Value Networks and the API Economy

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mike.callahan@agilelayer.com

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Topics

- Concepts & Context: Value Networks, API Economy, Microservices
- Value Networks: Purpose and Design
- How the API Economy advances and differentiates Value Networks
- How Business Architecture and Analysis support Value Network design & mgmt.
- How to model APIs and Microservices in the context of Business Capabilities
- Creating, managing and evolving Value Networks
An Application Programming Interface (API) is a set of clearly defined methods of communication between various software components. APIs are easy-to-access “gateways” to information and software-based capability.

A microservice is a micro application encapsulated behind an API. A microservice architecture divides an application into modules or components; which can be seen as a use of: modular design, OO design, CBD or SOA principles. Microservices can be distributed and integrated over a network. Today’s presentation will use the terms “API” and “microservice” interchangeably.

Value Networks are an example of an economic ecosystem. Each member of the network relies on the others to foster growth and increase value. Value network members can consist of external members such as customers, partners or vendors and/or internal members such as research teams. Value Networks are often described by nodes (which are the actors/organizations or actions within the network) and by the relationships between the nodes. The relationships are seen in terms of either tangible or intangible benefits or deliverables between the nodes.
“API Economy is a general term that describes the way application programming interfaces (APIs) can positively affect an organization's profitability.” – SearchMicroservices.com
“...the number of public APIs will triple over the next 12 months.”

“...API marketplaces and app stores will make it easier for users to access sophisticated business and consumer offerings.”
"APIs are a key foundation of digital transformation: they enable mobile apps, create integrated digital ecosystems across customers and partners, allow firms to benefit from the innovations of digital disruptors, and drive operational excellence.

“Done right, APIs create business agility that fosters the rapid business reconfiguration necessary to continually adapt to constant change driven by the need to revamp the customer experience, address regulatory challenges, and respond to new and changing competition and a wide range of unpredictable scenarios.”
Microservices are a key driver of the API Economy

- Microservices adoption is driven & enabled by advances in Containerization and by the exploding # of 3rd party APIs
- They mitigate some of SOA’s shortcomings and aid & abet Agile & DevOps approaches
- They are scoped and designed to deliver units of Business Capability

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What are Microservices?

Microservice: Wikipedia: Microservices is a variant of the service-oriented architecture (SOA) architectural style that structures an application as a collection of loosely coupled services. In a microservices architecture, services should be fine-grained and the protocols should be lightweight. The benefit of decomposing an application into different smaller services is that it improves modularity and makes the application easier to understand, develop and test. It also parallelizes development by enabling small autonomous teams to develop, deploy and scale their respective services independently. It also allows the architecture of an individual service to emerge through continuous refactoring. Microservices-based architectures enable continuous delivery and deployment.
What are Microservices?

API’s & Microservices:
- Decoupling
- Plug-ability
- Multi-sourcing
- Parallel, Rapid Delivery
- Flexibility to allow rapid business change
- A platform for Digital Transformation

Rafael Rocha, Sensedia
Value Networks & the API Economy

The API Economy fuels Value Networks by:
• Opening up new business opportunities
• Allowing for new combinations of things
• Making it easier to create & leverage strategic partnerships
• Enabling us to be more innovative

Key Value Network Design Drivers:
What APIs and Capabilities are available, possible and required to create & optimize our Value Networks?

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Value Networks innovate our:
- Business Models
- Operating Models
- Product/Service Offerings
- Value Streams
- Internal Business Services
- Customer Experiences

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Aligning Business & Microservice/API Architectures

**Business Needs & Strategies**
- Dictate
- Invest in
- Support
- Realize

**Business Capabilities**
- Guide design of
- Implement

**Microservices / APIs**

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**This Alignment Enables:**
- Focus on delivering Business Capability, not tech or features
- Microservices designed at the right level of scope & granularity
- Build the microservices that matter most to the Business
- Build flexibility & agility into the key parts of the Business
- Better ideate & design the Future
Analysis of Business Capability domains enables us to identify, prioritize, define and implement (or acquire) the appropriate set of Business-relevant enabling Services.

This diagram describes the end-to-end mapping, or context, between business capabilities, business processes, events, business entities, services, and enterprise resources (IT Assets).
“Capabilities” allow Planning at various levels of Abstraction

Capability-level Requirements

- “Ability to create long-term relationships directly with Consumers”
- “Ability to provide Price Transparency to Customers”
- “Ability to set up a Family (vs. Individual) Subscription”

APIs and Microservices are used to implement/deliver the lower level Capabilities in our portfolio.
**Key Use Case:** Exploiting Value Networks and the API Economy

**Overview:** Combining API/Microservice & Business Architecture approaches to create Value Networks

**Value provided by this Use Case:**
- Business and Operating Model Innovation
- Eco System-driven Innovation
- Faster Time to Market
- Increased Business Flexibility
- Reduced Cost

**Appeal of this Use Case:**
- It’s a Game Changer for the company
- It’s highly Strategic
- It focuses Senior Executives on Innovation
- It brings with it a top-down Change mandate

**Challenges of this Use Case:**
- Complex
- New Territory
- Requires Organization / Cultural Shift
Leveraging Value Networks & the API Economy

Opportunities to leverage Value Networks

Enablers

Value Chain

Customer Experience

Product / Service Offerings

Digital Solutions

Internal Business Services

Enterprise

Capability

Service / API

Partner

Capability

Service / API

Vendor

Capability

Service / API
Digital Imperative: Building and Leveraging the Enterprise API Fabric

- **Business Opportunities, Needs & Plans**
  - e-Commerce
  - Mobility
  - Social Computing
  - Data & Analytics
  - Payments
  - CX
  - Etc.

- **Capability-API Methodology** facilitates build-out of:
  - Enterprise API Fabric (internally & externally sourced)

- **API Management Framework**
  - Opportunity ID & Management
  - Product Management
  - Portfolio Management
  - Partner Management
  - Governance and Ownership
  - Monetization (API Economy)

When we create a new suit or coat, we create it from fabric, not by working with the underlying stuff (the raw wool). Similarly, we can leverage our Digital / API Fabric to produce new Solutions, Customer Experiences, Products, Processes, etc. - and do so more quickly & creatively (vs. having to work with a plethora of raw materials; i.e., data stores, technologies, systems, etc.).
Leveraging the API Economy: Top-down & Bottom-up Approaches

Opportunities to leverage Value Networks

Value Chain
- Customer Experience
- Product / Service Offerings
- Digital Solutions
- Internal Business Services

EXISTING Value Net Enablers
- Capability
- Service / API
- Partner

POTENTIAL Value Net Enablers
- Capability
- Service / API
- Partner

Enabling Capabilities

Enabling Services/APIs

Top-Down: What Business needs and opportunities could the API Economy address?
- Research Function
- Federated Hunting
- Targeting Process
- Ideation Workshops
- Assessment Process
- BA-based Modeling
- Collaboration model

Bottom-up: How can we leverage existing and potential Enablers?
- Research Function
- Inventory Analysis
- Clustering / Matching
- Ideation Workshops
- BA-based Modeling
- Collaboration model

Digital Solutions Opportunities to leverage Value Networks

Opportunities to leverage Value Networks

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Moving to a Next Generation Planning & Delivery Model

Enterprises are moving towards a more integrated Strategy-to-Delivery Model that effectively combines and coordinates key planning, architecture and delivery disciplines to further accelerate innovation, time-to-market, and the partner eco-system imperative.
Agile Layer

Strategic Planning

Business Architecture

Capability Requirements drive API/Service Scoping & Planning

Change Delivery

Work Force Development

Performance Improvement

IT Delivery (Agile)

Prioritized Capability Roadmap

Operating Model

Key Priorities

Key Objectives

Value Propositions

Customer Relationships

Customer Segments

Cost Structure

Revenue Streams

Capability Requirements are the "connective planning tissue"
The overhead of implementing and managing Program and Portfolio-level governance into AGILE delivery frameworks is far outweighed by the benefits of ensuring that delivery efforts are aligned (and re-aligned) to the most critical requirements of the Business.
“Ability to provide Price Transparency to Customers”

“Ability to rapidly develop products & services, leveraging partner collaborations”

“Ability to produce a 360º view of Customer data”
Agile Integrated Planning Process

Strategy to Execution

Participating Levels of the Organization

Business SWOT

Strategy Formation

Value Network Planning

Program & Project Conception

Project-level Requirements

Project Delivery

“Capability” realities, threats and opportunities

Capability constraints, levers, and needs

Capability-level requirements, innovations & roadmaps

Capability delivery & life-cycle mgmt.

Operate at the “Capability” (vs. feature) level

Engage earlier in the Planning Process

Work in a more Strategic capacity (ie, Val-Nets)

Provide insight & analyses to Leadership

Be a key participant in the end-to-end Strategy-to-Execution process

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Connecting Business Planning to Delivery through a Capabilities & Services/API-based methodology

An Integrated Design & Planning approach improves the speed, value and effectiveness of our Strategy-to-Delivery processes while furthering the realization of our strategic roadmaps.
Methodology: **Overview**

**Starting Points**
- Business Needs (high-level Requirements)
- Project-level Requirements (Product Features, Use Cases, etc.)
- Application Refactoring
- Proactive, Business Architecture Driven
- Value Network Design

**Methodology Components & Benefits**

- API / Microservice Identification
  - Maximum Harvesting
  - Proper Scope & Granularity
  - Best Skills & Techniques

- API / Microservice Portfolio Mgmt.
  - Avoid Redundancy
  - Align w/ Business Priorities
  - Drive Reuse
  - Create good Architecture
  - Enterprise Perspective

- API / Microservice Definition
  - Drive Good Designs
  - Standardization
  - Consistency

- API / Microservice Build or Buy
Methodology: Overview

1. Business Objectives, Strategies, Initiatives
   - Business Needs (high-level Requirements)
     - Project Requirements (Product Features, Use Cases, etc.)
     - Application Refactoring

2. Value Net Design
   - Capabilities-based Modeling
     - Consider Drives
     - Evolved through
     - Analyzed via

3. Capabilities Roadmap (prioritized Requirements)
   - Translating Capability Requirements to Agile
     - Aligns with and Delivers elements of

4. Agile process
   - Candidate Microservices
     - Microservice Portfolio
     - Microservices Roadmap (prioritized Requirements)
   - Microservice Definitions
     - Microservice Use Case Specification, and Microservice Interface Definition
   - Waterfall process

5. Expressions:
   - New Capabilities or Capability Increments (when using the “Capabilities-driven Planning” approach)
Methodology: **Project-driven Approach**

- **Project Requirements** (Product Features, Use Cases, etc.)
- **Microservice Identification Process**
- **Capability Portfolio & Roadmap**
- **Microservices Roadmap**
- **Microservice Definitions**
- **Solution Architecture Document**
- **Design / Build**

*Agile & Waterfall processes*

**Microservices Portfolio Management**

- Redundancy Analysis
- Dependency Analysis
- Consumption Analysis
- Value Analysis
- Sourcing Analysis
- Delivery Sequencing
Project-driven Microservice Identification

1. Extract Nouns & Verbs from the Business Requirements (OOA)

2. Identify Business Entities
   - Customer
   - Account
   - Credit Card
   - Order
   - Inventory
   - Store
   - Product
   - Region

3. Model the Domain represented by the Requirements (cite behaviors on the Business Entities)
   3a. Semantically group elements of the Domain Model creating Bounded Contexts (using DDD)

4. Identify Microservice Candidates (“MSCs”)
   - “Search Account”
   - “Manage Orders”
   - “Review Pipeline”
   - “etc.”

5. Ensure proper Microservice scope by analyzing the mapping to the Capability Model and by applying Microservice Granularity Rules

6. Factor in known MSC Consumer requirements

7. Ensure MSCs aren’t redundant or overlapping

8. Categorize & classify Microservice Candidates

9. Create Descriptions of Microservice Candidates

10. Hand-off to Microservice Portfolio Mgmt. process
Domain-driven Microservice Identification

Methodology Inputs:
• Business Capability Decompositions
• Planned Capability Increments
• Process Models for BPs that implement the Capability
• Enterprise Domain Model (as available)
• EA/SOA Reference Architecture
• Service and Systems Catalogs
• Service Consumer Requirements

Methodology Outputs:

Service Identification task:
• Service Descriptions (template)
• Services mappings to Business Architecture: (Capabilities, Systems, Entities, Services, Projects)

Services Portfolio Planning task:
• Update to Services Catalog
• Update to Services Roadmap
• Update to Capability Target-states & Roadmaps

Service Definition task:
• Service Use Case Specification (template)
• Service Interface Definition (template)
Methodology: **Documentation**

- **Microservice Identification**
  - Project-driven Microservice Identification (.pptx)
  - Domain-driven Microservice Identification (.pptx)
  - Application-driven Microservice Identification (.pptx)

- **Microservices Portfolio Management** (.pptx)

- **Microservice Definition**
  - Microservice Definition Methods & Practices (.pptx)
  - Governance Checklist (.pptx)
  - Microservice Use Case Specification (.docx)
  - Governance Checklist (.pptx)
  - Microservice Interface Specification (.docx)

= Microservice Product Management documents
Ascribing desired Product Features (aka “Increments”) to the Capabilities that they enhance enables us to work at a “Capability-level”, where we:

- Have line of sight to the role & value of the Capability that the Feature enhances.
- Are forced to think holistically about what the Capability is and does, vs. thinking solely at the technology/feature level.
- Can see how a Feature enhancement impacts the wider aspects of the Capability.
- Can see if/how Capability enhancements will effect other Customer Experience work (and the wider work of the company) that is also leveraging that Capability.
Developing Value Networks: High-level Approach

- **Set up & Planning**: Objectives, Methods, Tools, Roles, Governance, etc.
- **Value Hunting**
- **Value Network Opportunity Id. and Prioritization**
- **Initial Modeling of Target-state Value Network**
- **Detail-level Opportunity Analysis**
- **Eco-system Vetting & Viability Analysis**
- **Go-to-Market Planning**

Modeling of Value Networks, Capabilities, Services/APIs
What constitutes a good opportunity for a Value Network?

- There’s a “Whole” that’s greater than the Sum of the Parts
- The combination of Partners and Capabilities is: unique, compelling & defensible
- It’s sufficiently complex to conceive, design and implement (barrier to entry)
- We have the ability to control Value Network formation, design & operation
Value Networks: Ideation

**Ideation Tool:** Utilize a set of Lens (perspectives) to generate Ideas for creating Value Networks that are: unique, high-value, and deliver sustainable and defensible competitive advantage.
Value Network Ideation: **Workshop Approach**

- Business Model
- Operating Model
- Value Stream
- Customer Experience
- Product Offering
- Business Service

Value Network types

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**Pain Point Analysis**

Opportunity / Value Analysis

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**Use Cases**

- Capability / API Ideation (Ideation Lenses)
- Capability Blueprinting
- Roadmap Development

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**Business Architecture**

- Business Capabilities
- Digital Enabling Capabilities
- APIs / Microservices
- Value Network Models
- Technology Portfolio

- Prototyping Program
Enabling the Business & Microservice Architecture Approach

Enablement Requires:
1. Enhanced Meta Model
2. Standards, Methods & Practices
3. Integrated Portfolio Mgmt.
4. Governance Extensions
5. Collaboration Mechanisms
6. End-to-End Tooling
7. Skill Sets
### Deliverables: Value Network Framework

#### Framework Deliverables
- Value Network Inventory
- Value Network Business Cases
- Value Network Designs
- Value Network Roadmaps
- Capability Inventory
- Capability Business Cases
- Capability Architectures
- Capability Roadmaps
- Services/API Inventory
- Services/API Roadmap
- Business Architecture Views

#### Stakeholder Management Views
- Value Network (VN) Views
  - Value Networks Business Analysis
  - Value Networks Roadmap
  - Product/Service VN Views
  - Internal Business Service VN Views
  - Value Stream VN Views
  - Customer Journey VN Views

- Capability Views
  - Capability Contribution to VNs
  - Capability Dependencies & Impacts
  - Capabilities-to-Services/APIs View
  - Capability Roadmap

- Service/API Views
  - Services/API Contribution to VNs
  - Service/API Dependencies & Impacts
  - Services/API Roadmap

- Business Architecture Views
  - Partner / Sourcing Views
  - Business Line Views
  - Regional Views
  - Enterprise Shared Services Views
  - Technology Views
  - Investments / Projects Views
Program Office / COE:  Overview

Mission:
“Leveraging the API/Service Economy to deliver high-impact Capabilities and Value Networks”

Key Offerings:
- Value Network Ideation & Design
- Capability Ideation & Design
- Service/API-driven Business Modeling & Design
- Business Architecture-based Transformation Frameworks & Blueprints
- Value Assurance Models

Integrated Design & Planning Approach:

When to Call Us:
- You need to build unique, high-impact Capabilities and Value Networks that leverage internal and external APIs & Microservices
- You need to better leverage 3rd Party Partnerships, Capabilities, and IT-based Assets to drive better business outcomes
- You need to materially improve the alignment of your Business Architecture and Planning methods with your strategic IT functions and programs