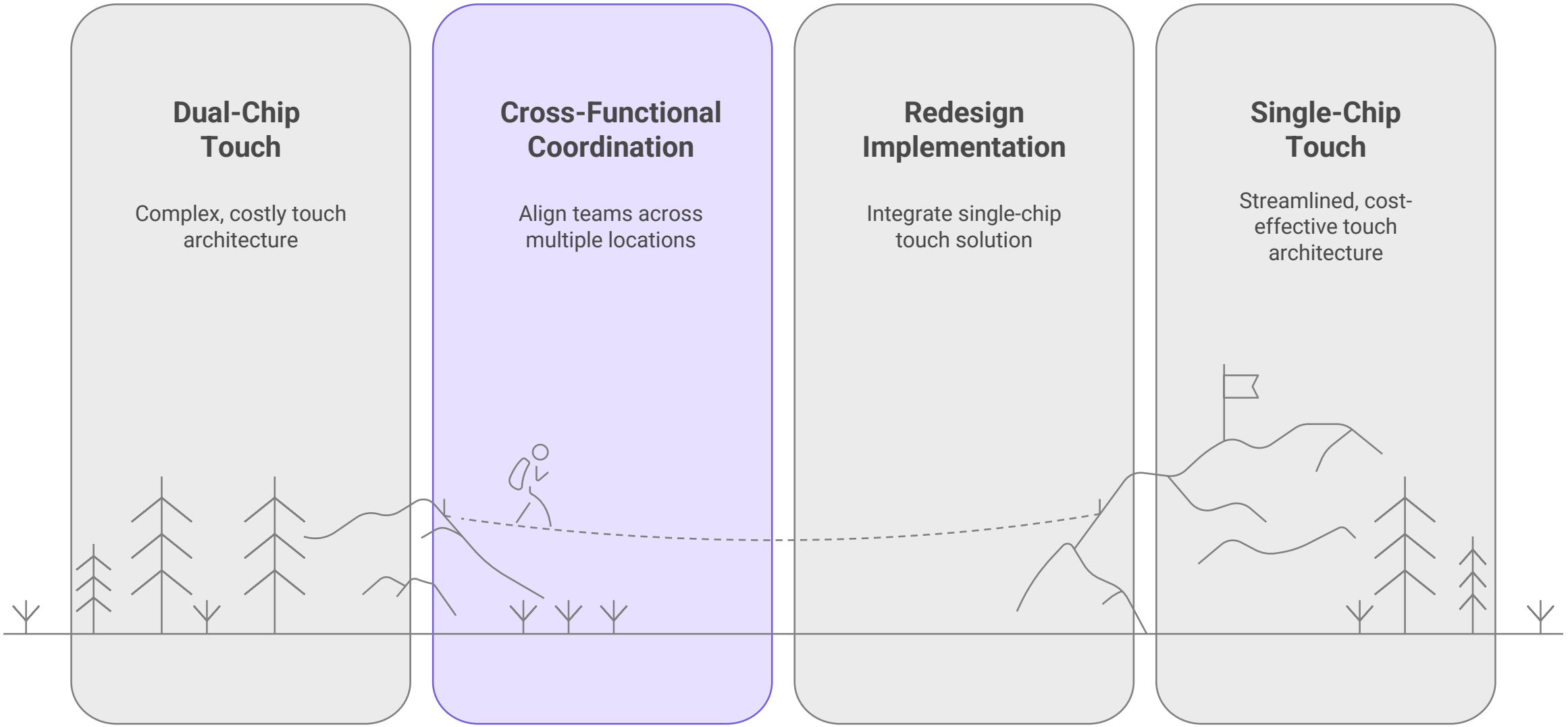
Leadership in Portfolio-wide UI Touch Re-Design

User interface touch sensing redesign

Portfolio wide Multi product impact

Touch Architecture Transformation



Dual-chip Touch Architecture

Pros	Cons
Reused Design	High cost
Legacy proven design	Suboptimal performance
Stable production	Complex integration

Single-chip Touch Architecture

Pros

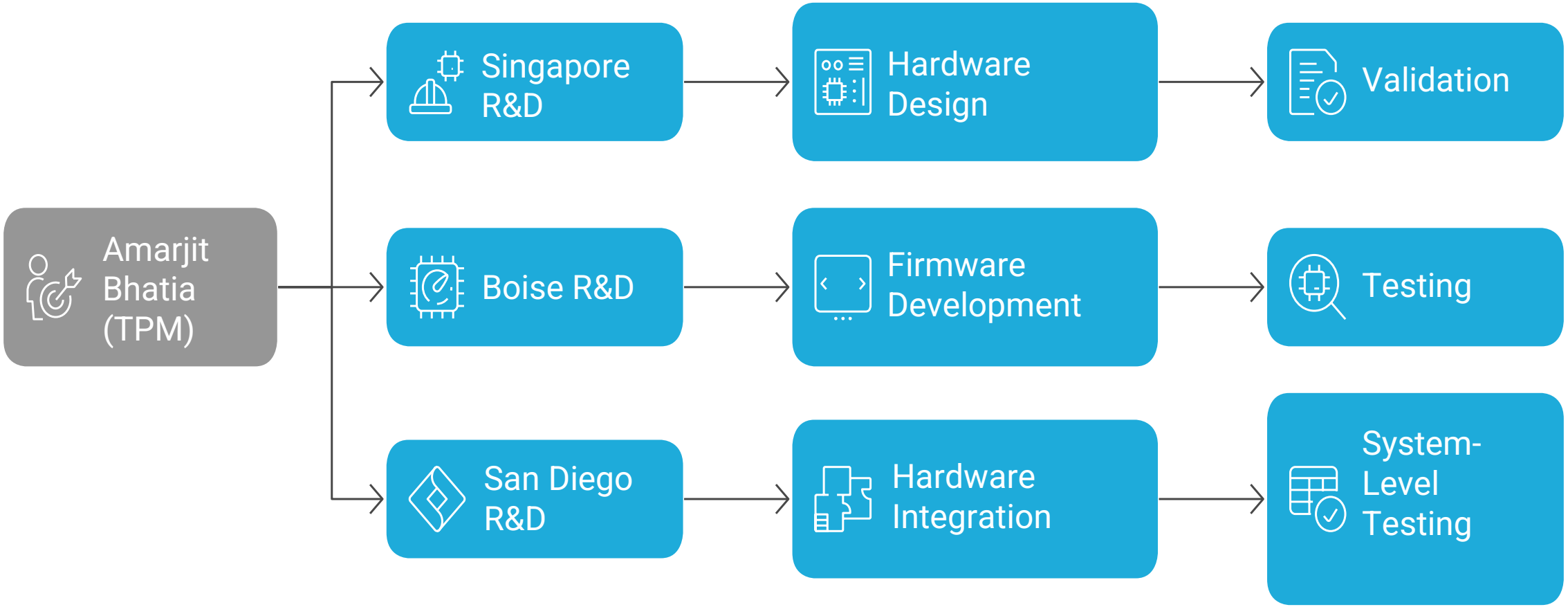
VS

Cons

- Cost savings
- Improved performance
- Streamlined integration
- Team leadership
- Project management

- Initial investment
- Technical challenges

Project Coordination Flowchart



Communication Strategies

Regular Meetings

Weekly meetings to discuss progress and coordinate activities.

1

Shared Documentation

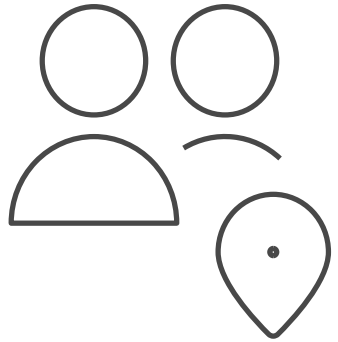
Centralized repository for all project-related documents.

2

Communication Tools

Collaboration tools to facilitate real-time communication.

3

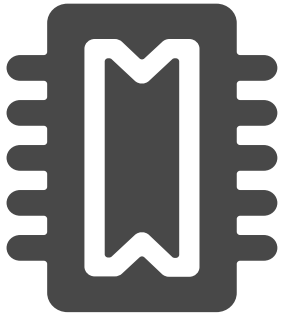


On-site Visits

Visiting different locations to ensure alignment.

4

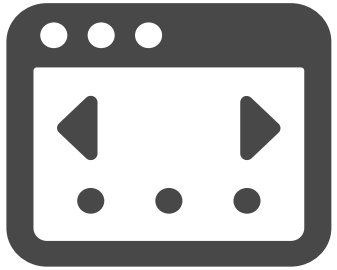
Project Challenges and Solutions



Hardware Design

Designing a single chip required careful consideration of power consumption, processing speed, and memory capacity.

1



Firmware Development

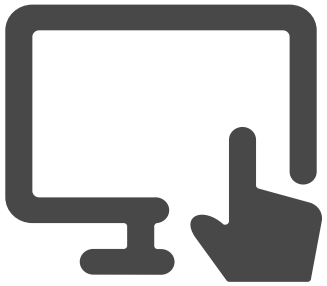
Developing firmware required a deep understanding of the hardware architecture and touch algorithms.

2

Regulatory Compliance

Working with regulatory labs to get the new design through compliance and certification testing.

3

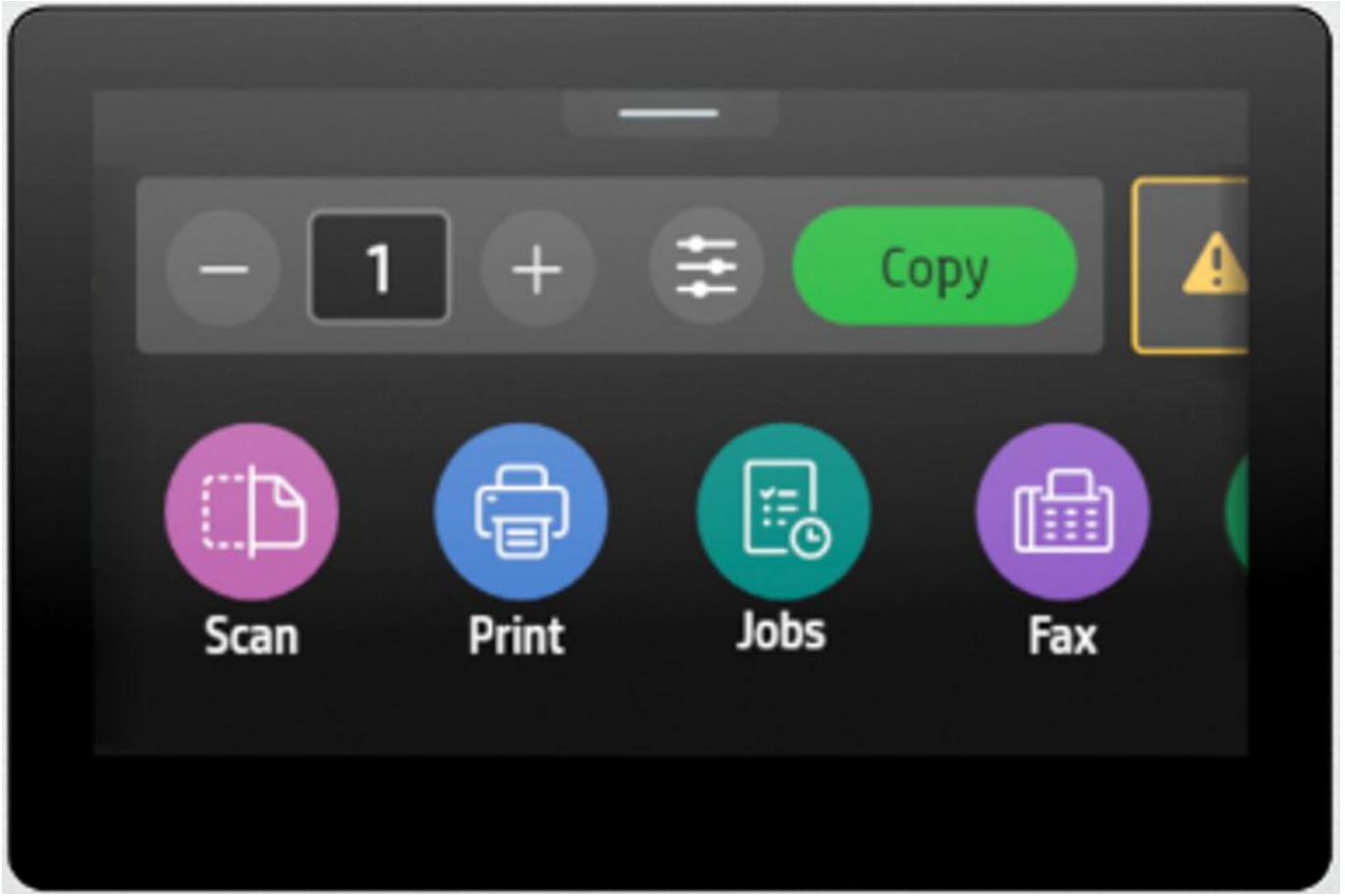


Touch Performance Testing

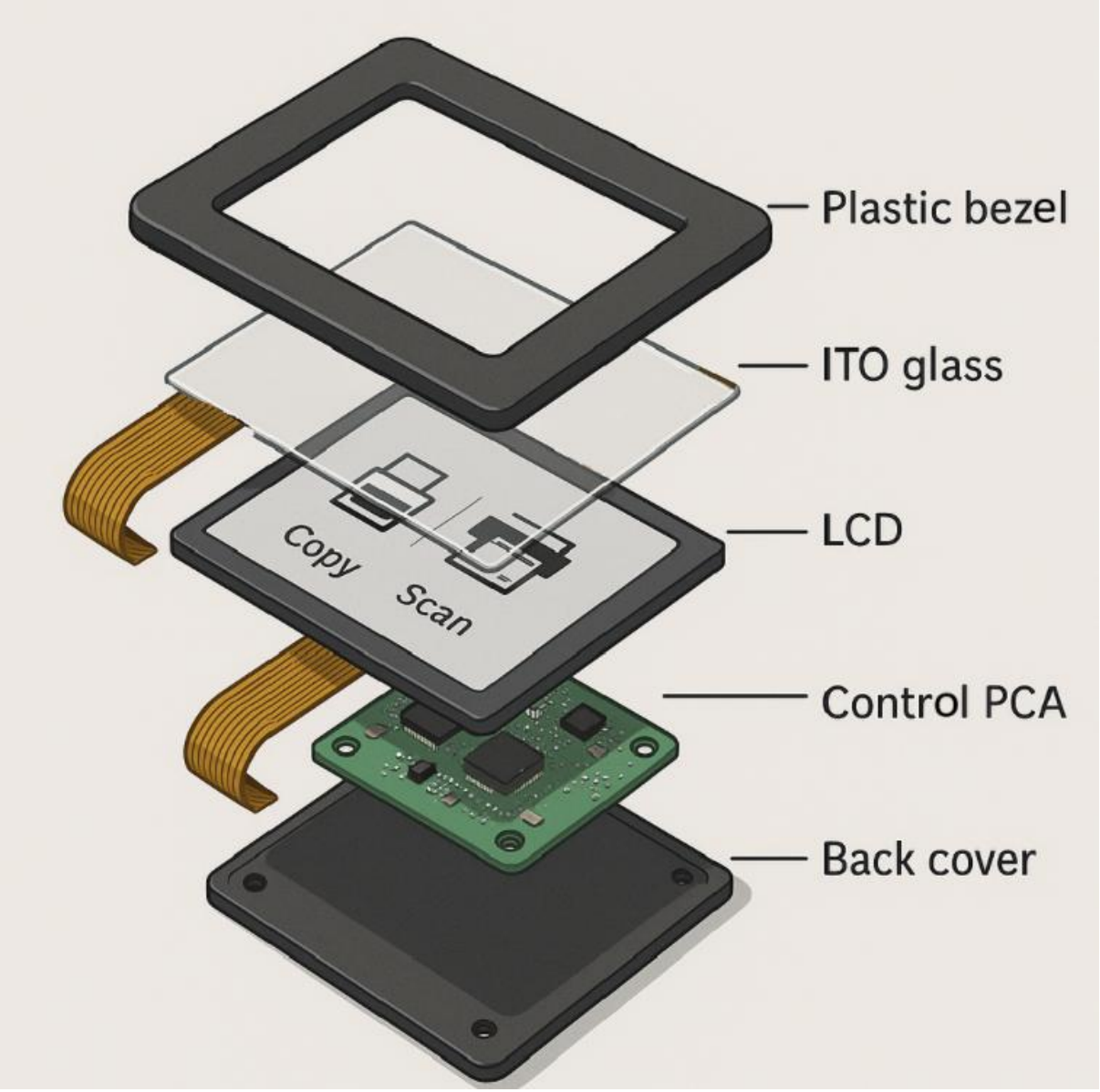
Working with the supplier to perform robotic calibration and code tuning.

4

Change Details Touch Sensing Architecture Change



Control Panel Architecture

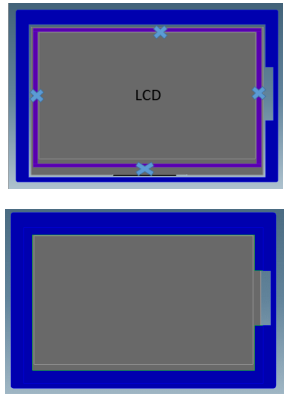


Lead Re-Architecture of Control Panel Touch Sensing

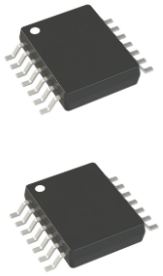
Sustainable solution

Complexity reduction

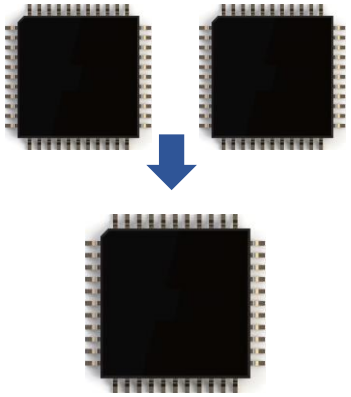
Lower cost implementation



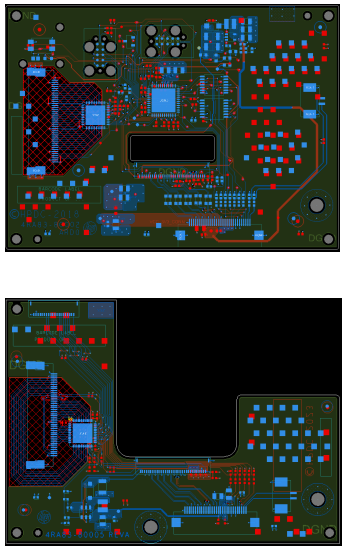
Cost reduce Display to ITO Glass attach



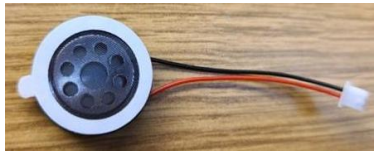
Remove Back bias buffers



Two chip to single chip Solution Hardware and Firmware redesign

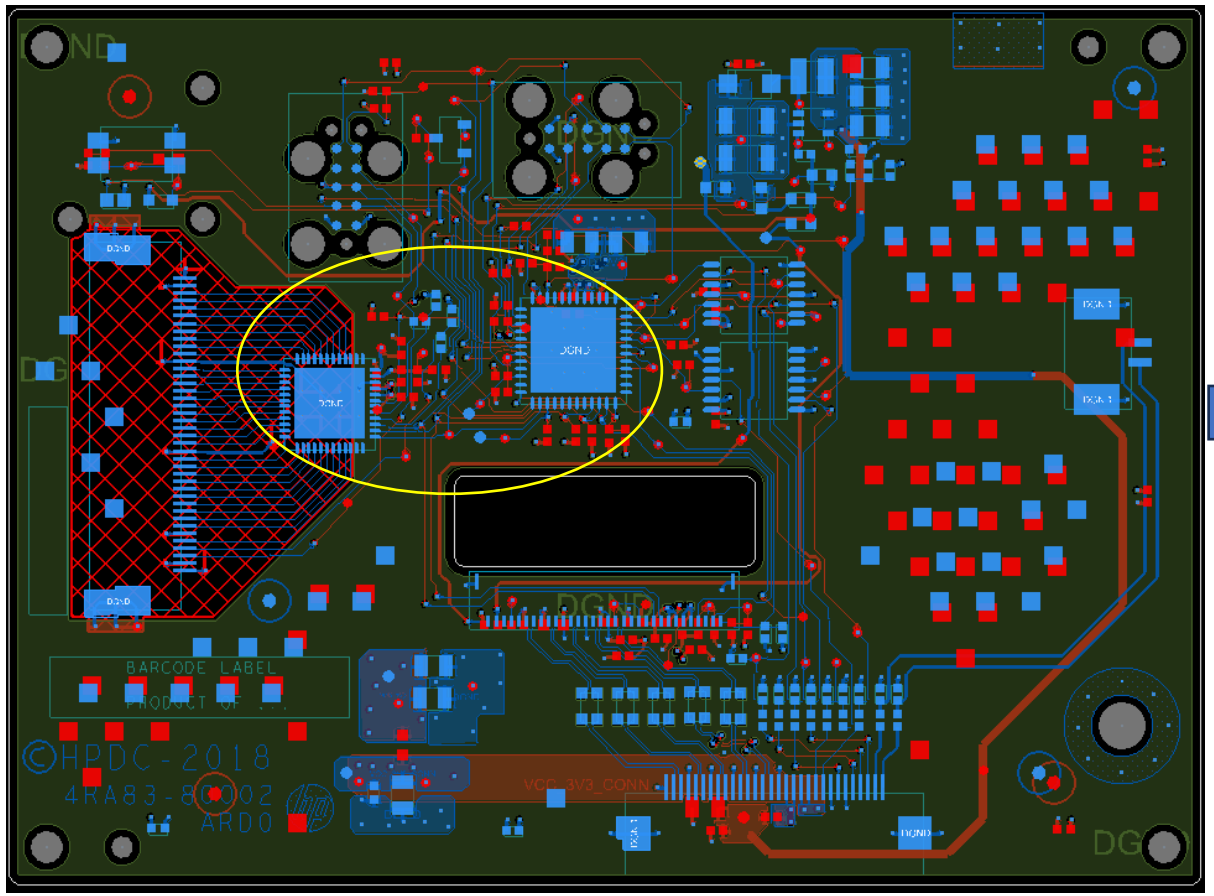


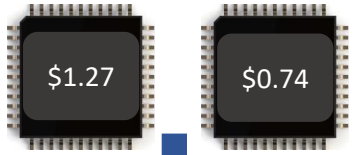
Redesign PCB to smaller size



Qualify lower cost speaker supplier

Capacitive Touch 2 Microcontroller to Single Microcontroller |$1.58/unit savings



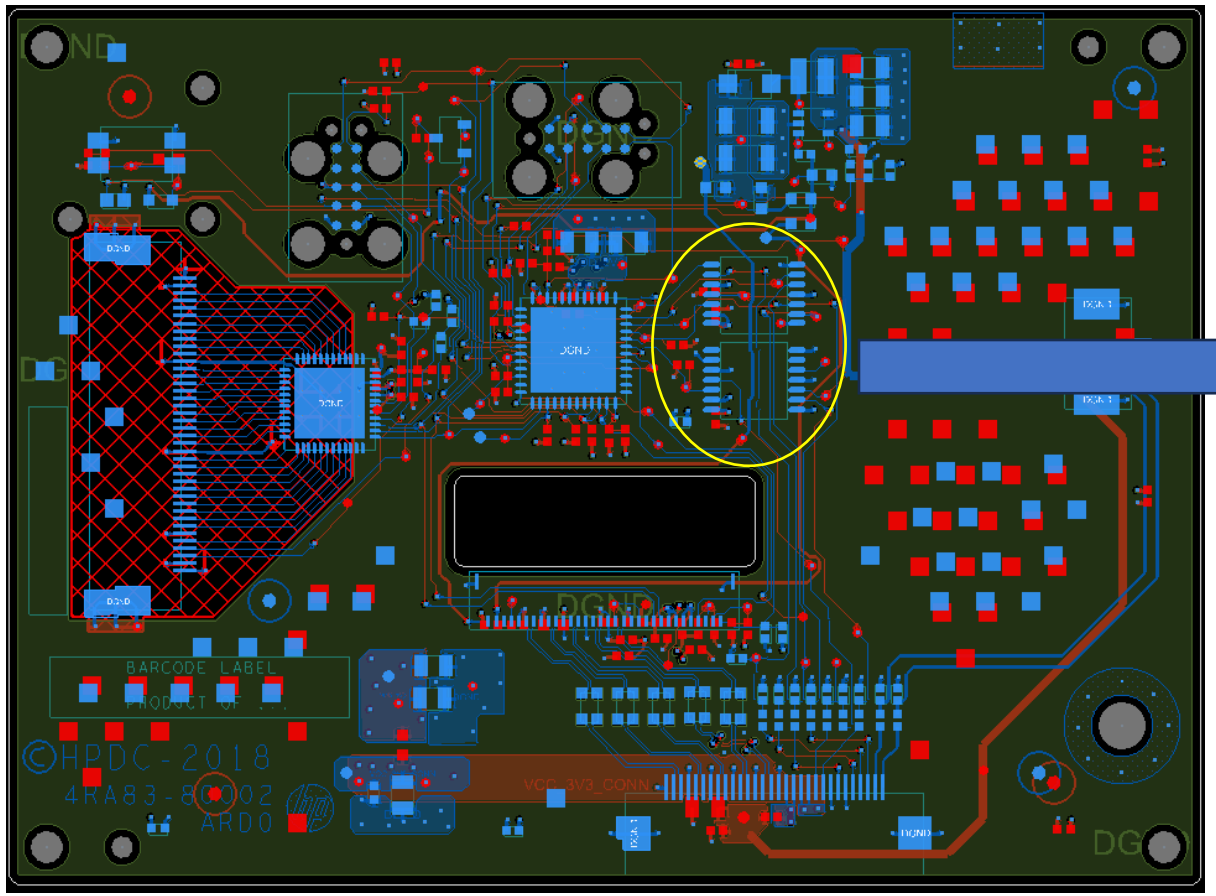


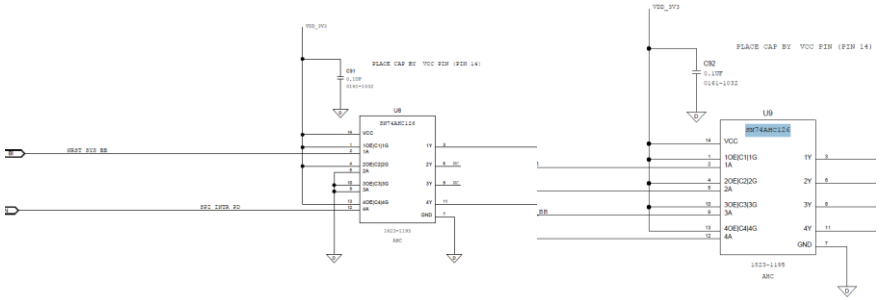
Total cost
$2.01

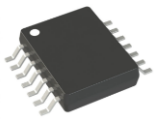
New cost
$0.43

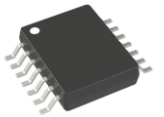
Two chip touch sensing to single chip Solution Hardware and Firmware redesign

Remove Back Bias Buffers| $0.20/unit savings



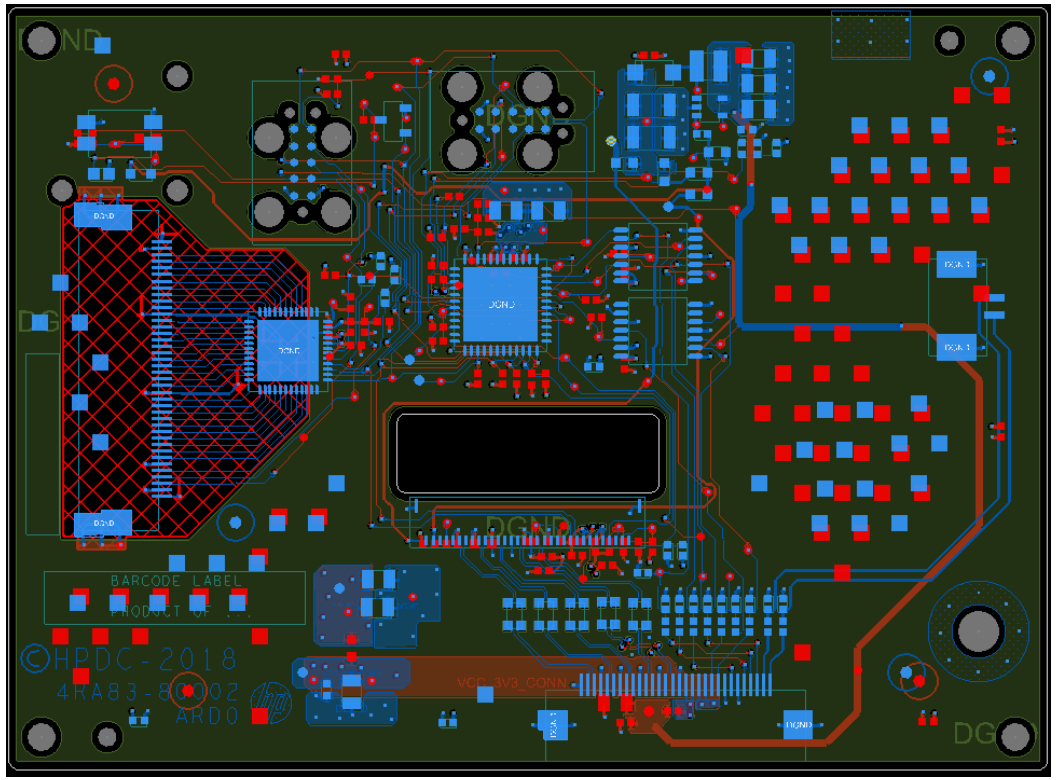


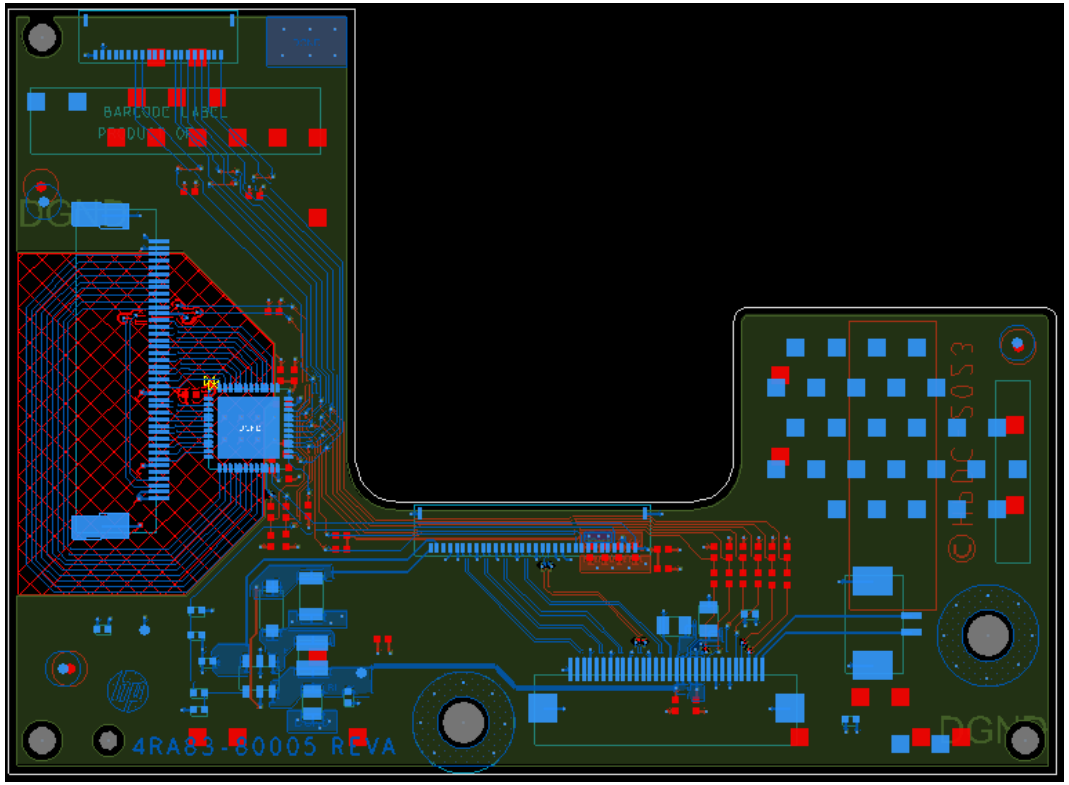




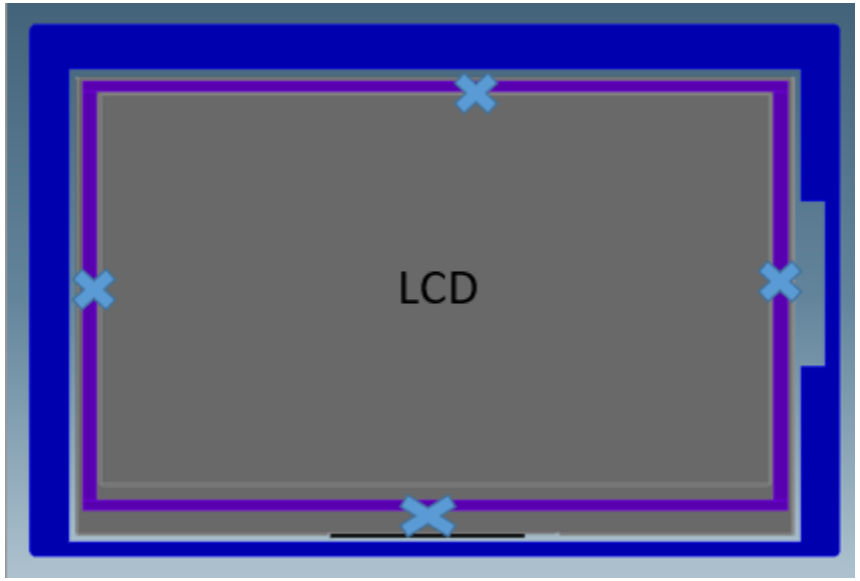
Remove Back Bias buffers while maintaining good signal Integrity

Redesign PCB to smaller nested PCB |Saving $0.38/unit





Use ITO adhesive to attach Display | $0.10/unit

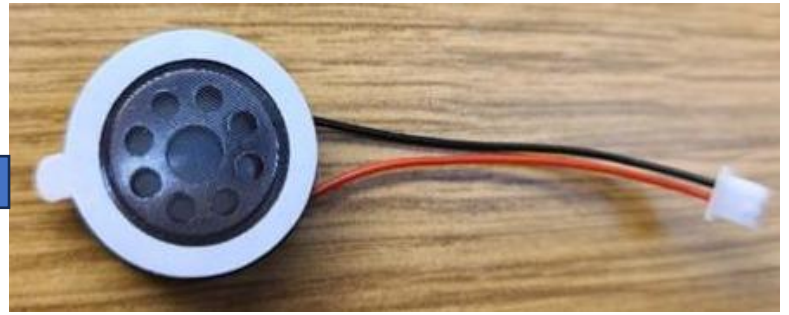


Touchscreen Adhesive enlarged by adding material to the inner dimension

Part Number	Description	unit cost	qty	Ext. cost
3SJ05-00004	Adhesive - LCD	0.034	2	0.069
3SJ05-00005	Adhesive - LCD Side	0.015	2	0.029
			Savings	0.098

Worked with the ITO supplier to grow ITO attach area, removed 4 inner adhesive strips and direct attach the Display to ITO glass

Qualified Lower cost Speaker | $0.14/unit



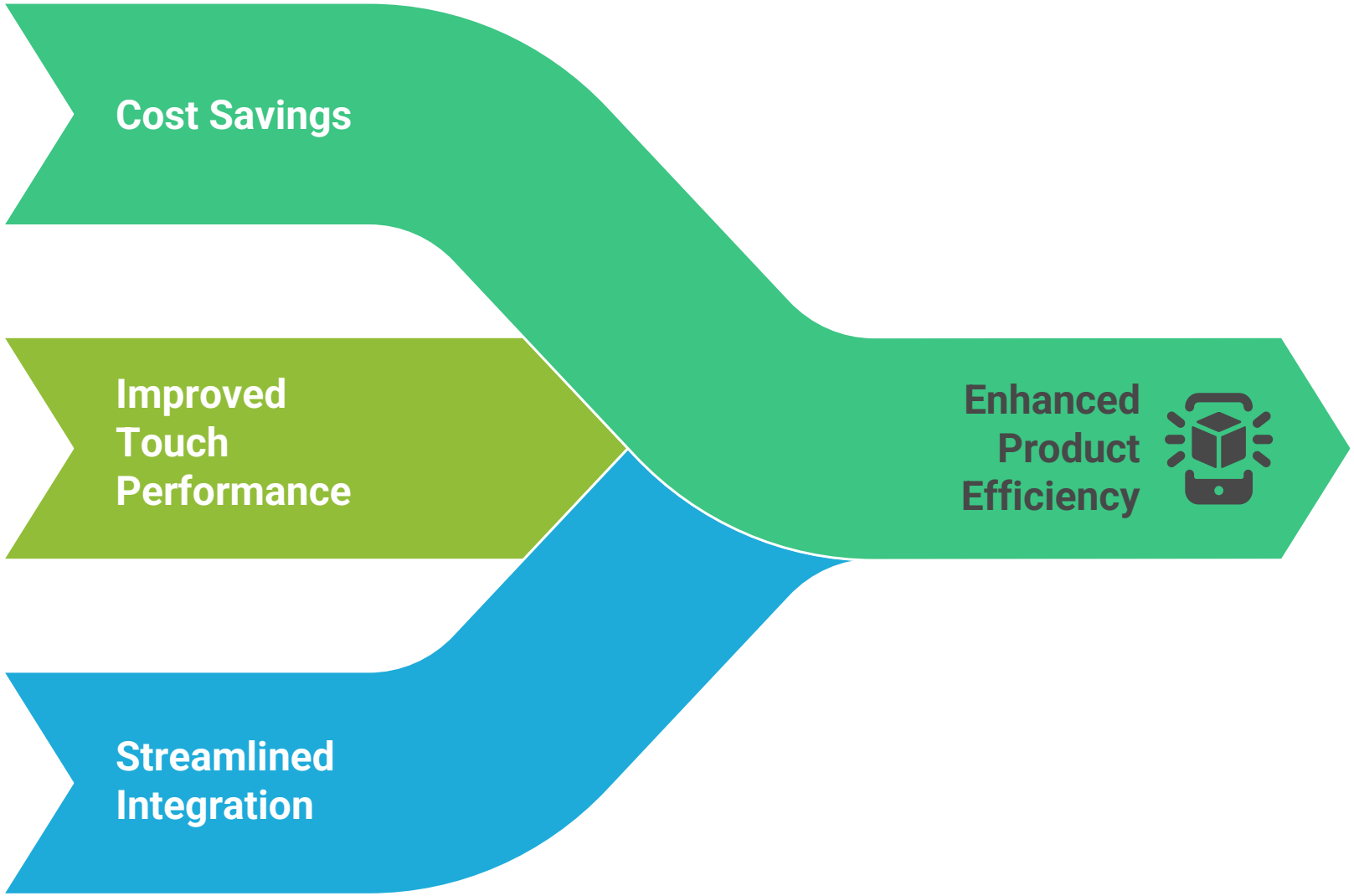
Collaborated with the supplier to design and qualify a speaker at a lower cost, while meeting the audio performance.

Single-Chip Architecture Benefits

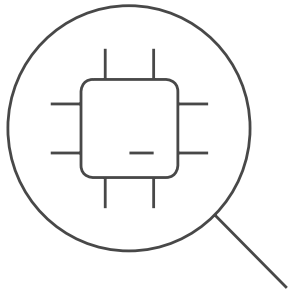
1. Reduced material costs and simplified manufacturing process.

2. Eliminated latency, enhancing touch response time by 20%.

3. Simplified integration, reducing engineering effort significantly.



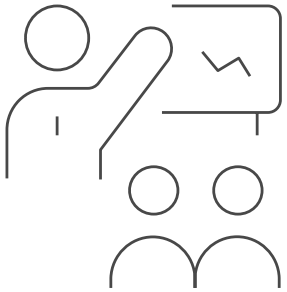
Deployment to Manufacturing



Testing Procedures

Developed new testing procedures to ensure quality standards.

1



Personnel Training

Provided training to manufacturing personnel on new processes.

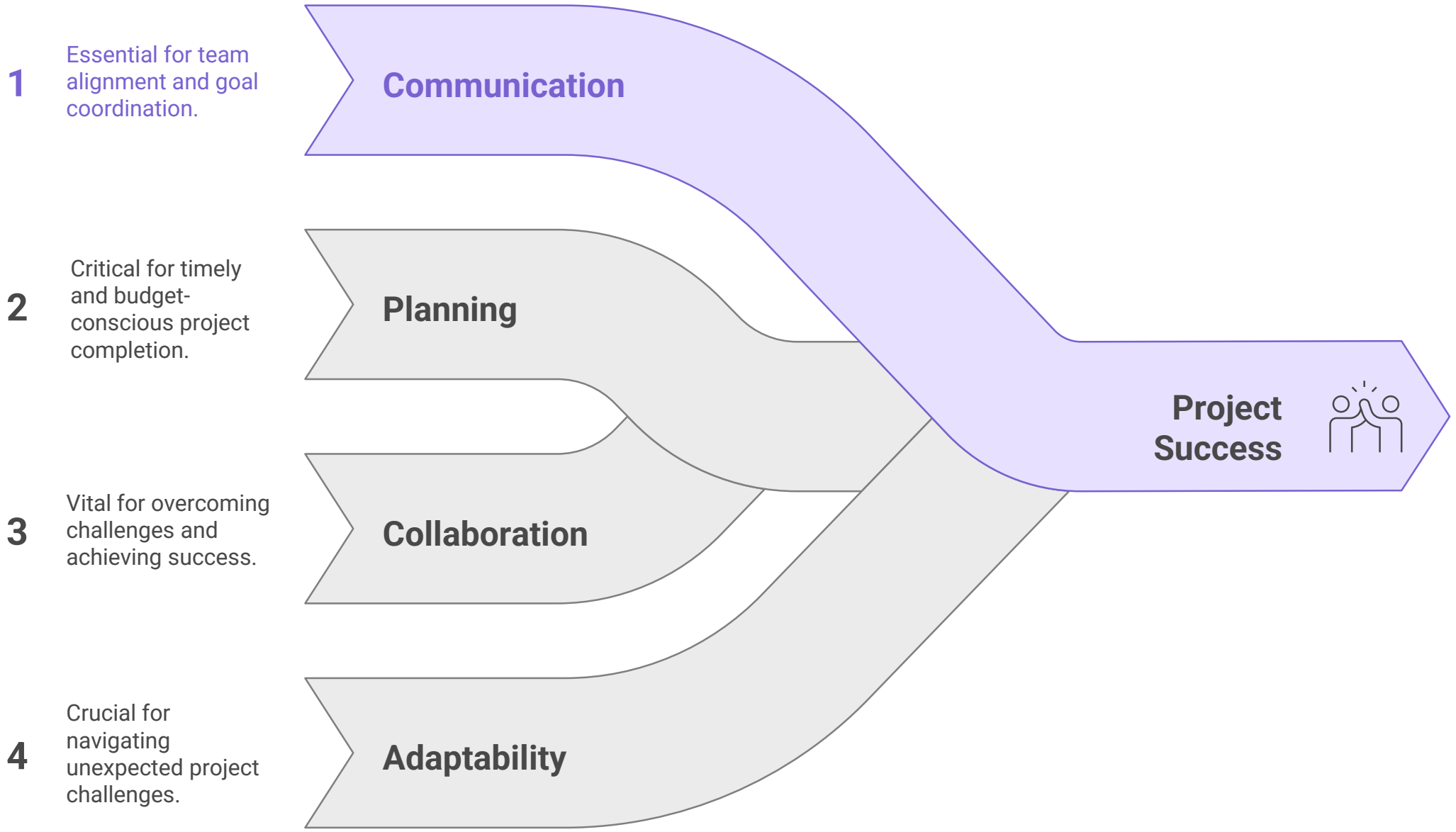
2

Yield Monitoring

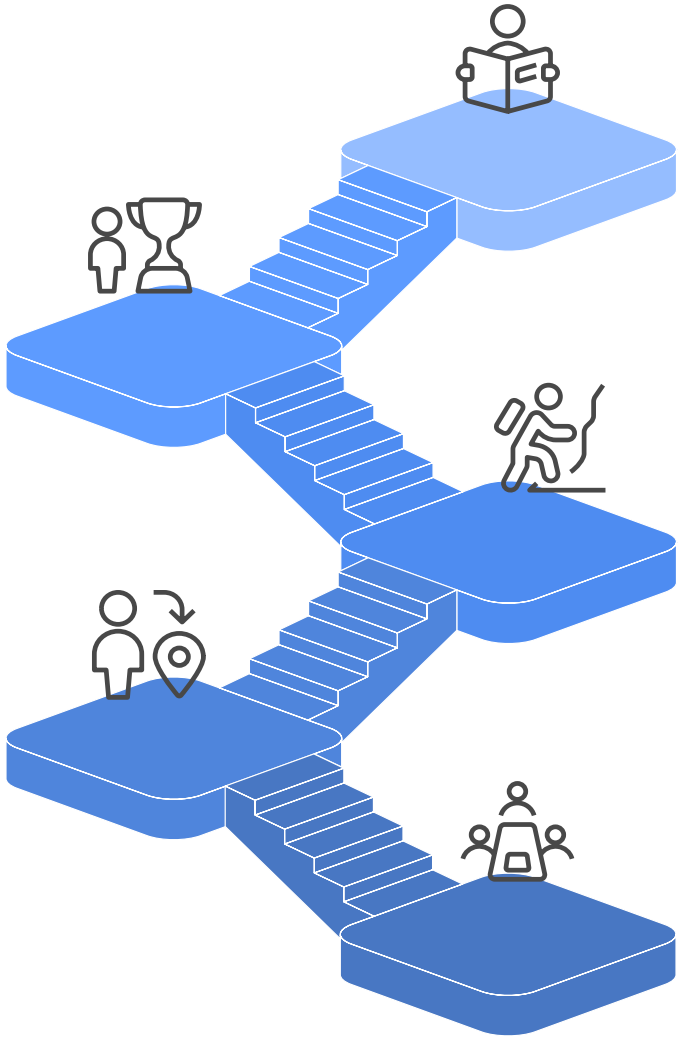
Closely monitored production yields to address manufacturing issues.

3

Demonstrated Pathways to Project Excellence



Journey to Project Success



5

Gain Experience

Acquire invaluable lessons and skills for future endeavors.

4

Deliver Results

Achieve tangible outcomes and benefits for the organization.

3

Manage Challenges

Overcome obstacles and ensure smooth project progression.

2

Lead Team

Guide a diverse team of engineers across different locations.

1

Initiate Project

Begin the ambitious task of redesigning the touch architecture.