

Simulation as Tool – Continuous Software Testing in Simulation

MOTIVATION

- Simulation as **analysis method** is used at different steps in the development process.
- To use simulation as method for verification and validation, the automated driving function can be placed in a virtual environment and the interaction with it can be observed.

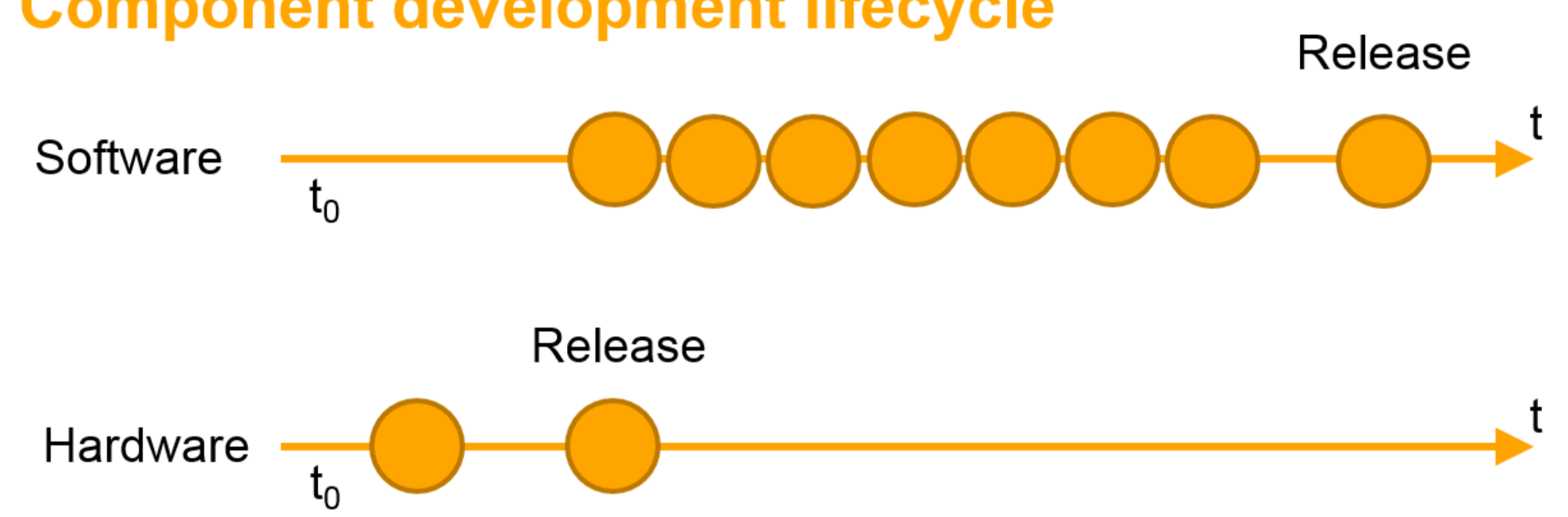


- The virtual driving function is mainly realized by software, which is thus a focal point in the development efforts.

BACKGROUND

- The functionality of the automated vehicle is defined by performance of the used hardware e.g. sensors and the applied software.
- Software is always developed against its environment context.

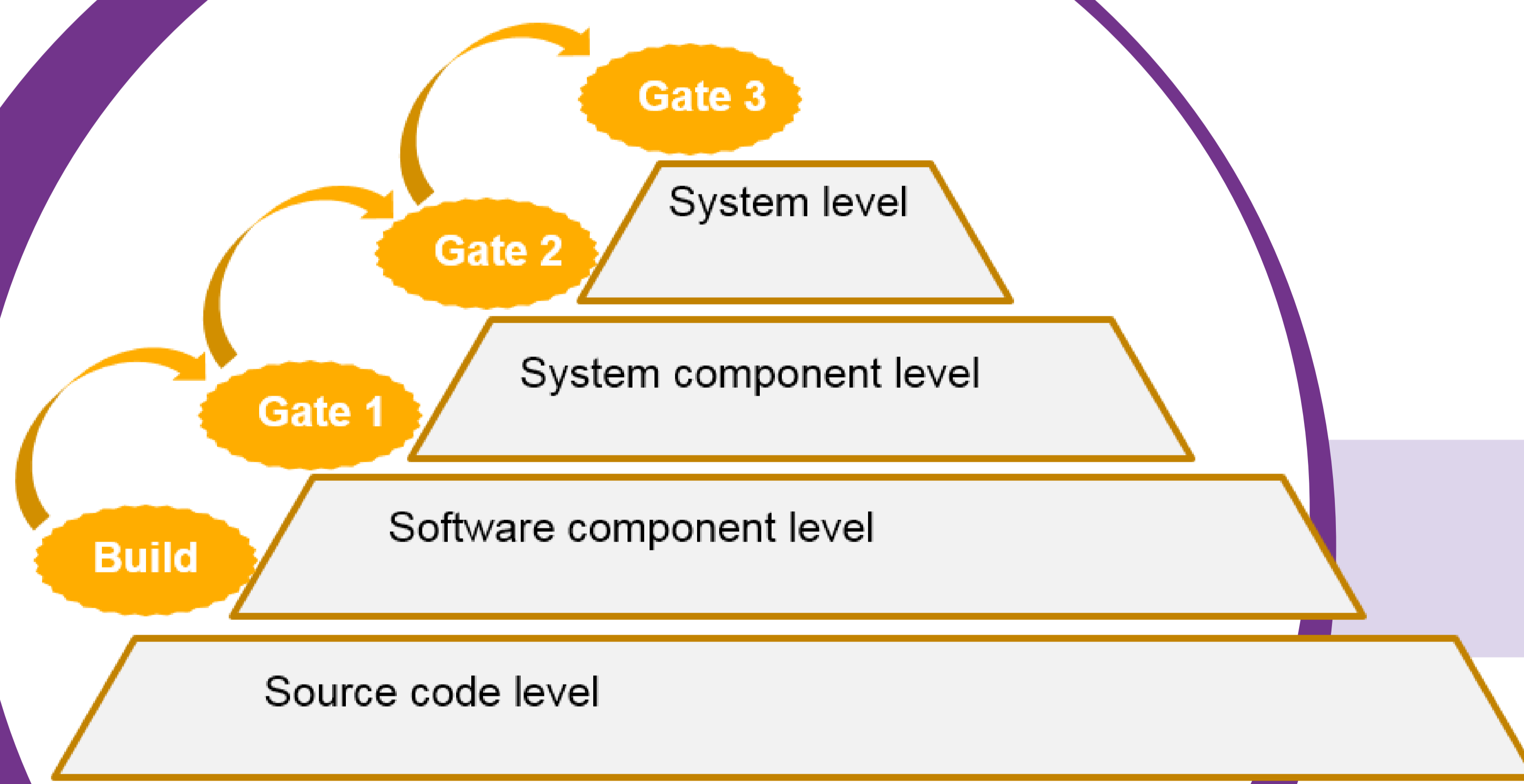
Component development lifecycle



- For this reason, while developing software, it is meaningful to **avoid changes of hardware** which is in the context of the software.

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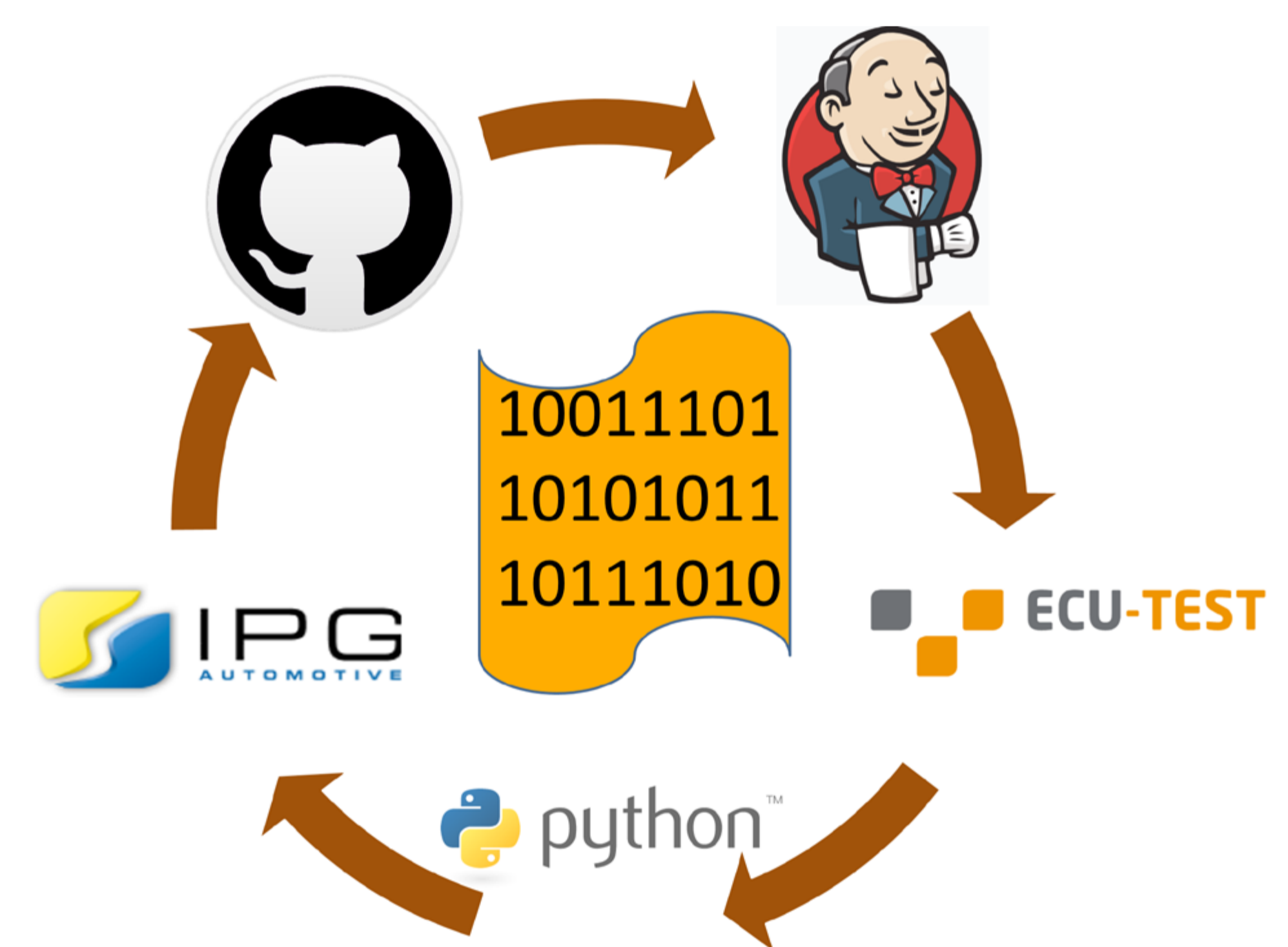


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- For verification of the cooperative driving function, a three step size approach was chosen in order to test at different levels of systems hierarchy.
- At the end of **each successful** test, the software reaches a higher gate. Each gate lies at a different systems architecture level.
- As higher **the gate** as more complex is the simulation environment which is needed to execute test on this level.
- By this approach valuable simulation resources are used efficiently for mature software

- A contious test environment based on a Jenkins platform has been set up to **automate all simulations** after a code change.



- Each code change triggers test tool chain execution in order to show improvements while development of the cooperative driving function.

SIMULATION STRATEGY

PRACTICAL APPROACH