

QTronic User Conference 2019

Virtual ECUs and Applications

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1. Introduction

2. Background

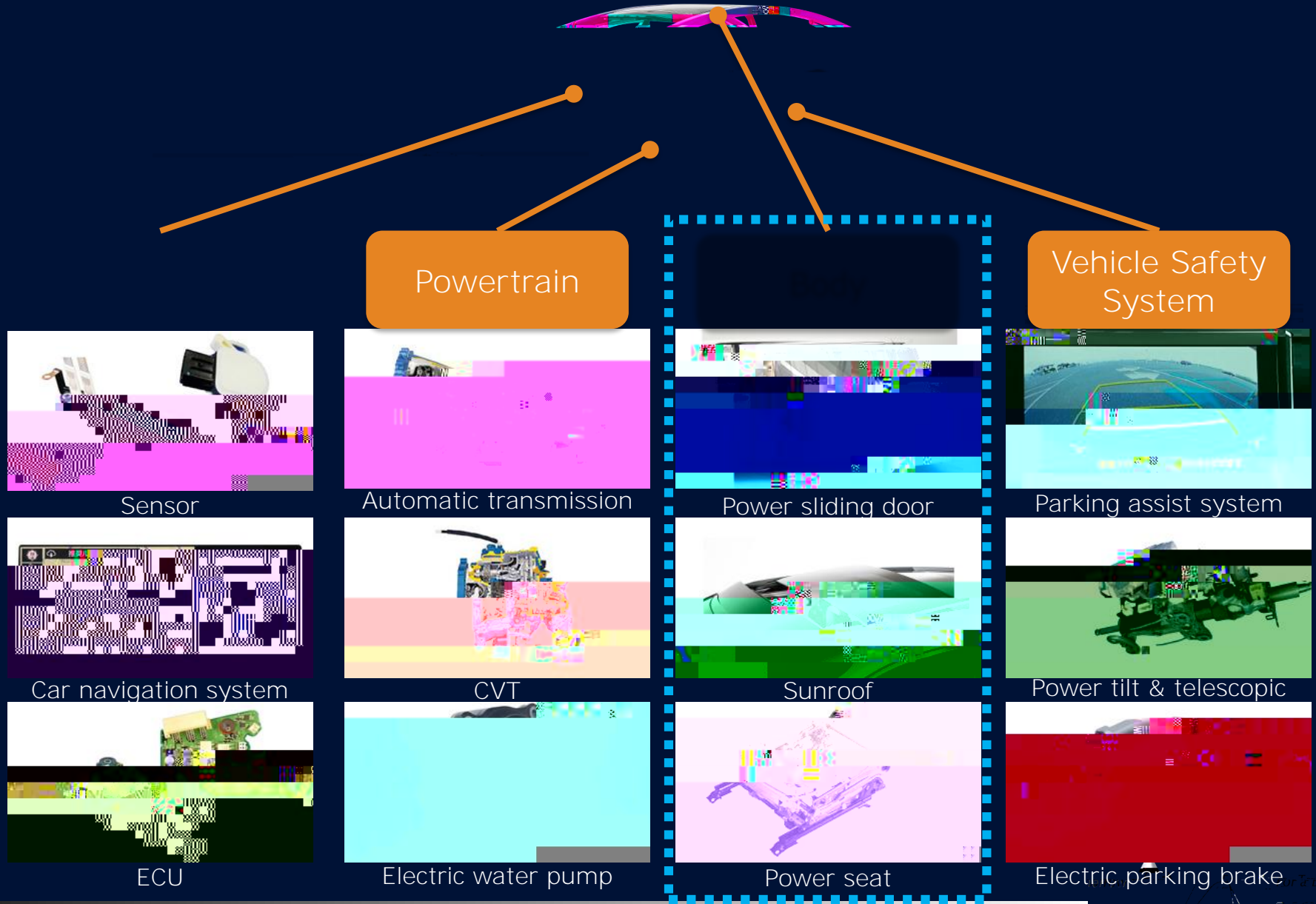
3. HILS by Silver

4. Python Scripts Management

5. Summary



1-1. AISIN Group Main Products



1-2. Features of the Body System

Features of the body system

- There is a direct operation request from the user.
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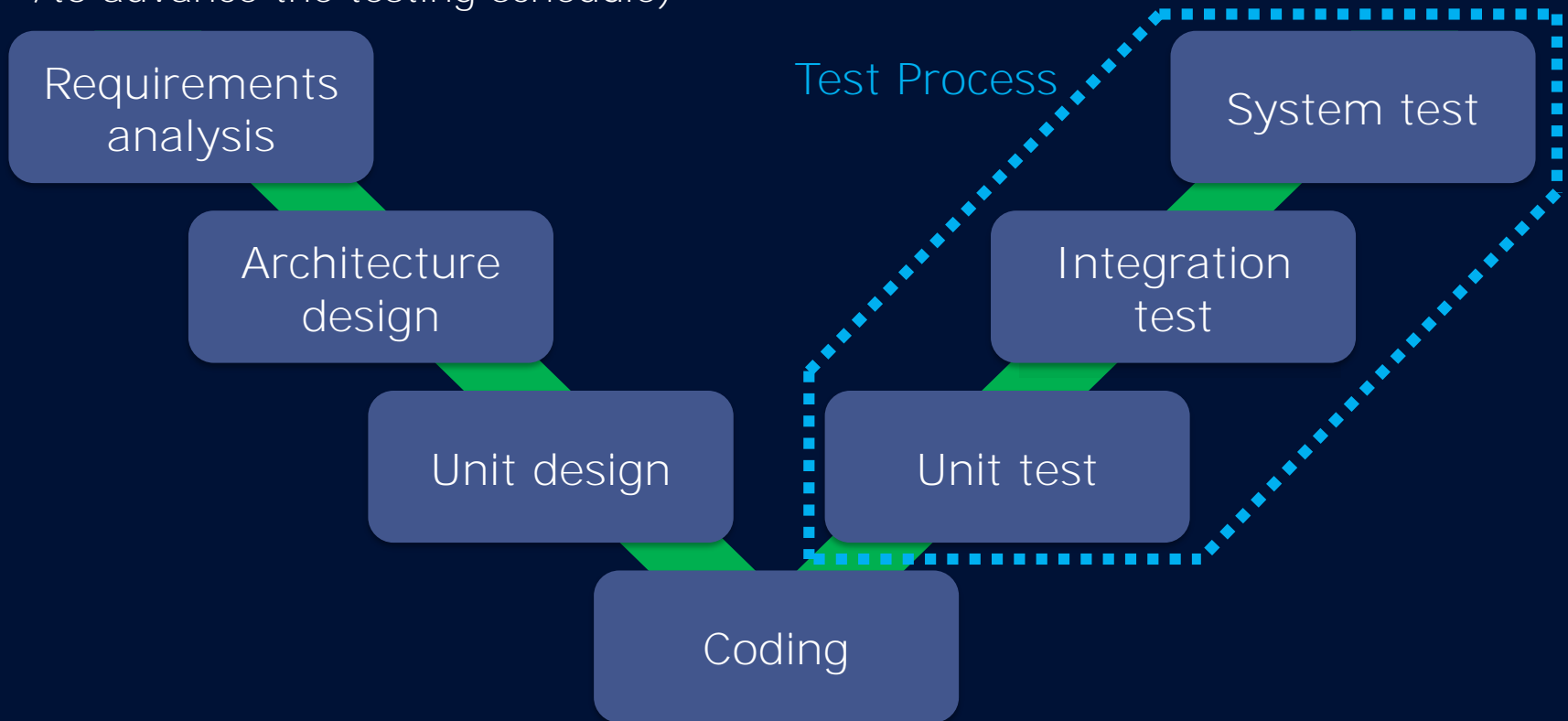
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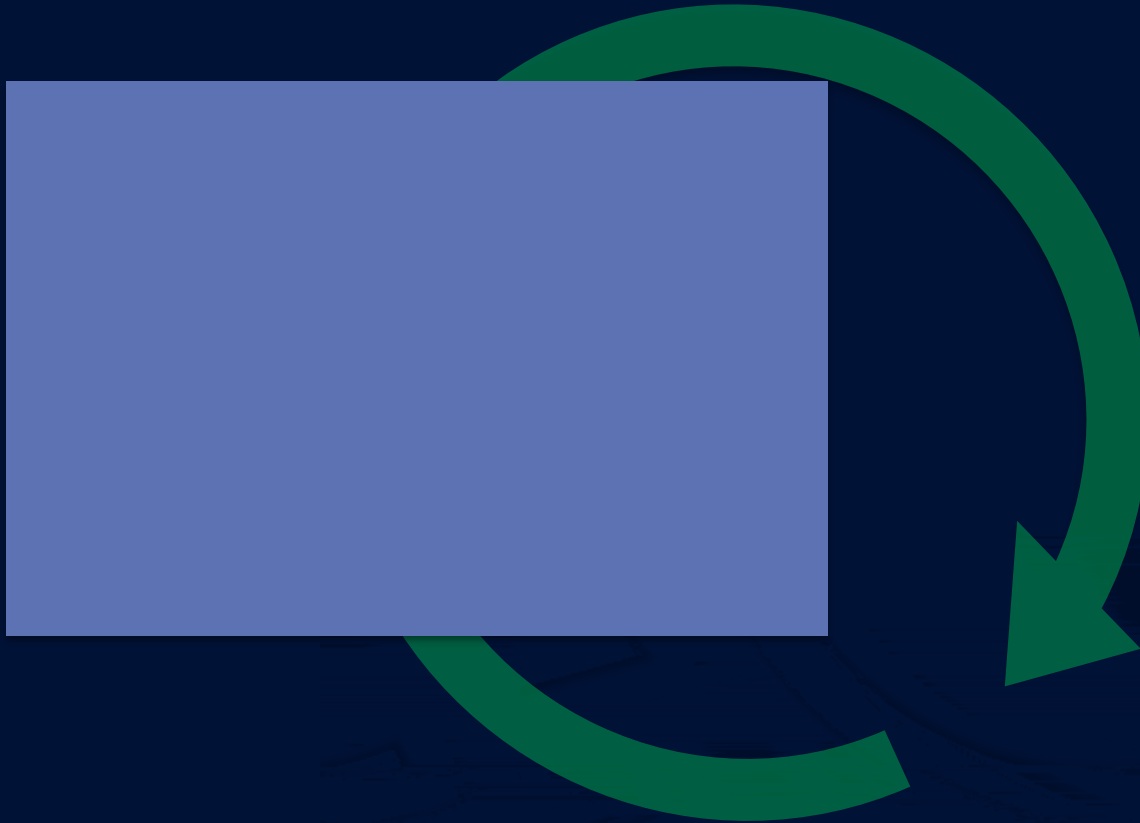
2-1. Testing Embedded Software

- Increase in test cases due to the development of larger-scale in-vehicle software
- Increased demand for simulation testing
(Reduced hardware and other provisioning costs
/easy and replicable test environments
/to advance the testing schedule)

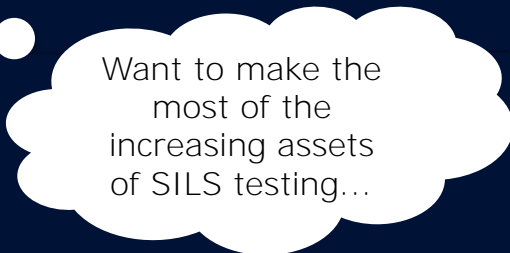


Software Development V-Model

1. Silver was introduced as a tool for simulation of product ECU, and SILS environment was constructed.
2. TestWeaver Light was introduced to automatically generate reports and automatically judge for simulation results.



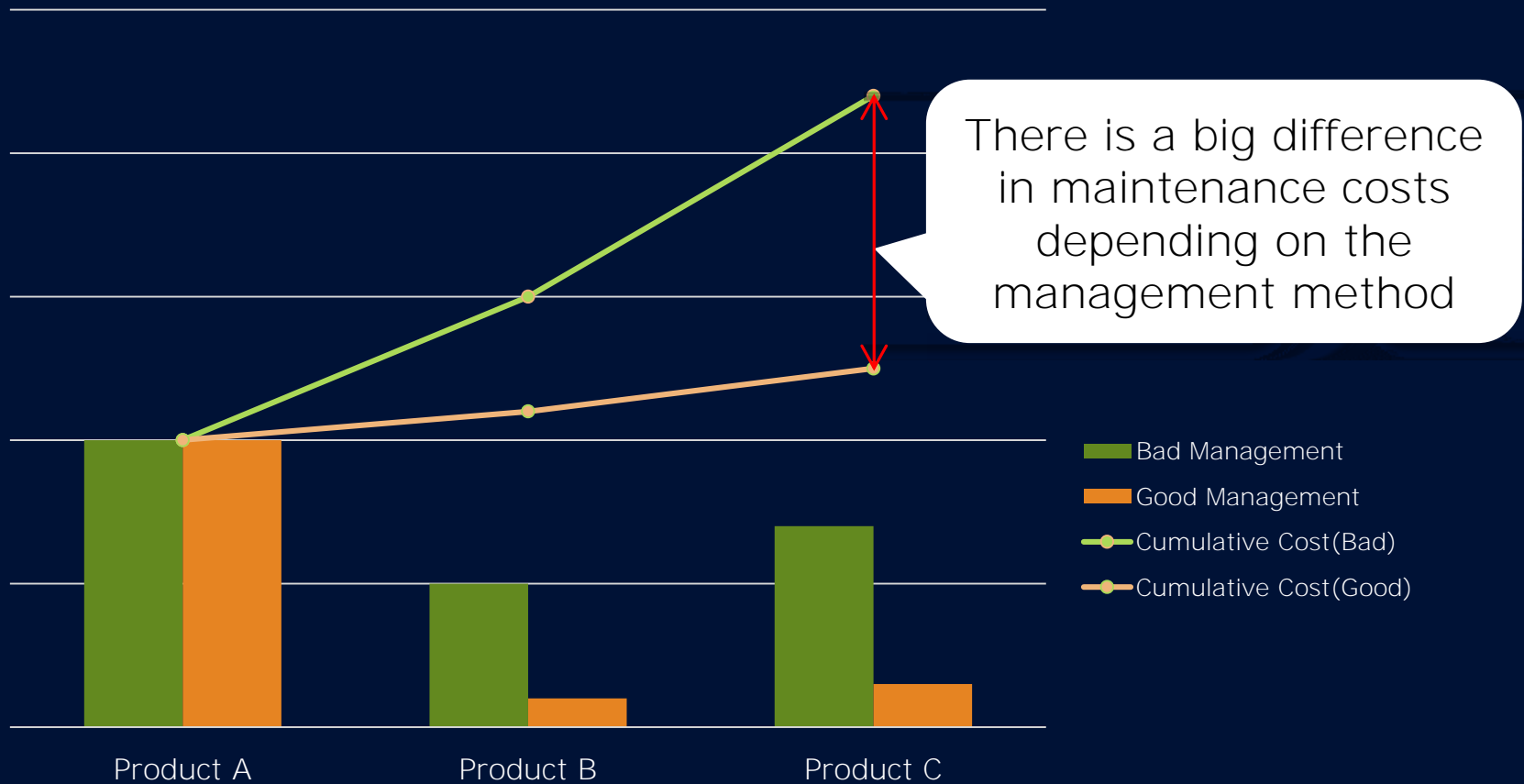
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Want to make the most of the increasing assets of SILS testing...

Good management practices for test assets are needed to keep testing costs lower.

Management Cost



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Windows



Test: Monitoring + Operation

INtime®

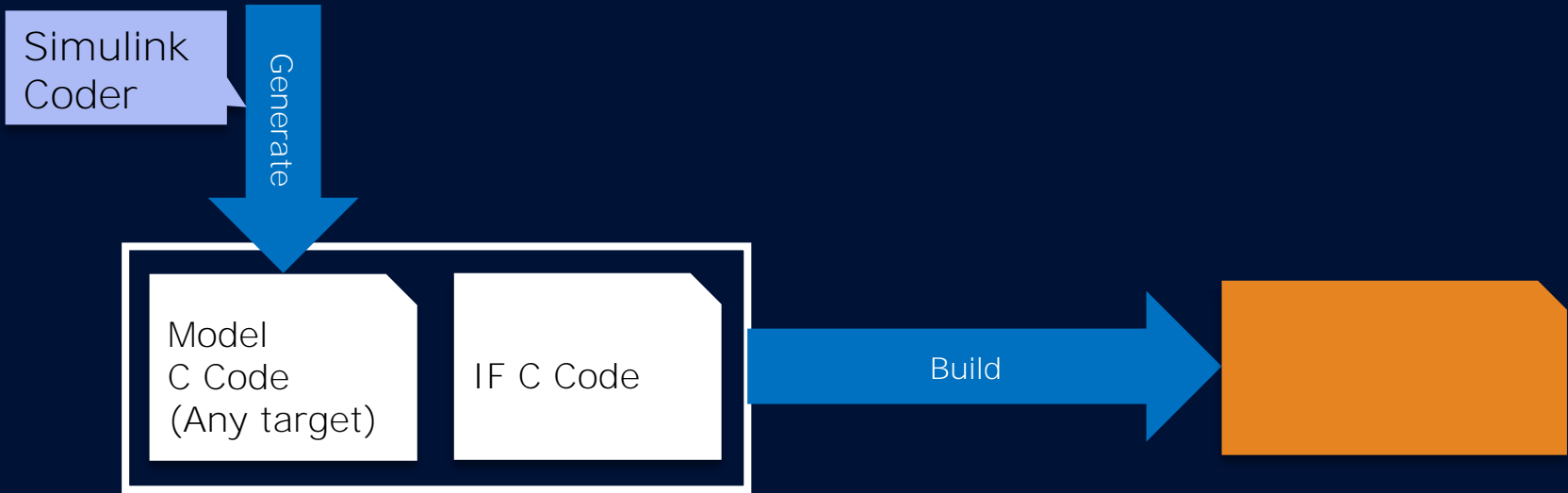
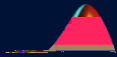


Plant Model

Interface Circuit

Flexible support for MBD by designing the HILS Plant Model Interface so that it can be imported from Simulink Model. Model development is performed externally using Simulink, and by providing the model, real time operation can be easily performed.

MATLAB Simulink

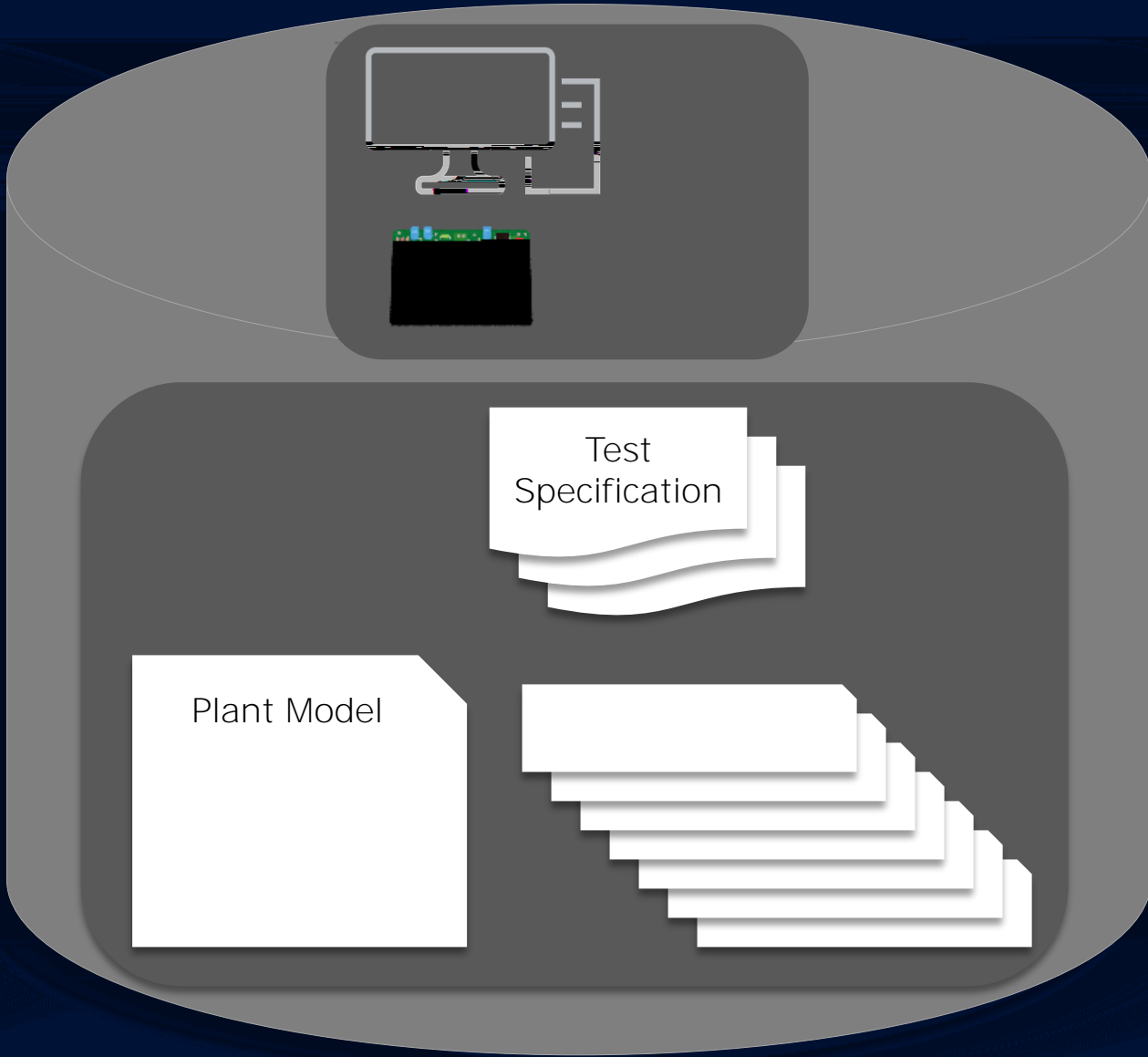


<Reduce in-house software components>

- Cultivate successors through in-house software refactoring.
- Smaller in-house software components

Component	Conventional	Development
1.PC	Outside	Outside
2.Test Scripts	In-house	In-house
3.GUI	In-house	Outside
4.Interpreter	In-house	Outside
5.Plant Model	In-house	Internal
6.Controller	In-house	

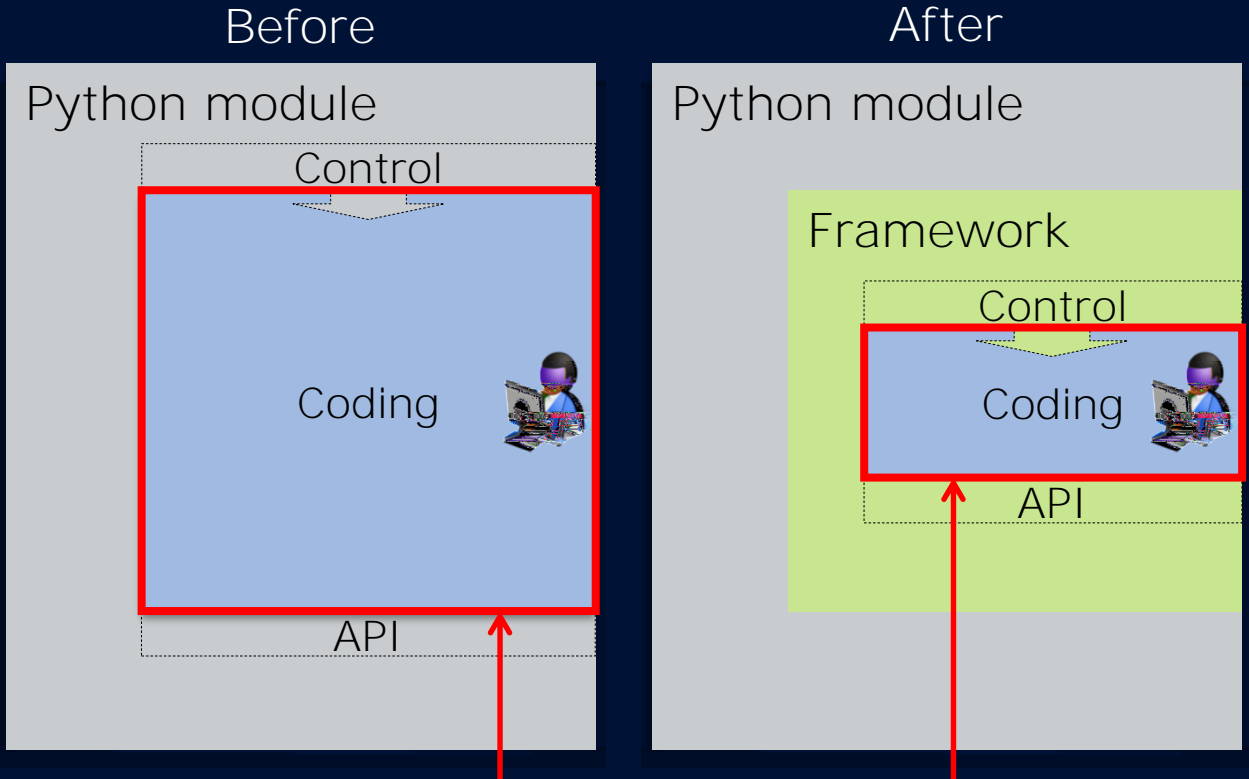
Entrepreneurial Business Manager



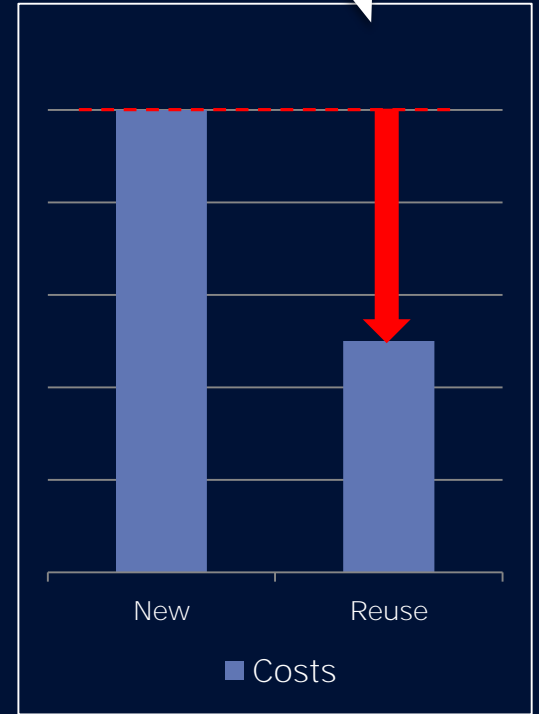
4-2. Test Framework

Advantages of the framework

- Reduce code volume
- Prevent unintended variations
- Fewer bugs

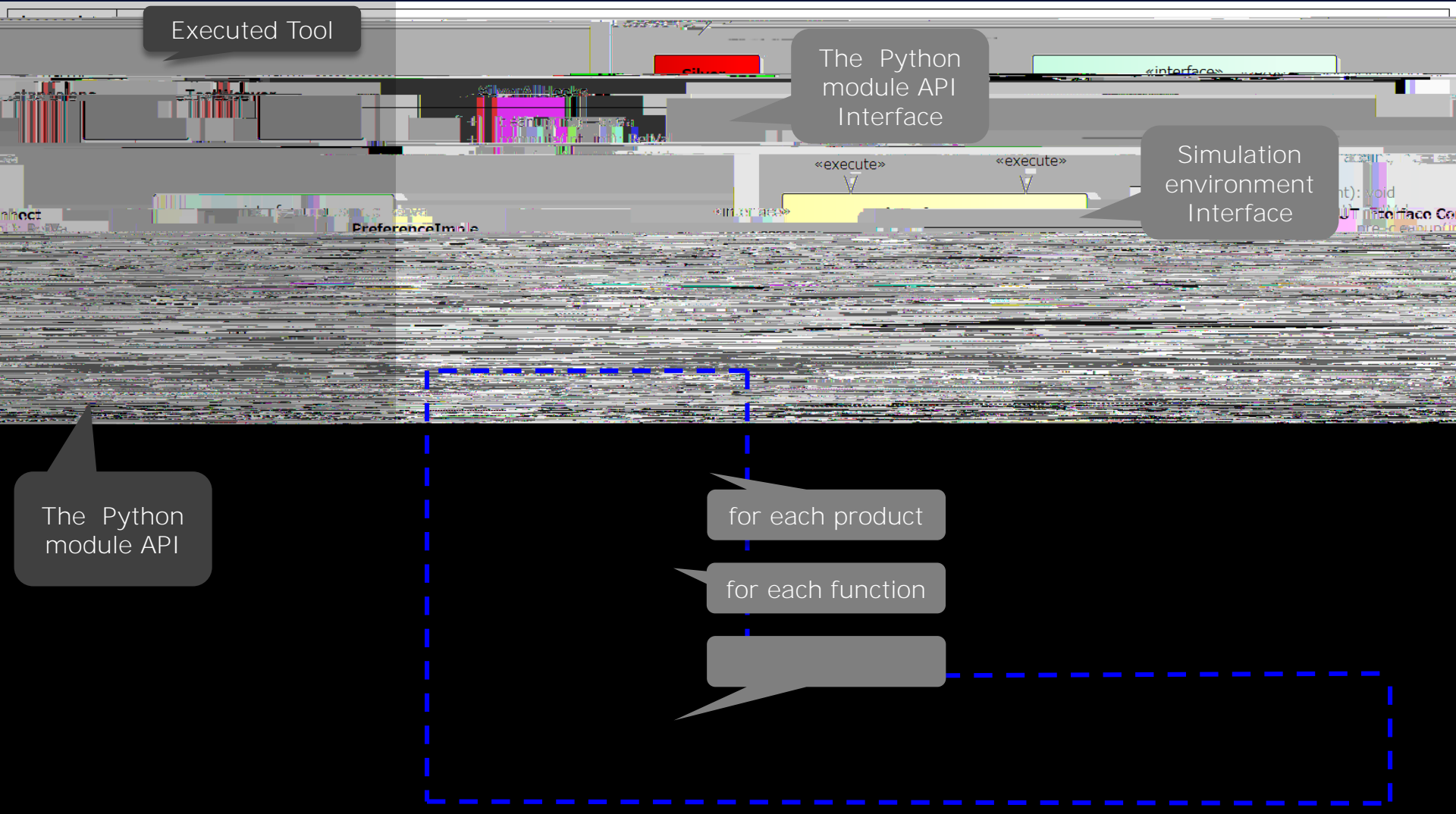


50% more efficient



5-1. Test Script Architecture Design

Design Test Script Architecture by Python for



Executed Tool

The Python module API Interface

Simulation environment Interface

The Python module API

for each product

for each function

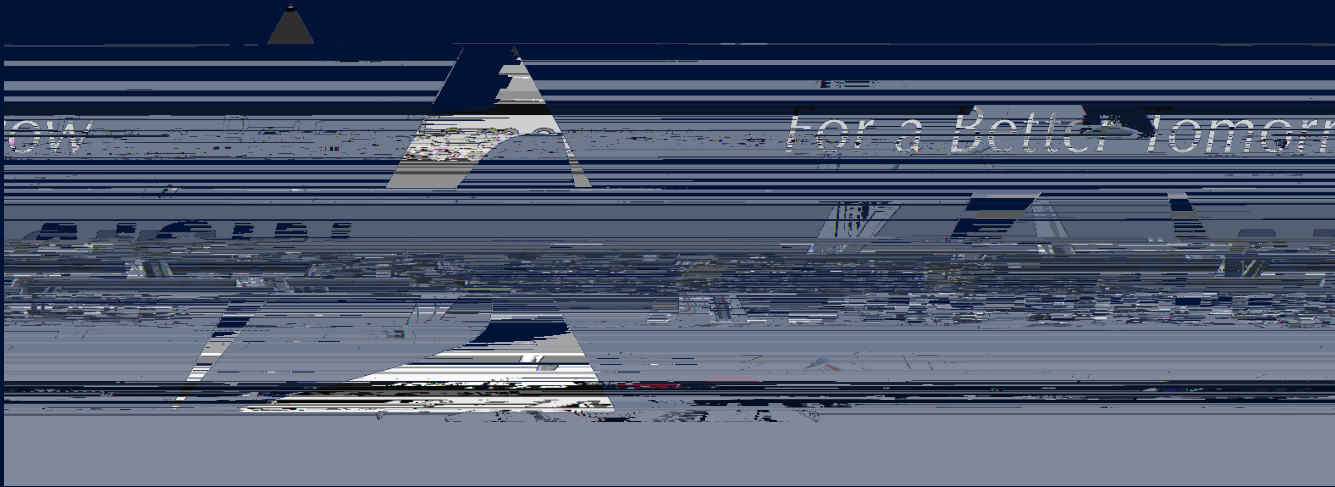
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Thank you for your attention!!