CEC Continuing Education Center

DesignNews

DAY 1 : To Agile or Not?

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BENINGO EMBEDDED GROUP

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THE SPEAKER

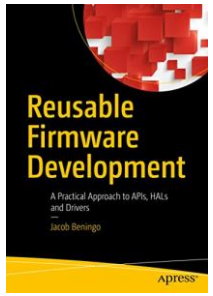
Jacob Beningo

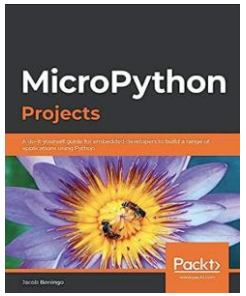
Lecturer Profile

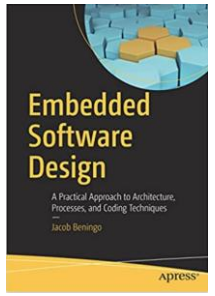
Beningo Embedded Group - President

Focus: Embedded Software Consulting and Training

Specializes in *creating* and *promoting* **embedded software excellence** in businesses around the world.







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01

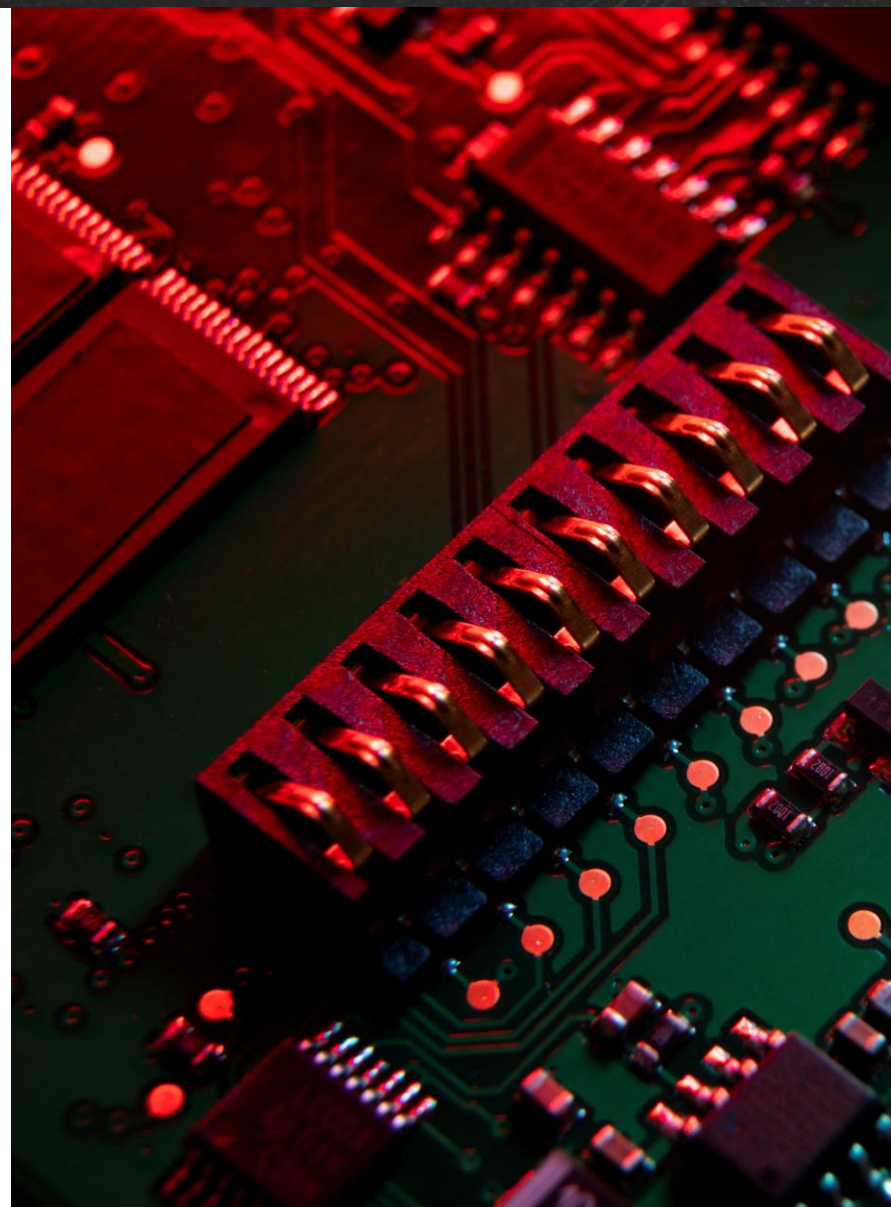
Agile...

What's the deal with Agile?

Lab 1 : What do you Value?

Discuss what is more important given the following options:

Processes and Tools	. . . OR . . .	Individuals and Interactions
Working Software	. . . OR . . .	Comprehensive Documents
Customer Collaboration	. . . OR . . .	Contract Negotiation
Following a Plan	. . . OR . . .	Responding to Change



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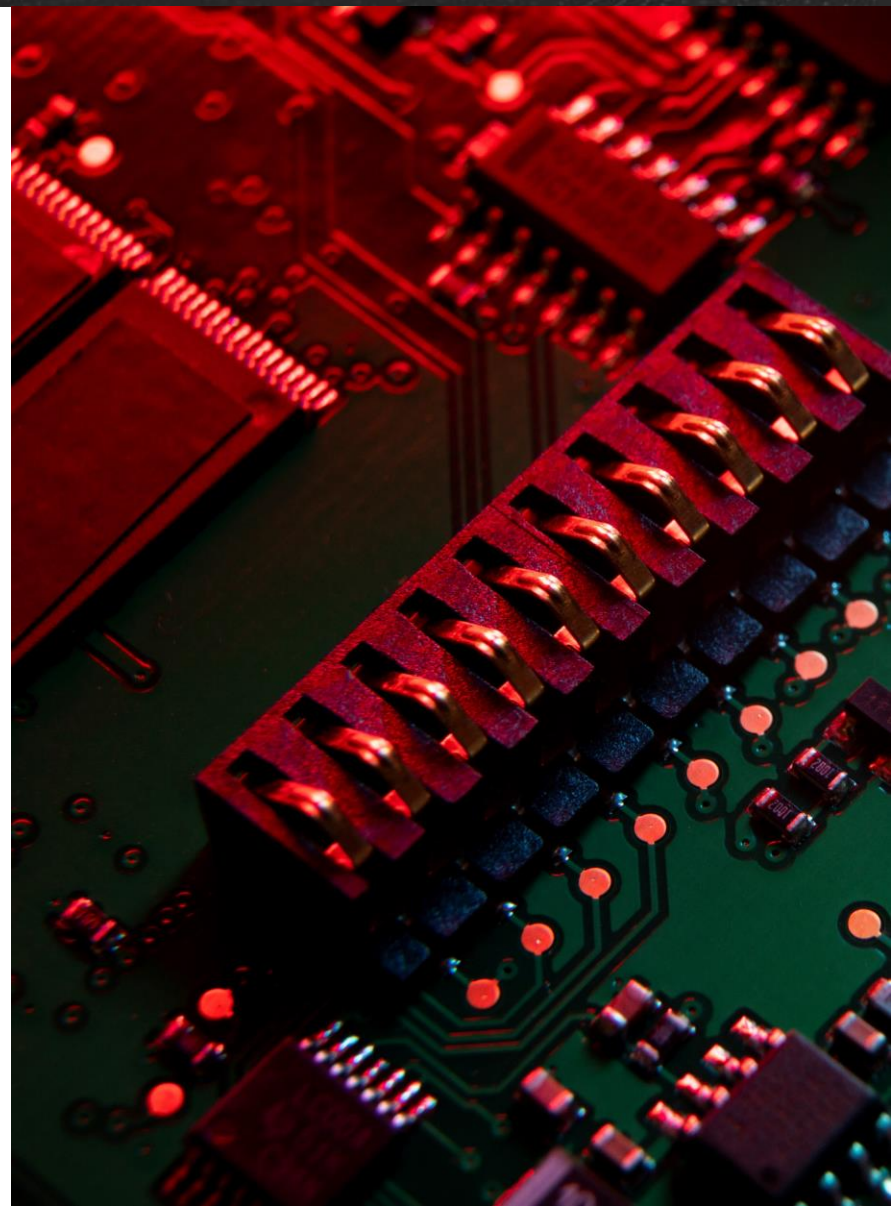
AGILE MANIFESTO VALUES



AGILE...

Challenges Facing Embedded Developers

Quality

- Buggy software
- Constant bug fixes
- Customer complaints

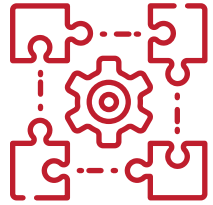
Development Costs

- Smaller budgets
- More features
- Increased complexity

Time to Market

- More debugging
- Missed deadlines
- Integration woes

Scalable Solutions



- Tightly coupled code
- Vendor dependency
- Inflexible architecture

AGILE...

The Definition

Agile is a set of methods and methodologies that are optimized to help with specific problems that software teams encountered.

Agile development is a **philosophy**. It's a way of thinking about software development. The canonical description of this way of thinking is the Agile Manifesto, a collection of 4 values and 12 principles.

Agile is a **mindset** focused on helping people share information with each other, which makes it much easier for them to make important project decisions together.

Agile methods consist of individual elements called **practices**. Practices include using version control, setting coding standards, and giving weekly demos to your stakeholders.

Agile is revolutionary because it's more than just a new set of development practices; it requires **significant changes** to **culture, roles, methods, and metrics**.

02

The Agile Manifesto

What are Agile's values and principles?

THE AGILE MANIFESTO

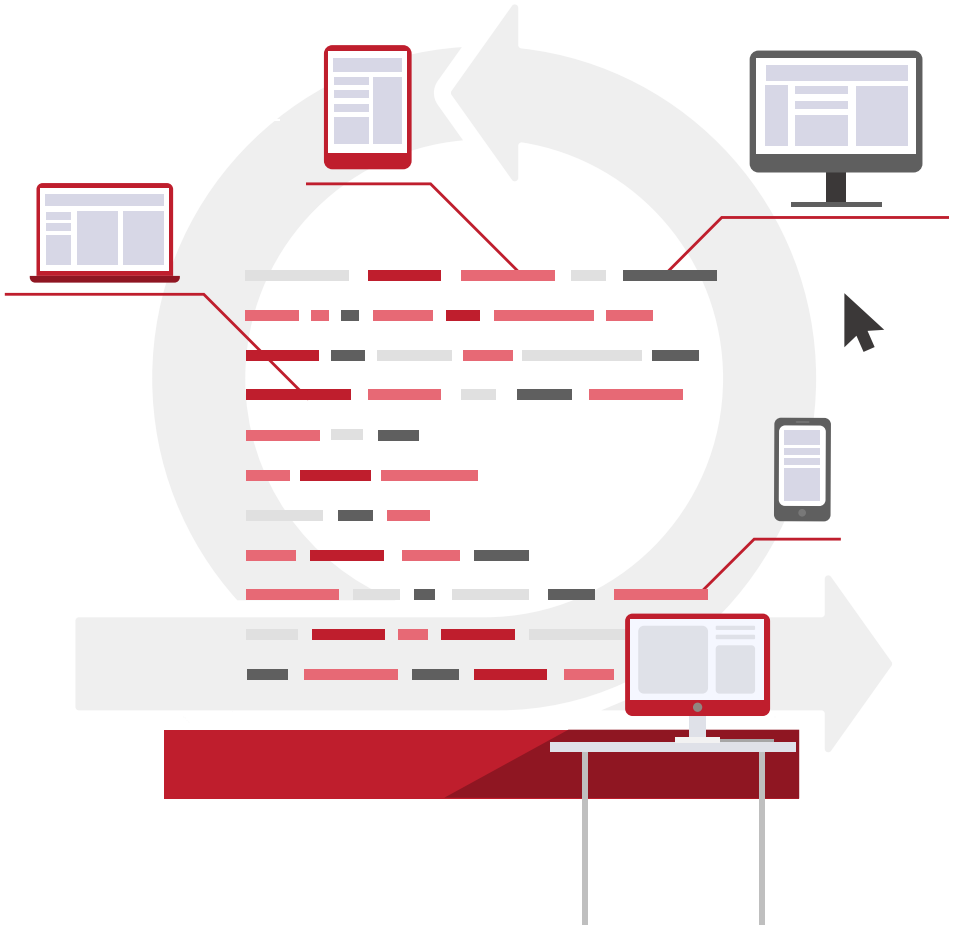
Agile Values

Individuals and Interactions	over **Processes and Tools**
Working Software	over **Comprehensive Documentation**
Customer Collaboration	over **Contract Negotiation**
Responding to Change	over **Following a Plan**

THE AGILE MANIFESTO

The Principles

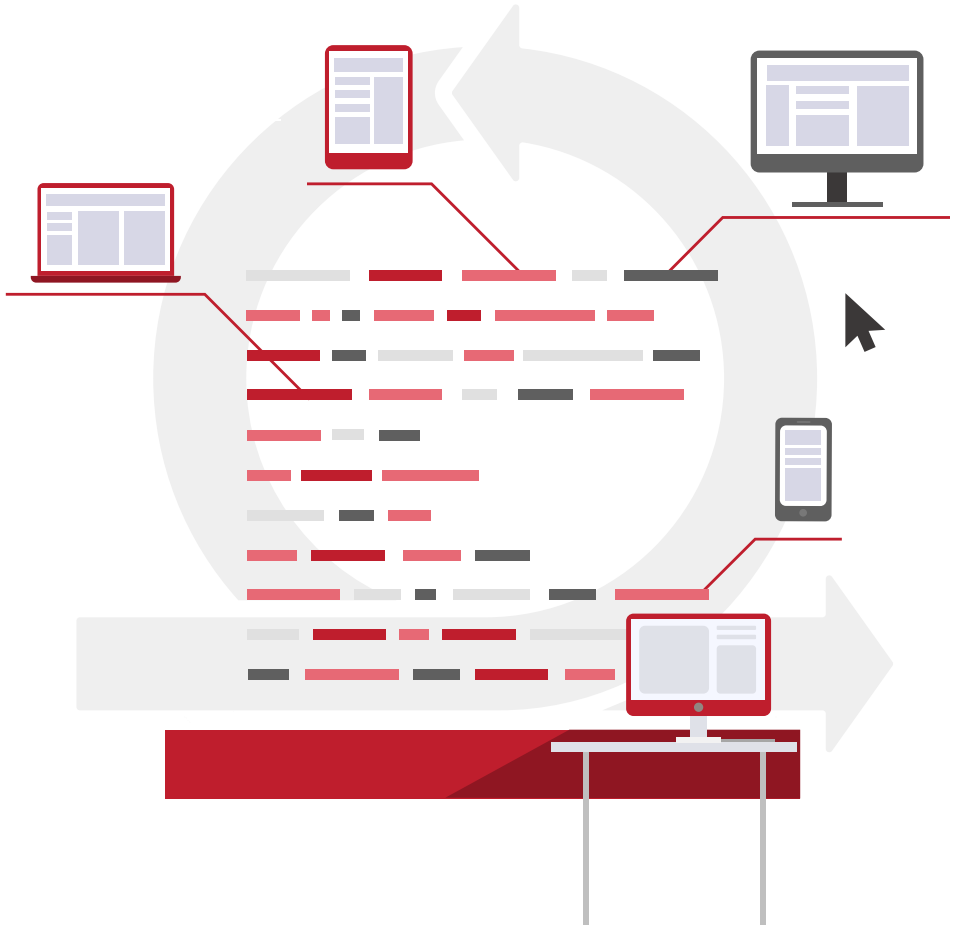
- Our **highest priority** is to **satisfy the customer** through early and **continuous delivery** of valuable software.
- **Welcome changing requirements**, even late in development. Agile processes harness change for the customer's competitive advantage.
- **Deliver working software frequently**, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- Businesspeople and developers must **work together daily** throughout the project.



THE AGILE MANIFESTO

The Principles

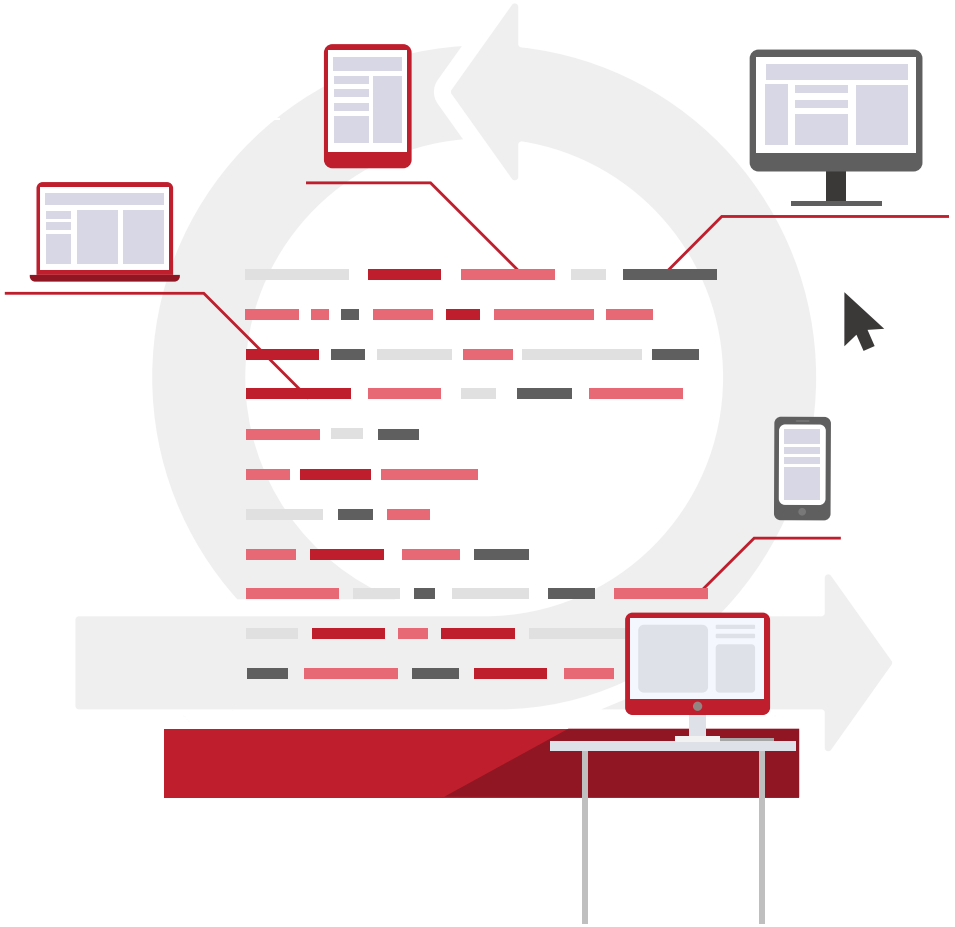
- Build projects around **motivated individuals**. Give them the **environment and support they need** and **trust them to get the job done**.
- The most **efficient** and effective method of conveying information to and within a development team is **face-to-face conversation**.
- **Working software** is the **primary measure of progress**.
- Agile processes promote **sustainable development**. The sponsors, developers, and users should be able to **maintain a constant pace indefinitely**.



THE AGILE MANIFESTO

The Principles

- **Continuous attention** to **technical excellence** and **good design** enhances agility.
- **Simplicity** - the art of **maximizing** the amount of **work not done** - is essential.
- The **best architectures, requirements, and designs** emerge from **self-organizing teams**.
- At **regular intervals**, the team **reflects** on how to become **more effective**, then **tunes and adjusts** its behavior accordingly.



03

Adopting Agile

Is Agile the silver bullet?

AGILE ADOPTION

The Silver Bullet?

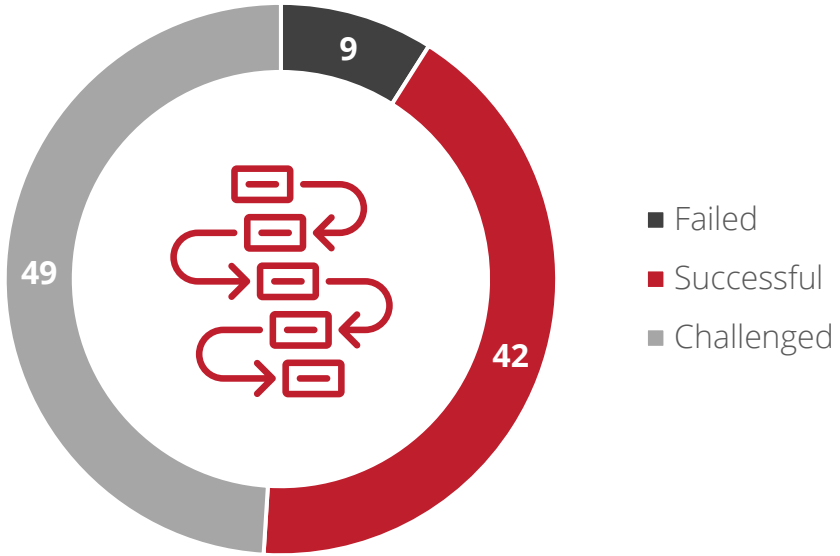
- At least **71% of U.S. companies are now using Agile.**
- Agile projects have a **64% success rate**, whereas project using Waterfall have a **49% success rate**.
- After adopting Agile, companies have experienced an average **60% growth in revenue and profit**.
- **Scrum is the most popular Agile framework**, with 61% of respondents from 76 countries reporting that they use it.

www.zippia.com/advice/agile-statistics

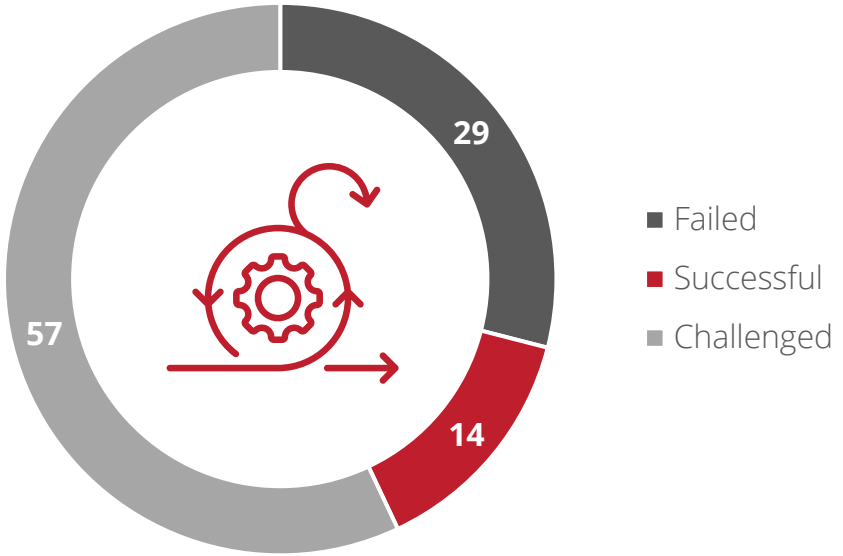
AGILE ADOPTION

Success and Failure

AGILE SUCCESS RATE



WATERFALL SUCCESS RATE



AGILE ADOPTION

What does Agile really do?

" Some folks think that Agile is about going fast. It's not. It's never been about going fast. Agile is about knowing, as early as possible, just how screwed we are. "

- Bob Martin

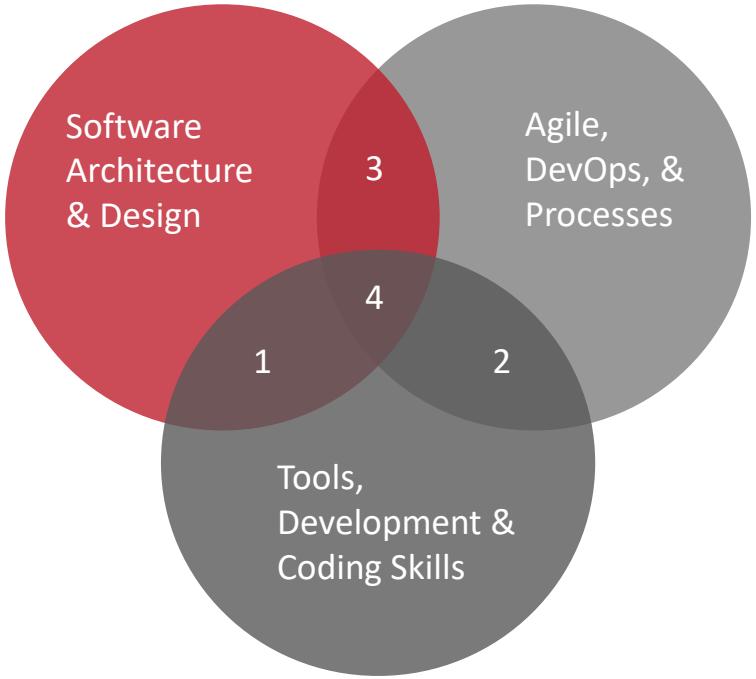
04

Successful Embedded Software

Success requires more than just Agile.

SUCCESSFUL EMBEDDED SOFTWARE

The Embedded Software Triad



1. Late, Inconsistent, Quality Issues
2. Late, Rework, Lost / Meandering
3. Never completed
4. Successful Delivery

SUCCESSFUL EMBEDDED SOFTWARE

Software Design Philosophy

Define the principles that are most important to you

Principle #1 – Data Dictates Design

Principle #2 – There is No Hardware (only data)

Principle #3 – KISS the Software

Principle #4 – Practical, Not Perfect

Principle #5 – Scalable and Configurable

Principle #6 – Test, Test, and Test

Principle #7 – Security is King

Action Item

Identify and write down your top 7 principles.

Put them in a place you can readily see them!

SUCCESSFUL EMBEDDED SOFTWARE

Yin-Yang

Process dictates design

Design dictates Process

What is being accomplished?

- Proof-of-concept
- Production system?
- Simulation?

Core Challenges Established

Likelihood of Success

SUCCESSFUL EMBEDDED SOFTWARE

The Need of Discipline

Successful implementation requires *discipline* across three business level:

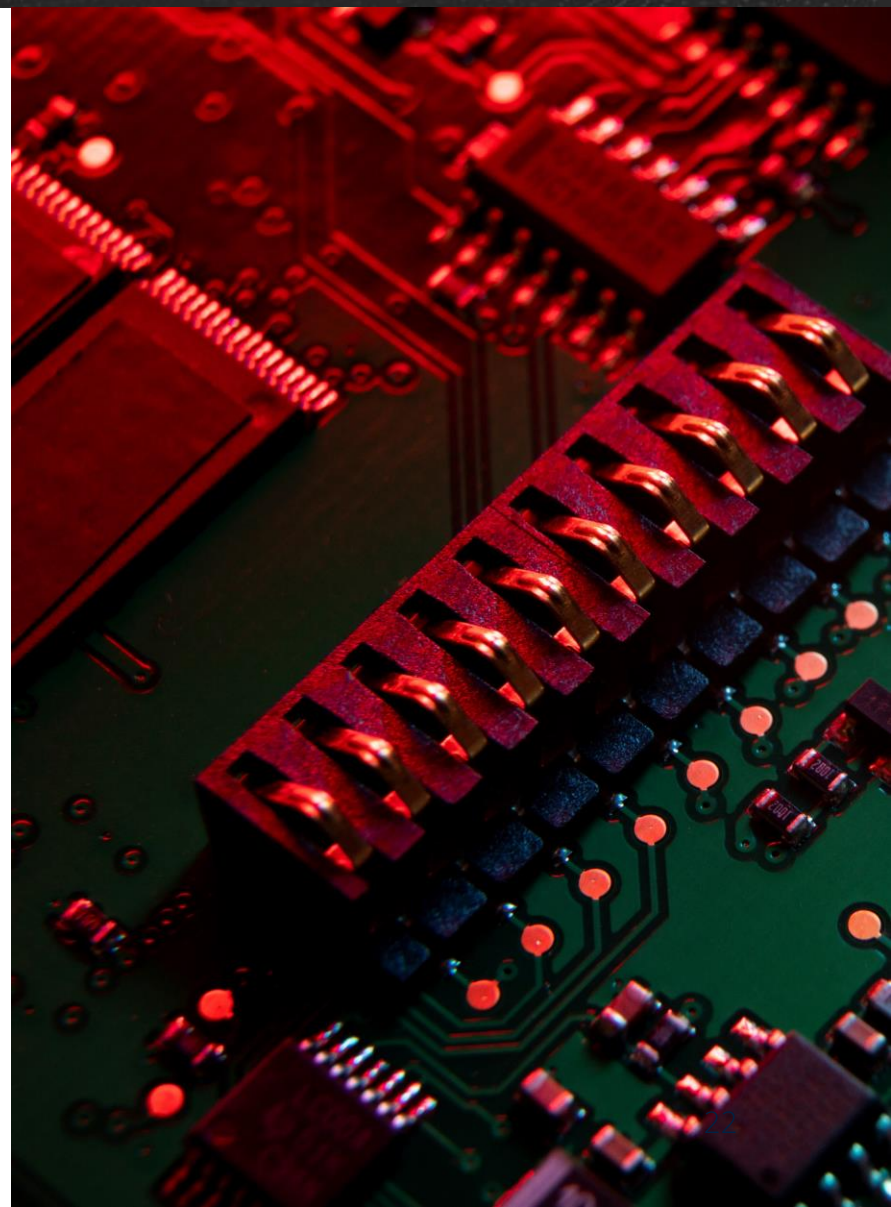
COMPANY — Management needs to buy-in to the benefits and agree to the value.

TEAM — Teams work together to adhere and reinforce.

DEVELOPER — Individual developers form the foundation.

Lab 2 : What Principles Guide You?

What principles should you adopt to guide your product development?



QUESTIONS

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