goes through an Initiation phase that includes a Solution Vision and other agile artifacts
- The Solution Vision leads to a Program Increment Roadmap that outlines Significant Architecture Requirements that need to be delivered
- The Architecture Vision is the translation of the Solution Roadmap, Program Increment Roadmap and the Significant Architecture Requirements
- Architecture processes do not change in an agile approach from those used in a waterfall approach
- Architecture processes are performed in increments driven by the delivery of Significant Architecture Requirements over time

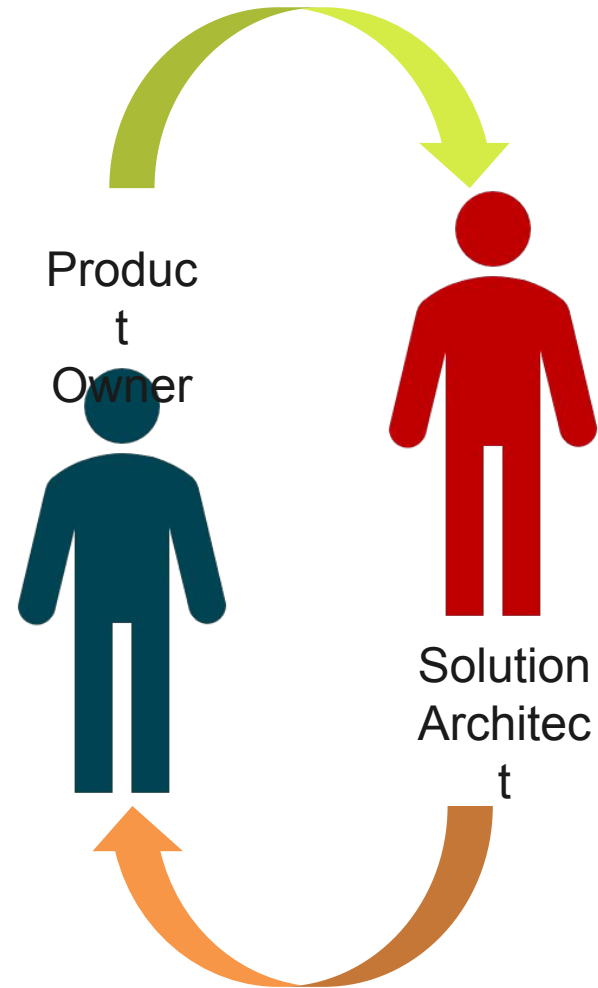


Continuous Product Development

- A Product is continuously developed and is delivered through Program Increments
- The Program Increment Roadmap is a decomposition of the Solution Roadmap broken down in Program Increments
- The goal of Program Increments and the building of Product capabilities is to deliver Business Value
- There are Significant Architecture Requirements that may be associated with the Program Increment Roadmap based on the Conceptual Architecture developed as part of the Product Initiation phase
- Significant Architecture Requirements are documented through the definition of a Logical Architecture and User Stories or Tasks across Sprints



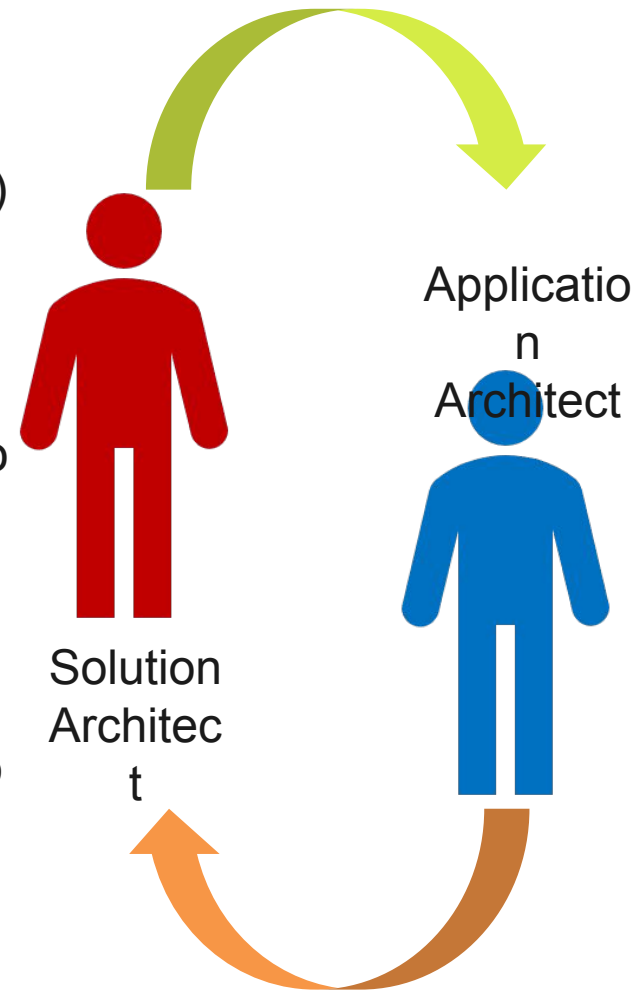
Product Owner and Solution Architect Relationship



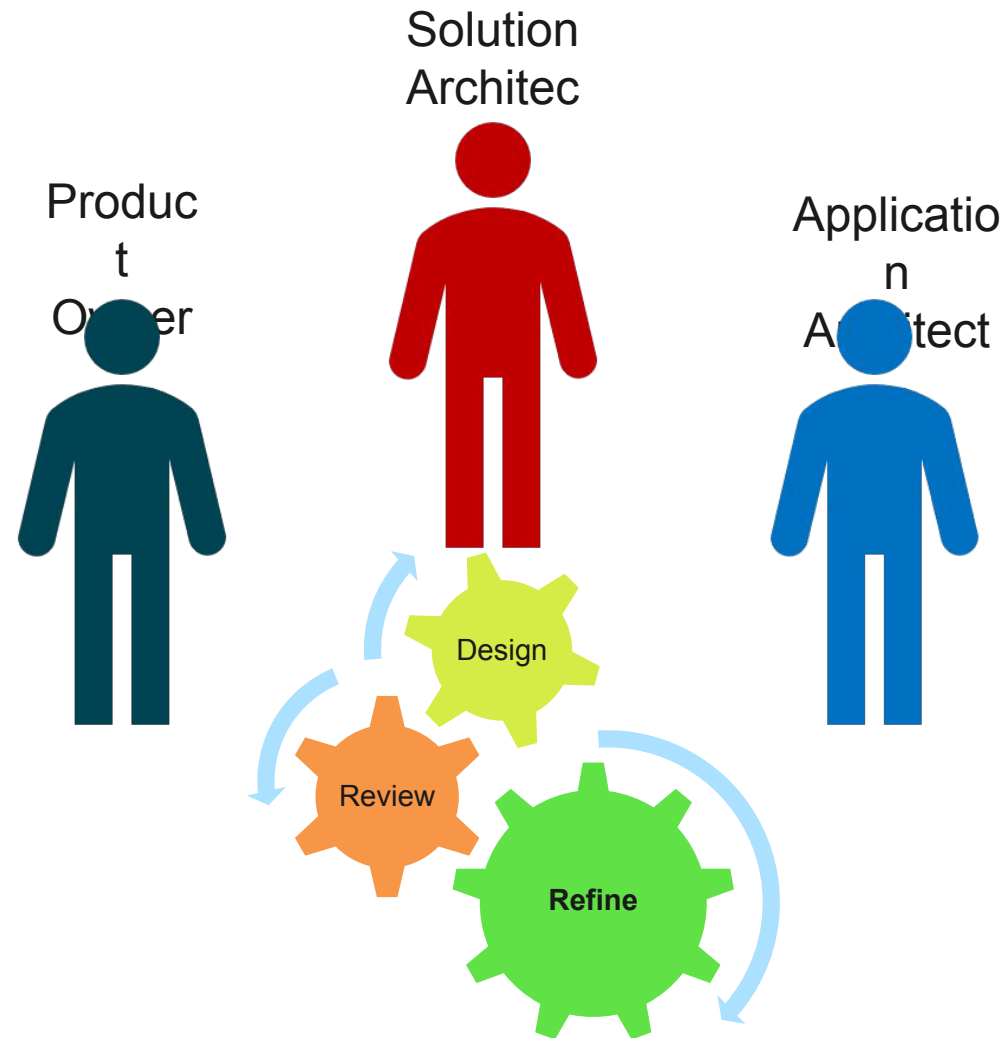
- The Product Owner represents the voice of the customer, internal employees and executive stakeholders and has the responsibility to manage a backlog of requests for new solutions, existing solutions and bug/defect requests. The Product Owner is responsible for creating a Solution Vision providing Product guidance to the Agile Team in the form of Solution Roadmaps.
- The Solution Architect works with the Product Owner and represents the technical team through the development of initial conceptual solutions and ongoing refinement of the architecture through addressing Significant Architecture Requirements, building out logical solution architectures over time and providing on-going technical consulting to the Agile Team as Products are developed and delivered

Solution Architect and Application Architect Relationship

- The relationship between the Solution Architect and the Application Architect (aka, System Architect, Technical Lead) is key to the success of the development of the Product
- The Application Architect is responsible for translating the logical architecture developed by the Solution Architect into a physical architecture
- There is a continual “architecture refinement” process that occurs between the Solution Architect and the Application Architect, initially interpreting the conceptual solution into an initial physical view and refining as time goes on

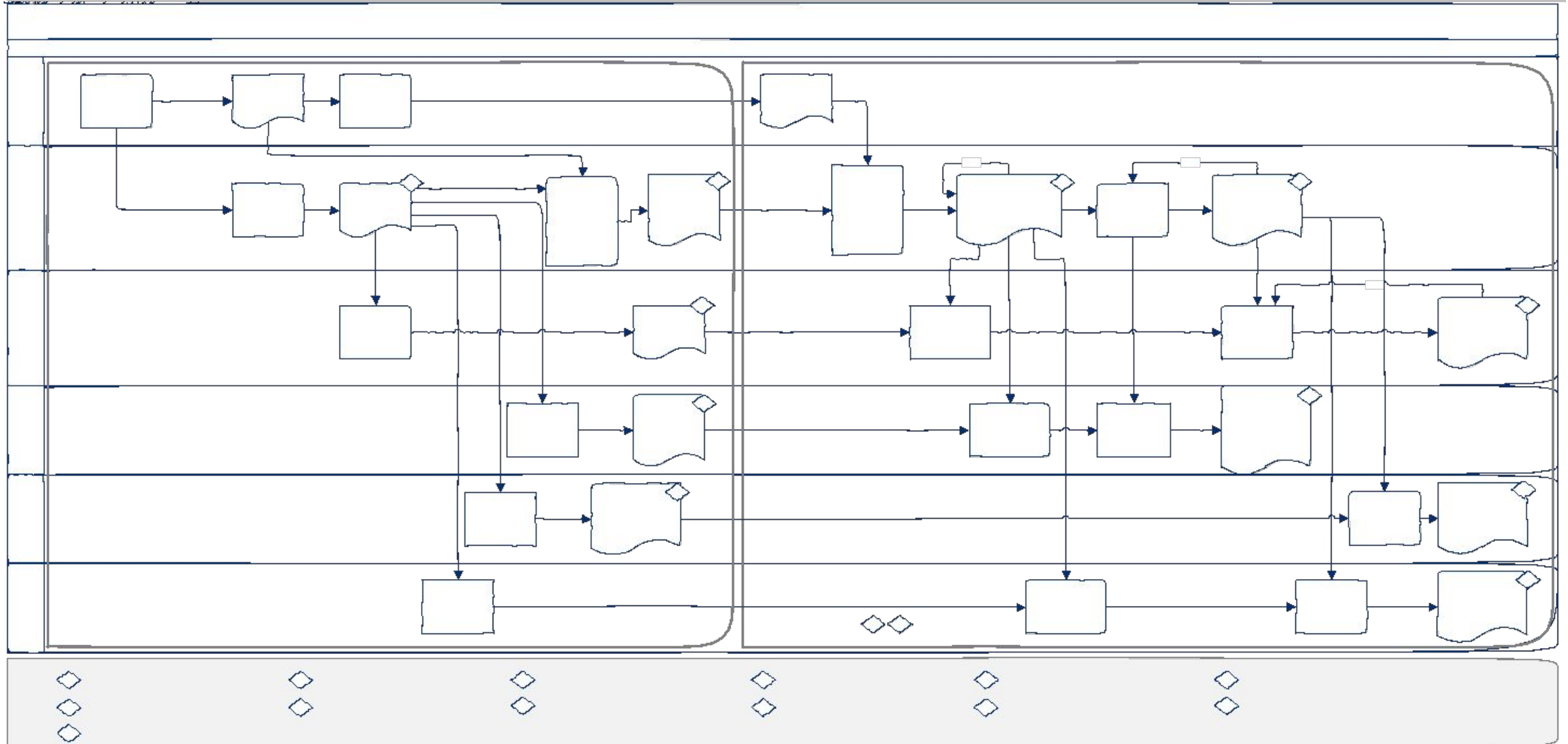


The Architecture Refinement Process



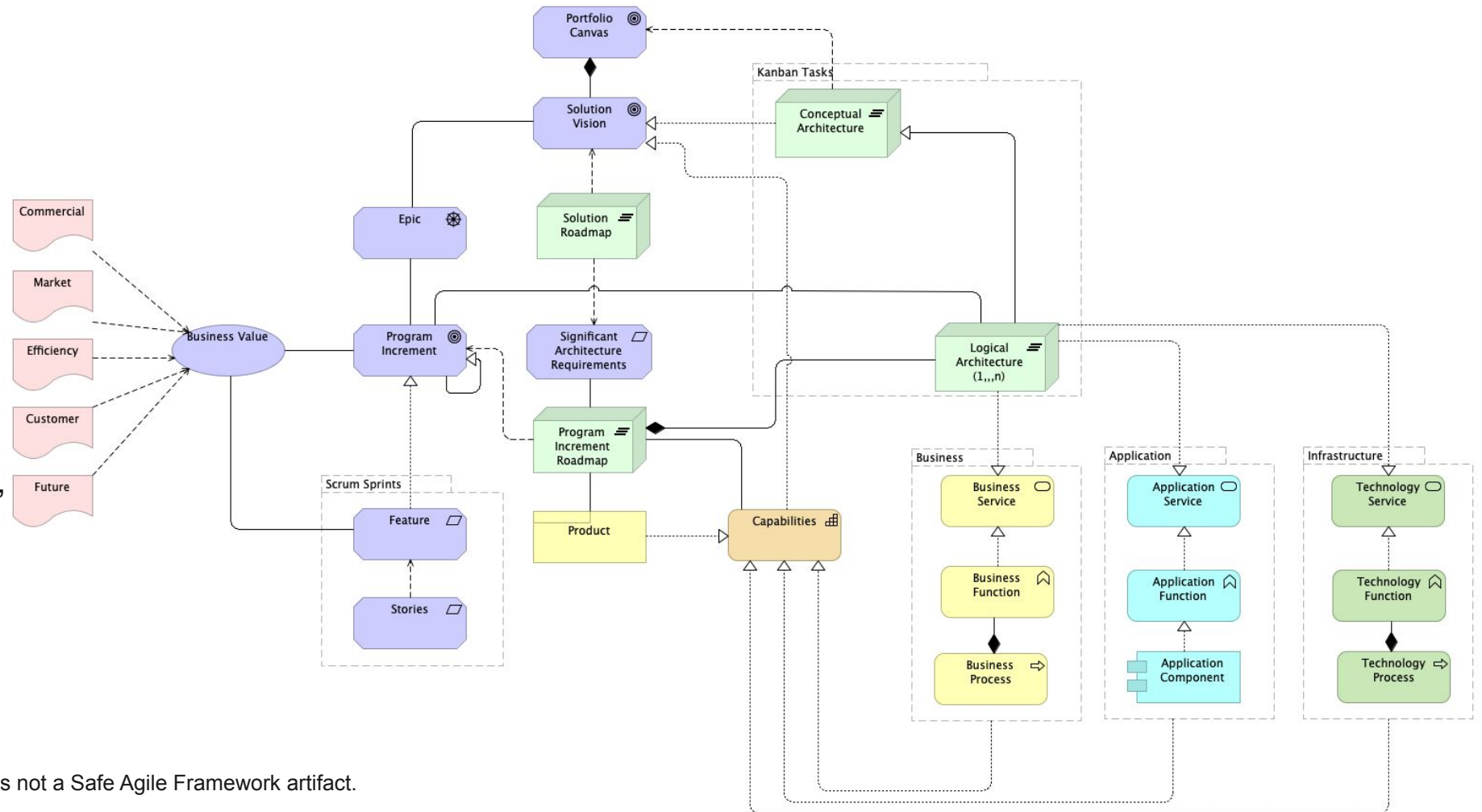
- There is a synergistic relationship between the Product Owner, Solution Architect and Application Architect going through a continual process of Review, Design and Refine
- This process is ad hoc in nature as Agile Teams develop and deliver new products or new product functionality
- The process is also structured in that appropriate reviews based on Agile approaches (e.g., SAFe®) are used to time-box product delivery cadence

Agile Architecture Engagement Process



Architecture Engagement Metamodel

- An architecture metamodel of the Agile Architecture process
- The metamodel presents the relationships from an agile perspective how a Product is delivered and the artifacts that are involved in the definition, implementation and deployment of Product value by Program Increments



Note: The Agile Architecture Metamodel is not a Safe Agile Framework artifact.

Summary

- Some Agile statistics⁸
 - 71% of companies are adopting Agile
 - Agile adoption has helped 98% of companies
 - 60% of companies experience growth in profits after adopting an Agile approach
 - Agile failure rate is 8% while the Waterfall rate is 21%
- The agile architecture engagement process with Agile teams has not been addressed in the literature
- A successful Agile architecture practice requires that an engagement process is documented and communicated to the Agile team
- Architects working on Agile products serve different roles than normal project architecture and must have strong soft skills to be successful
- The architecture deliverables are the same regardless of whether an Agile or a Waterfall approach is used

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Questions?

