



E

C



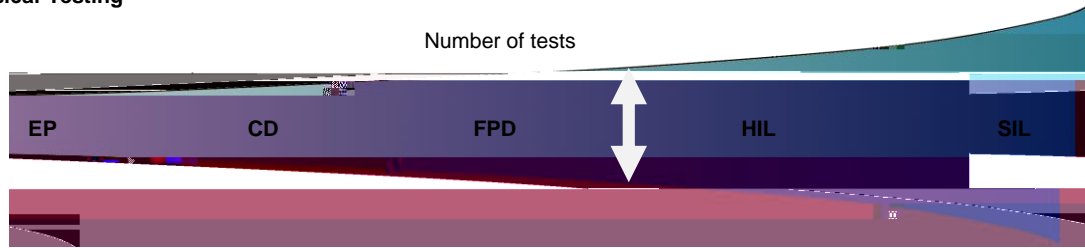
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Physical Testing

Virtual Testing



Physical test cells are limited in numbers due to HW and Facilities

Virtual test cells are limited by number of SW licenses, only

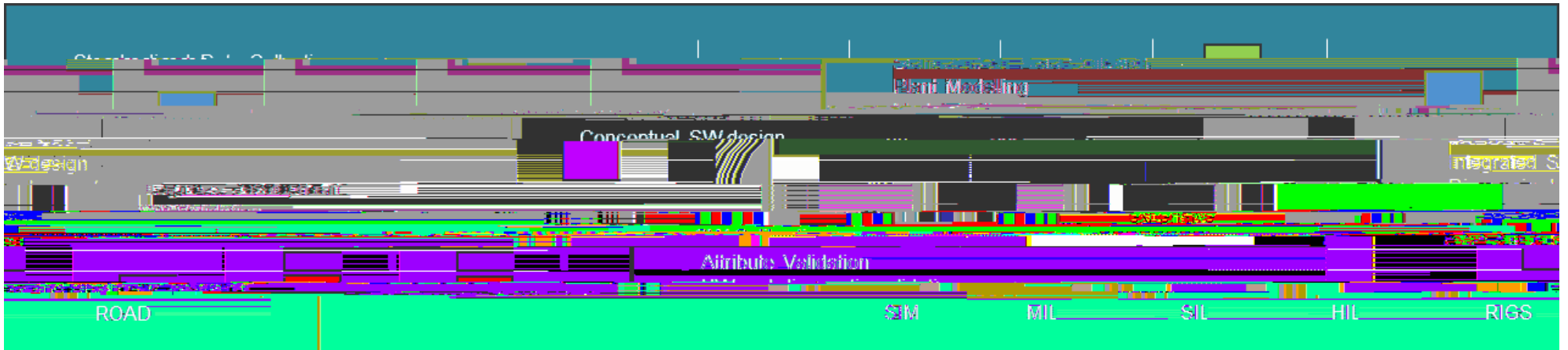
SIL offers a vehicle like integration environment

SIL provides faster execution time than MIL

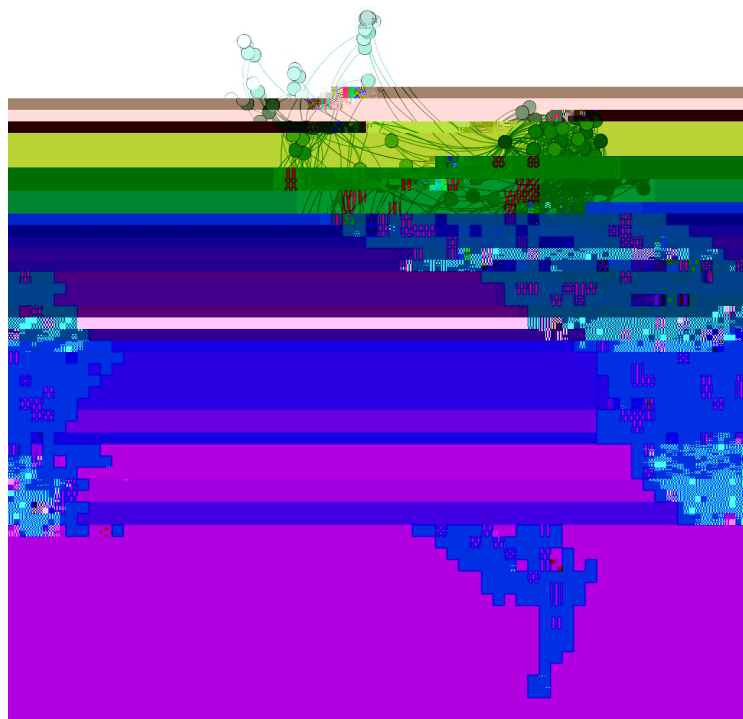
SIL can in many cases replace HIL debugging

SIL serves as a virtual test environment

Unified testbench for SW design

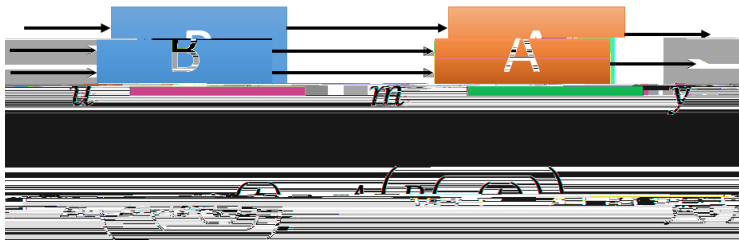


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The Software in current generation ECMs is structured into around 250 modules

Unit tests are required to ensure software quality and compliance with industry norms (e.g. ISO 26262)



Functions in the ECU are made up of smaller units during the design phase

These Subfunctions are not represented in generated code



Unit tests need to be applicable to subfunctions

Values need to be injected into the input vector of each subfunction



```
void Module(void)
[...]
```

A large black rectangular box redacting the majority of the code content in the snippet.

Code generators tend to use temporary, local variables

Analysis is needed to determine cases where such a temporary variable is always equal to a measurable signal

Value injecting needs to take into account all aliases of a given input



Traditional Unit Tests rely on a small amount of scripted scenarios

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Test cases are expressed in Python

Run TestWeaver Light on a Jenkins test server as a nightly build

Code coverage is measured by using CTC++ from Verifysoft and reported as HTML





The presented method of **code instrumentation**



Engine,