

Architecture Katas On-line

Spring 2022



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Thoughtworks
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@neal4d

Introduction

Where did this
idea come from?

The screenshot shows a web browser window with the URL `archkatas.herokuapp.com` in the address bar. The page title is "Architectural Katas". The main content features two quotes:

"How do we get great designers? Great designers design, of course." --Fred Brooks

"So how are we supposed to get great architects, if they only get the chance to architect fewer than a half-dozen times in their career?"
--Ted Neward

A blue button labeled "Do one! »" is visible.

The page is divided into several sections:

- About**: Describes the workshop started by Ted Neward. Includes a "Learn more »" button.
- Invite**: Wants an experienced moderator to run the workshop. Includes a "Contact »" button.
- Rules**: Explains rules for doing an Architectural Kata. Includes a "Read rules »" button.
- Lead**: Wants to run the workshop yourself. Includes a "Learn how »" button.
- Contribute**: Welcomes new Kata problems/proposals. Includes a "Send ideas »" button.
- Join**: Wants to find a group near you. Includes a "Find groups »" button.

At the bottom, a copyright notice reads: © Neward & Associates 2012.



Architectural Katas

Home About Rules Contribute Invite Lead Join Contact

Architectural Katas

"How do we get great designers? Great designers design, of course." --Fred Brooks

"So how are we supposed to get great architects, if they only get the chance to architect fewer than a half-dozen times in their career?"
--Ted Neward

[Do one! »](#)

About

The Architectural Katas started as a presentation workshop by Ted Neward. They've taken on a life of their own.

[Learn more »](#)

Invite

Want an experienced Architectural Kata moderator to run the workshop at your place of business?

Rules

Doing an Architectural Kata requires you to obey a few rules in order to get the maximum out of the activity.

[Read rules »](#)

Lead

Want to run the Architectural Katas yourself? There's only a few things you need to know before you do.

Contribute

New Kata problems/proposals are always welcome.

[Send ideas »](#)

Join

Want to find a group near you that's running the Architectural Katas?

...and then...

<http://fundamentalsofsoftwarearchitecture.com/katas/>

The screenshot shows a web browser window with the URL <http://fundamentalsofsoftwarearchitecture.com/katas/> in the address bar. The page content includes:

- A header with links to "Architectural Katas", "Updated Fundamentals of Software Architecture Images", and "Architectural Katas", "Fundamentals of Software Architecture", and "List of Architecture Katas".
- A section titled "Architectural Katas" with a quote:

"How do we get great designers?
Great designers design,
of course."
Fred Brooks
- A section with a quote:

"So how are we supposed to get great architects, if
they only get the chance to architect fewer than
a half-dozen times in their career?"
Ted Neward
- A section titled "About" with text explaining the purpose of Architectural Katas.
- Text at the bottom stating: "Each group is given a project (in many ways, an RFP–Request For Proposal) that needs development. The project team meets for a while, discovers requirements that aren't in the original proposal by"

...and then...
.





LIVE ONLINE TRAINING

Architectural Katas

Topic: Software Development



NEAL FORD



Late 2020...

October 20, November 17 & December
3, 2020

10:00am – 12:00pm EST

This course has ended.

[What you'll learn](#) [Instructor](#) [Schedule](#)

New information after 10/20 kickoff:

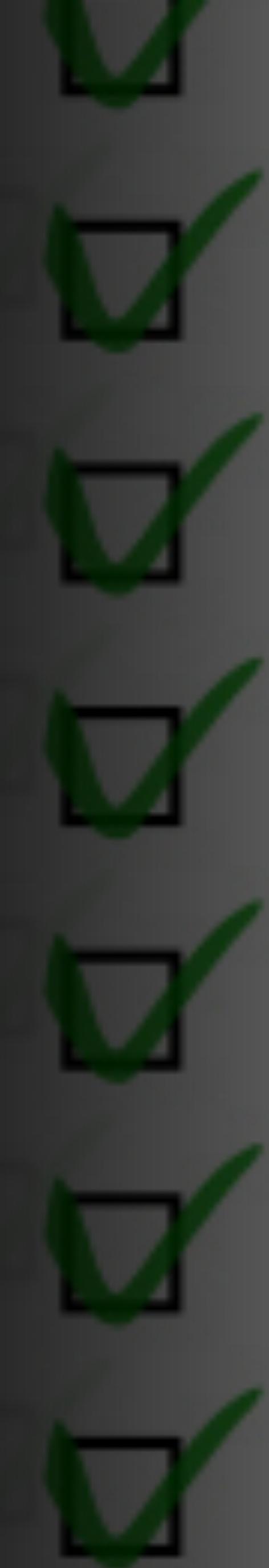
The image shows a screenshot of the FarmacyFood website. At the top, there's a navigation bar with icons for back, forward, search, and refresh, followed by the URL "farmacyfood.com". The main header features the "FarmacyFood" logo with a green stylized 'F'. To the right are links for "ABOUT US", "INTERESTED?", "Sign Up", and a shopping cart icon showing "0".

The main visual is a large photograph of a bowl of soup with rice, vegetables, and herbs, overlaid with the text "Let Food be Thy Medicine" in white. Below this text is a green button with the text "LEARN MORE >".

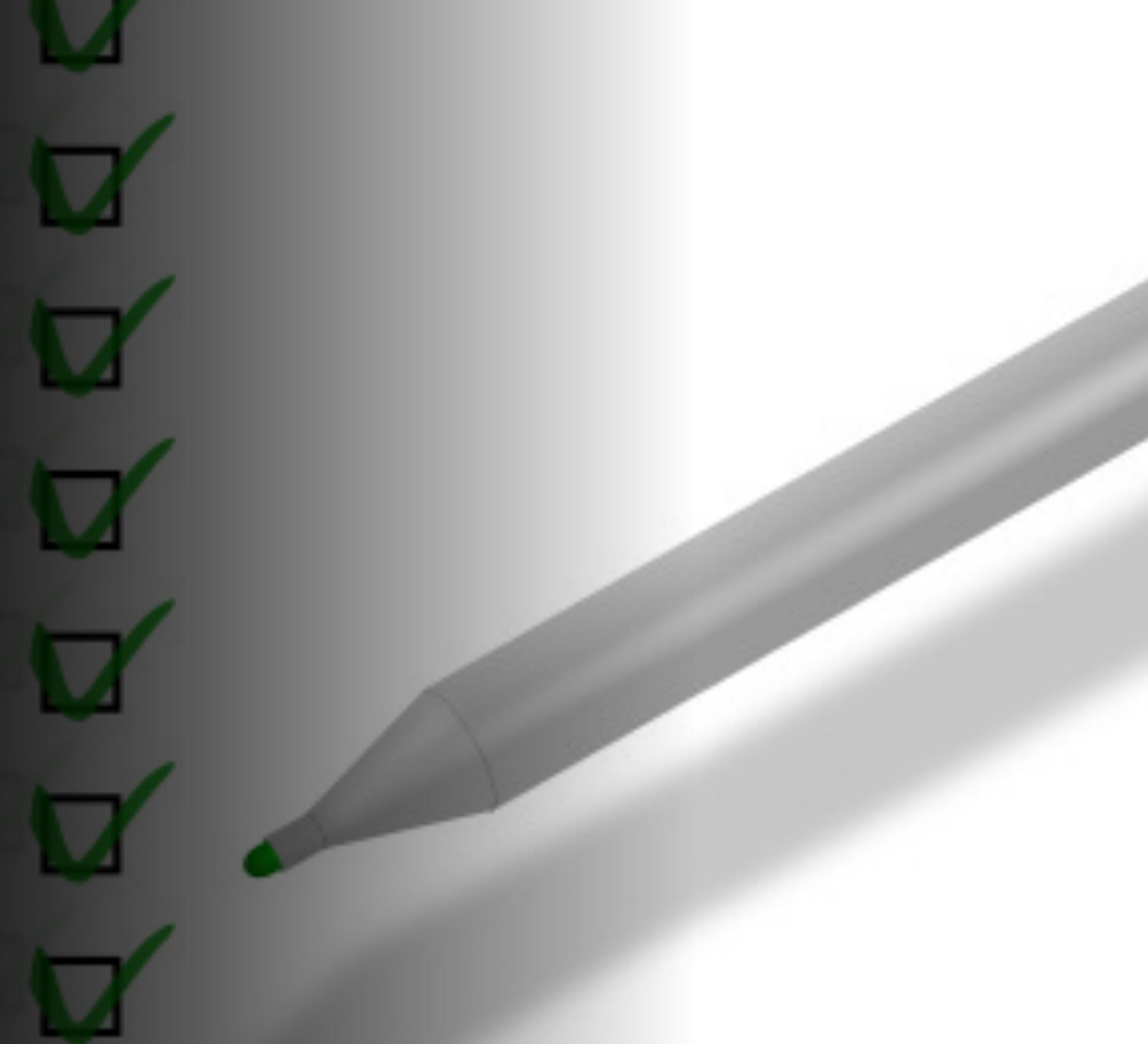
The lower half of the page has a green background with a repeating circular pattern. On the left, there are two black meal prep containers filled with pasta and vegetables. In the center, the FarmacyFood logo is displayed again, followed by the text "Healthy, locally sourced meals for delivery or pick-up." Below this is a "GET STARTED" button.

On the right, there's a smartphone displaying the FarmacyFood mobile app interface, which includes sections for "OUR FOOD", "OUR MISSION", and "YOUR IMPACT".

Judges Criteria

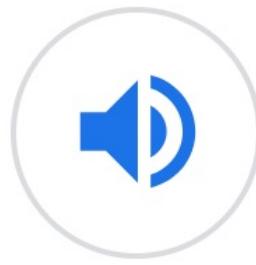


Clarity of narrative, organization, and supporting documentation



Narrative and Organization

A narrative tells the story of the architectural solution



narrative

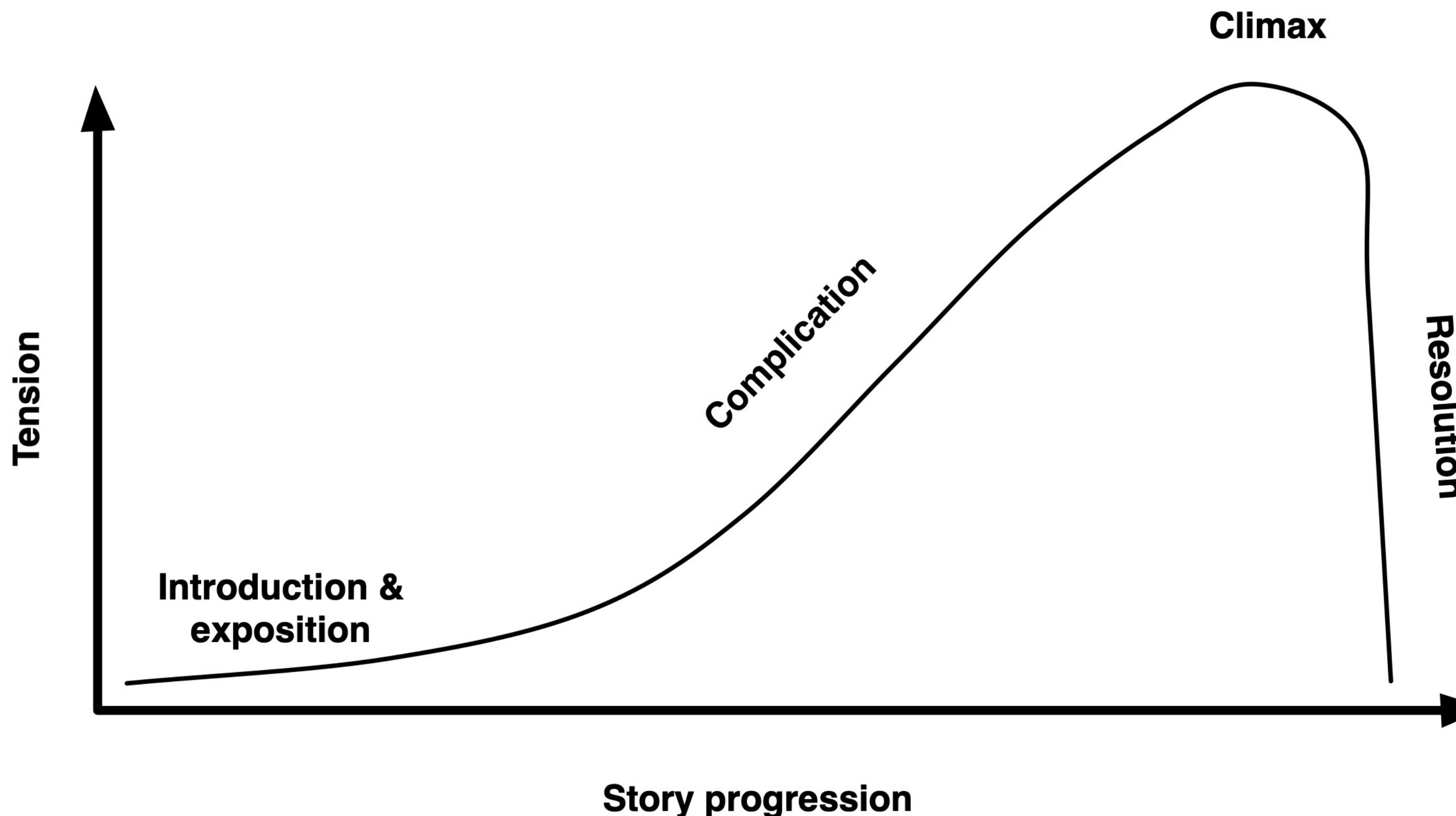
/'nerətiv/

noun

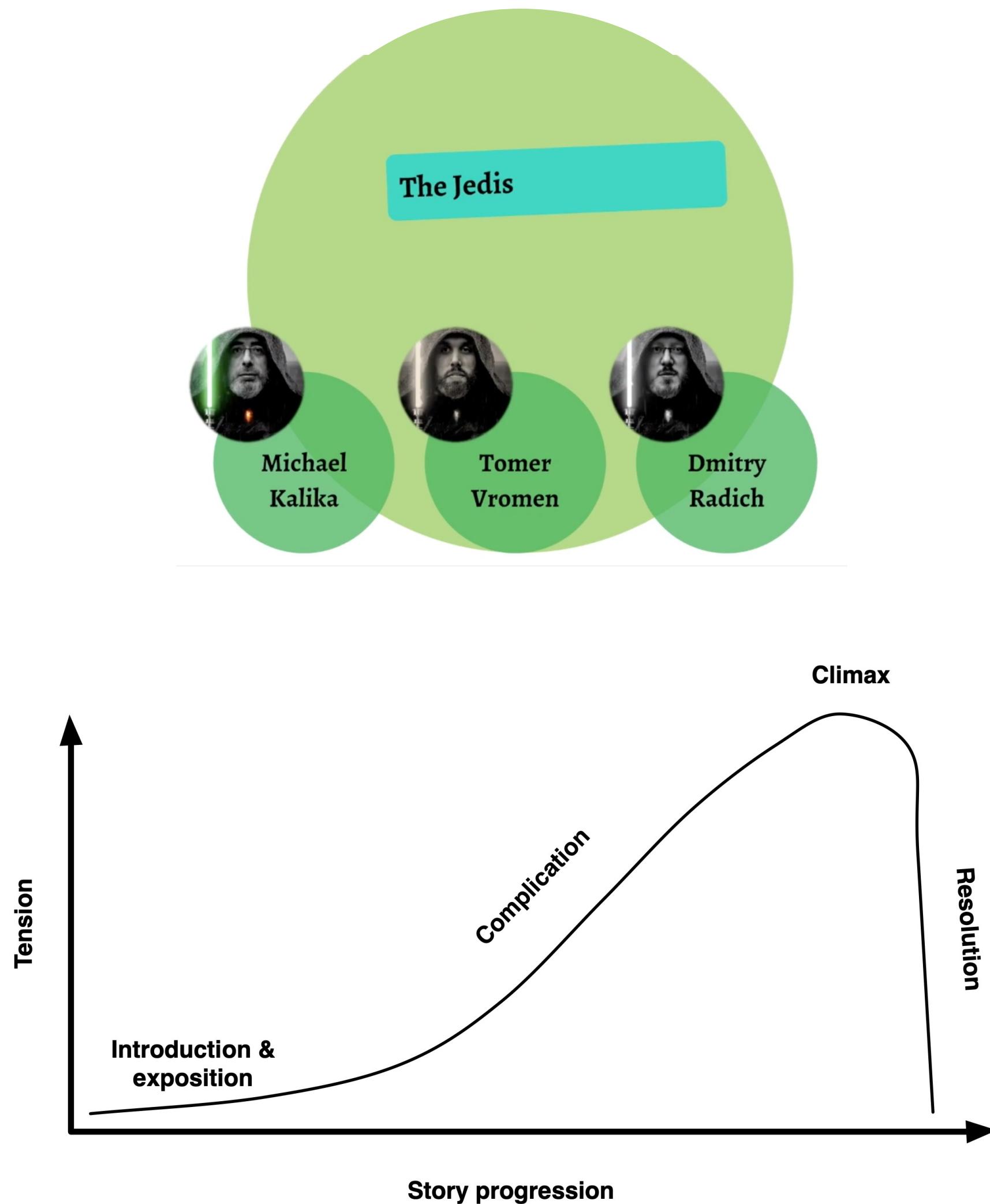
a spoken or written account of connected events; a story.

Narrative and Organization

A *narrative arc* a literary term for the path a story follows. It provides a backbone by providing a clear beginning, middle, and end of the story



https://github.com/TheJedis2020/arch_katas_2020



Prelude

The Vision

The Final Video Presentation

Business Requirements

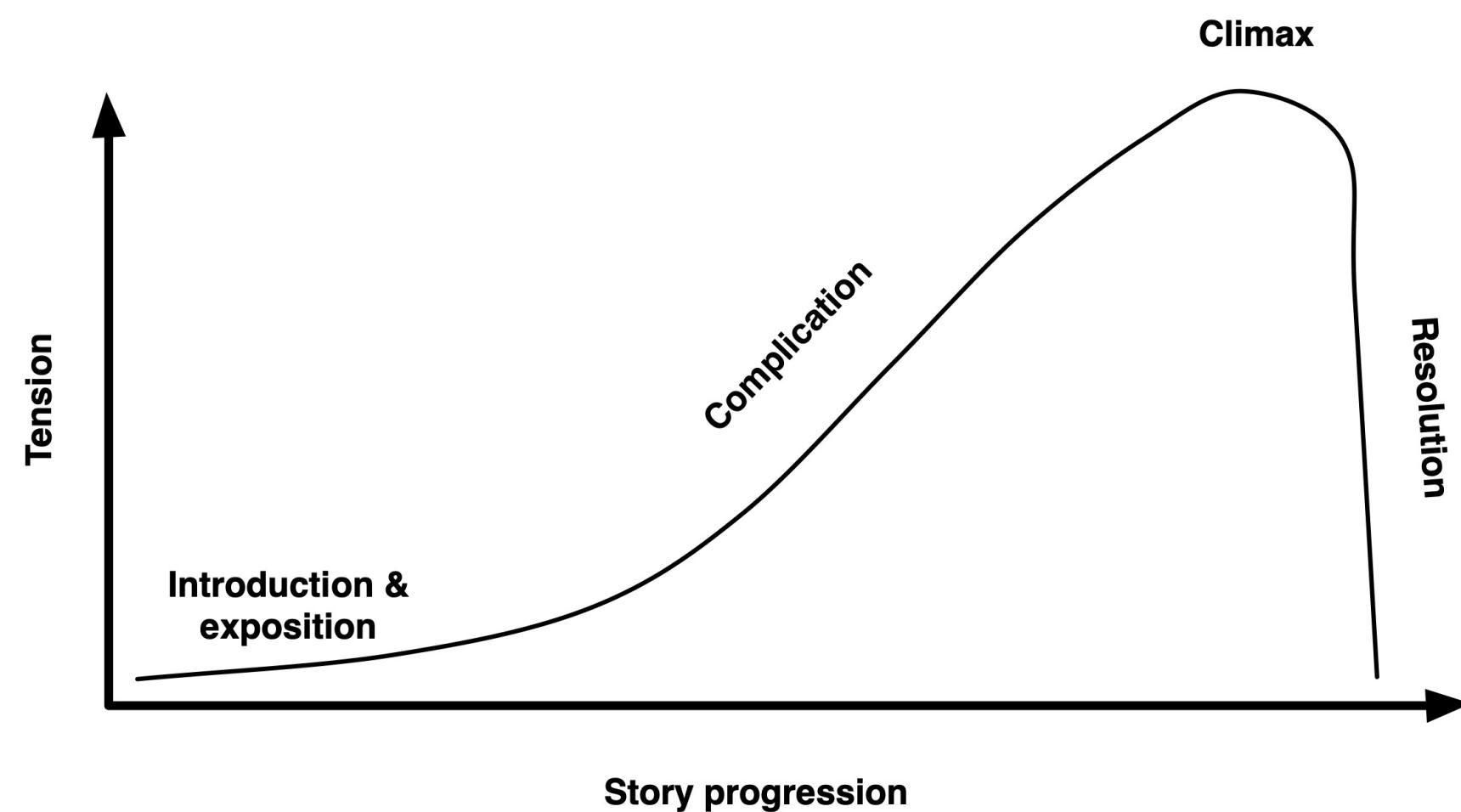
The Strategy

The Architecture

Sequence Diagrams

Architectural Desision Records (ADRs)

<https://github.com/miyagis-forests/farmacy-food-kata>



Requirements

This section contains the requirements, distilled from the [provided use cases](#), the interview with the PO, Kwaku Osei, but also with some assumptions and research. These requirements are the main drivers for the design decisions in this proposal.

- [Functional requirements](#)
- [Quality attribute requirements](#), aka architecture characteristics

Architecture

Here you find the documentation of the software architecture that fulfills the requirements.

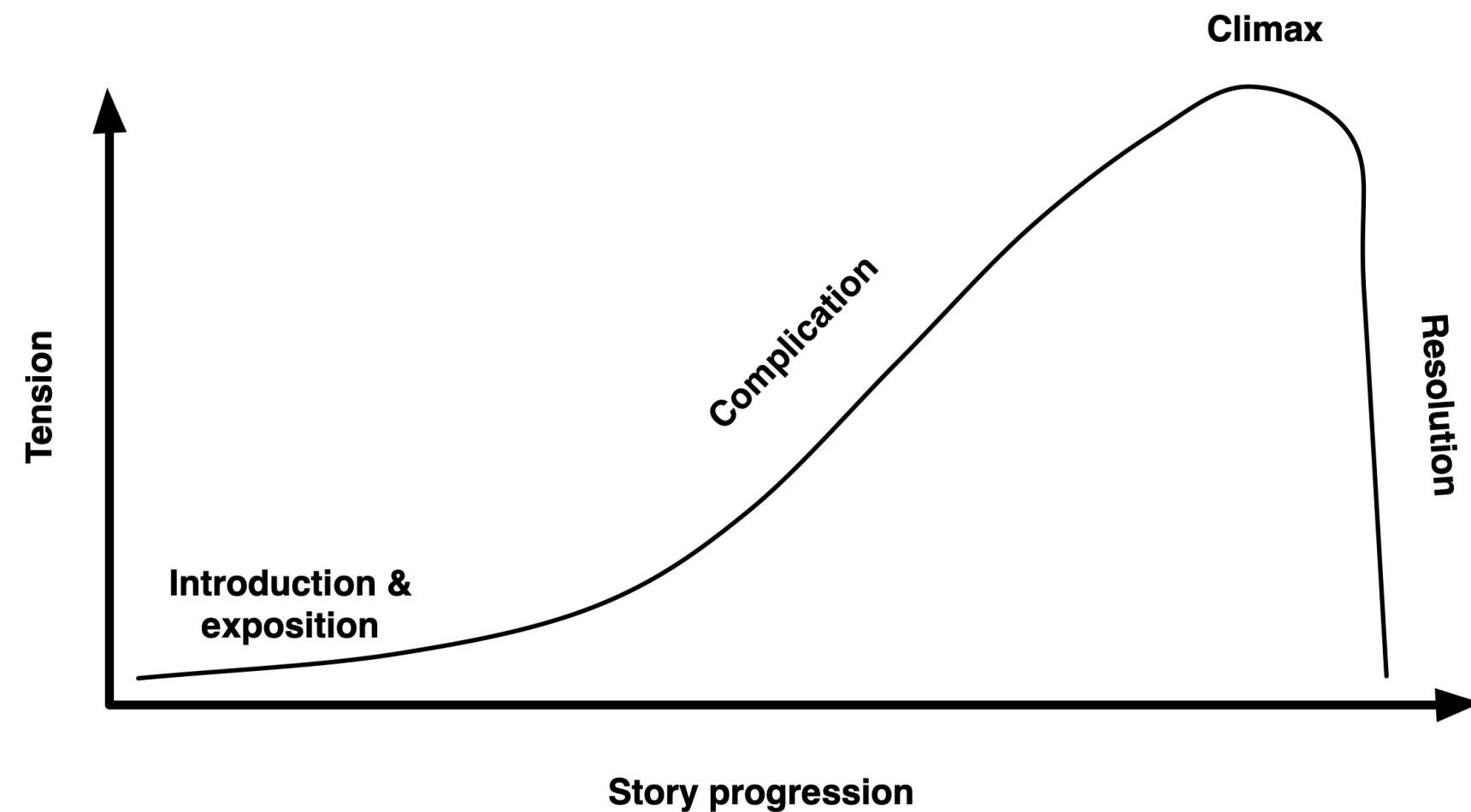
As a starting point, there's a context diagram that gives an overview of the system boundaries. The central system is called the *Farmacy Food System*, which is the scope of this proposal.

ADRs

The linked ADRs below record the main architecture decisions recorded in this proposal, with their context and rationale.

- ADR 001 - [Microservice style](#)
- ADR 002 - [Payment gateway](#)

<https://github.com/lookfwd/archkata>



Overview

Vision

Goals and Opportunities

Use Cases

Architecture Characteristics

Design Constraints

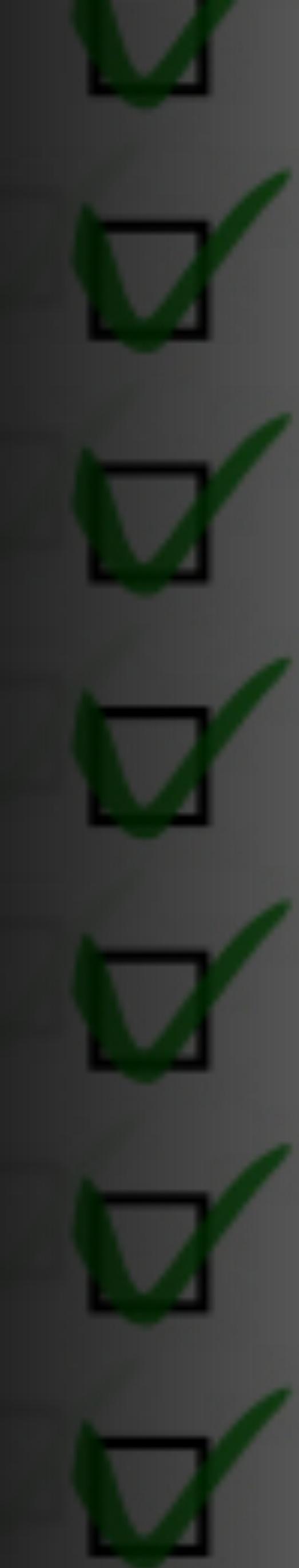
High-Level Architecture

Mid-Level Architecture

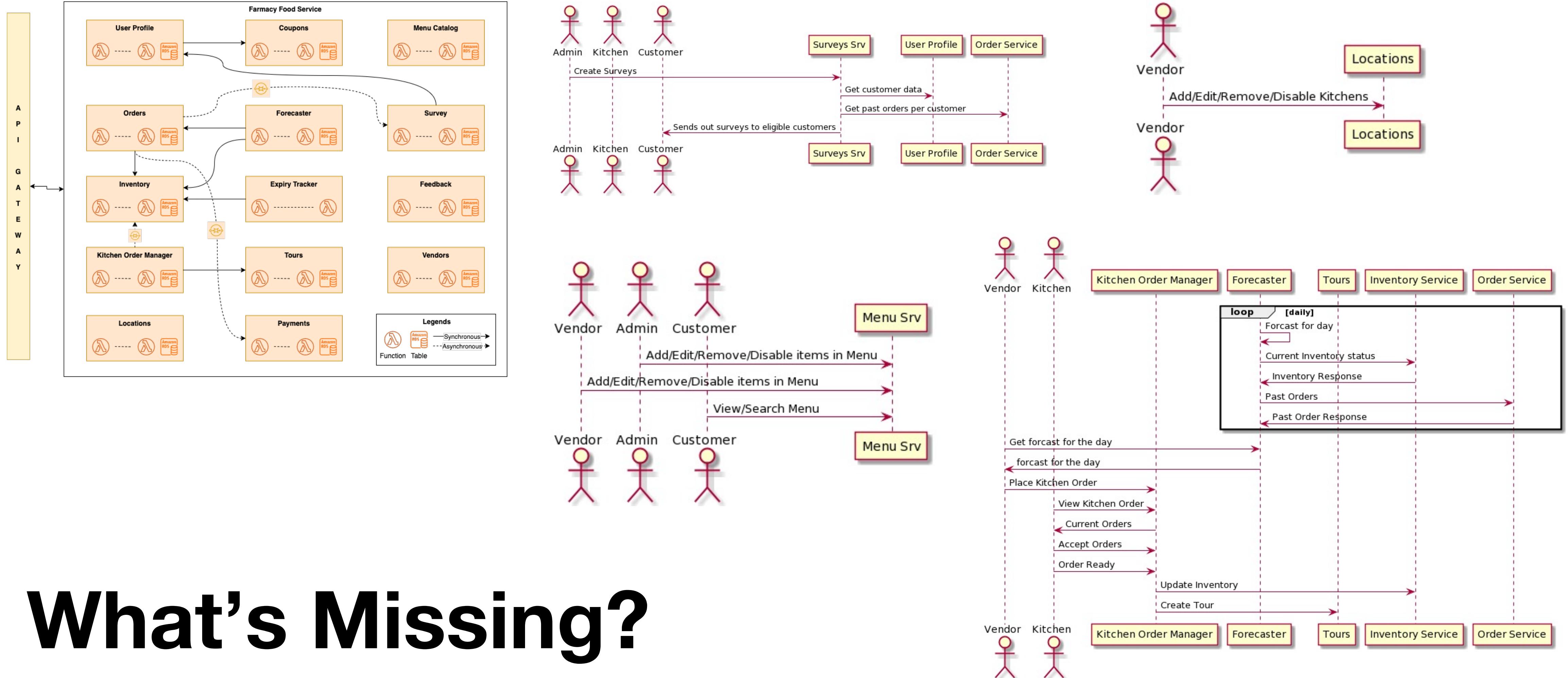
Milestones

ADRs

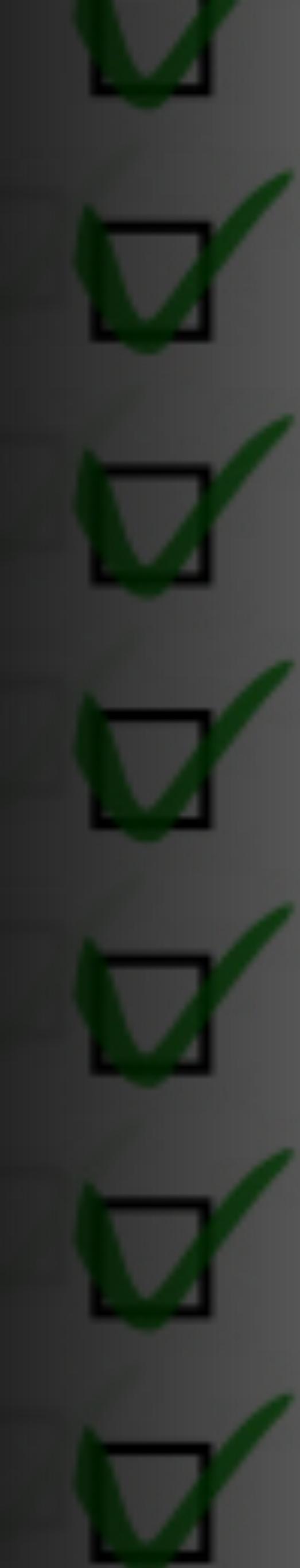
Completeness of solution



Completeness of Solution

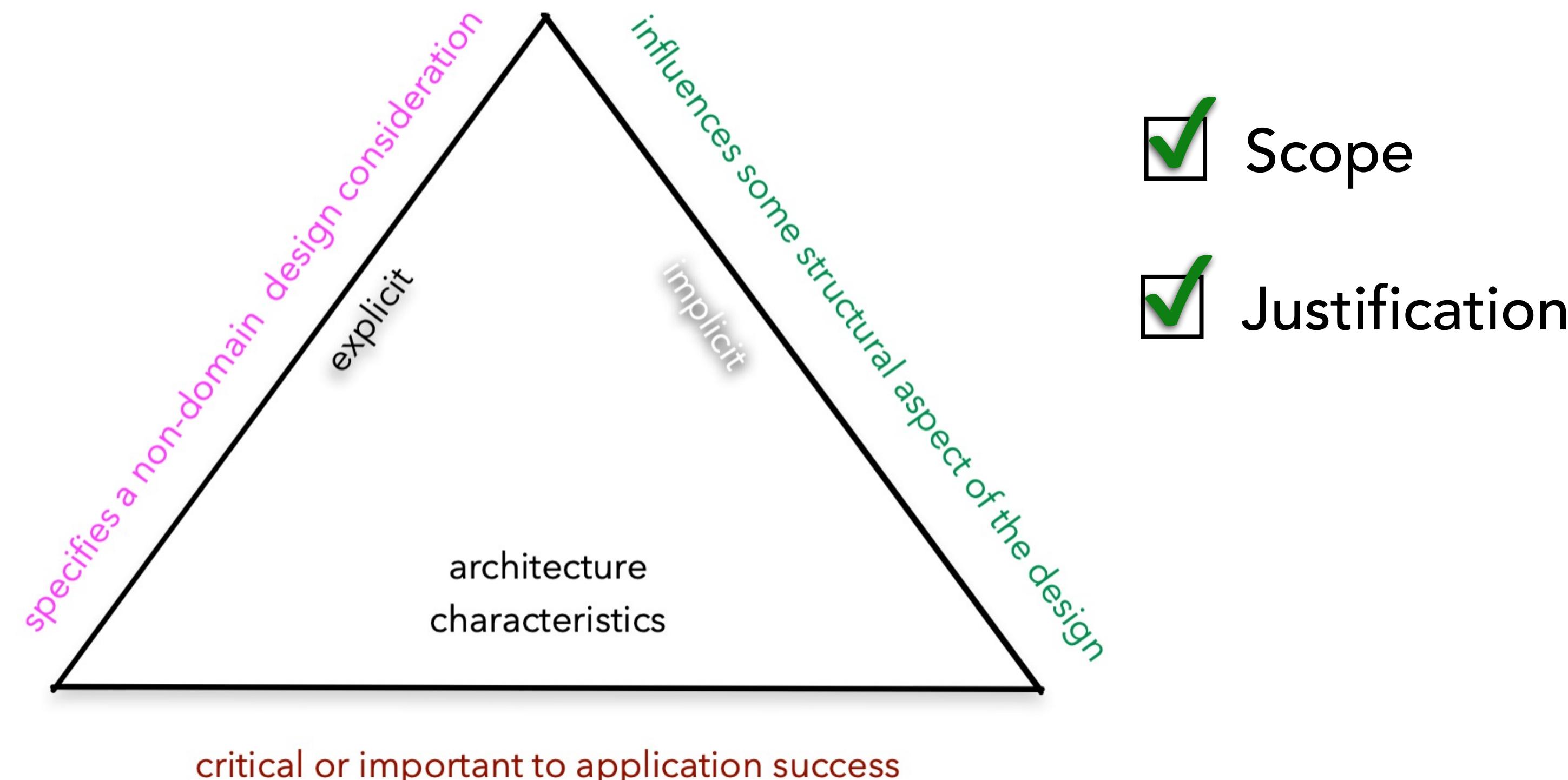


Identification of supporting architecture characteristics



Architecture Characteristics

Architecture characteristics form the foundational aspects of the architecture and are required for proper trade-off analysis and decision making



<https://www.developertoarchitect.com/downloads/worksheets.html>

<https://www.developertoarchitect.com/lessons/lesson112.html>

Architecture Characteristics Worksheet

System/Project: _____

Architect/Team: _____ Date: _____

Candidate Architecture Characteristics		
performance	data integrity	deployability
responsiveness	data consistency	testability
availability	adaptability	abstraction
fault tolerance	extensibility	workflow
scalability	interoperability	configurability
elasticity	concurrency	recoverability
others: _____ _____		

Top 3 Driving Characteristics

<input type="checkbox"/>	1. _____	Implicit Characteristics feasibility (cost/time)
<input type="checkbox"/>	2. _____	security
<input type="checkbox"/>	3. _____	maintainability
<input type="checkbox"/>	4. _____	simplicity
<input type="checkbox"/>	5. _____	
<input type="checkbox"/>	6. _____	Others Considered
<input type="checkbox"/>	7. _____	

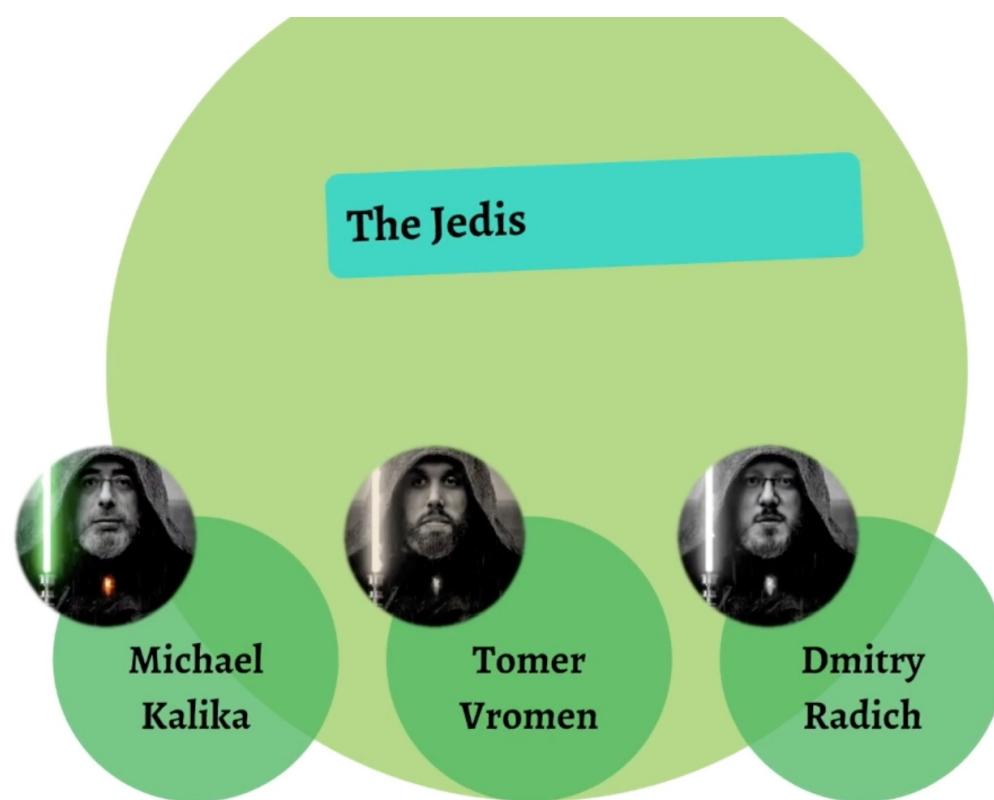
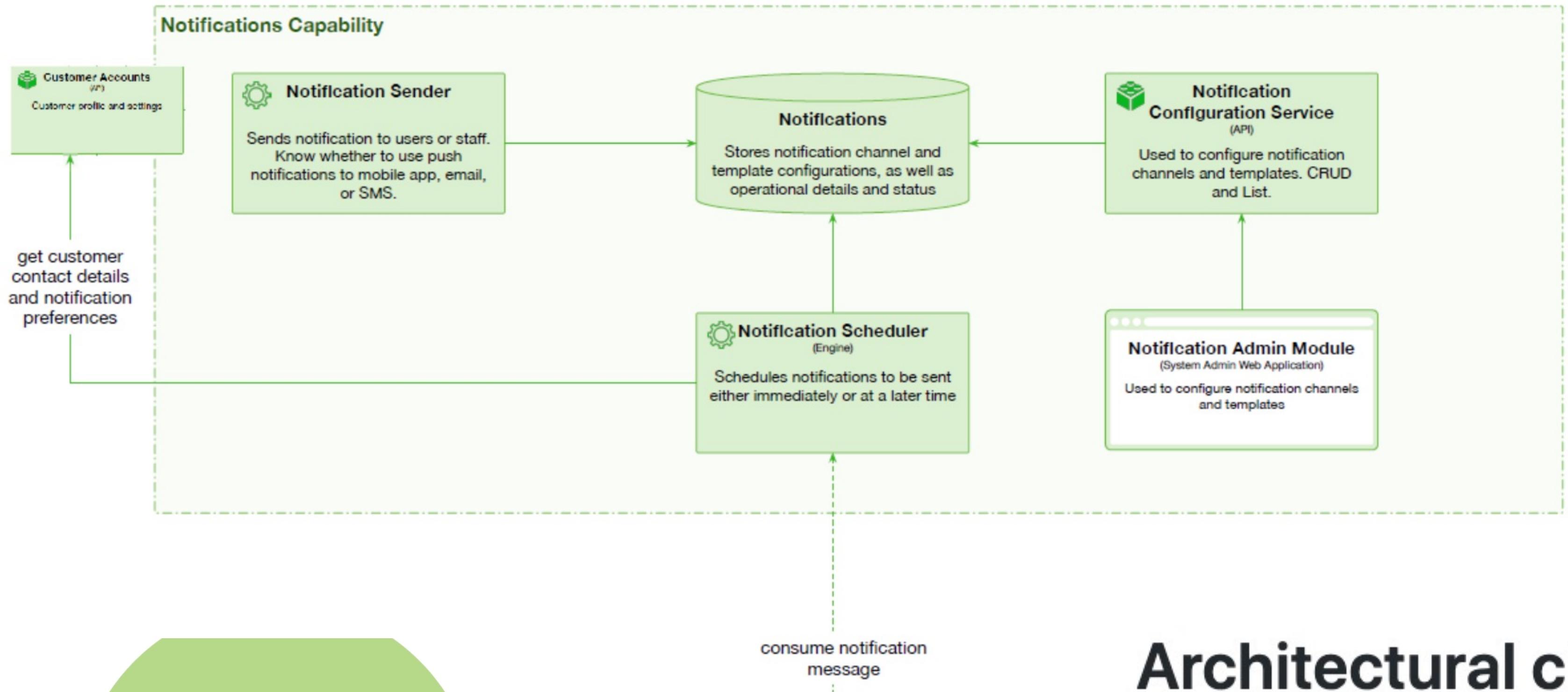
Instructions

- Identify no more than 7 driving characteristics.
- Pick the top 3 characteristics (in any order).
- Implicit characteristics can become driving characteristics if they are deemed *structural* concerns.
- Add additional characteristics identified that weren't deemed as important as the list of 7 to the *Others Considered* list.

^a denotes characteristics that are related; some systems only need one of these, other systems may need both



Notifications Capability



Architectural characteristics

- Elasticity.
- Fault tolerance.
- Plugin support.



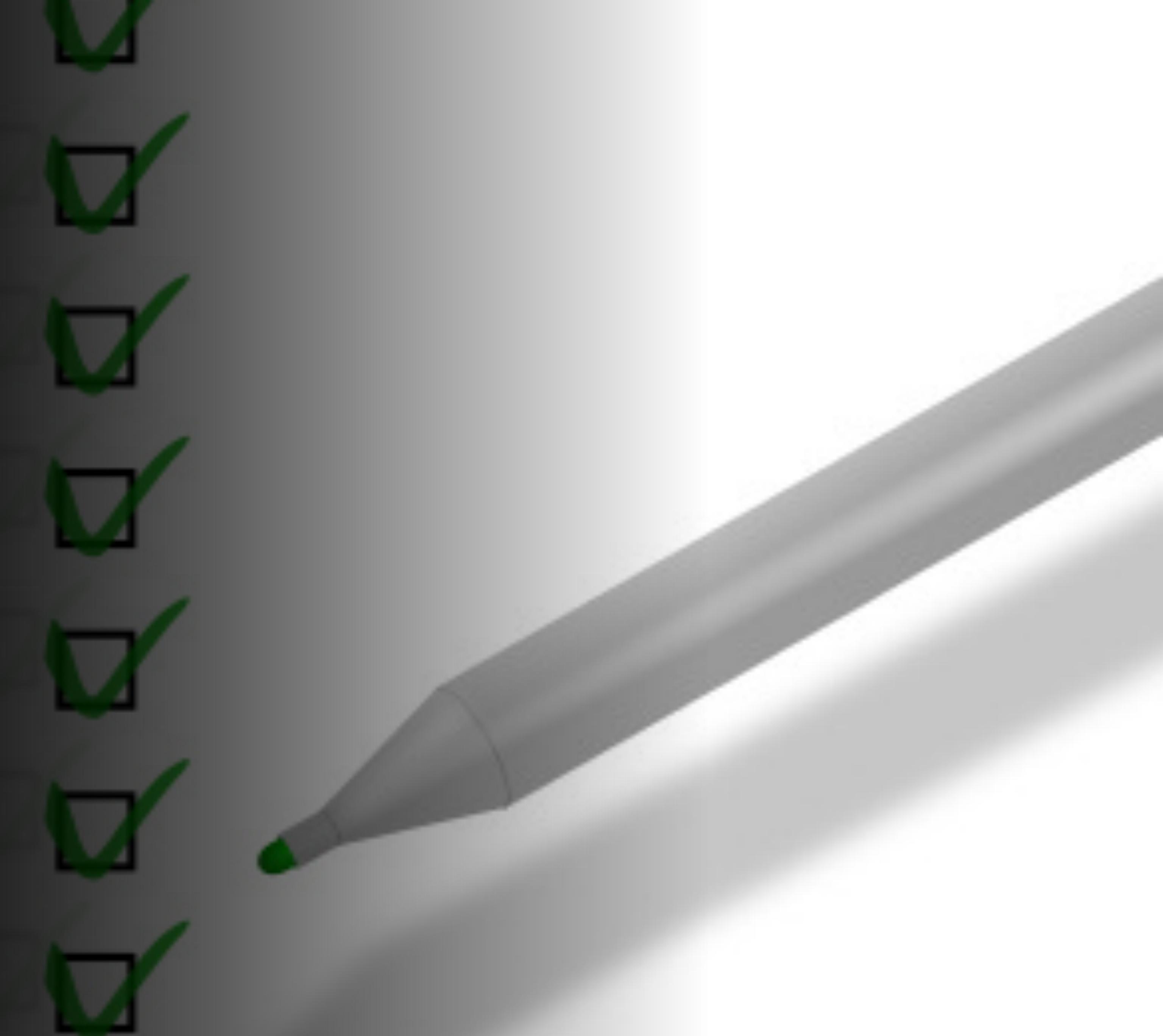
1. Enable Discovery - Agility

The customer experience in acquisition channels (mobile, web and even SMS) must be seamless. This requires custom experimentation and optimization. The architecture must provide ways to capture customer behaviour with comprehensive analytics and support A/B testing. It's a plus if it can also provide rich experiences like smart recommendations powered by AI/Machine Learning. Those features must be immediately available on pay-as-you go basis, instead of requiring significant upfront investments in development or technology.

2. Affordable DevSecOps - Viability

The startup must be able to implement the architecture given budget and time constraints. More specifically this is framed as an integration project where solutions from Software as a Service (SaaS) vendors are integrated using minimal software development. The architecture must be able to be built by delivering features that address the most immediate growth pain points of the business. Complex features that require custom software development must be postponed to as late as possible.

Diagrams - types, level of detail, and completeness



Diagrams

An effective architecture picture is worth more than a 1,000 words.
Architecture represents topology, which benefits from visual representations.

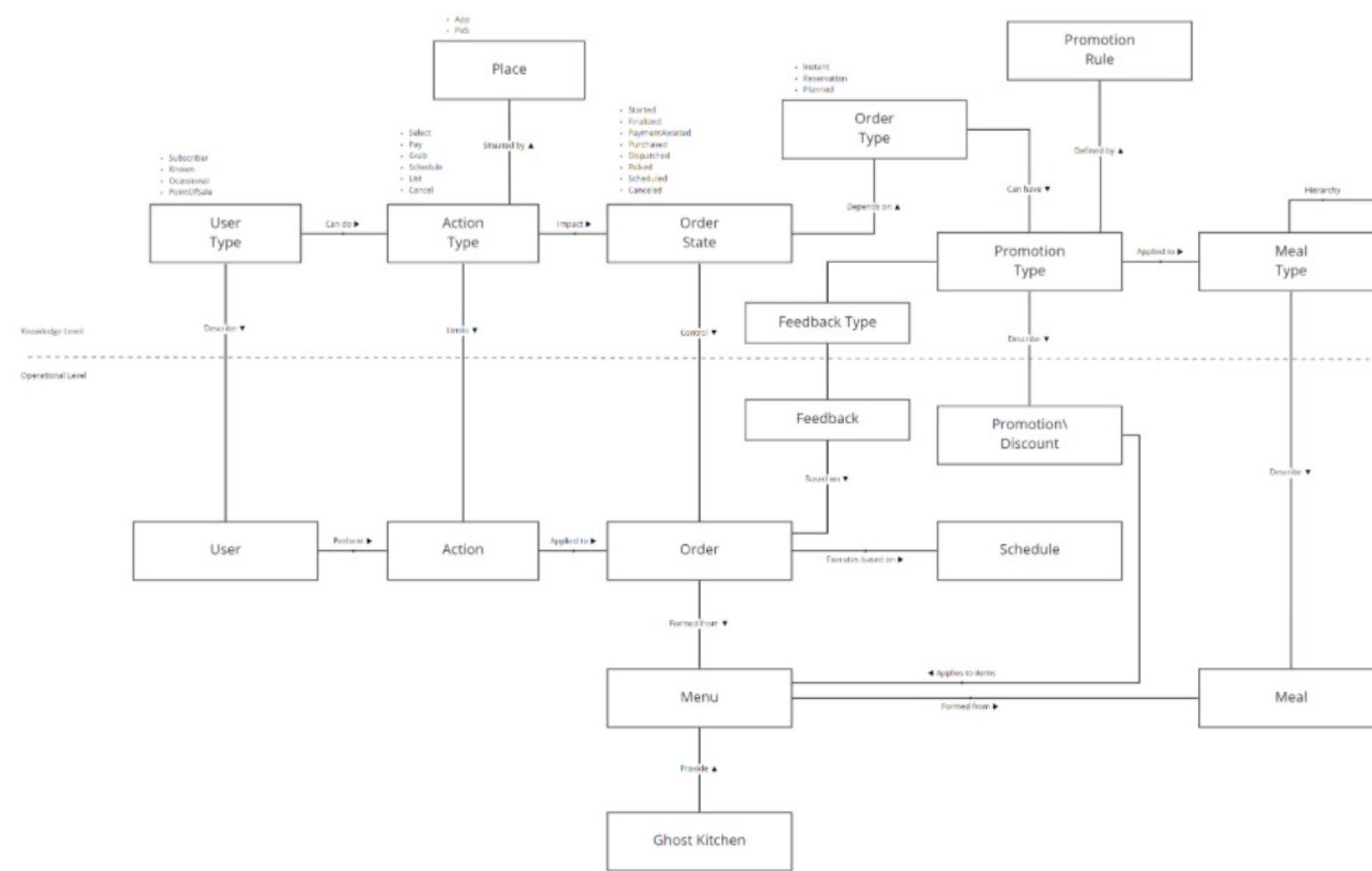


“The goal of a diagram is to convey a clear and shared understanding of the architecture”

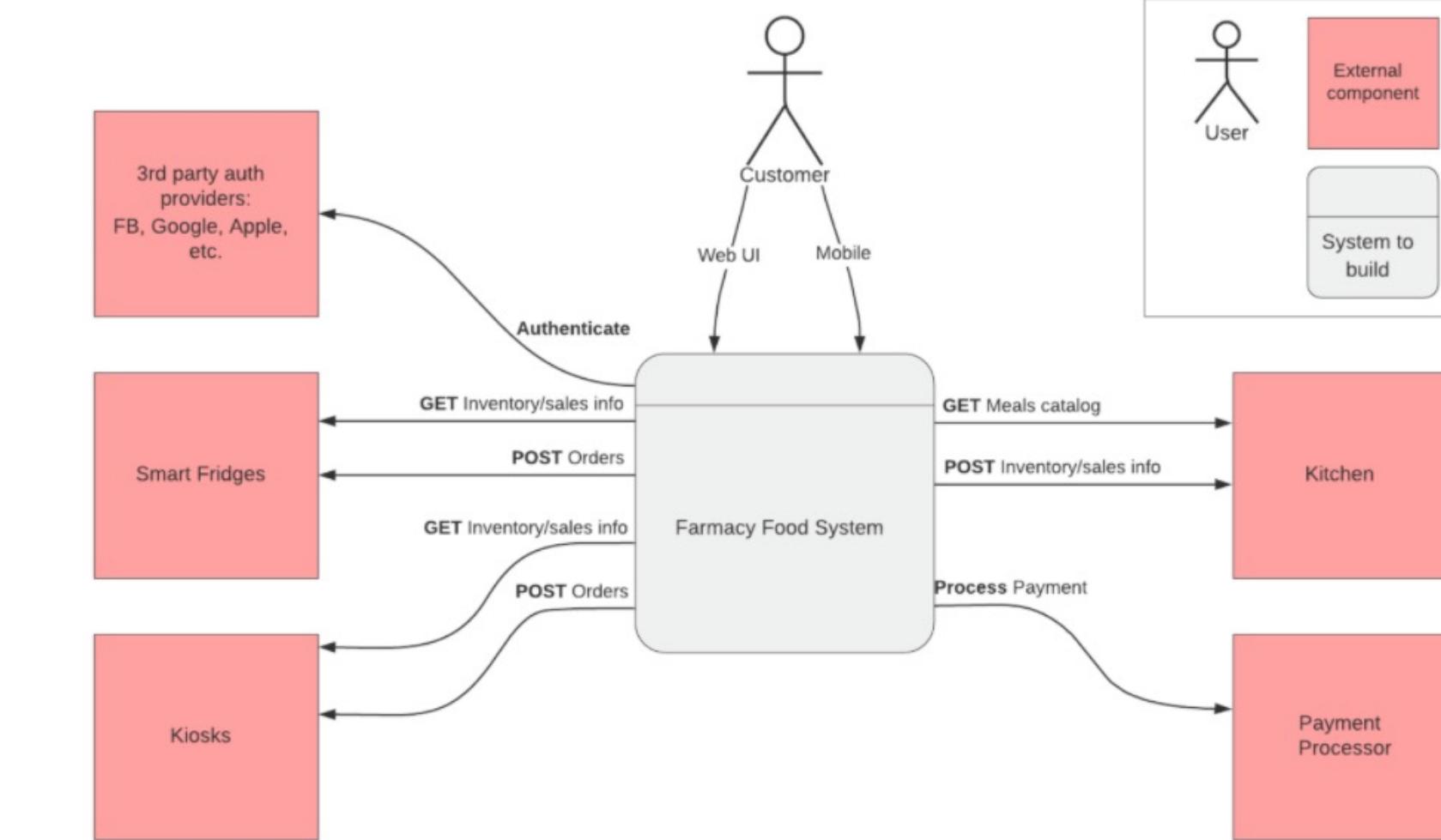
- Neal Ford

Diagrams

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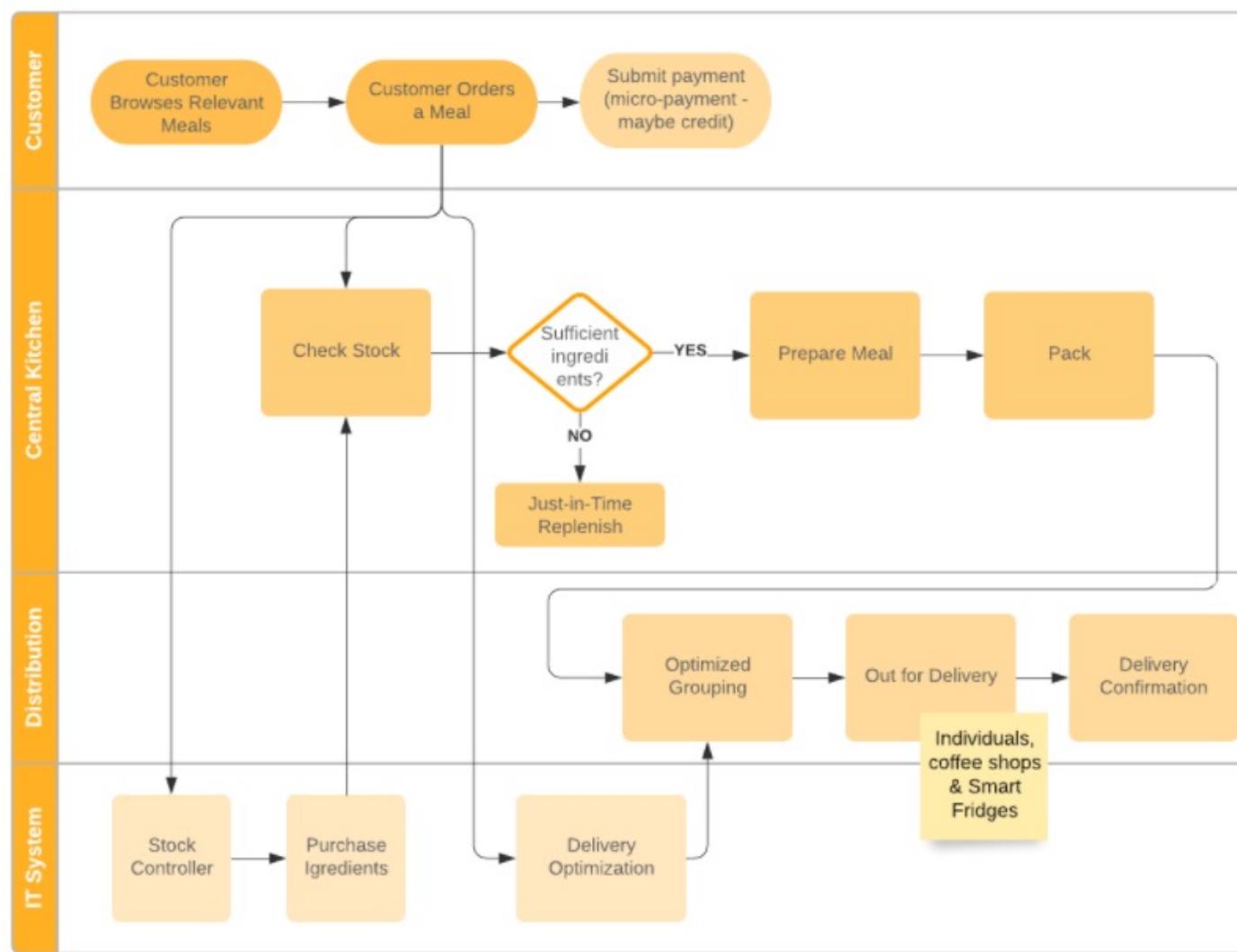
component diagrams



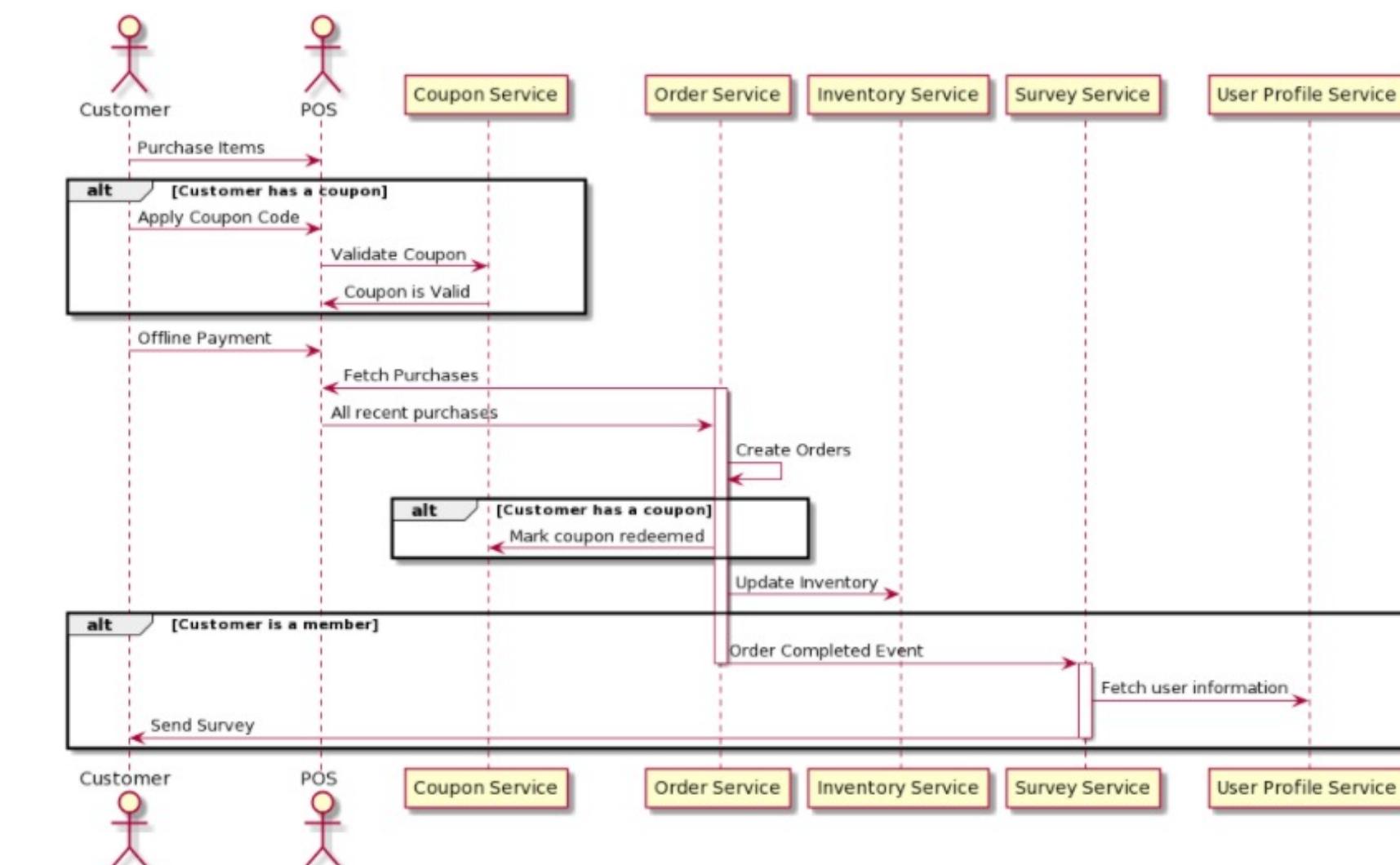
context diagrams

Diagrams

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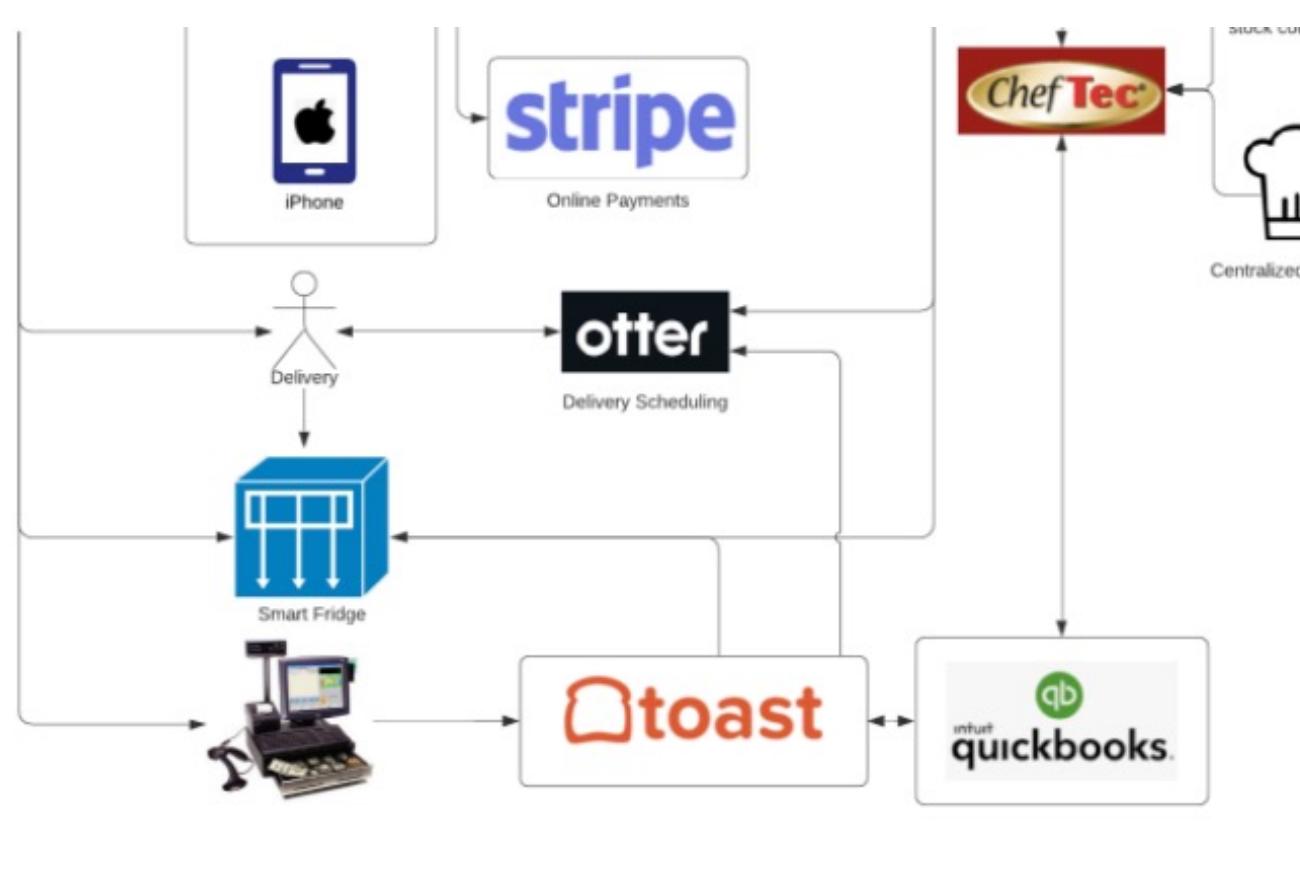
user journey diagrams



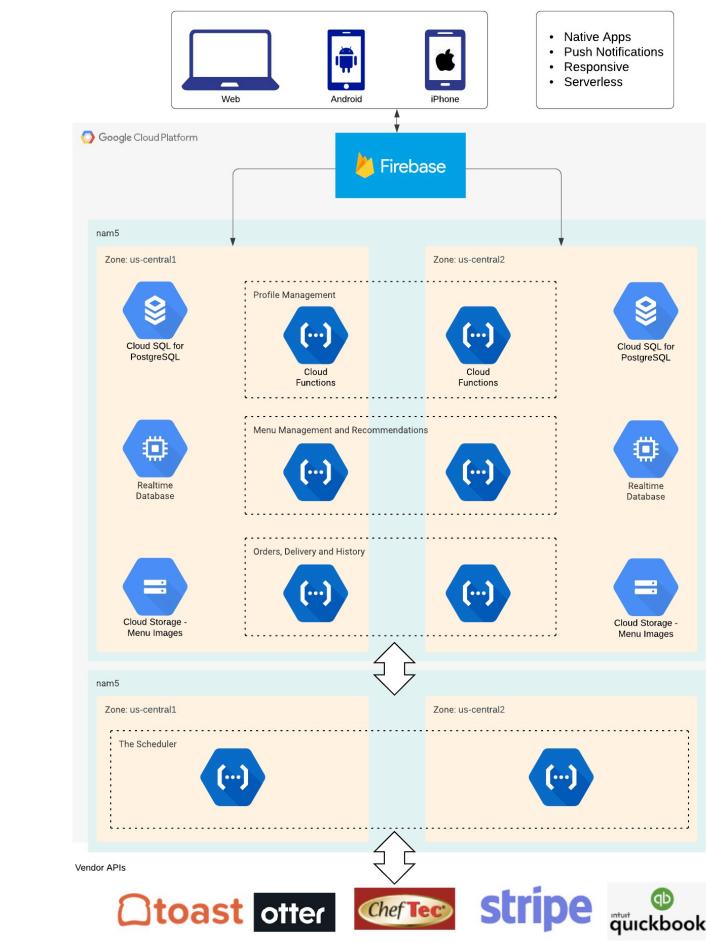
sequence diagrams

Diagrams

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Architecture represents topology, which benefits from visual representations.



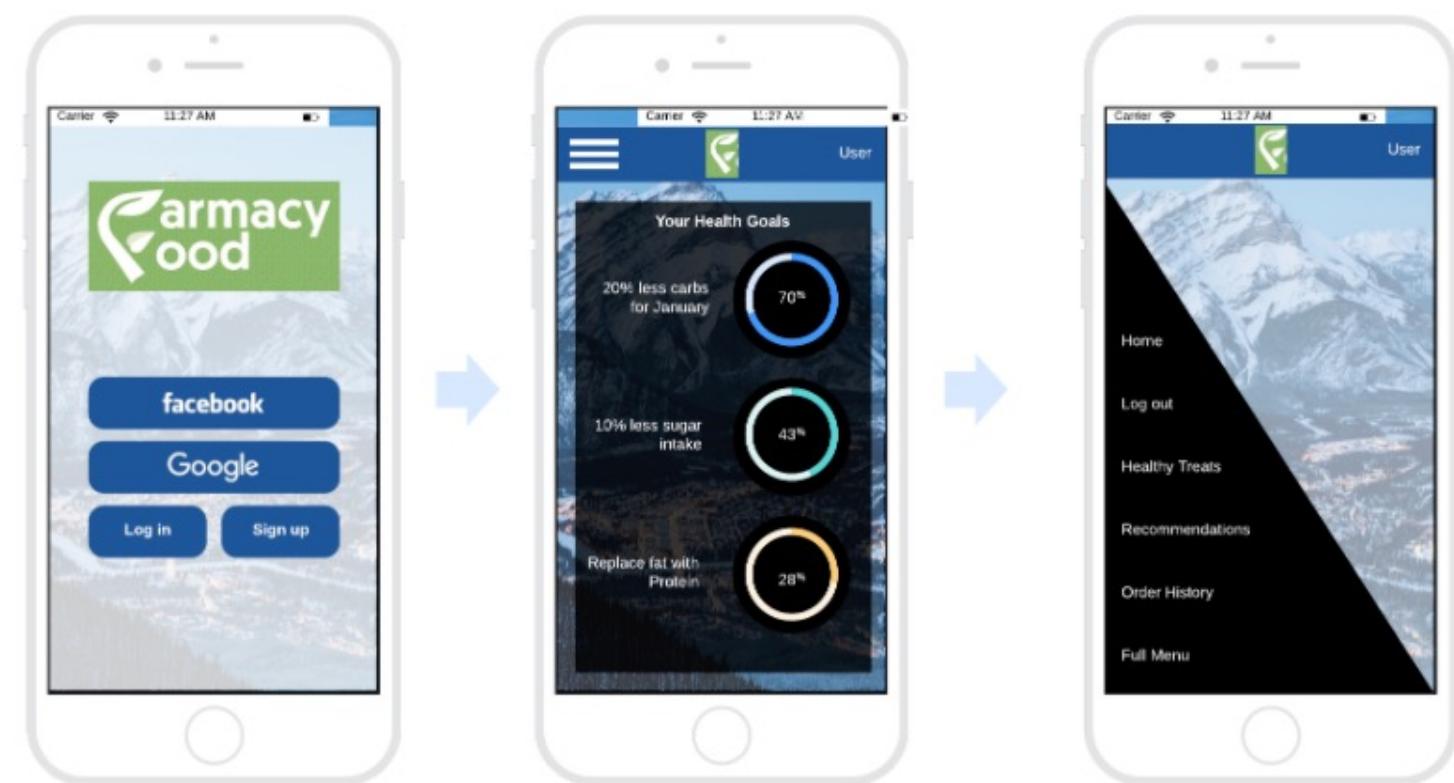
system-level diagrams



deployment diagrams

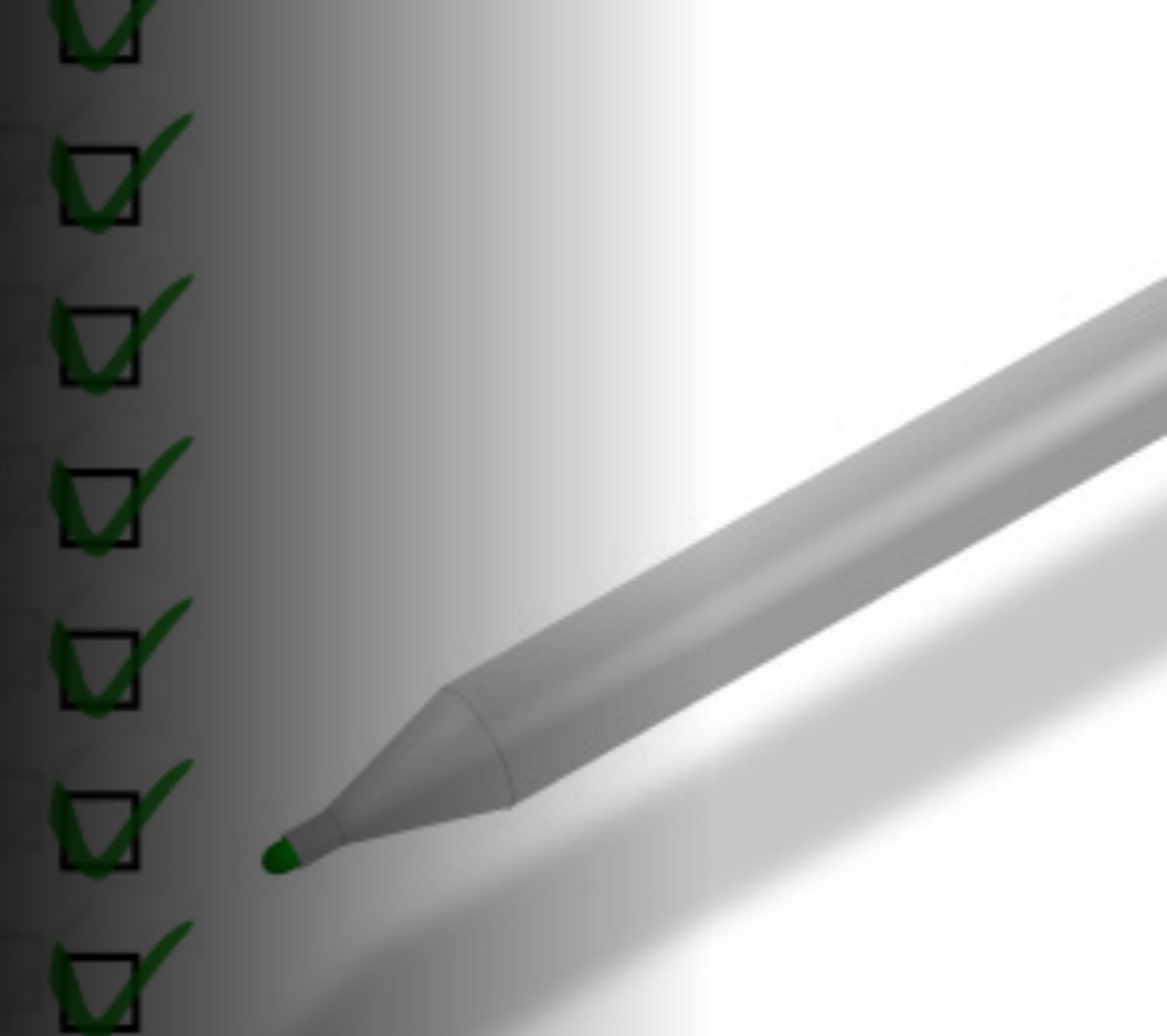
Diagrams

An effective architecture picture is worth more than a 1,000 words.
Architecture represents topology, which benefits from visual representations.



user interface mockups

Architecture decision records - documentation and justification



O'REILLY®



Fundamentals of **Software** **Architecture**

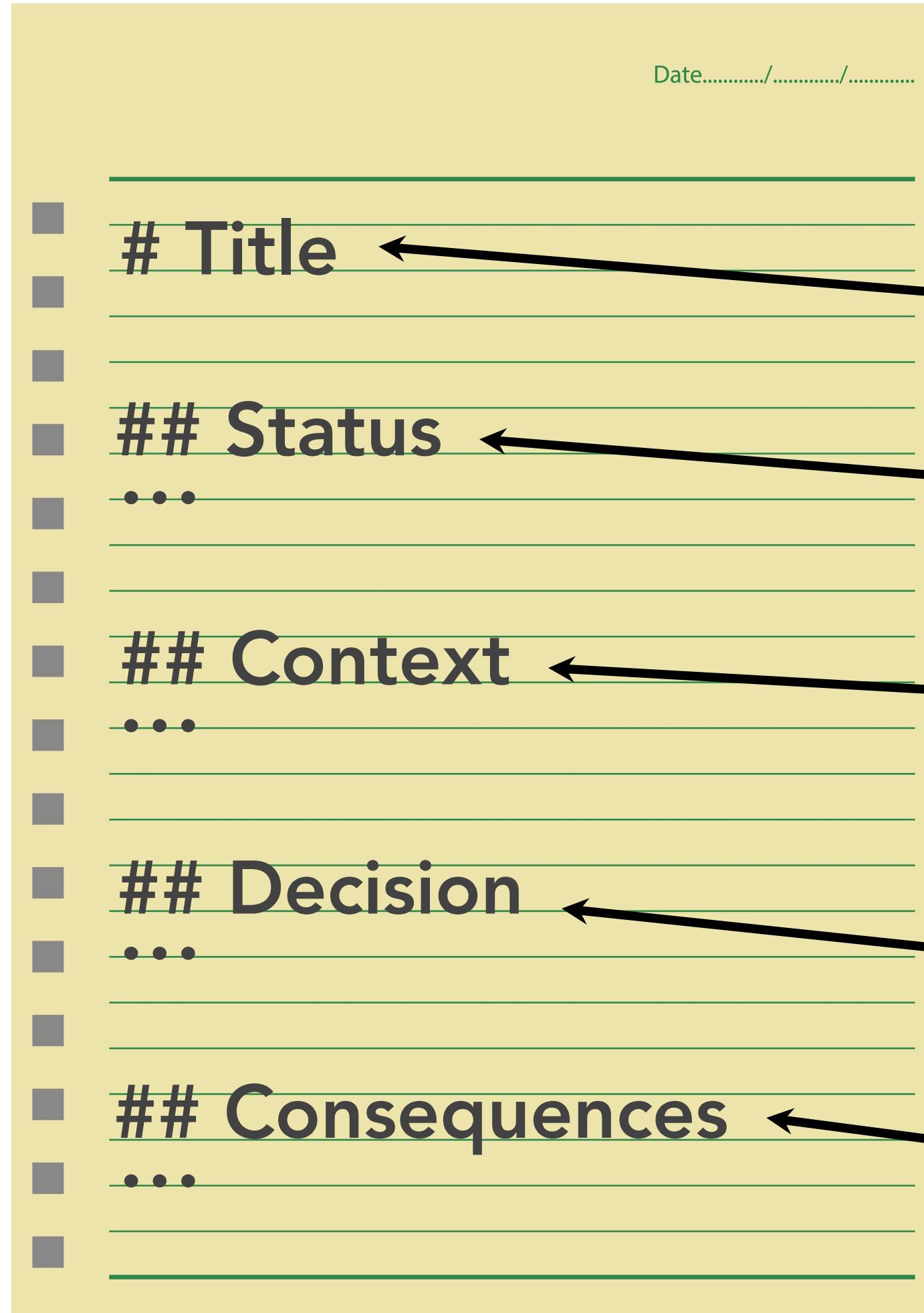
An Engineering Approach

Mark Richards & Neal Ford

Second Law of Software Architecture

*"Why is more
important than how"*

architecture decision records



short text file; 1-2 pages long, one file per decision
markdown, textile, asciidoc, plaintext, etc.

short noun phrase

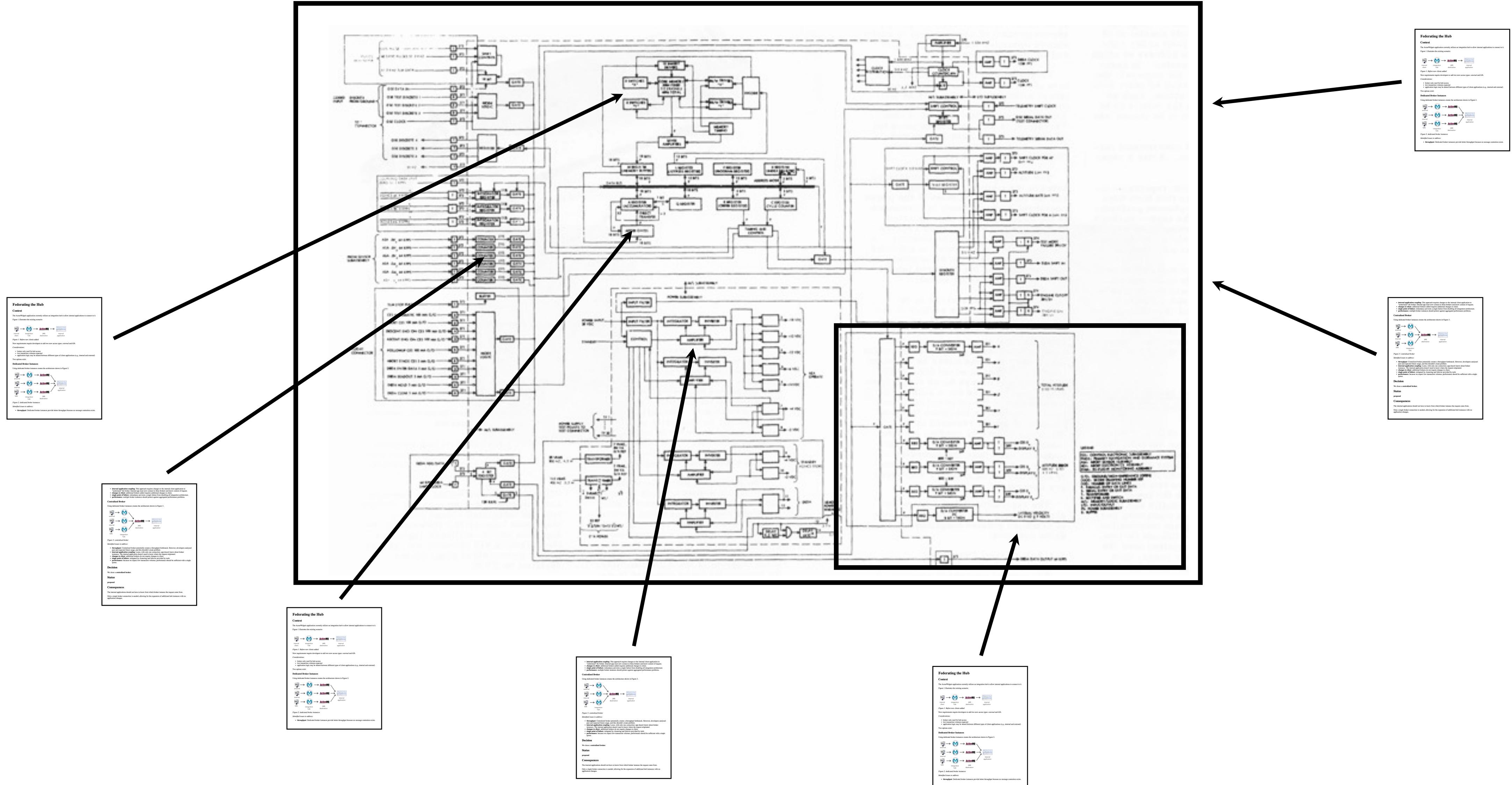
proposed, accepted, superseded

description of the problem and alternative
solutions available (documentation)

decision and justification (the “why”)

trade-offs and impact of decision

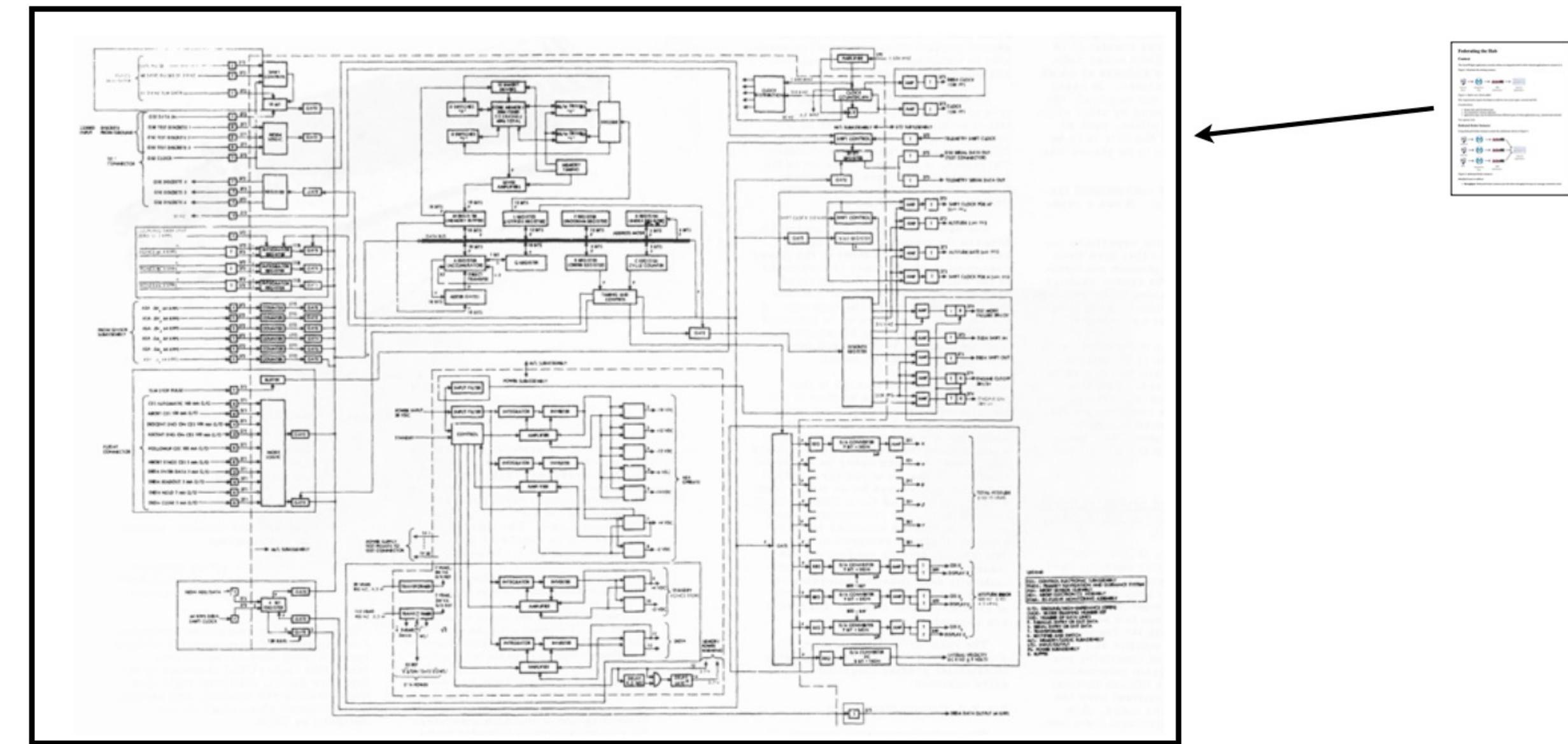
architecture decision records



architecture decision records

ADR 001: Use the microservice architecture style with containerization

Farmacy Food is a start up company and does not have a sizeable team of experienced developers available. The overarching architecture style for the Farmacy Food system should be simple, easy to create, maintain and **evolve**. Finding developers that can create and evolve the system, as well as tools and frameworks that support the system should not require heaps of money. In other words, Farmacy Food is not in a position to be an *early adopter*, and should hence adopt an established architecture style that supports evolution.



architecture decision records

ADR_004 Use a centralized notification for external communication

Context

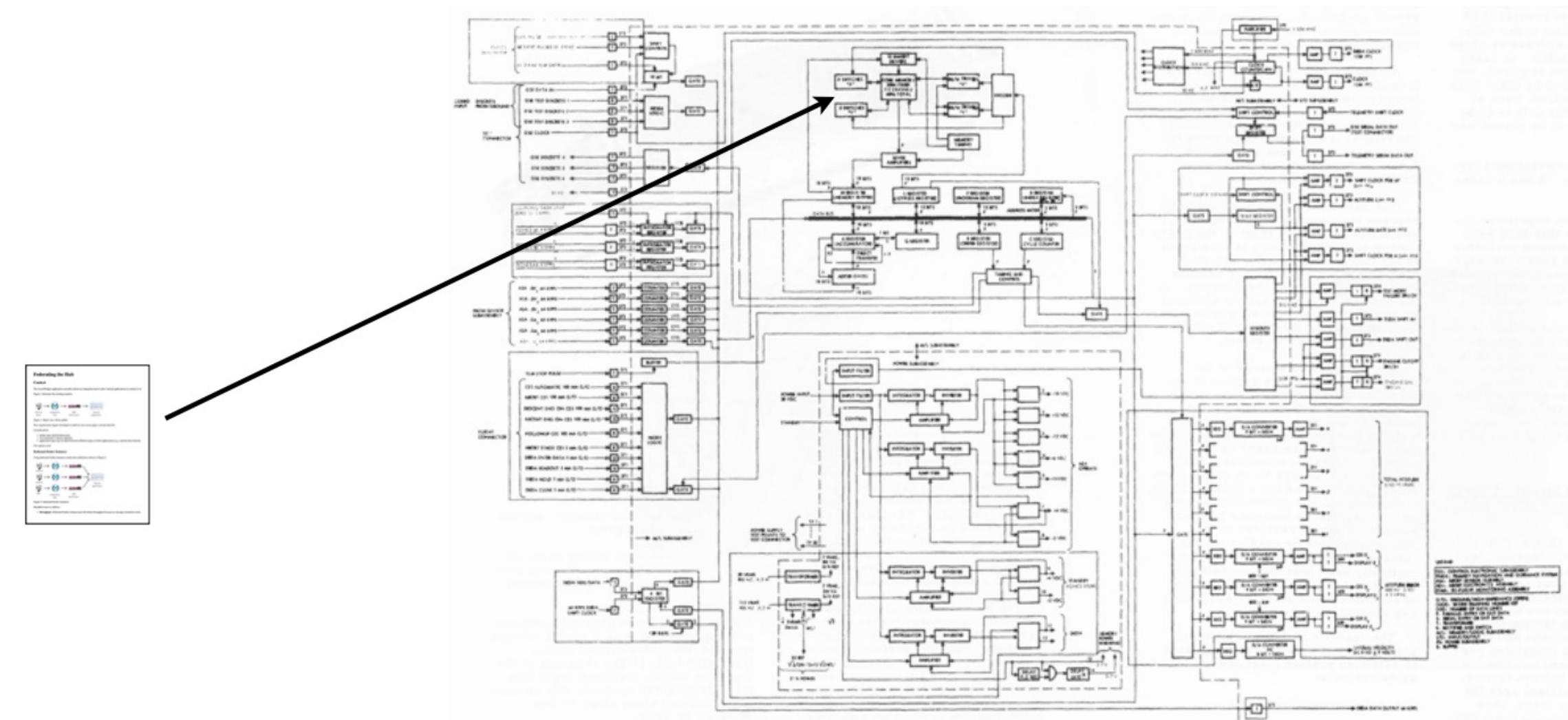
There was some confusion around the purpose of the notification component. Specifically, is this component an event bus for **all** communication or is it a shared component for communicating externally.

Decision

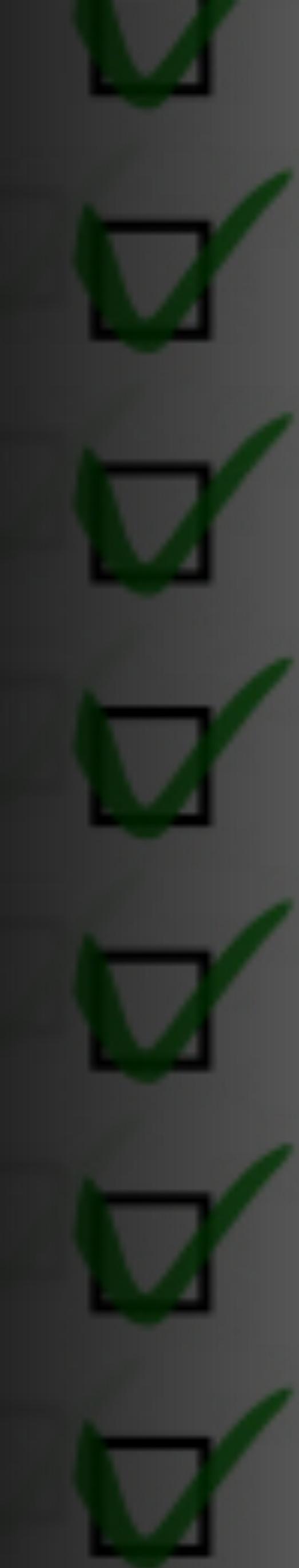
We decided to have a dedicated notification system responsible of sending external notification. The reasons include:



[selfdriveteam](#)

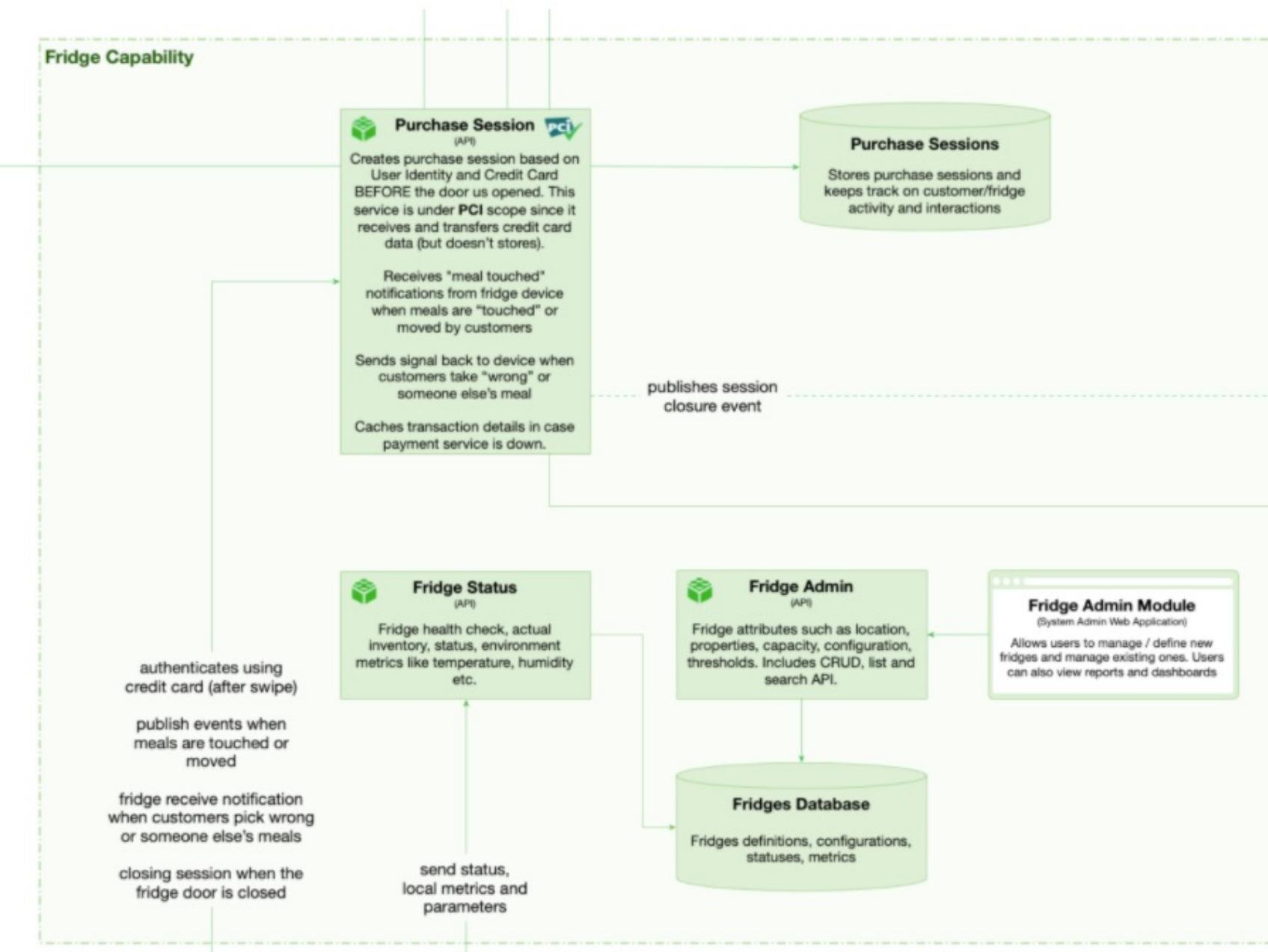


Overall solution



Overall Solution

The architecture solution describes the overall structure of the system and how it will be constructed



- Are the architecture characteristics demonstrated in the solution?
- Is the solution appropriate and feasible given the project constraints?
- Are the architecture styles selected represented in the solution?

Integration

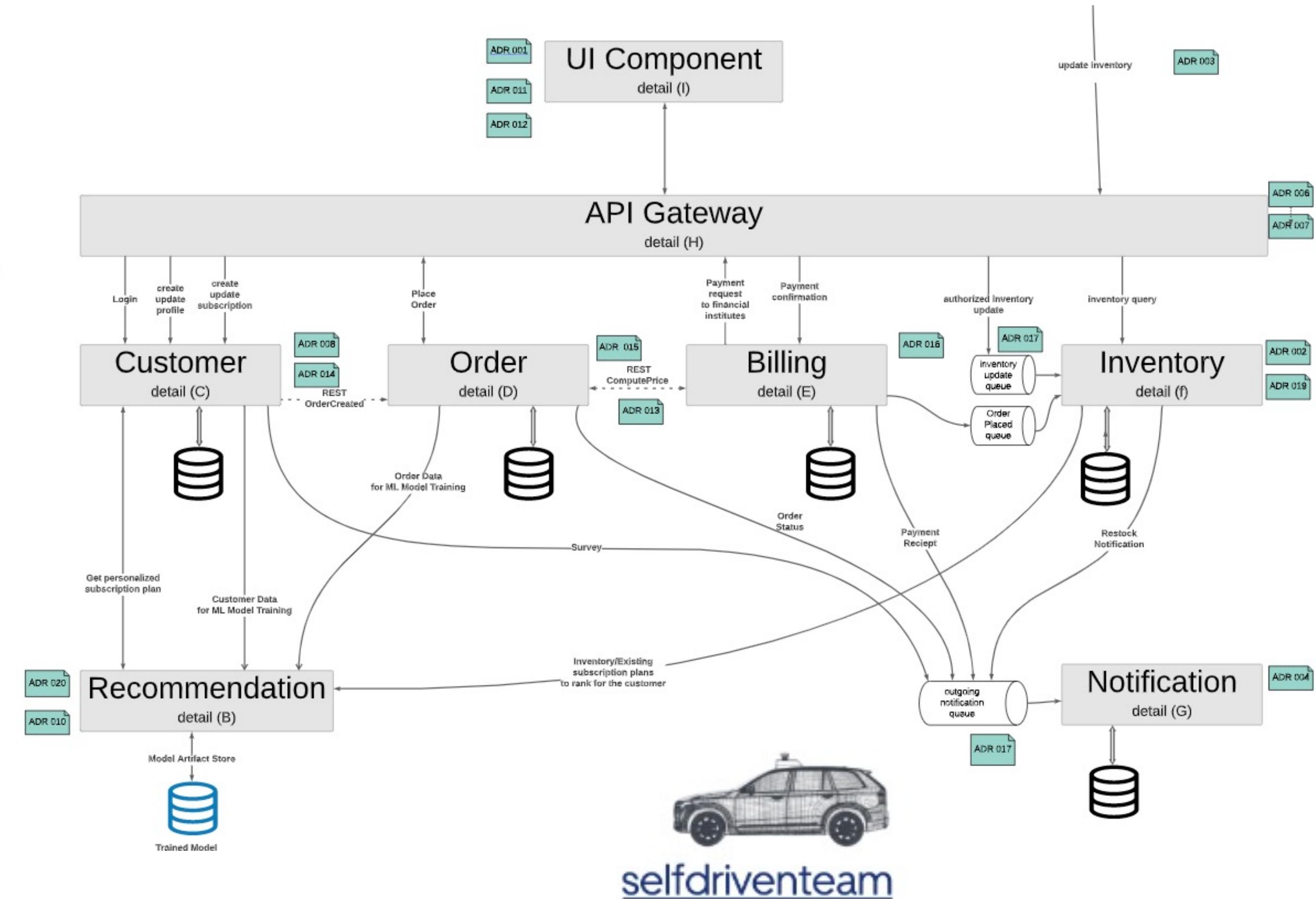
Feasibility

Agility

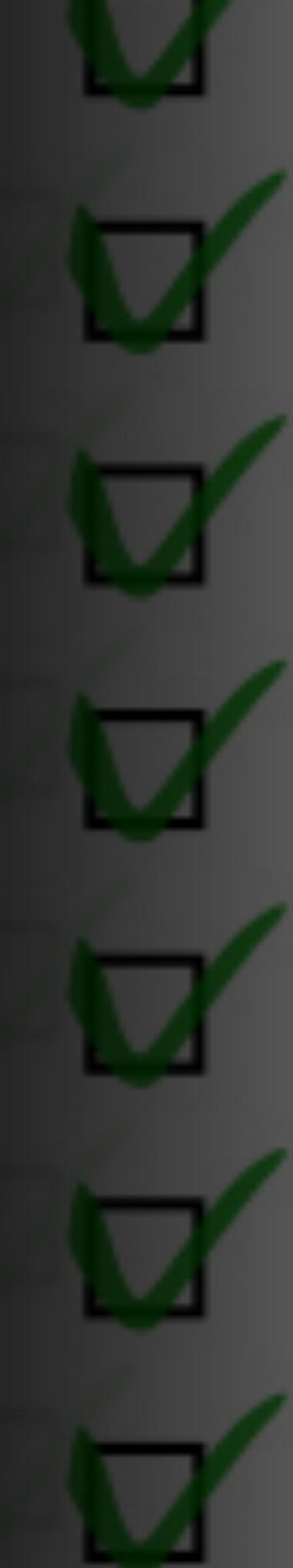
Availability

Security

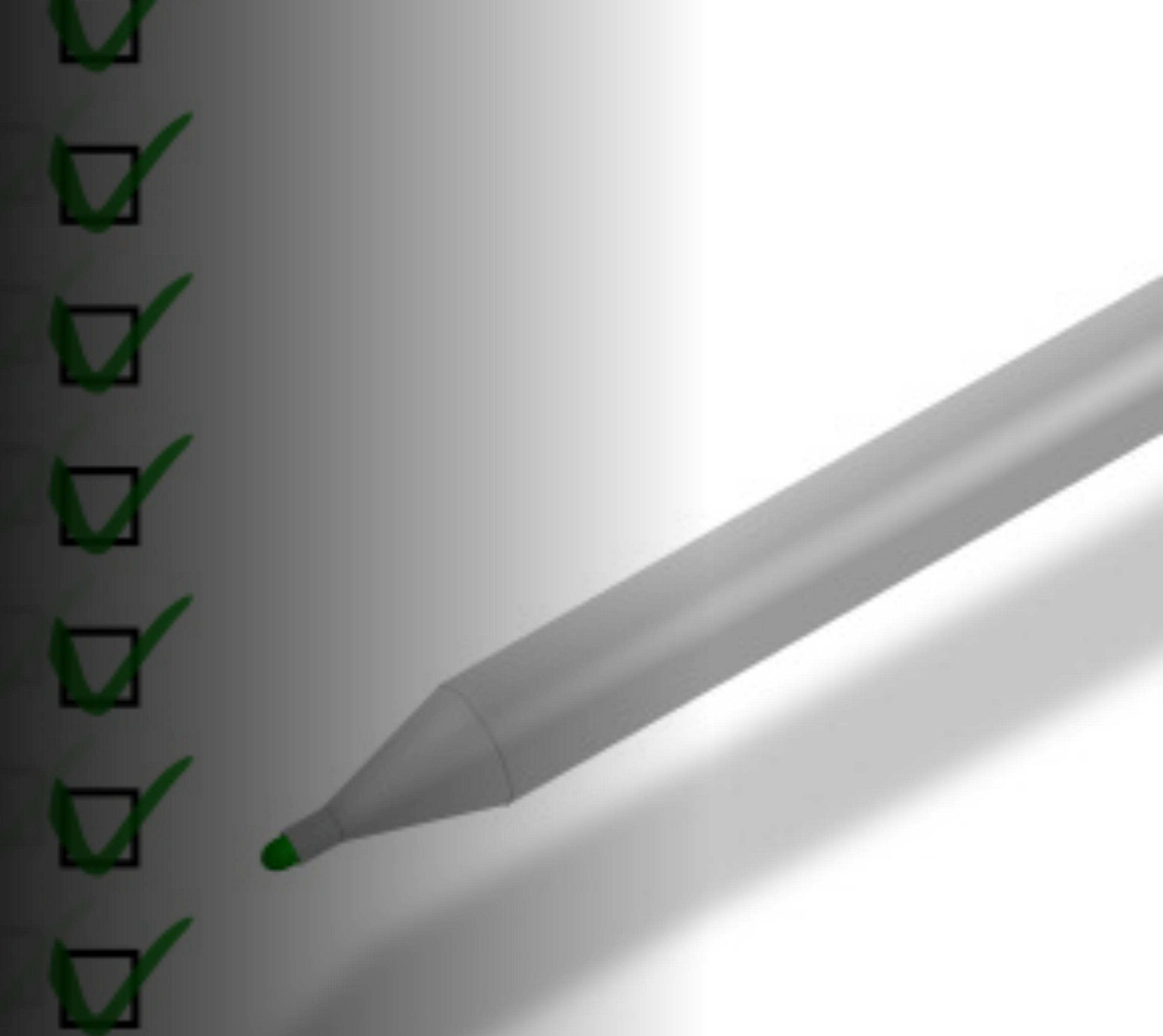
Scalability



Final architecture presentation (semi-finalist)



Meet the SME



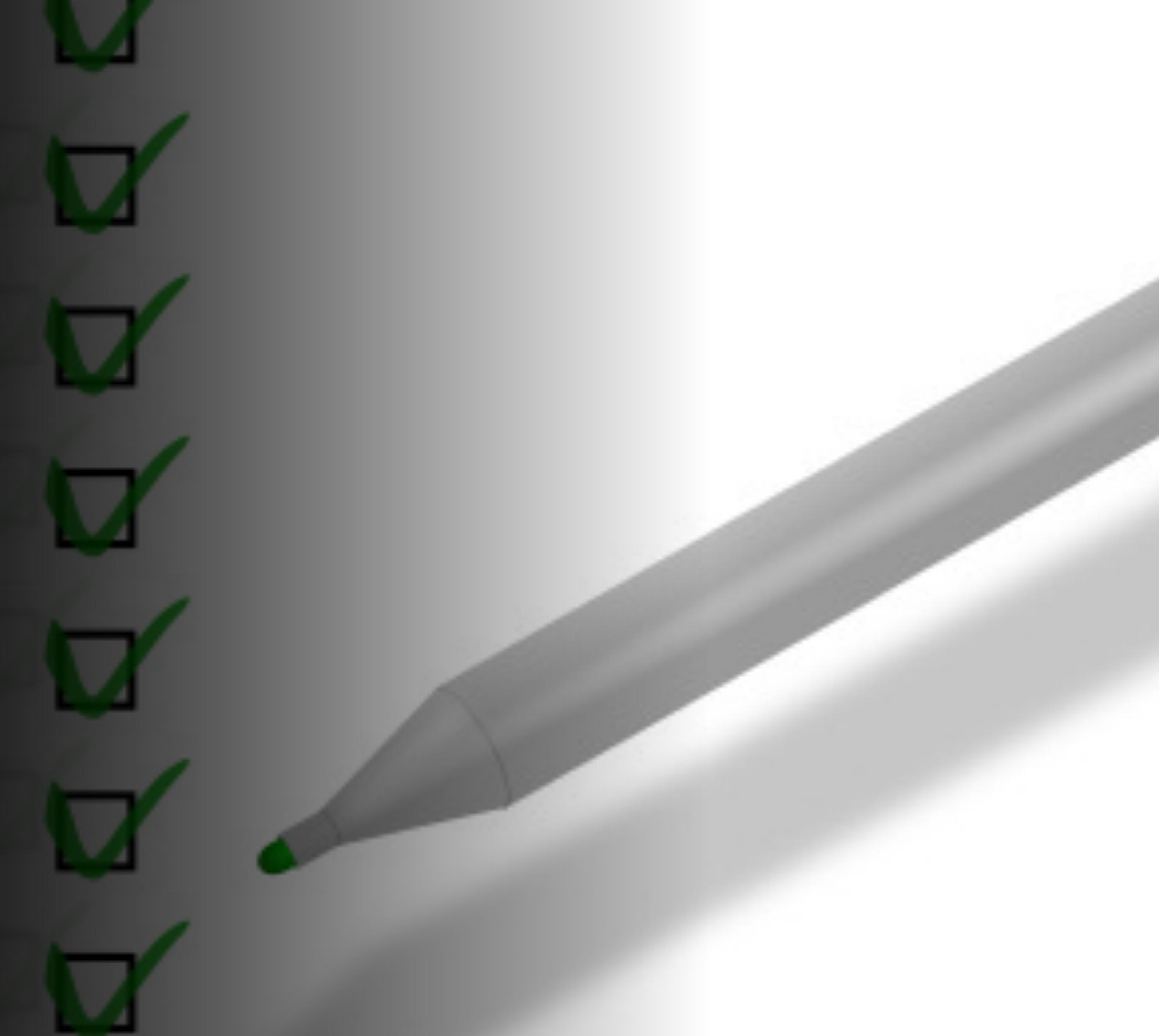
Odie Gray

Founder & President, Diversity Cyber Council



Odie Gray is a disabled military veteran, cybersecurity professional, and businessman of 15 years specializing in business strategy development and transformation. As a thought leader in this space, he's delivered strategic value to his clients by developing new cybersecurity service offerings and programs and managing teams for industry-leading organizations.

Meet the Judges



David Bock



David Bock is the vice president of strategic development at Core4ce, where he helps turn new ideas into successfully executed business plans. Previously, David was the VP of tech and engineering mission support at Decisiv, where he was responsible for internal IT operations, site reliability engineering, quality assurance, security, customer service, and the company's release and triage teams. David served as the editor of O'Reilly's OnJava.com website, has been published in several books and magazines, and frequently speaks on technology and team processes at software conferences.

Lukasz Dynowski



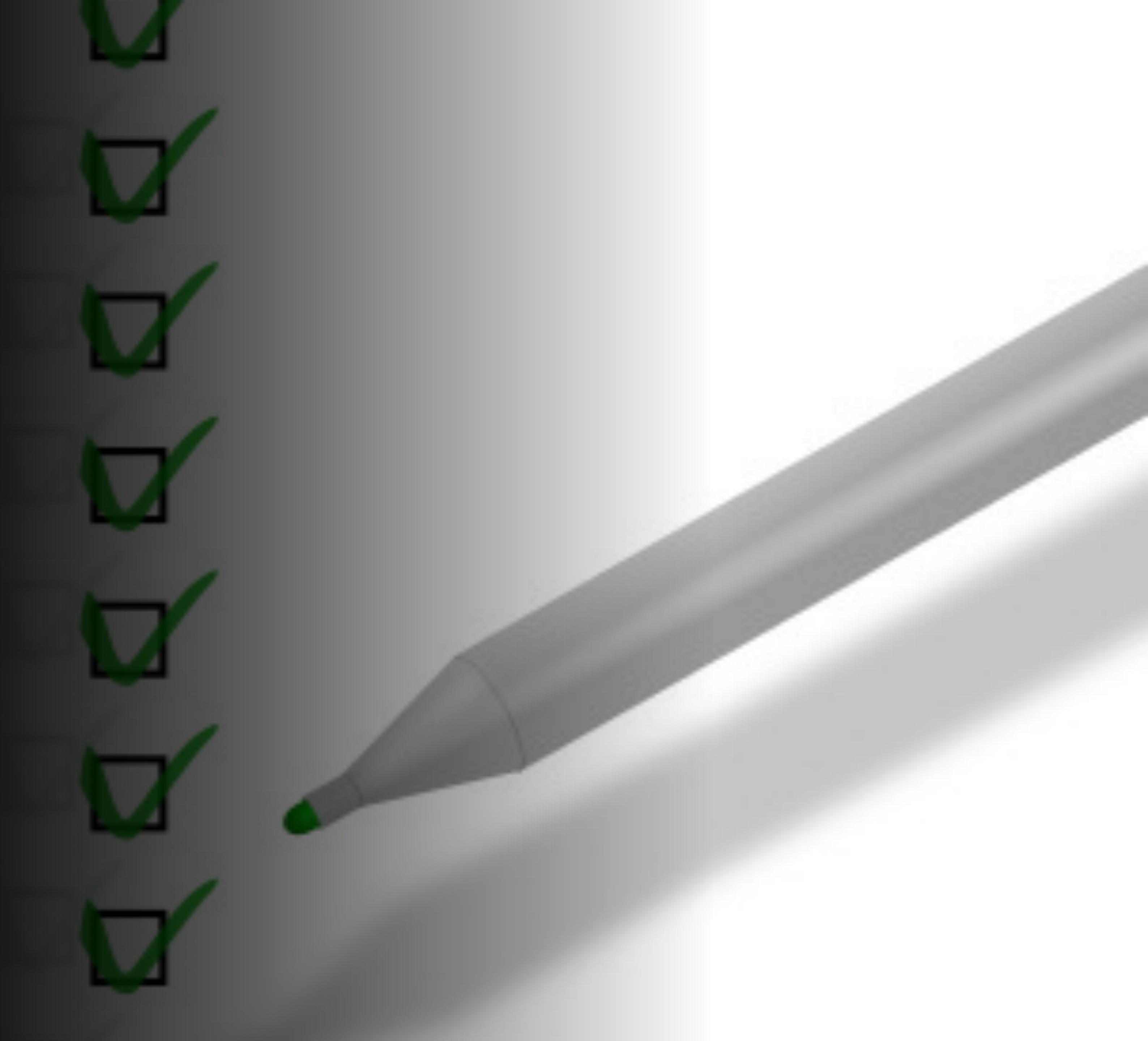
Lukasz Dynowski is a Copenhagen-based independent consultant. Over his 10+ year IT career, he's worked with cloud, DevOps, full stack, software architecture, and other stuff that he wishes to forget. He's a firm believer in the open source movement and in the values behind the Agile Manifesto. Lukasz is a former winner of Architectural Katas and is ranked in the first 0.2% of developers on Stack Overflow. He's also a geek and beloved husband and father to two lovely kids.

Jacqui Read



Jacqui Read is a thought leader in the documentation and communication of design, outlining technical solutions to a broad variety of audiences, from technical leads to the C-suite and from developers to prospective clients. She's an experienced software architect and has worked in domains including fintech and big data, in roles such as software developer, technical architect, and solution architect. From her origins publishing blog posts and gists, she's become involved in user groups, workshops, and conferences. In 2021, she led the winning team at the autumn O'Reilly Architectural Katas challenge. Her interests include living documentation, NoSQL, and Agile practices, with a focus on learning and improvement through iteration.

Contest Details





DIVERSITY CYBER COUNCIL

SECURING ACCESS TO OPPORTUNITY

Mission:

Diversity Cyber Council is a 501c3 Non-Profit that serves under-represented demographics in the tech industry by facilitating education, training, and staffing opportunities to establish a sustainable and diverse talent pipeline to the workforce.

Vision

Our vision is to enhance inclusion and representation in the tech industry through training, mentoring, networking, and visibility programs.

Goal

Our goal is to establish a sustainable and diverse talent pipeline that extends career equity to underrepresented demographics by providing access to competent training programs that lead to direct employment opportunities.

The Kata

Program Name: ***Spotlight App/Platform***

Program Summary: The Spotlight App Project is a sustained effort to amass a coalition of nonprofits in order to address specific needs within the communities we serve by leveraging a centralized platform as the base of operations to collaborate and make a collective impact.

The Kata

Problem Statement #1: The decentralization and lack of support between nonprofits create gaps of service and overall impact.

Problem Statement #2: The lack of visibility of nonprofit groups and offerings creates a barrier of access to the people we aim to serve.

Technology Solution Description: Nonprofit Networking Hub & Diverse Candidate Career Case Management Tool

Solution Summary

A technology solution that serves the purpose of enhancing visibility, support, and collaboration of nonprofits serving similar needs in the community and operate as a candidate case management platform.

Users:

Non-Profit with offering ("Non-Profit") - group with a platform integration offering

Candidate - consumer of non-profit offerings, delivered via the platform

Administrators - Management of the platform, registering Non-Profits

Requirements

The Platform must establish a way to incentivize engagement such as sharing of resources, collaboration, networking, facilitating introductions, and partnerships
The Platform must categorize/tag nonprofit support services to match candidate needs identified in the onboarding assessment to include but not limited to

- Resume Writing Services
- Interview Prep
- Free Business Attire
- Apprenticeship Program Registration
- Training Program Registration
- College & University Registration
- Free Grocery & Meal Services
- Discounted Rent & Housing Services
- Daycare/Child Care Services
- Mentorship/Career Advocate Services

Requirements

- End-User Ease of Use is a hard requirement
- Tracking candidate progress is a hard requirement
- Tracking engagement is a hard requirement
- The Platform must provide a way to allow Non-Profits to publicize offerings to the platform that can provide some level of automatic matching for Candidate requests.
- The Platform allows offerings to contain rich text, links, and downloadable readable content such as PDFs, but no other downloads.
- Each offering must support a certain list of properties (defined by the platform), such as name, organization description, website, unique identifier (assigned by the Administrators) and other identification information.
- The Platform must provide both operational reports (number of candidate matches / period, number of offerings / region, and so on) and analytical reports (projections of future desirable career paths, Offering gaps in a region based on demand, and so on) for use by Administrators.

Reminder

Think critically about the nonprofit and candidate experience, anticipate these users needs while developing the use case and user stories.

Consider what can offer these users maximum value to fulfill the intent of logging on the app.

Resources



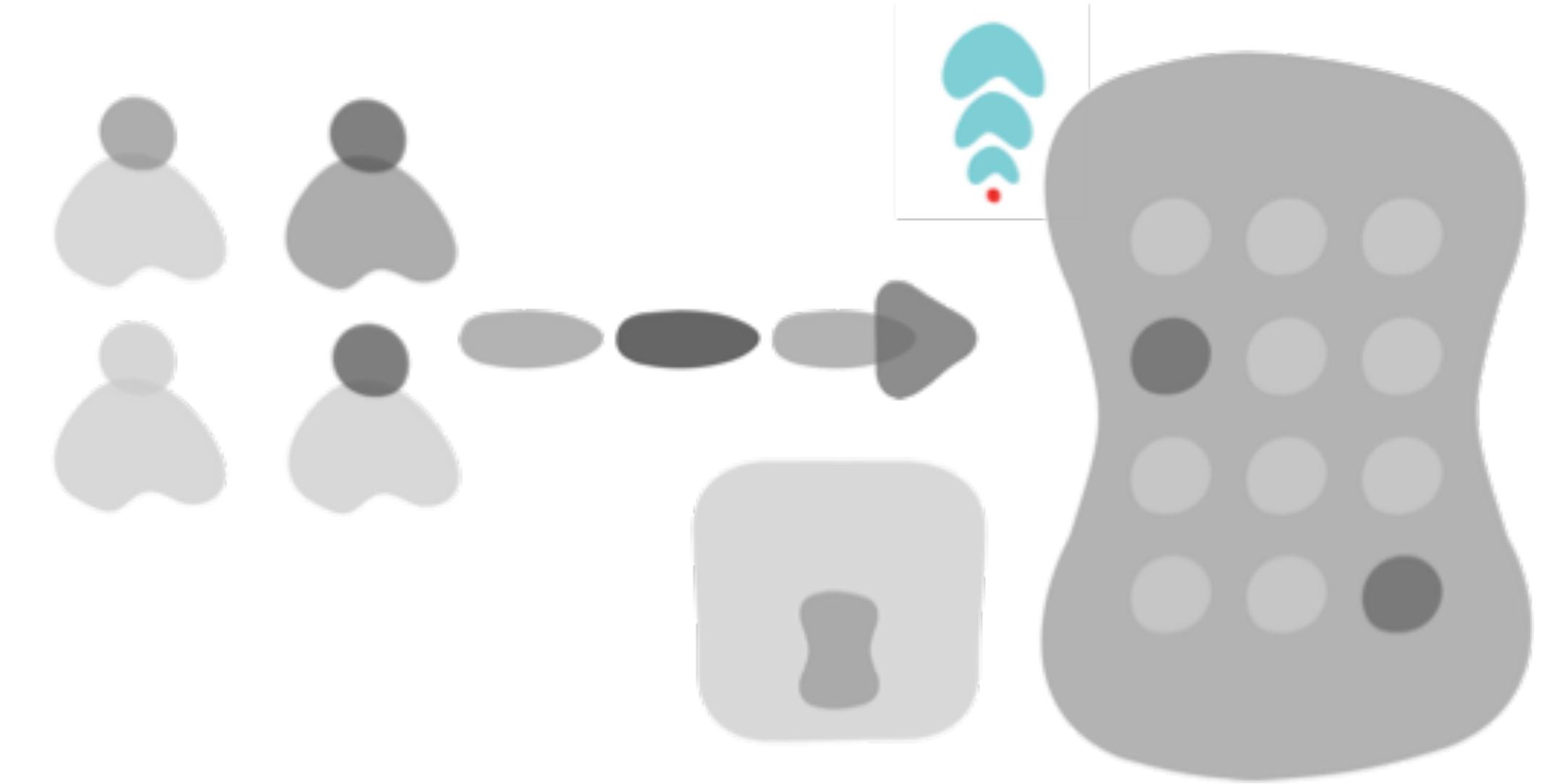
<https://www.diversitycybercouncil.com/>

Important Dates

- All teams must submit a google form (<https://forms.gle/xE1L3P95szQz3FTLA>) by Wednesday, May 25th at 12PM Eastern to participate
- Solutions are due in your GitHub repo by Friday, June 3rd, 11:59PM Eastern
- Semifinalists will be announced at the second event on Thursday, June 16th
- Questions? Email us at katas@oreilly.com

Architecture Katas On-line

Spring 2022



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Director / Software Architect / Meme Wrangler
<http://www.nealford.com>
@neal4d