

# Building Production Software

The Complete Software Development Lifecycle

The logo consists of a white square with a stylized 'C' shape cut out of it, positioned to the left of the company name.

**Credera**



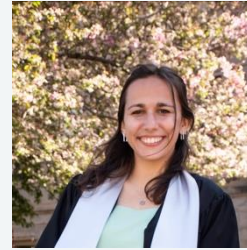
# Our Team

The Mines campus recruiting team consists of alumni who were all once in your shoes and now work as consultants at Credera.



## Joseph Spielman

Senior Consultant, Technology Solutions  
B.S. Computer Science – Dec 2022



## Meg Kearns

Consultant, Technology Solutions  
B.S. + M.S. Computer Science – May 2023



## Joe Bartman

Architect, Technology Solutions  
B.S. Mechanical Engineering – May 2019



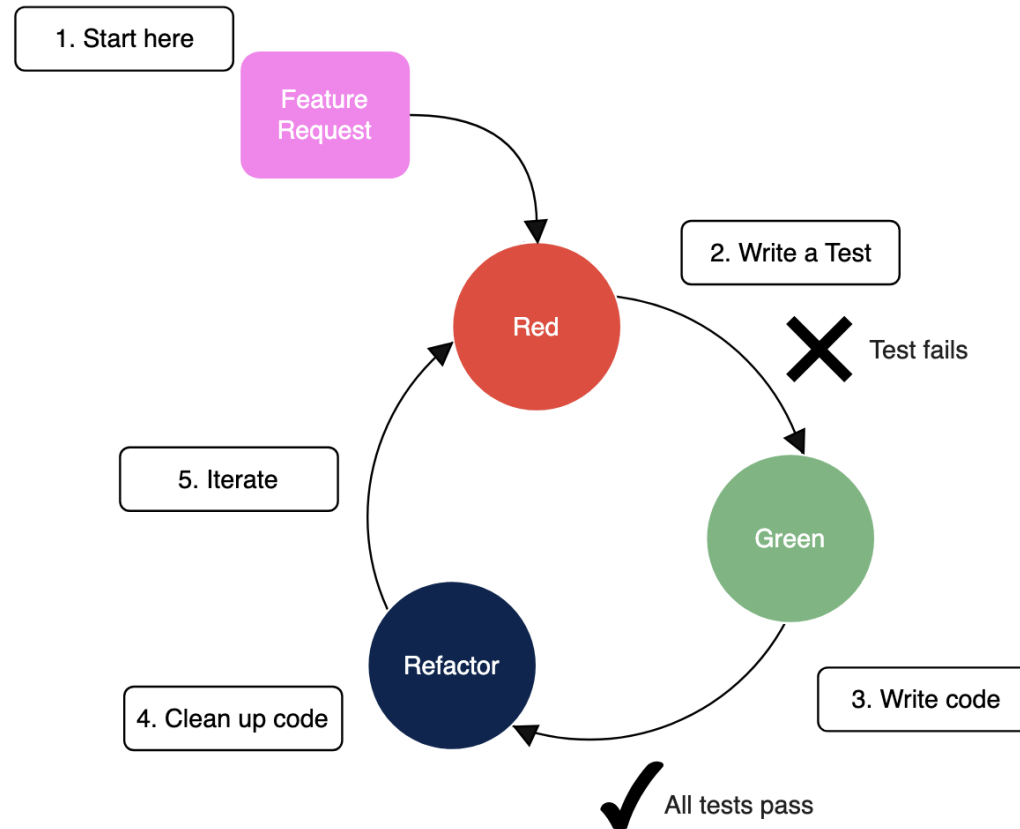
# Agenda

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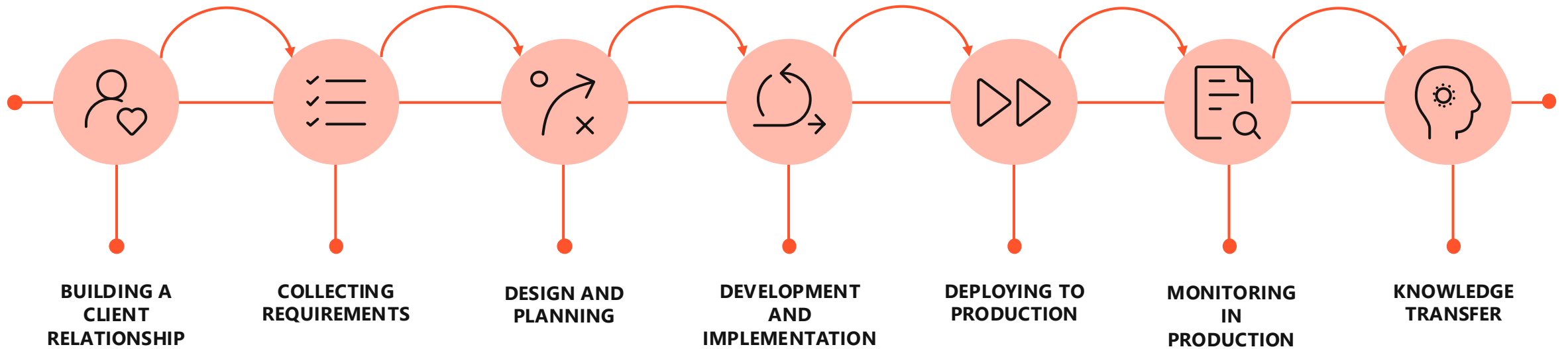
# Overview

# The Development Lifecycle in School





# The Development Lifecycle for Production Software

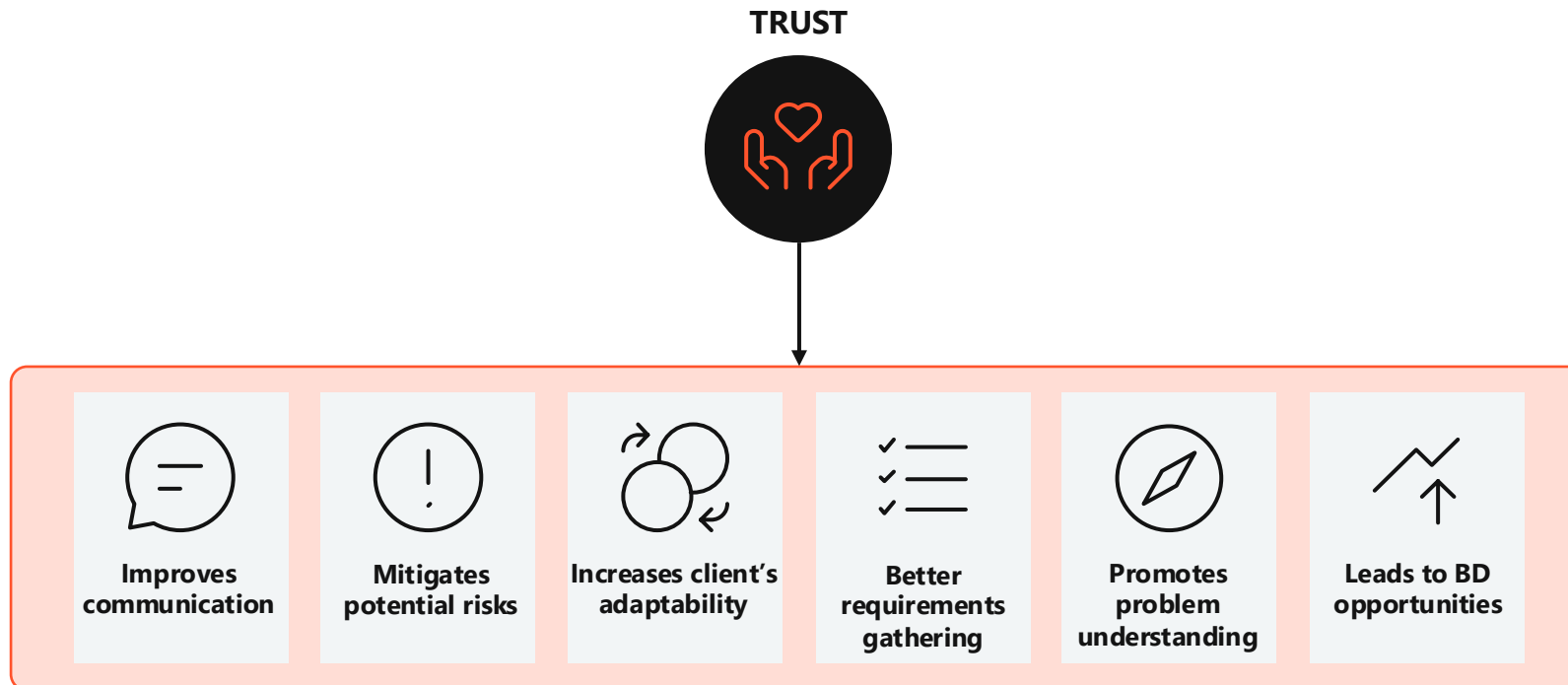




# Building a Client Relationship



# Why is building a client relationship important?





# How do I build a client relationship?

## COMMUNICATE EFFECTIVELY

- Practice active listening
- Ask thoughtful questions
- Engage in discussion intentionally
- Escalate unachievable expectations

## BUILD PERSONAL CONNECTIONS

- Be transparent and accountable
- Develop rapport by showing genuine interest in clients as coworkers and people
- Be present – be in person for meetings, have your camera on, etc.

## DELIVER EXCELLENT WORK

- Consistently meet or exceed expectations, no matter how small the task is
- Consider business requirements and how to add value



# Collecting Requirements

# Overview

What is collection requirement and why do we do it?

## Why collect clear requirements?



## What is requirement collection?

The process by which the business specifies what the software team should build.

**FUNCTIONAL**

**WHAT** should the application do?

**AND**

**NON-FUNCTIONAL**

**HOW** should the application perform its task?



# How do we collect requirements?



## **ACTING AS AN INTERPRETER**

You must be able to speak the language of the business, while getting the information that the engineering teams need.



## **CONNECTING THE DOTS**

The business usually thinks in terms of use cases. You need to connect the dots to create a detailed specification for creating software.



## **IMPLICIT REQUIREMENTS**

The business cannot spell out every requirement. The engineering team must be able to make informed assumptions and confirm those assumptions.



# Design and Planning



# Why design and plan?



## LONG-TERM CONFIDENCE

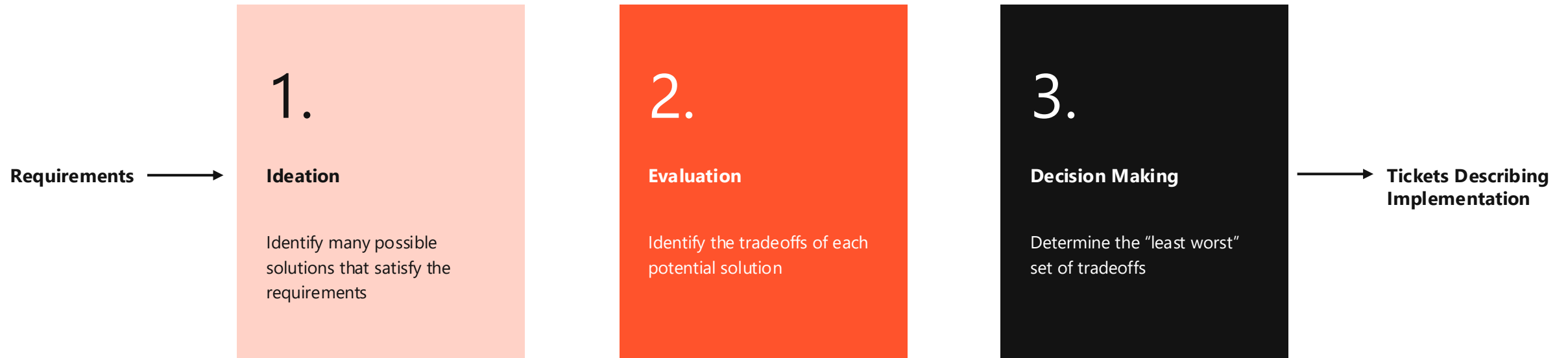
Building software is time-consuming. You want to minimize the chances that you'll need to redo part of it again.



## RECORD OF DECISIONS

A good design process will create documentation for why decisions were made, which can be referenced in the future.

# How do we design and plan?



# Client Example: Web Application Permissions Set

**Ideation:** An application we are planning to develop for a client needs the ability to send emails and schedule meetings for end users



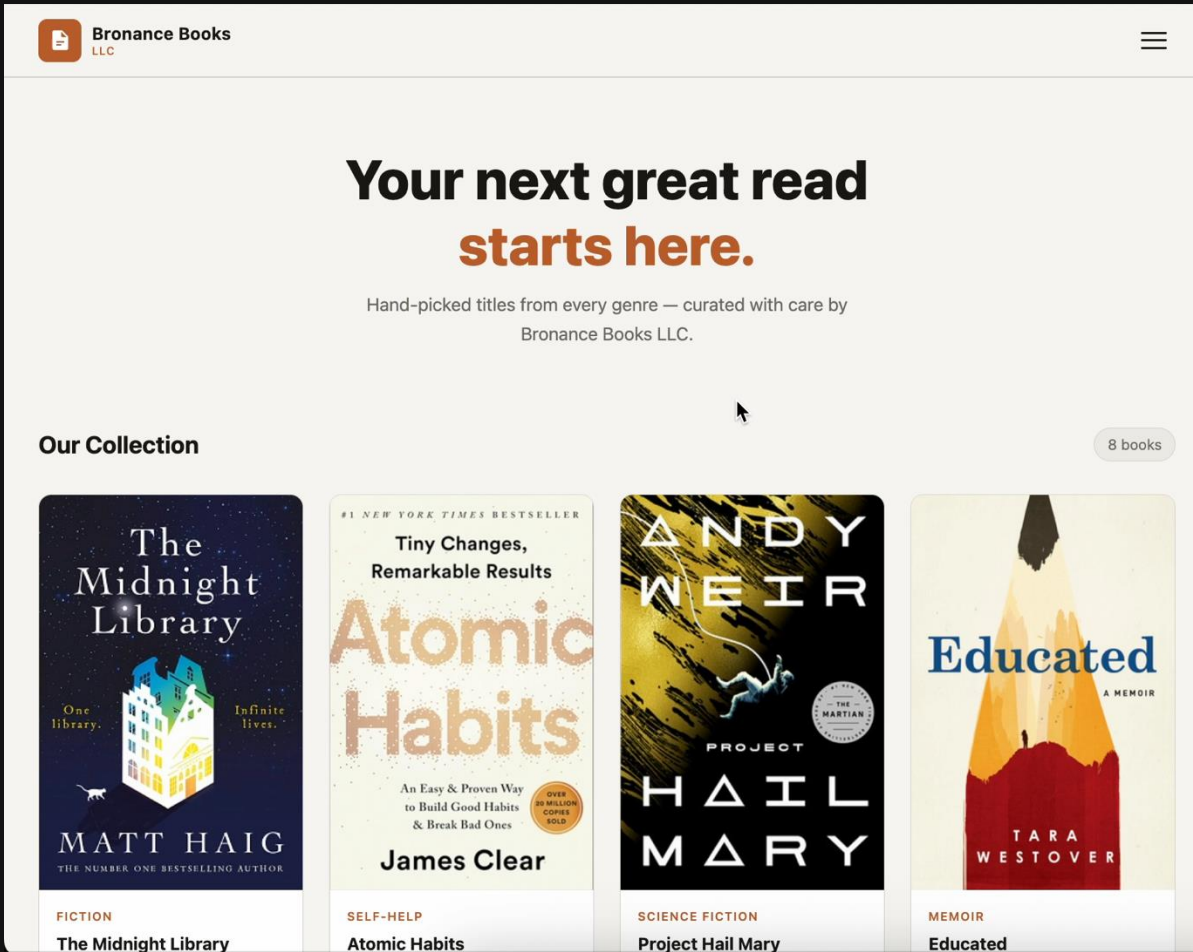
**Evaluation:** The more automated we can make the process the better, but we must adhere to the client's enterprise-level policies and regulations



**Decision Making:** We will reach out to all applicable teams in the client's organization to collaborate on a solution that makes the process as seamless for the end user as possible while also working within the Client's security parameters



# Design Activity



## Your Goal:

*Bronance Books LLC* (your presenters) have hired you to add search functionality to their website. On the left is a snapshot of their current site.

Collect enough requirements to create a plan for implementation in the form of user stories (don't worry about writing these yet).

## Directions:

1. Split into teams of 3-5 with the people around you
2. Take 5 minutes to ask presenters any questions that help determine the specific requirements for the search functionality

**What is a user story?** A user story is a way of describing a software feature from a user's perspective. We will write them later on in the activity!



# Example Requirements Collection

Here is Q&A describing how someone could go about collecting requirements for this new search functionality

**Q:** Would you like users to search with a search bar?

**A:** Yes, users should type in their search into a search bar on the page. We also want them to filter on genre.

**Q:** Where should the search bar be located on the screen?

**A:** The search bar should be in the nav bar just left of the hamburger menu selector.

**Q:** Where should the filter selector be located on the screen?

**A:** The filter selector should be a dropdown menu that is only seen after a search is made, located below the page header.

**Q:** Should users be able to get back to a state of the page with all books?

**A:** Yes, there should be a button just below the genre filter selector that clears the search and gets rid of the filter selector.

**Q:** What should happen if there is no data in the search results or we are unable to search due to some error?

**A:** Where the books are displayed, please display "No books found".



# Create User Stories

Based on the requirements you have gathered write down at least 3 user stories that describe features of this search functionality

## What is a user story?

A user story is a way of describing a software feature from a user's perspective. We usually write them in a specific format:

As a \_\_\_ I want \_\_\_ so that \_\_\_

## Examples unrelated to Bronance Books LLC:

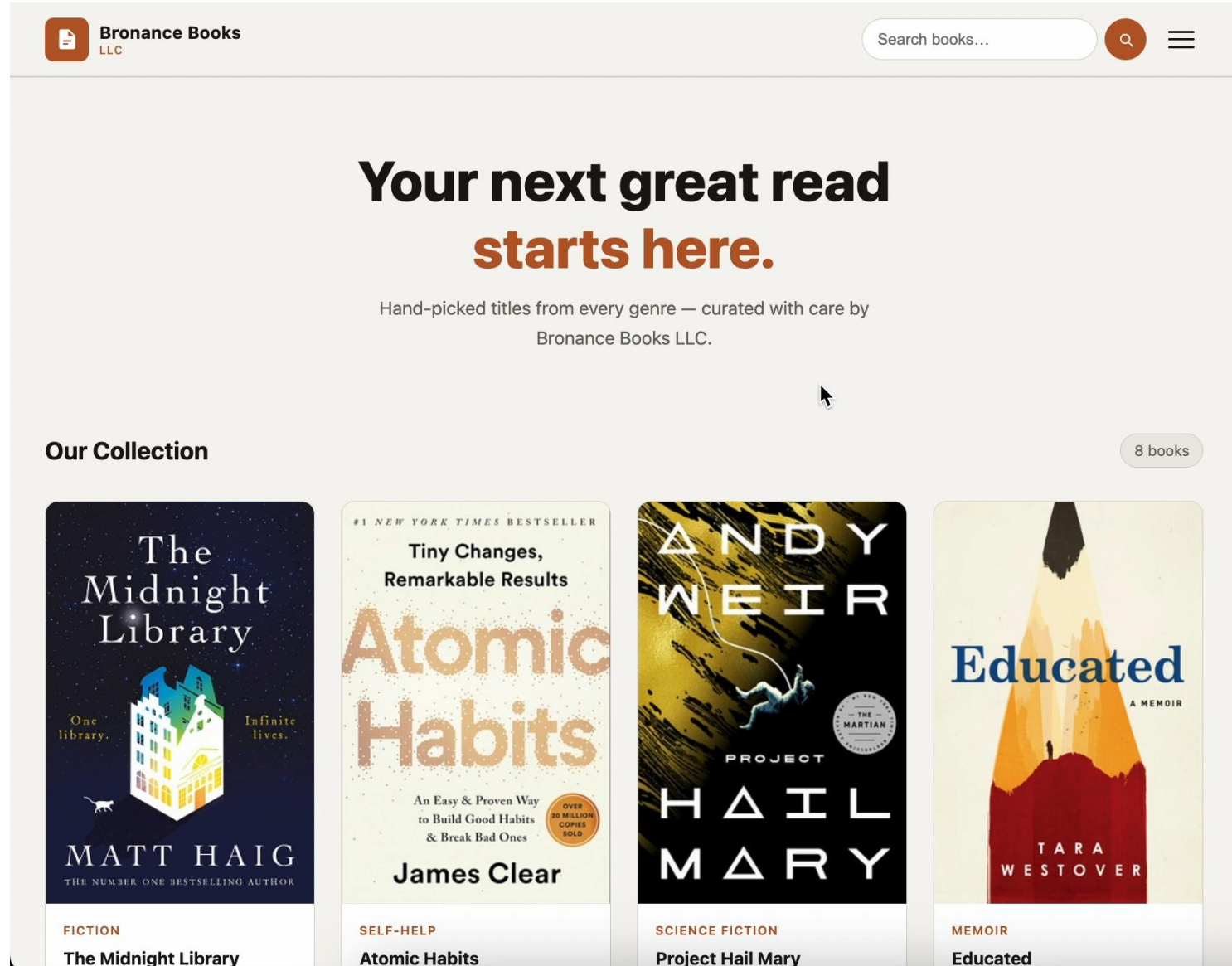
- **As an** Amazon.com shopper **I want** a button to add an item to a wish list **so that** I can purchase the item later
- **As a** Home Depot shopper **I want** items on the website to display which aisle they are in at the nearest store **so that** I can quickly find what I want and checkout

Please write down at least 3 user stories for the Bronance Books search functionality!



# The Final Product

After each team member implements a set of user stories, the final search functionality might look like this





# Development and Implementation



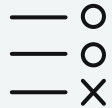
# Deploying to Production



# Deployments

## ENVIRONMENTS

Publishing programs to various stakeholders for developing, testing, and final delivery.



## SERVICES AND RESOURCES

Components of code which separate the concern of your technical requirements.

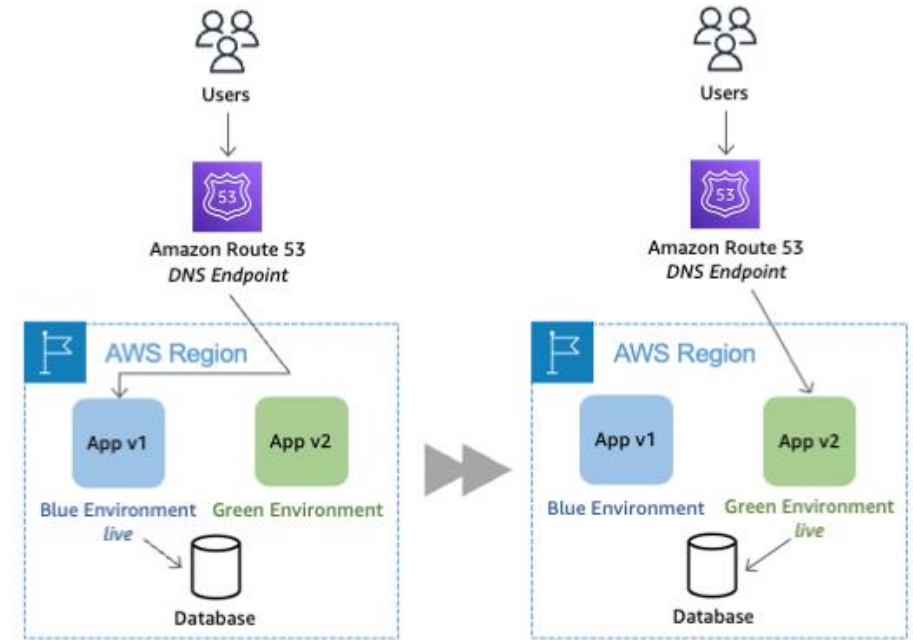
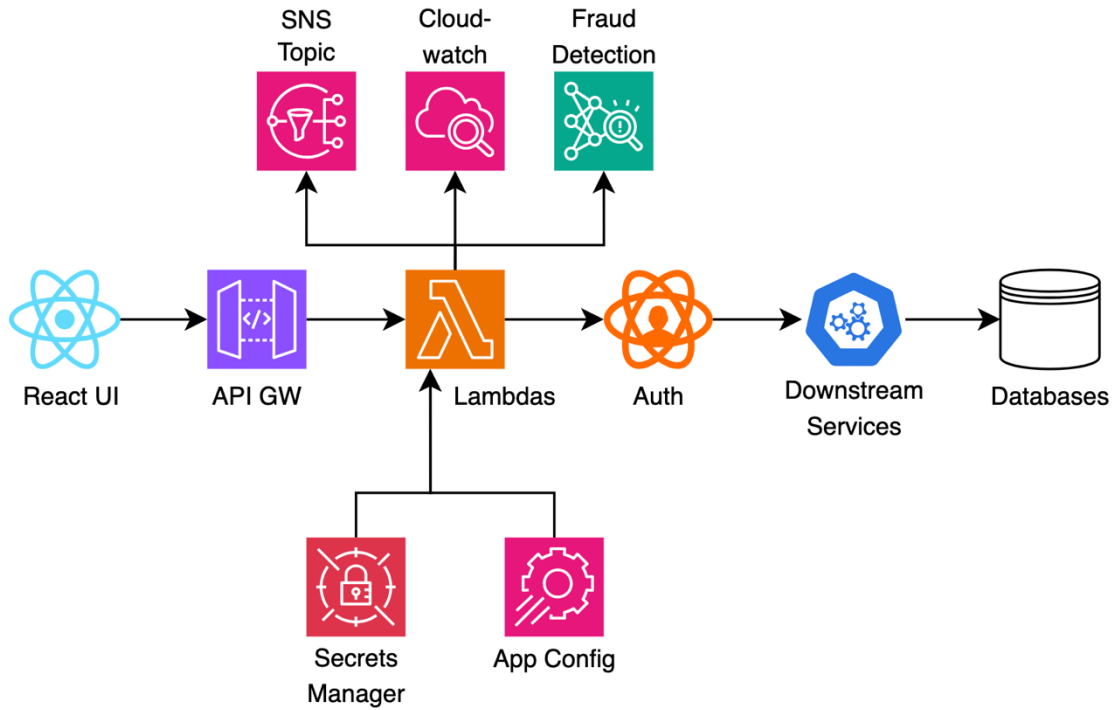


## DEVELOPMENT OPERATION

Releasing code is done through various external tools and processes.

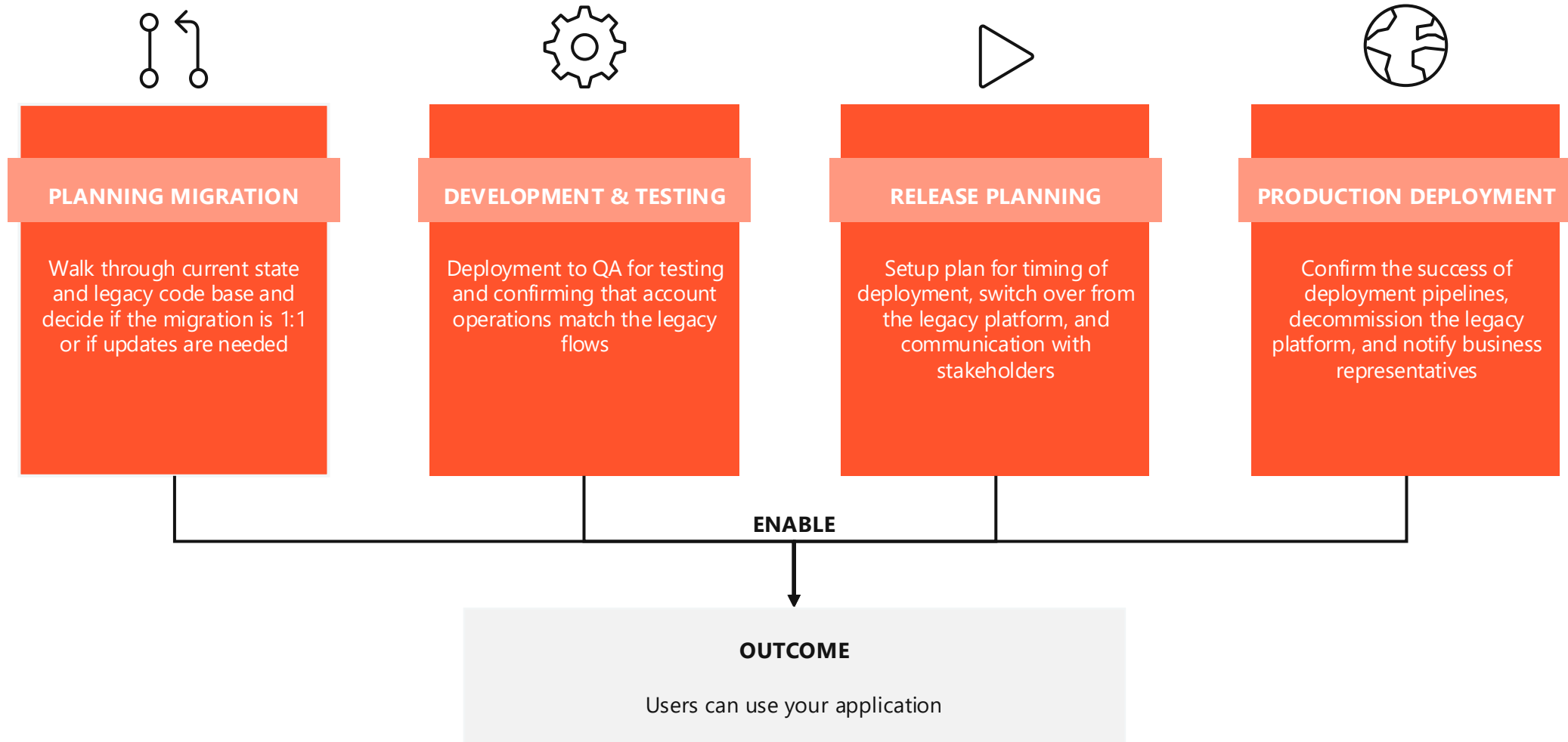


# Client Deployment Example





# Leading airline is deploying a cloud migration





# Monitoring in Production



# Observability and Alerting

Keeping an eye on the services and resources that have been deployed to production.

## OBSERVABILITY

The ability to understand the internal operation of the system, while it is running in production

## APPLICATION HEALTH

Logs describing how the code is operating, including errors

**Example:** Alerts when a certain number of 4xx occur in a certain service within a time frame

## ALERTING

Sending notifications when unexpected events occur within the system

## INFRASTRUCTURE HEALTH

Metrics about the platform that the application is operating on, including CPU, memory, and network usage

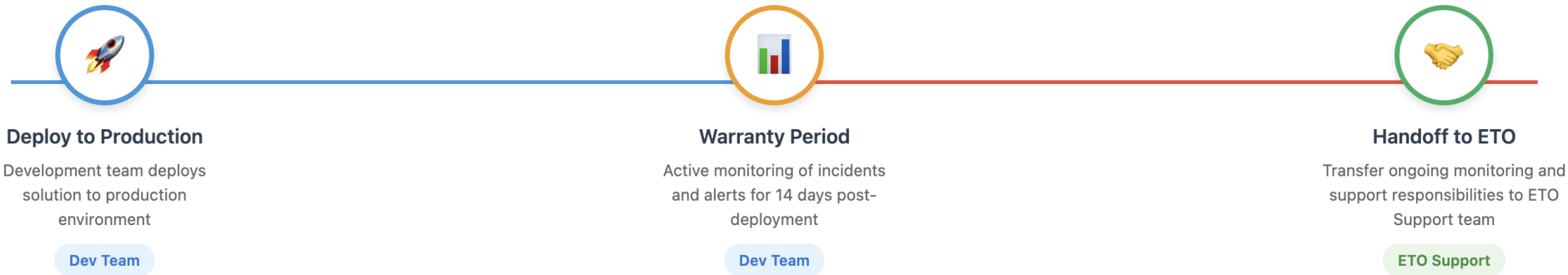
**Example:** Monitoring memory usage to identify memory leaks

# Airline Client Example: Centralized Alerting Platform

Dashboard: Incidents ★

All > Assignment Group is not empty > Assignment Group is (ETO Support, Devs)

Number	State	Priority	Short Description	Assignment Group	Assigned To	Planned End Time	Business Elapsed Time
<a href="#">INC7184432</a>	Closed	● 4 - Low	Database connection timeout on primary cluster	ETO Support	Maria Chen	2026-04-24 18:25:20	1 Day 5 Hours 37 Minutes
<a href="#">INC7244180</a>	Open	● 3 - Medium	API gateway returning 503 errors intermittently	ETO Support	James Rodriguez	2026-03-26 18:56:00	2 Days 5 Hours 6 Minutes
<a href="#">INC7244034</a>	Resolving	● 4 - Low	Cache invalidation delay causing stale data display	ETO Support	Priya Patel	2026-03-26 17:57:02	2 Days 6 Hours 5 Minutes
<a href="#">INC7237938</a>	Resolving	● 3 - Medium	Memory leak detected in background worker process	Devs	Alex Thompson	2026-03-24 19:04:39	4 Days 4 Hours 57 Minutes
<a href="#">INC7237540</a>	Open	● 2 - High	Load balancer health check failures on node 3	Devs	Michael O'Brien	2026-03-24 18:10:45	4 Days 5 Hours 51 Minutes





# Knowledge Transfer



# When and why would we need to knowledge transfer?

## **ENSURES CONTINUITY AND QUALITY**

Properly transferring knowledge to clients ensures that quality of current and future code will be maintained due to the continuity of the knowledge

## **FURTHER SOLIDIFIES CLIENT TRUST**

Upskilling clients with the tools and information that they need to continue and improve upon a project is a huge value added

## **REDUCES GAP RISK**

A successful roll-off lessens the gap between our knowledge of the project and the client's knowledge of our work



# Client Example

For one of our oil and gas clients, we are integrating several client developers into the Credera Dev team so they have hands-on experience working with the solutions we are building

## FULLY INTEGRATED

Our client developers:

- Attend our daily stand ups
- Own their own pieces of end-to-end work, from data pipelining, to infrastructure, to full stack application development

## MUTUAL BENEFITS

Having client and industry experts integrated into the team:

- Gives us easy access to industry knowledge
- Brings us closer trust with the client

## WEEKLY KT SESSIONS

We conduct weekly KT with the client developers to:

- Ensure they involved in architectural decision-making
- Keep them close to the latest updates that have been made throughout the tech stack

## LEGACY CODE UNDERSTANDING

Having the builders of legacy client code on the team helps us:

- Better understand current state code and processes
- Understand pain points with the current system



# Best Practices for Knowledge Transfer

## Before You Roll Off

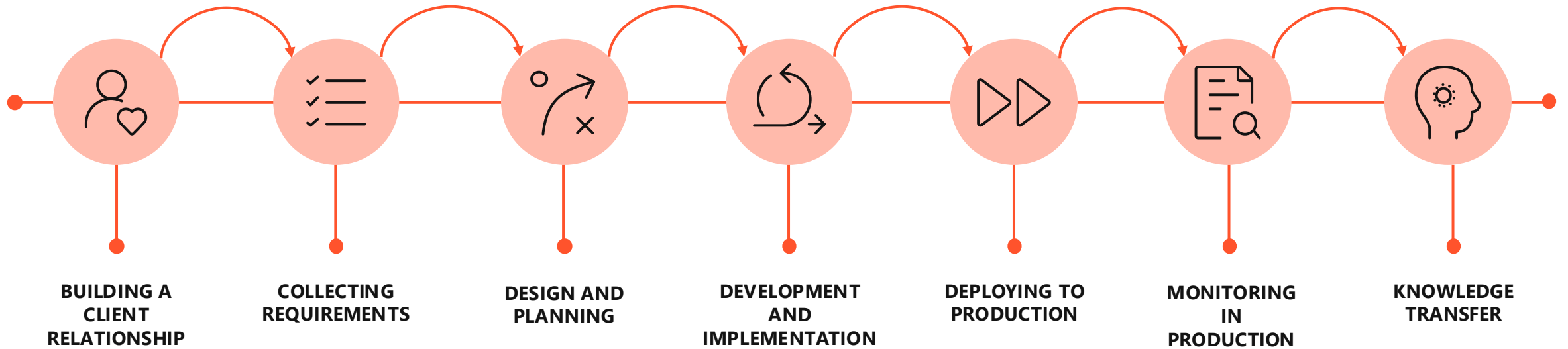
- Conduct demos and reviews with your client
- Update documentation to cover latest changes
- Continuously train client counterparts on new features or technologies that you implemented

## While You Roll Off

- Develop a knowledge transfer plan with your client
- Thoroughly review pre-existing documentation
- Provide hands-on support as new resources ramp up

# Conclusion

# The Development Lifecycle for Production Software



# Credera Campus Recruiting

Credera offers multiple avenues for students to learn and connect with our consultants



## ON CAMPUS

- Find us on Campus at Career Fairs and at various events
- Email us to find out where you can connect with us next

## SCAN TO STAY CONNECTED!



## VIA EMAIL

- Email [campus\\_recruiting@credera.com](mailto:campus_recruiting@credera.com) to learn more about our application process and how to stay connected with us
- Please don't hesitate to reach out via email to request a coffee chat with one of our current consultants

**Thank You**

# Q&A