AGILE ARCHITECTING

FLOW SYSTEMS CONTROLER NEXT GENERATION

A USE CASE

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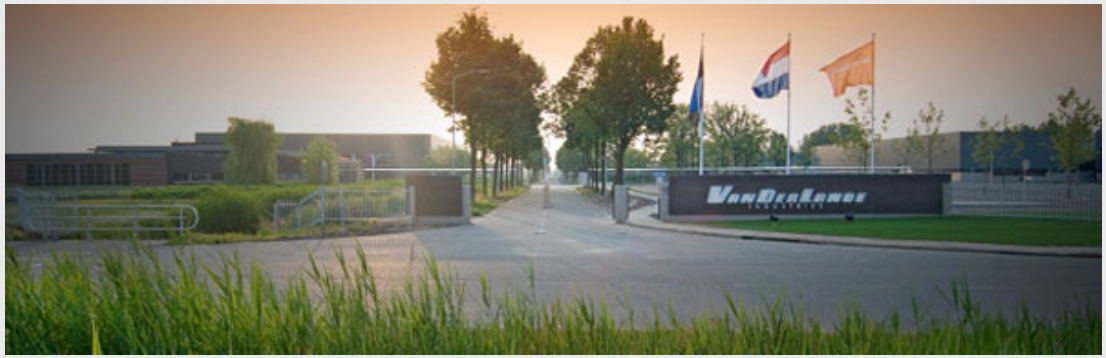
Agenda

- Project and product background
- Mapping scrum phases to project
- Lessons learned / evolutions
- Questions



System architecture

Host (ERP / WMS)
= Business control / Data management

Destination server

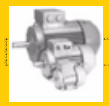
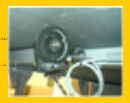
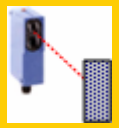
Scada

Reporting & Diagnostics

FSC (s) ⟷ PLC (s)

EM-components



Identification Equipment


Measuring equipment

Embedded controllers



Equipment
-Control
-Monitoring

Core process
•Transporting
•Merging
•Sorting

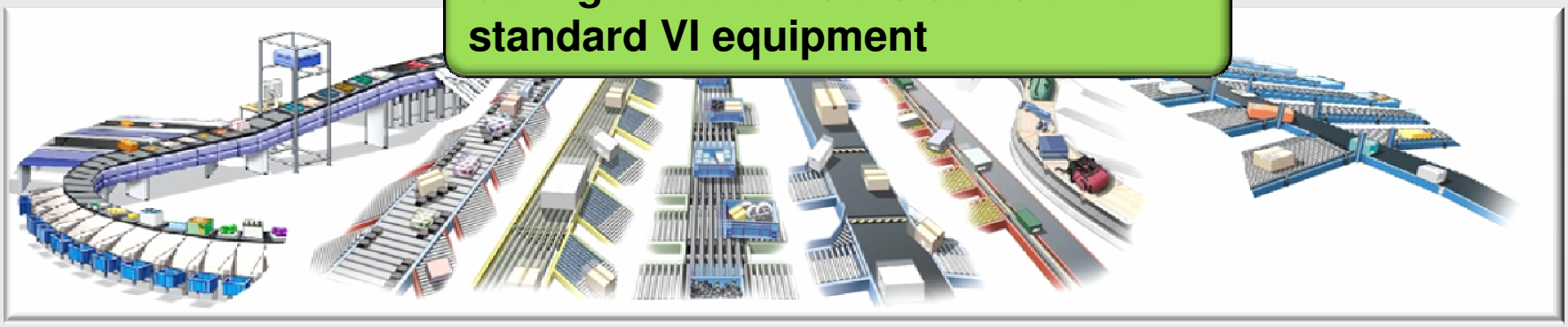
-Decrease project lead time
-Standard building blocks
-Easy commissioning
-Easy maintenance

Important KPI
-Availability
-Sorting accuracy
-Merge capacity

Flow Systems Controller

-PC based control

Configurable controls solution for standard VI equipment



Project background

Successor current FSC product

Total redesign

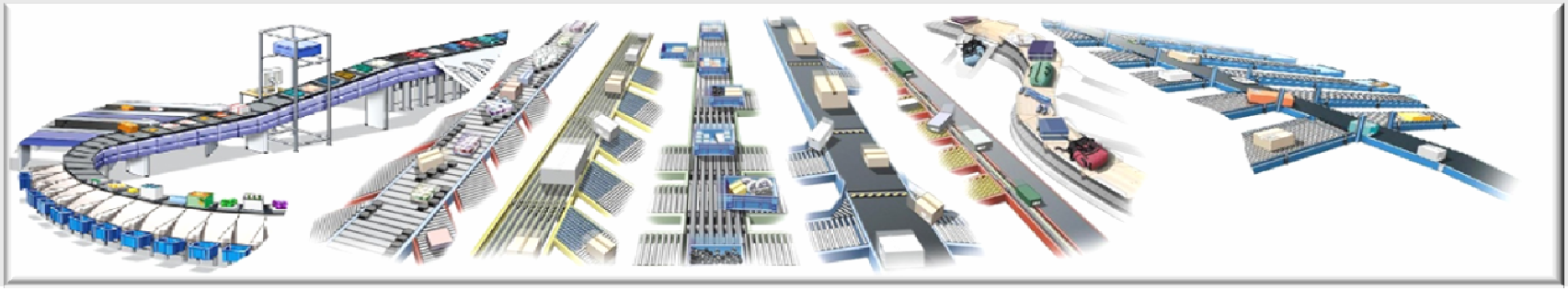
Start 1 April 2008

Multidisciplinary team
Project leader
Architect
Test engineer
Software Engineers
Commissioning engineers

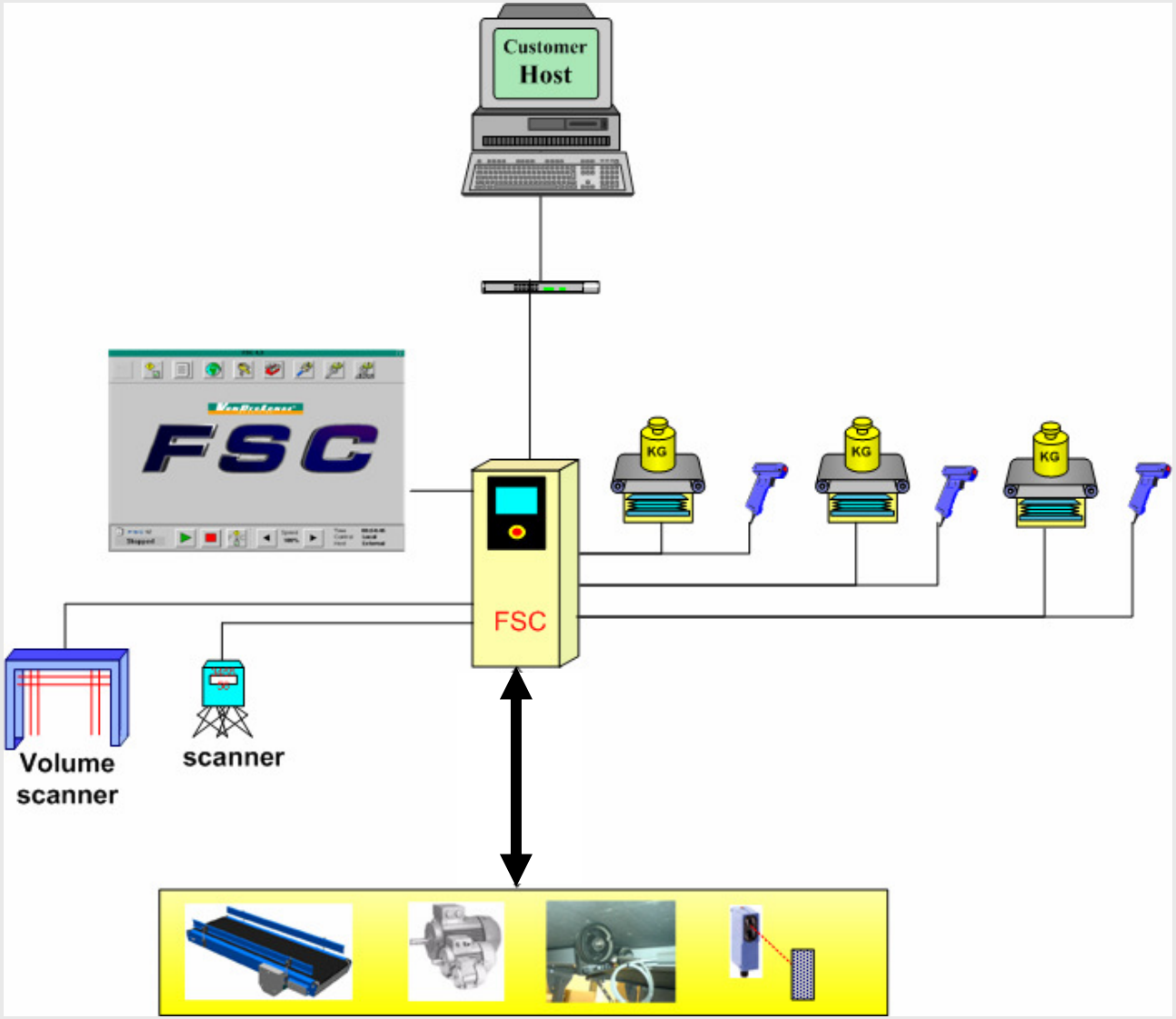
Flow
Systems
Controller

Next generation

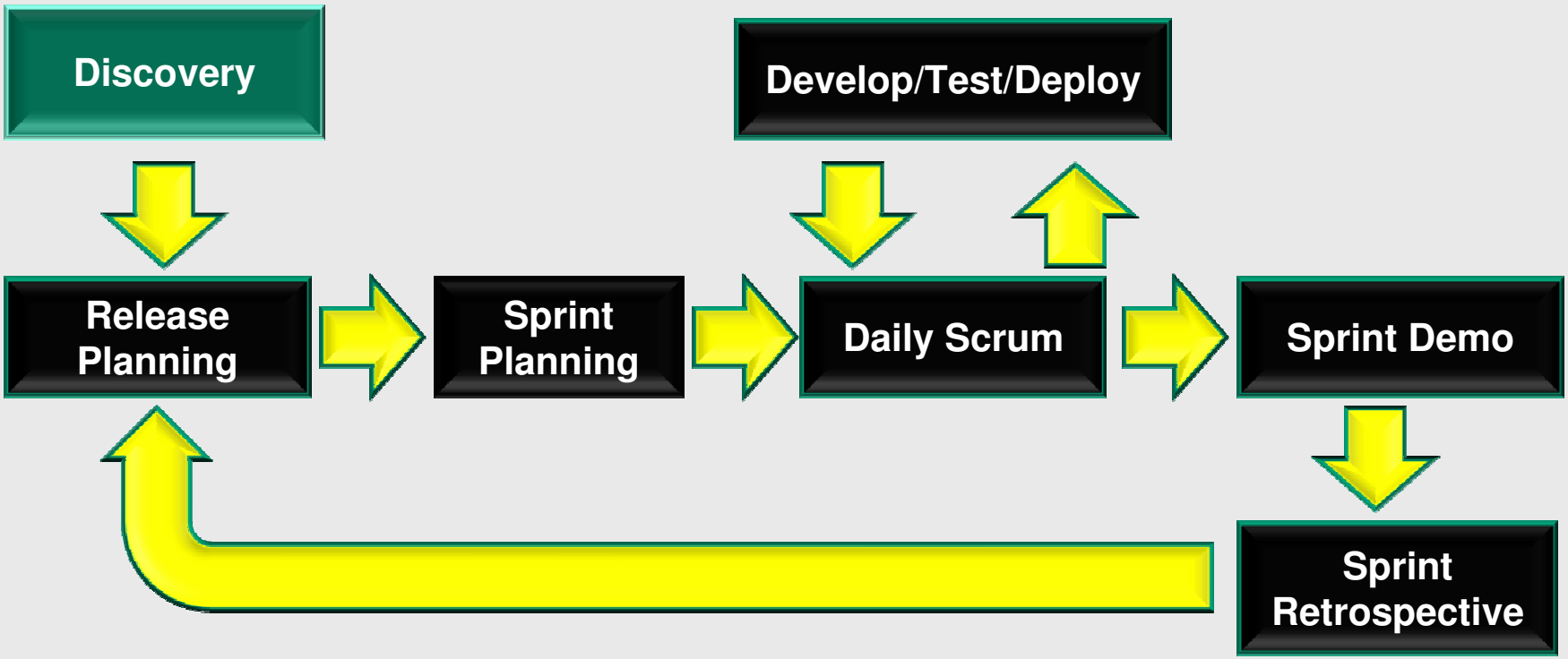
Project end date 1-april-2011



Application view



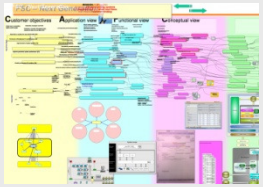
7 Phases of Scrum



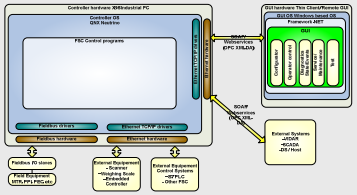
Defining architecture

- High level system requirements
- Domain knowledge
- Use cases
- Pros and cons old FSC
- Product team

CAFCR



Architecture



- Primary Technology decisions
- Design review
- Global estimation
- Release for pilot plan

Define processes and tooling

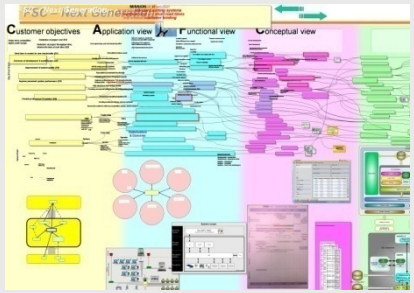
High level requirements

Workflow team

VI Tools

Pros cons current tools

CAFCR



Tools decisions

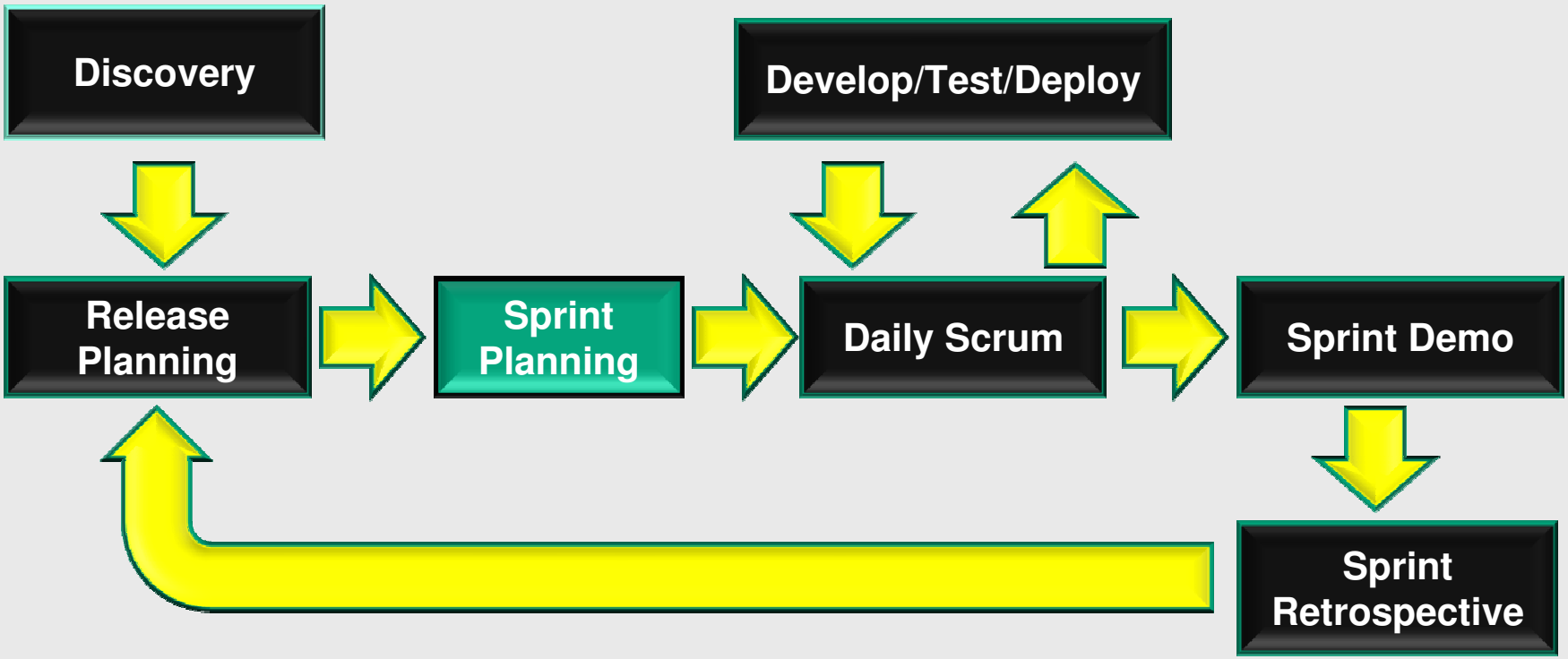
Release plan

Software development plan

Requirement management plan

Test management plan

7 Phases of Scrum



Sprint plan 1/2

Release plan

Sprint use cases

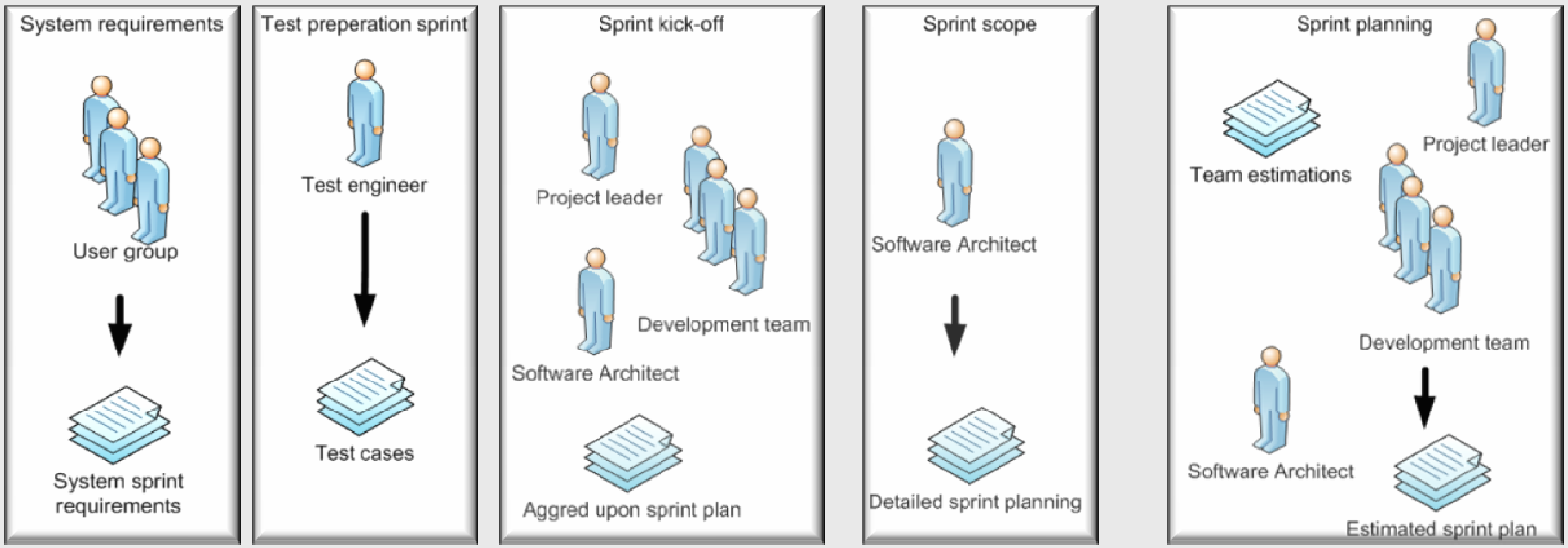
I/O on controller
I/O on GUI
Configuration of demo system
Start / Stop system
Control based on timing
Control based on tracking
Full tracking ring
Operator GUI
Sorting
Merging
Scanning / Destination requests

Process iterations:
- Scrum as way of working
- Test management plan
-Continues integration process
- CM Tooling introduction

Sprint plan

4 Wk Iteration

Sprint plan 2/2



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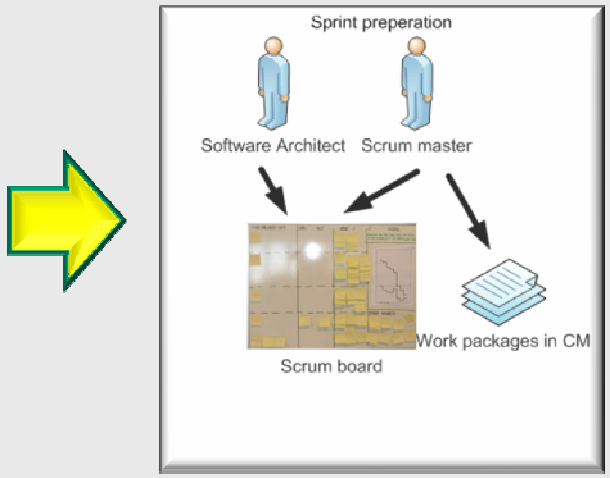

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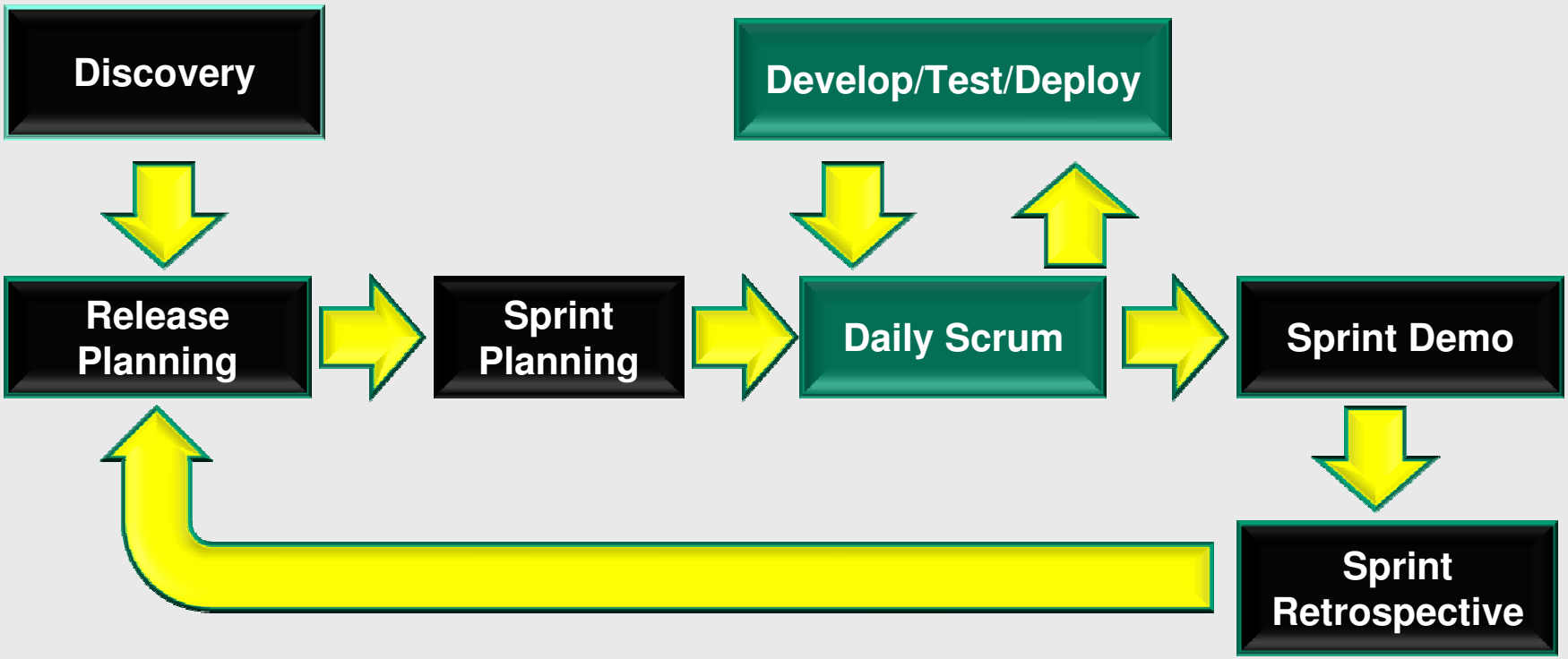
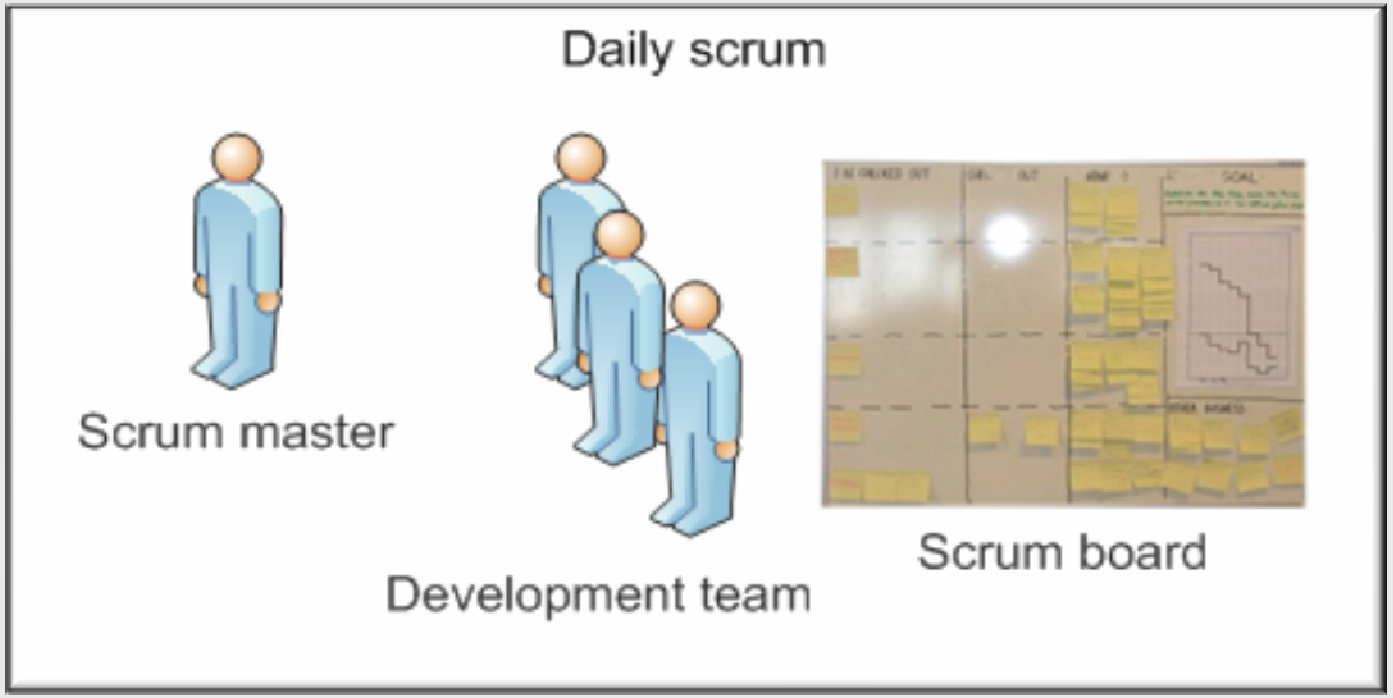
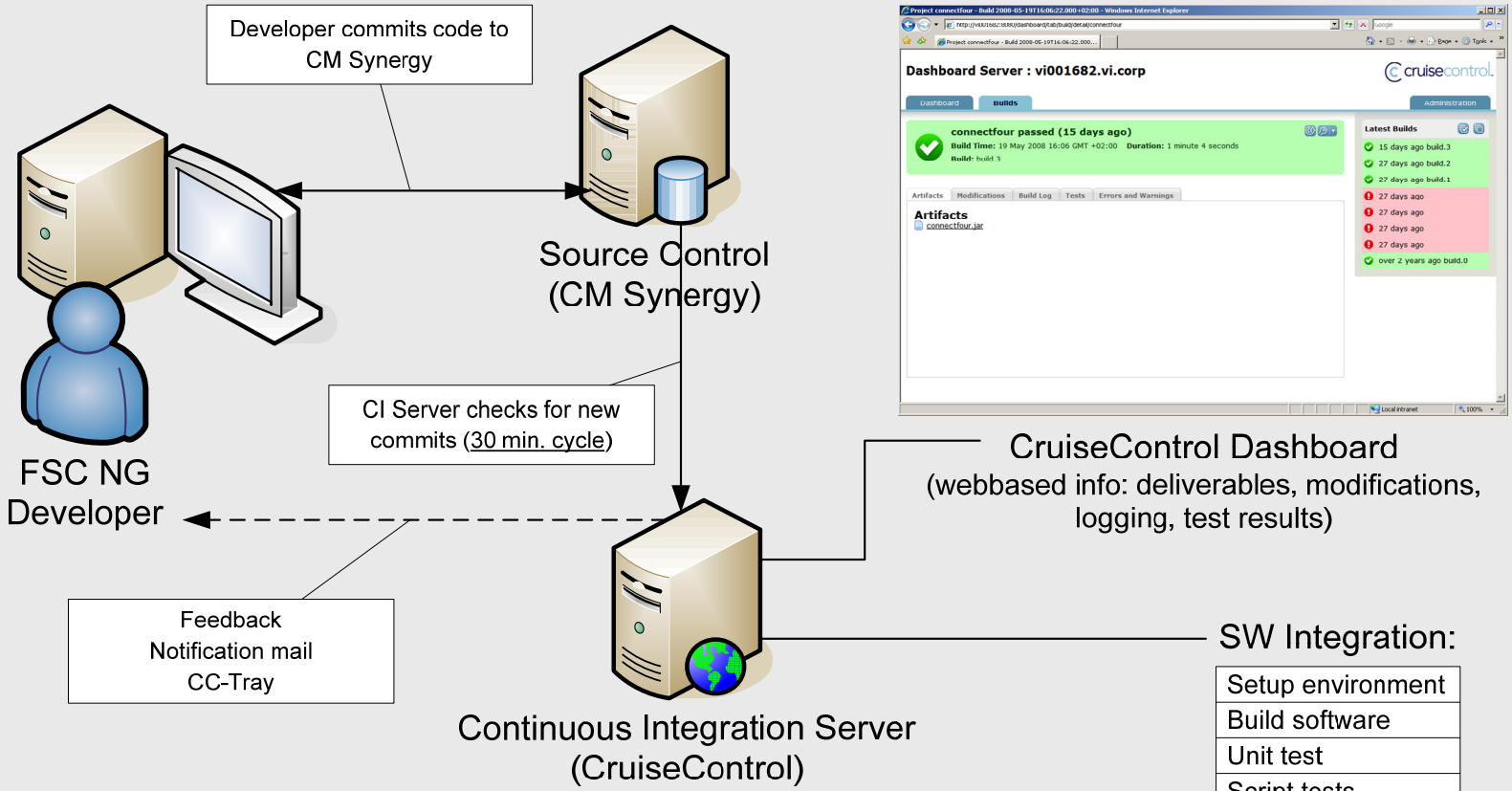


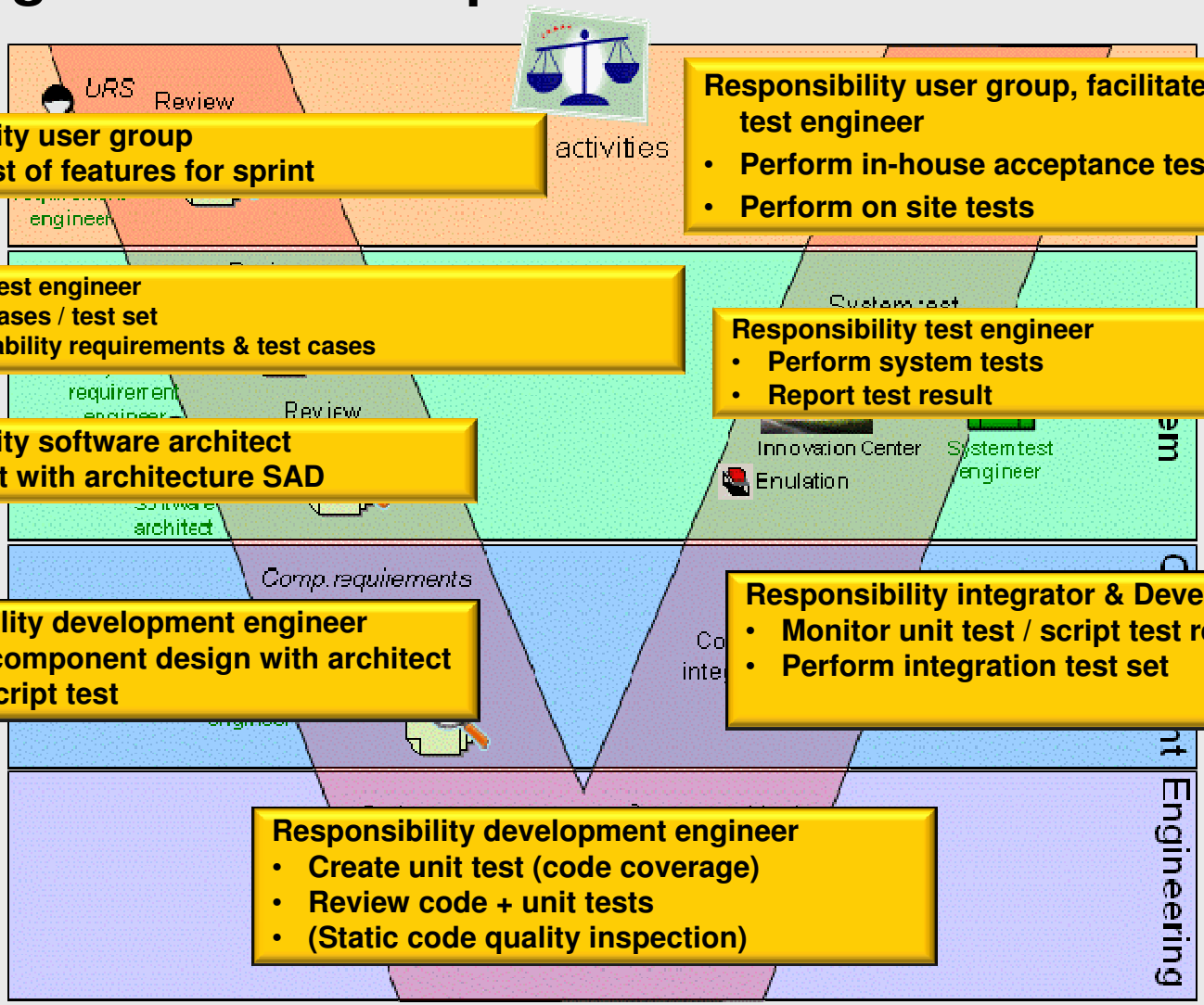
Development/Test/Deploy



Continues integration



Mapping V-model in a sprint



Responsibility user group
- Review list of features for sprint

Responsibility user group, facilitate acceptance test engineer
- Perform in-house acceptance test
- Perform on site tests

Responsibility test engineer
- Create test cases / test set
- Create traceability requirements & test cases

Responsibility test engineer
- Perform system tests
- Report test result

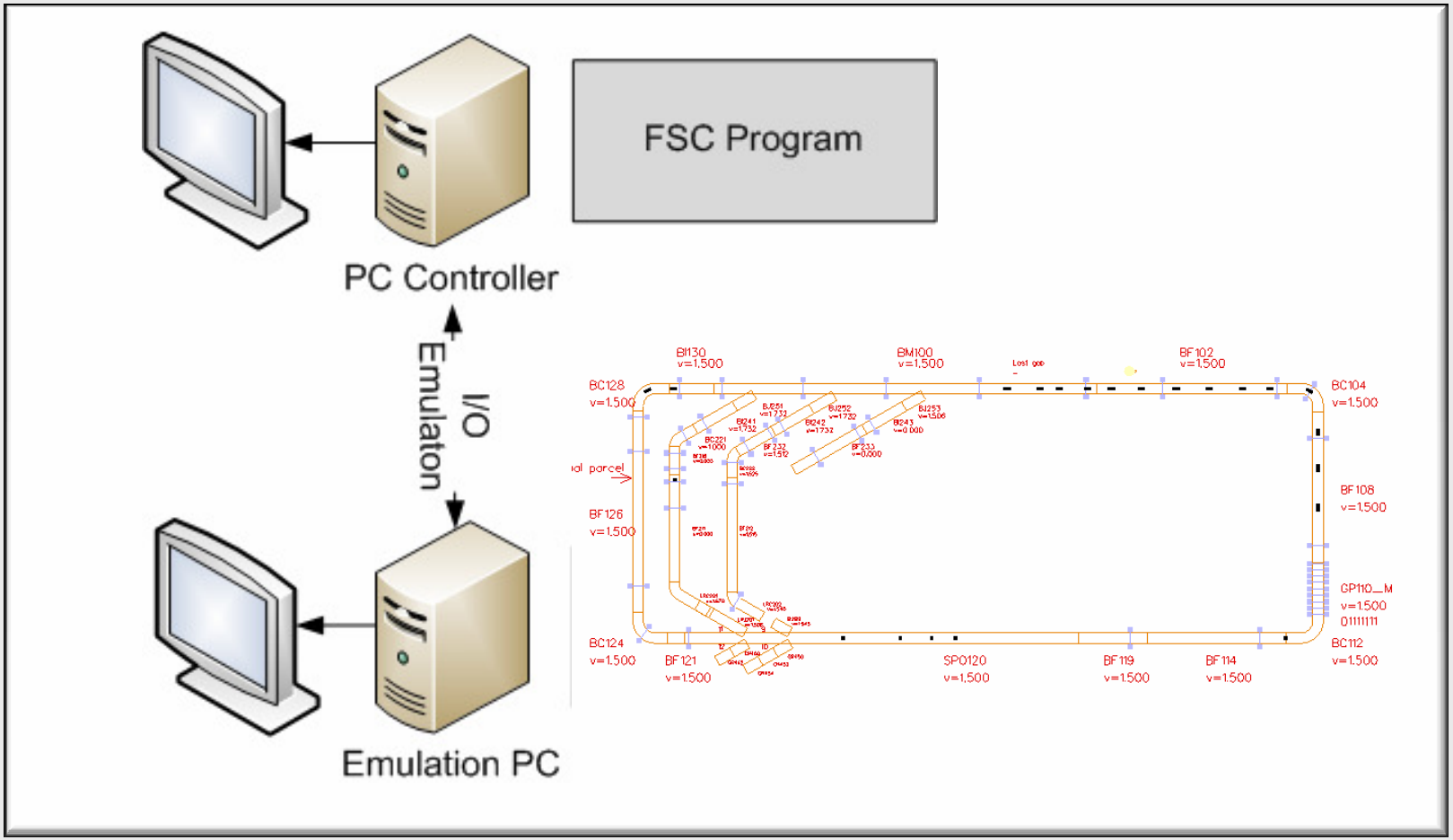
Responsibility software architect
- Alignment with architecture SAD

Responsibility development engineer
- Review component design with architect
- Create script test

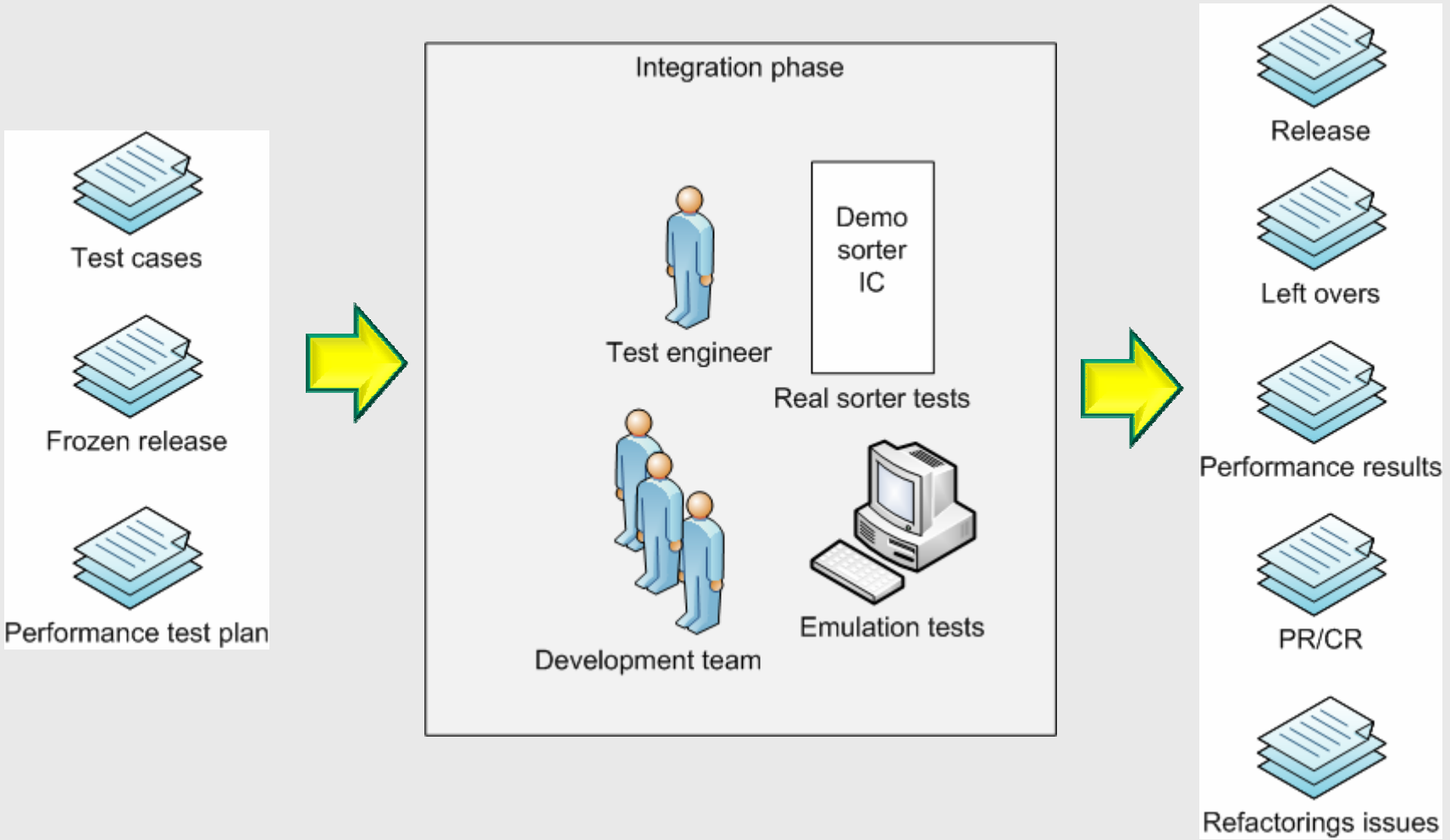
Responsibility integrator & Developers
- Monitor unit test / script test results
- Perform integration test set

Responsibility development engineer
- Create unit test (code coverage)
- Review code + unit tests
- (Static code quality inspection)

Integration test in office



Sprint integration



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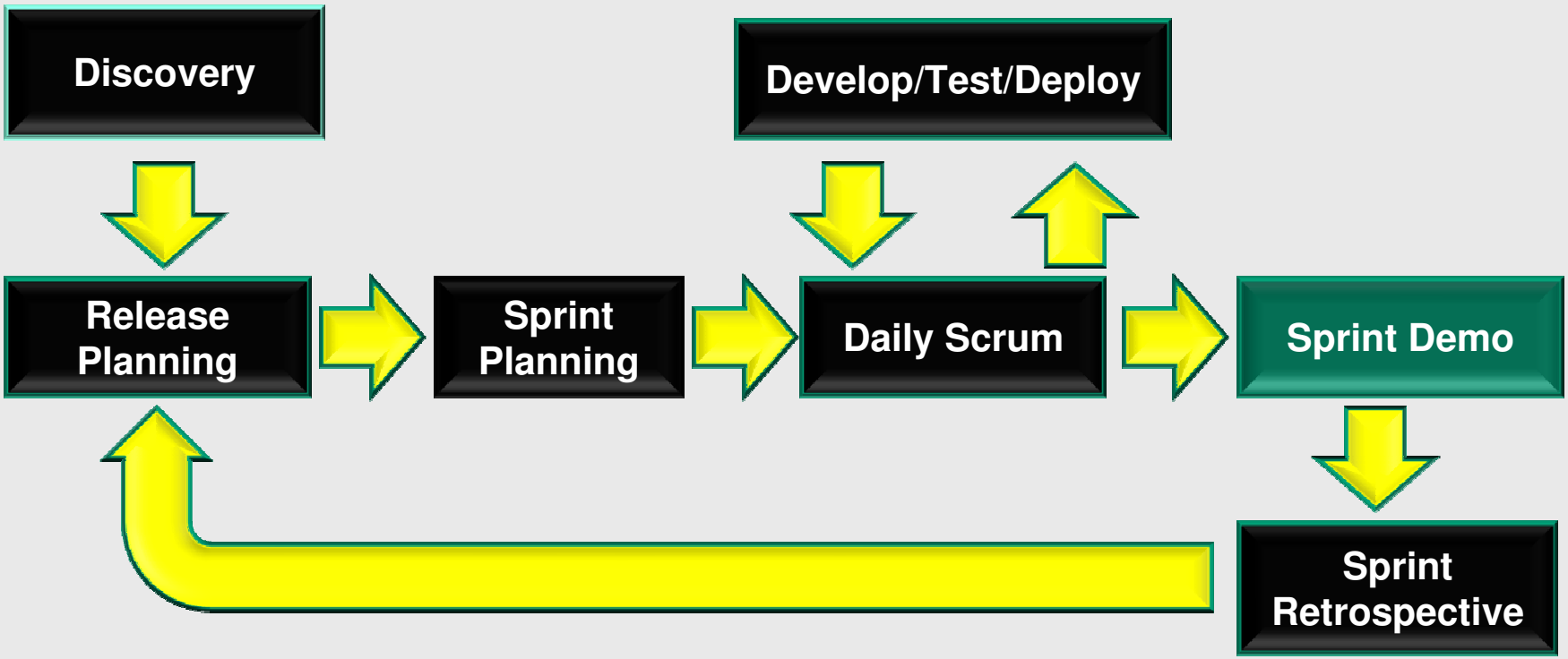
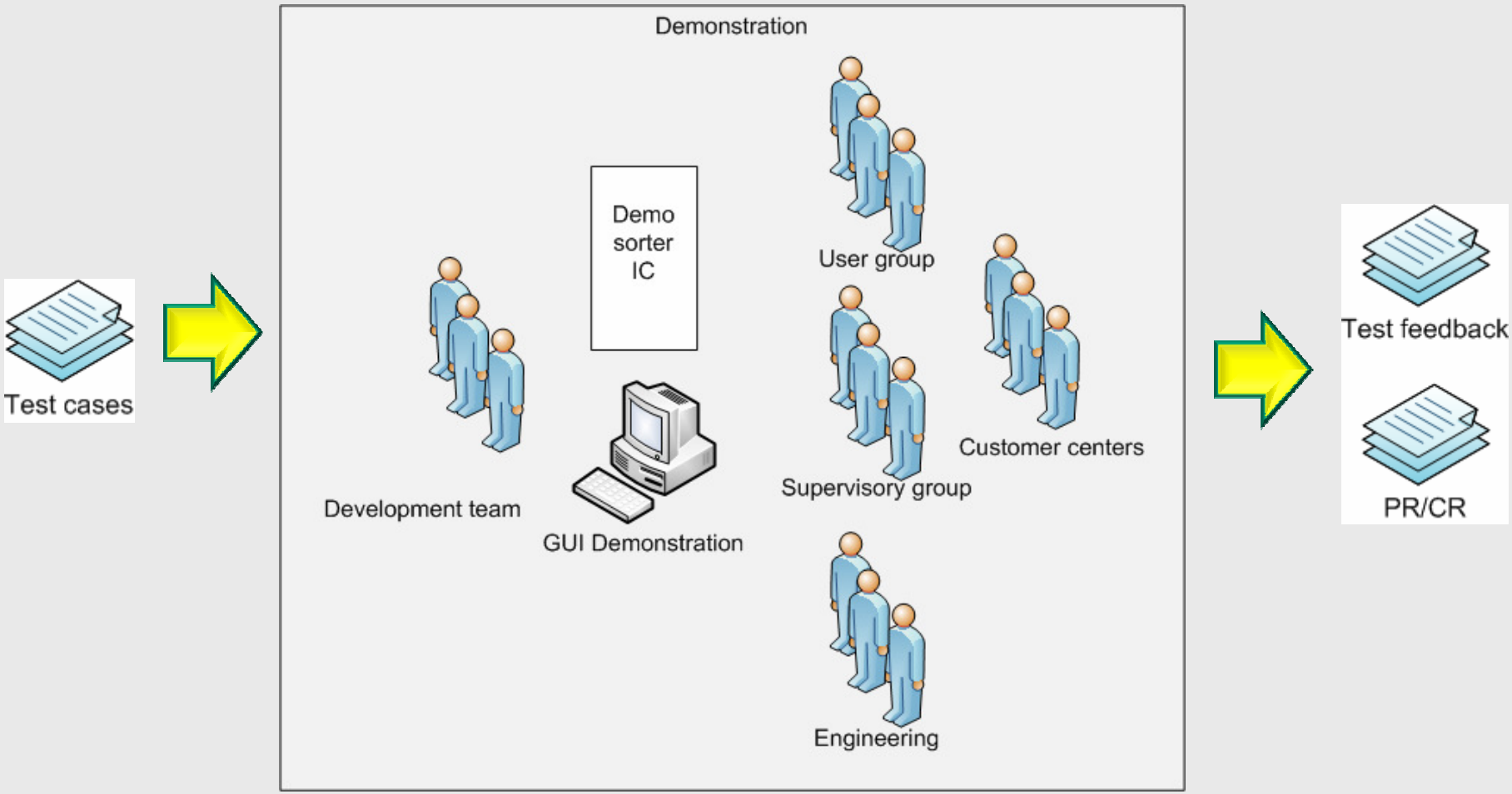
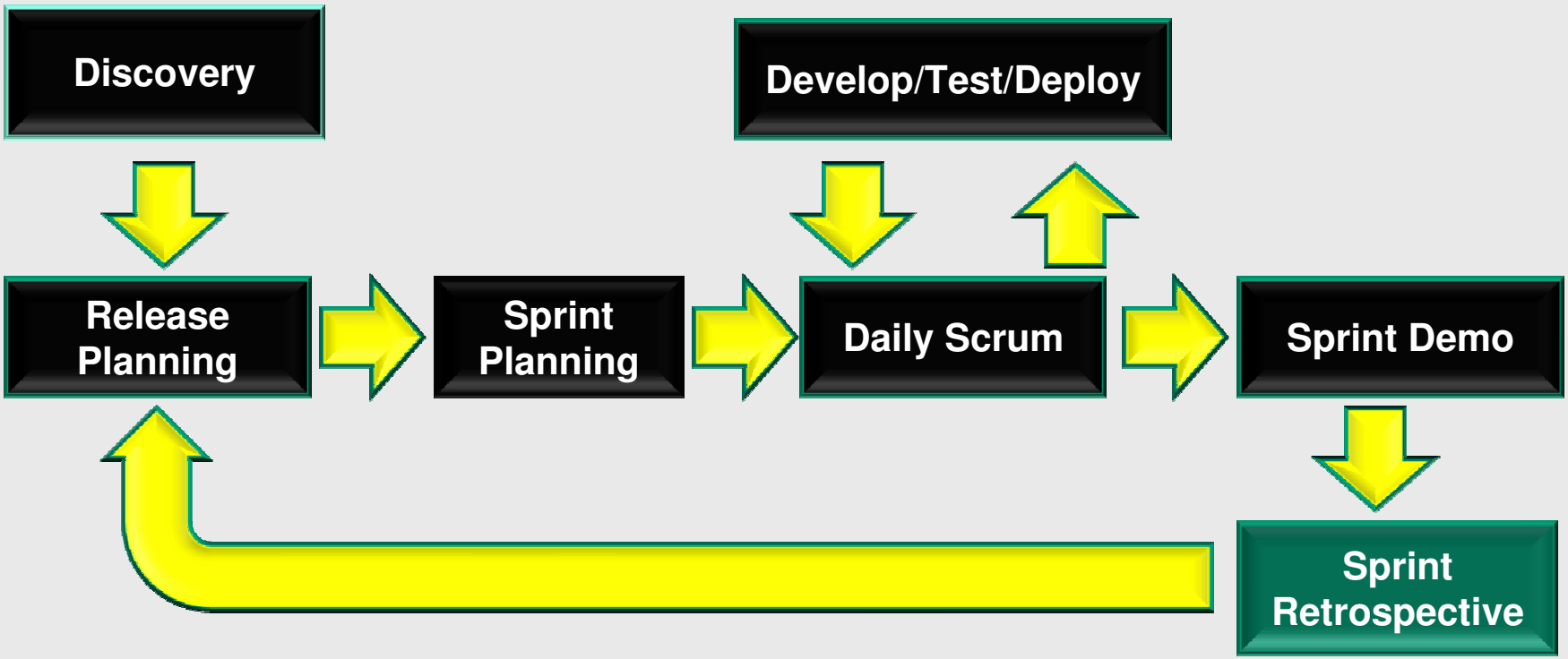


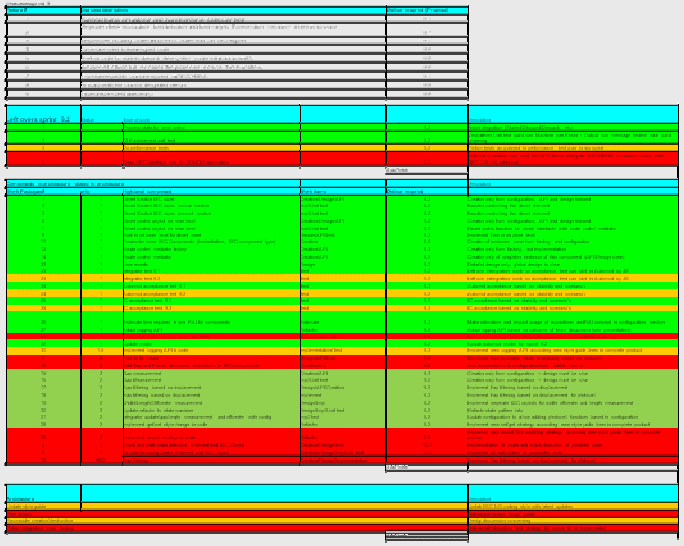
Sprint demo

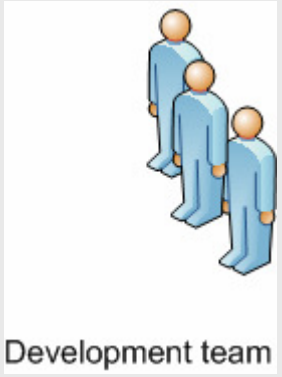

Test cases
Demonstration
Demo sorter IC
User group
Development team
GUI Demonstration
Supervisory group
Customer centers
Engineering
Test feedback
PR/CR

7 Phases of Scrum



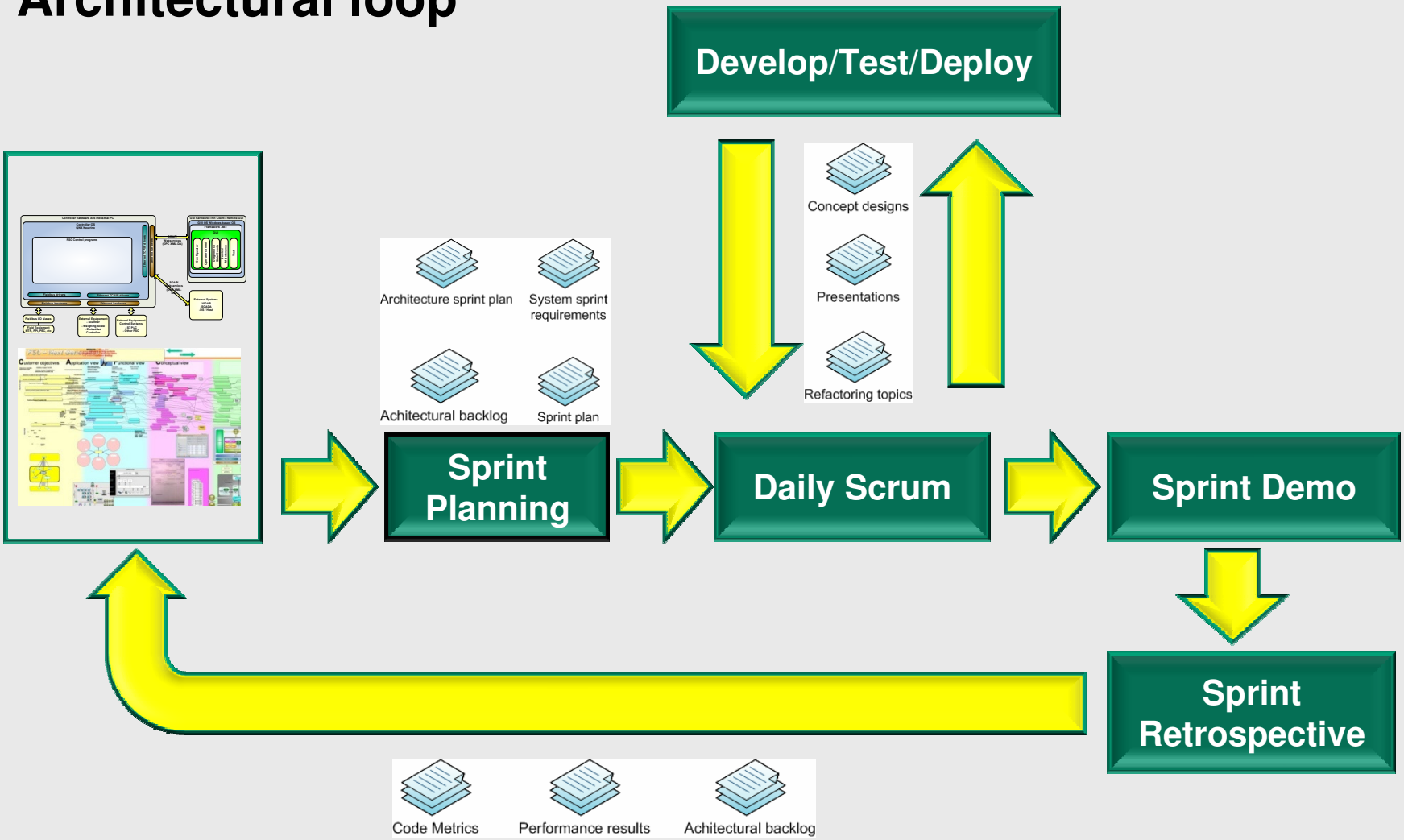
Sprint retrospective





-Keep
-Stop
-Try

Architectural loop



Lessons learned / Observations

- Product architecture is required upfront when scope is broad
- Implementation architecture can be done using hybrid Agile
- Feedback loop → Requirements and Demonstration should stay in same pace as feature development.
- High team spirit.
- Introduction of processes and tooling can be Agile
- Huge focus on functionality.
- Domain and design knowledge is shared in team in high pace
- Challenge to combine refactoring and technical backlog with sprint plan
- Challenge to combine PR work with sprint plan
- High pace adding new functionality

Agile evolution observations

-Integration process is more formalized.

-Estimation process keeps evolving.

-Definition what is finished (Shortcuts, Future scope)

-Estimating integration work

-Continues integration requires continues attention (Task size)

-Need for component design responsible

-High hesitation to make architectural changes

-Commitment from project sponsors still high

Discussion topics

1.Product architecture is required, realization can be done using a hybrid Agile way of working.

2. Process issues are more visible due to Agile way of working

3. Agile architecting leads to more rigid architectures


Questions

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