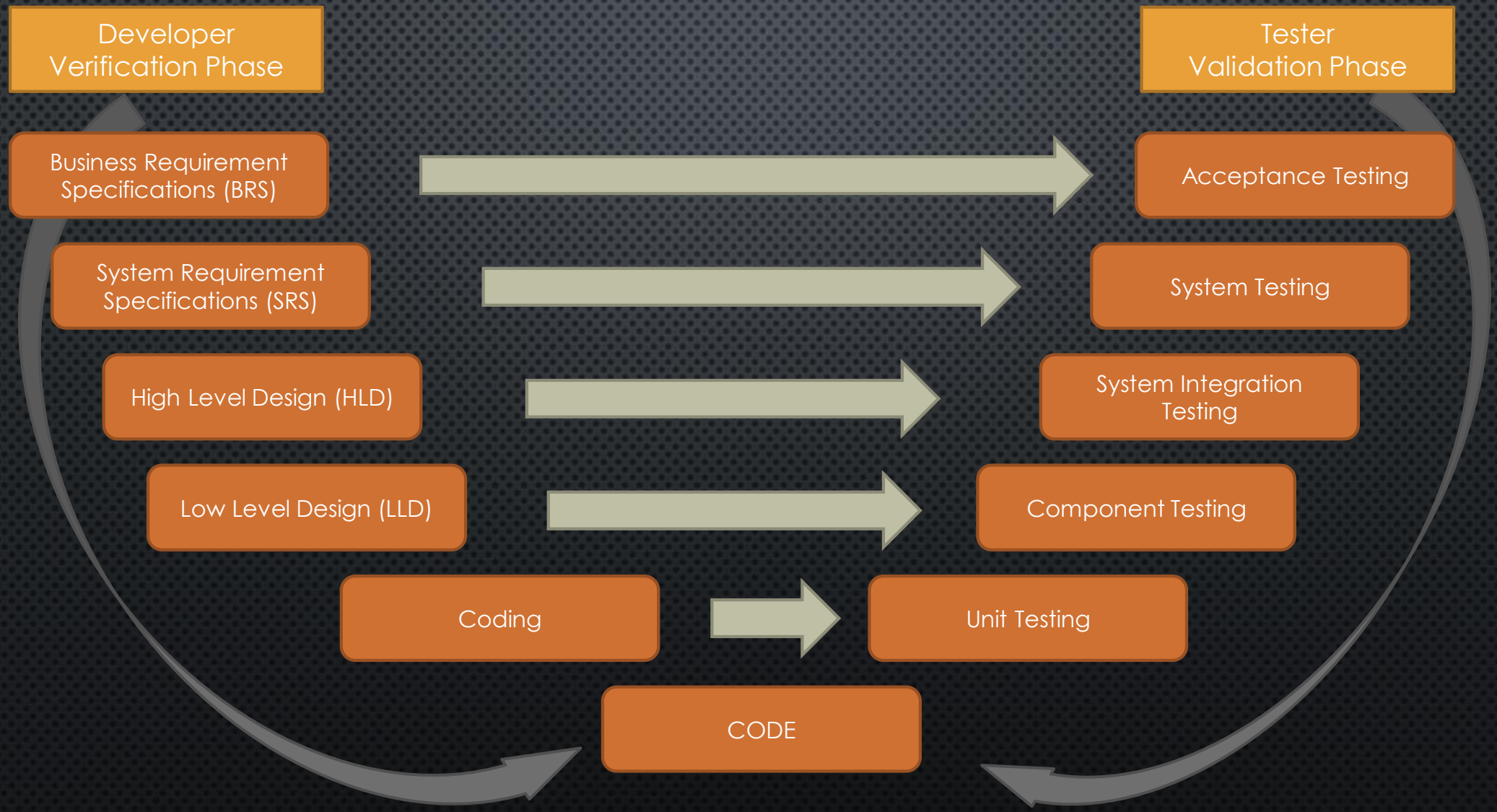
THE SOFTWARE DEVELOPMENT PROCESS

Software Development Models – V-model

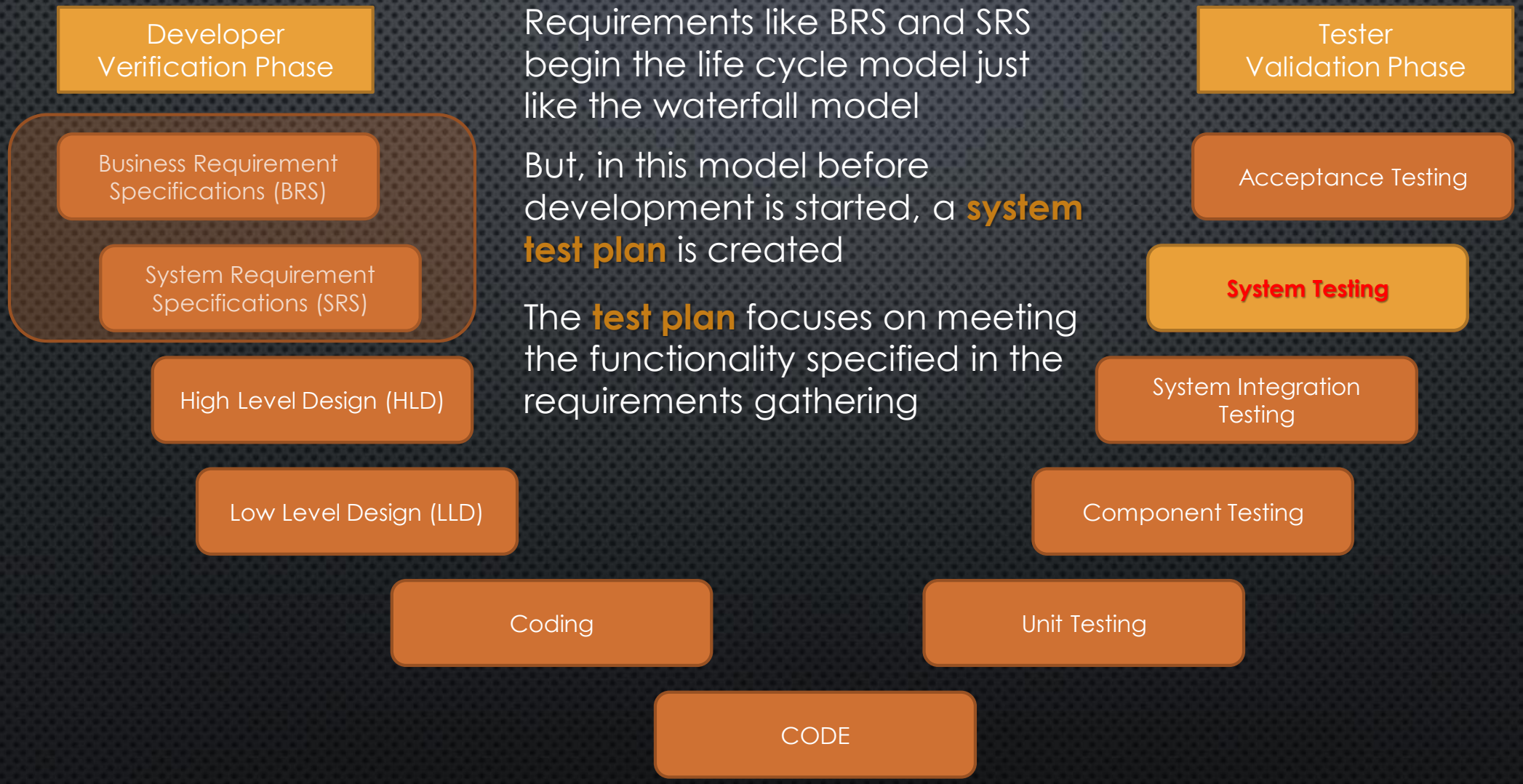
V-MODEL

- V- model means Verification and Validation model
- Just like the waterfall model, the V-Shaped life cycle is a sequential path of execution of processes
- Each phase must be completed before the next phase begins
- V-Model is one of the many software development models
- Testing of the product is planned in parallel with a corresponding phase of development in V-model

DIAGRAM OF V-MODEL



PHASES OF V-MODEL



Requirements like BRS and SRS begin the life cycle model just like the waterfall model

But, in this model before development is started, a **system test plan** is created

The **test plan** focuses on meeting the functionality specified in the requirements gathering

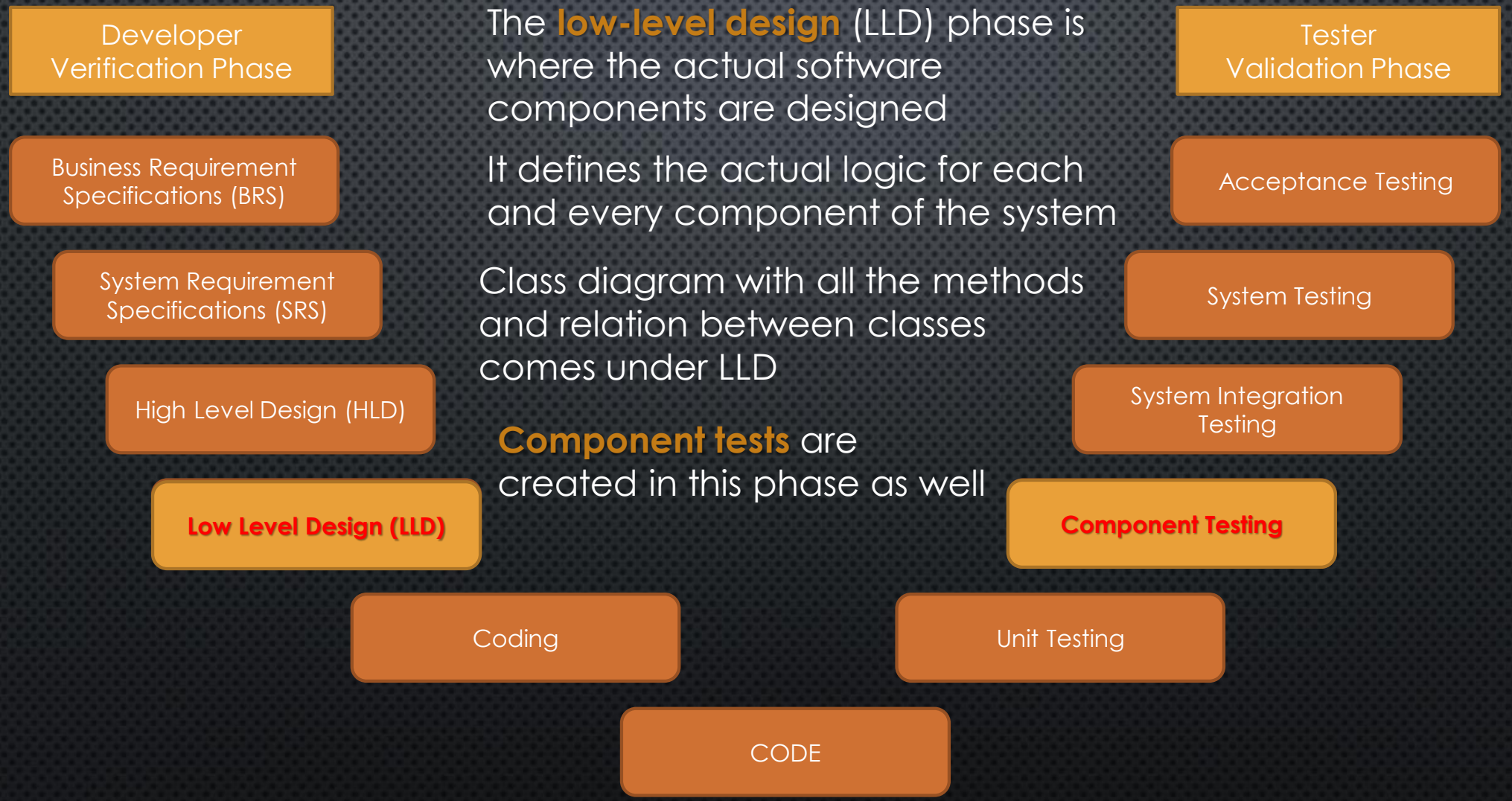
PHASES OF V-MODEL

The **high-level design** (HLD) phase focuses on system architecture and design

It provide overview of solution, platform, system, product and service/process

An **integration test** plan is created in this phase as well in order to test the pieces of the software systems ability to work together

PHASES OF V-MODEL



The **low-level design** (LLD) phase is where the actual software components are designed

It defines the actual logic for each and every component of the system

Class diagram with all the methods and relation between classes comes under LLD

Component tests are created in this phase as well

PHASES OF V-MODEL

The **implementation** phase is, again, where all coding takes place

Developer Verification Phase

Business Requirement Specifications (BRS)

System Requirement Specifications (SRS)

High Level Design (HLD)

Low Level Design (LLD)

Once coding is complete, the path of execution continues up the right side of the V where the test plans developed earlier are now put to use

Coding is at the bottom of the V-Shape model. Module design is converted into code by developers

Unit Testing is performed by the developers on the code written by them

Tester Validation Phase

Acceptance Testing

System Testing

System Integration Testing

Component Testing

Coding

Unit Testing

CODE

ADVANTAGES OF V-MODEL

- Simple and easy to use
- Testing activities like planning, test designing happens well before coding. This saves a lot of time. Hence higher chance of success over the waterfall model
- Proactive defect tracking – that is defects are found at early stage
- Avoids the downward flow of the defects
- Works well for small projects where requirements are easily understood

DISADVANTAGES OF V-MODEL

- Very rigid and least flexible
- Software is developed during the implementation phase, so no early prototypes of the software are produced
- If any changes happen in midway, then the test documents along with requirement documents has to be updated

WHEN TO USE THE V-MODEL

- The V-shaped model should be used for small to medium sized projects where requirements are clearly defined and fixed
- The V-Shaped model should be chosen when ample technical resources are available with needed technical expertise

High confidence of customer is required for choosing the V-Shaped model approach
Since, no prototypes are produced, there is a very high risk involved in meeting customer expectations