TEST ARCHITECTURE

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POLYTECH NICE-SOPHIA

INTRODUCTION

Software quality

- What is it?

Software quality

- What is it?
- No Defects?

Software quality

- What is it?
- No Defects?
- Or….

- Known defects?

Known defects???

- Goals of quality are:
  - Know and document bugs
  - Verify them for regression
  - Find workarounds
  - Feed more requirements

How do you **choose** your defects?

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- Dev methodology
- Team culture
- Good practices
- Correct soft. Architecture
- Early Integration

- And…

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- And…

- **Testing**

Types of tests

- Unit-tests
- Integration tests
- Acceptation tests

- …ok…. What else?

Types of tests

- Unit Tests
- Integration Tests
- GUI Tests
- Non-regression Tests
- Coverage Tests
- Load Tests
- Stress Tests
- Performance Tests
- Scalability Tests
- Reliability Tests
- Volume Tests
- Usability Tests
- Security Tests
- Recovery Tests
- L10N/I18N Tests
- Accessibility Tests
- Installation/Configuration Tests
- Documentation Tests
- Platform testing
- Samples/Tutorials Testing
- Code inspections

Seriously, you do all of this stuff???

How the hell do you get organized???

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How the hell do you get organized???

TEST ARCHITECT

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Test architect role

- Choose test tools
- Define practices
- Build base frameworks → reusability
- Find test data
- Global test bucket consistency, strategy

Test Tools

Criteria

- Language
  - Eg: java -> jUnit and variants (HttpUnit, etc.)
- Type of app
  - Eg: desktop, mobile
- Layer where test is applied
  - Eg: UI → Selenium, RFT and other robots
- Goals
  - Eg: Perf -> jMeter
- Phase
  - Eg: functional vs system, see later

Define Test Practices

- Coding guidelines
- Test inventory tracking
  - Inventory tooling (RQM and the likes)
- Manual vs automated
  - ROI
  - Exploratory

Define Test Practices

- Policies
  - Eg: each new defect gets a testcase
- Testability
  - Eg: naming UI elements
- Repeatability
  - Setup / cleanup guidelines
  - Or: VM snapshoting

Test Data

- Representative samples
- Customer data
  - through support ticket
- Adhoc data
  - Eg: to cause error conditions
- Need be managed
  - Inventoried
  - Anonymized (confidential info)
  - Setup (Eg: prod-like DB)

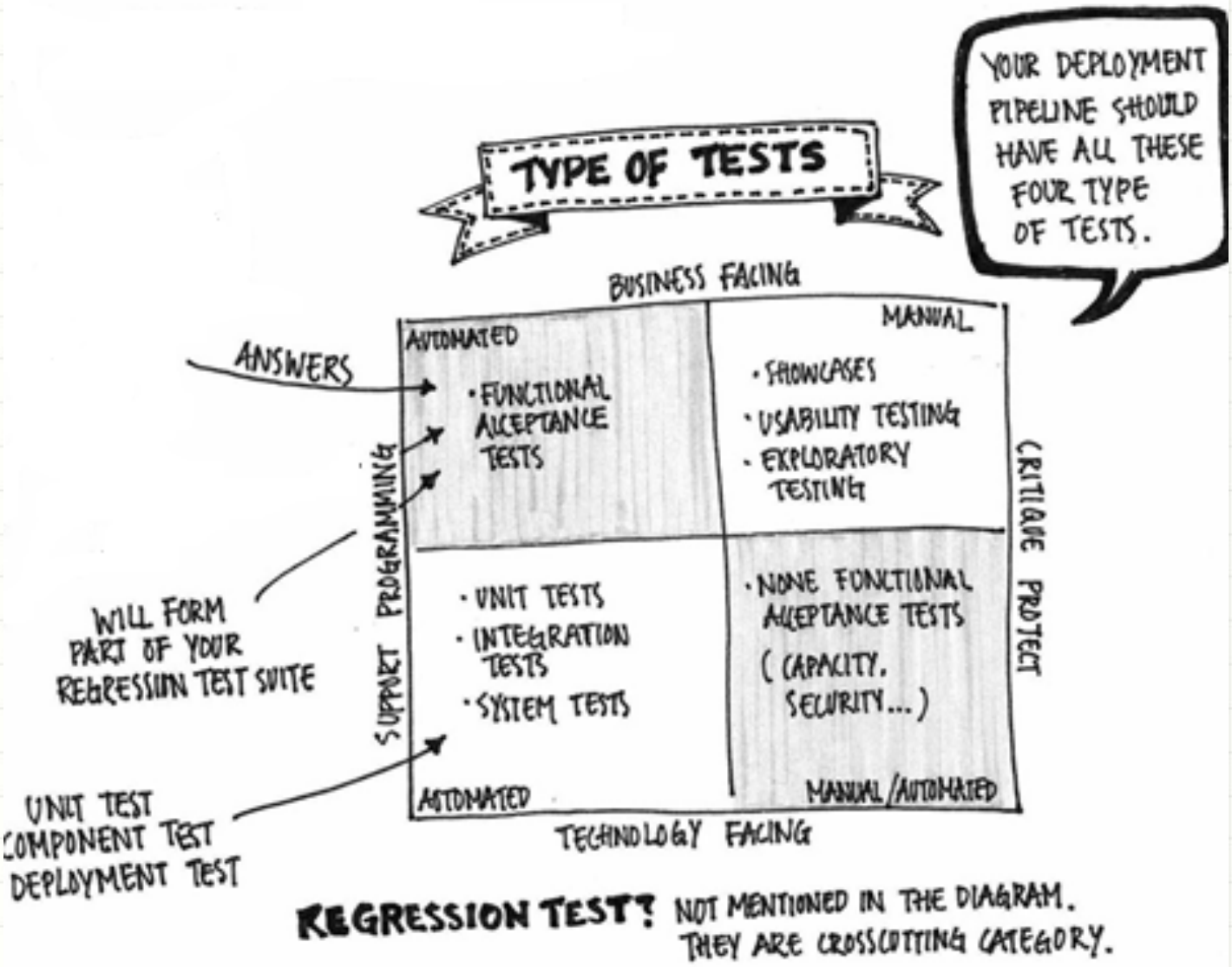
Test Strategy

- Aka: where and when to test
- Sources of information
  - User defect reports
  - Coverage data
  - User story / functional understanding
- Measure effectiveness
  - # defects / regressions found
  - Time to find next defect
  - Time spent in maintenance

Test Dimensions

Can be organized based on:

- Product area
- Goals (find defects, measure perf., …)
- Team in charge
- Dev. Phase
- Execution time

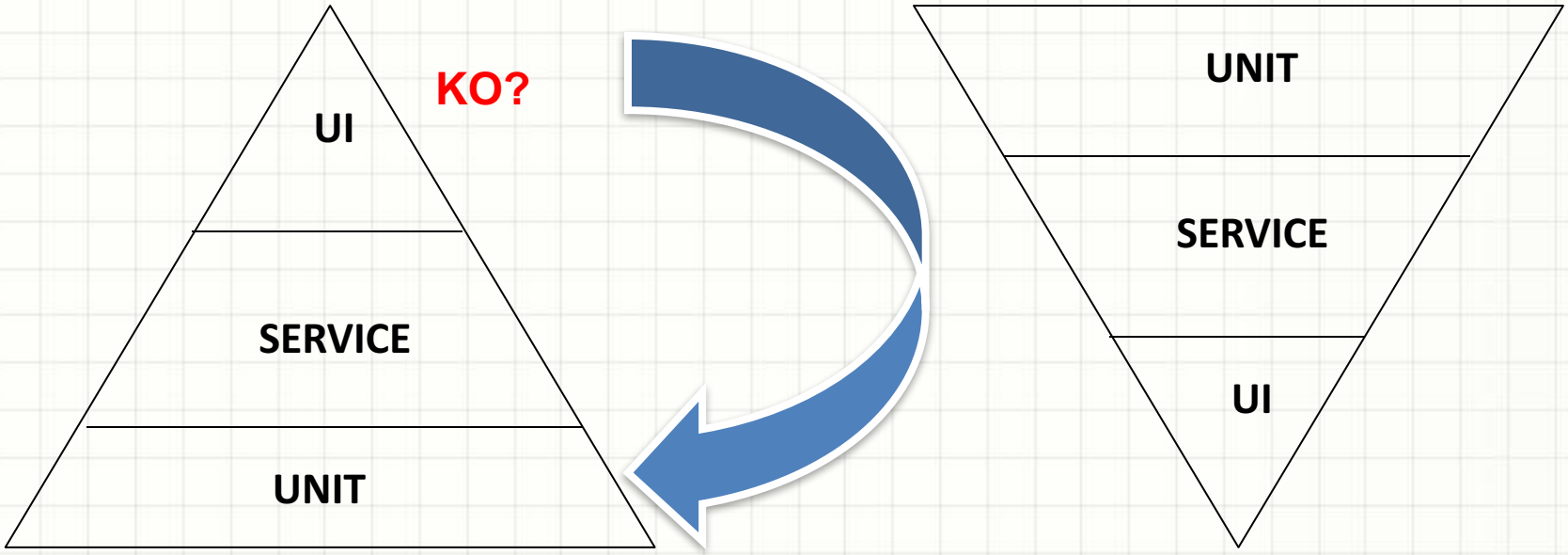


(From: Nhan Ngo)

Test Sizes

- Number
- Execution time
- Depth of paths traversed

> *"In particular I always argue that high-level tests are there as a second line of test defense. If you get a failure in a high level test, not just do you have a bug in your functional code, you also have a missing unit test. Thus whenever you fix a failing end-to-end test, you should be adding unit tests too."*
>
> *Martin Fowler*

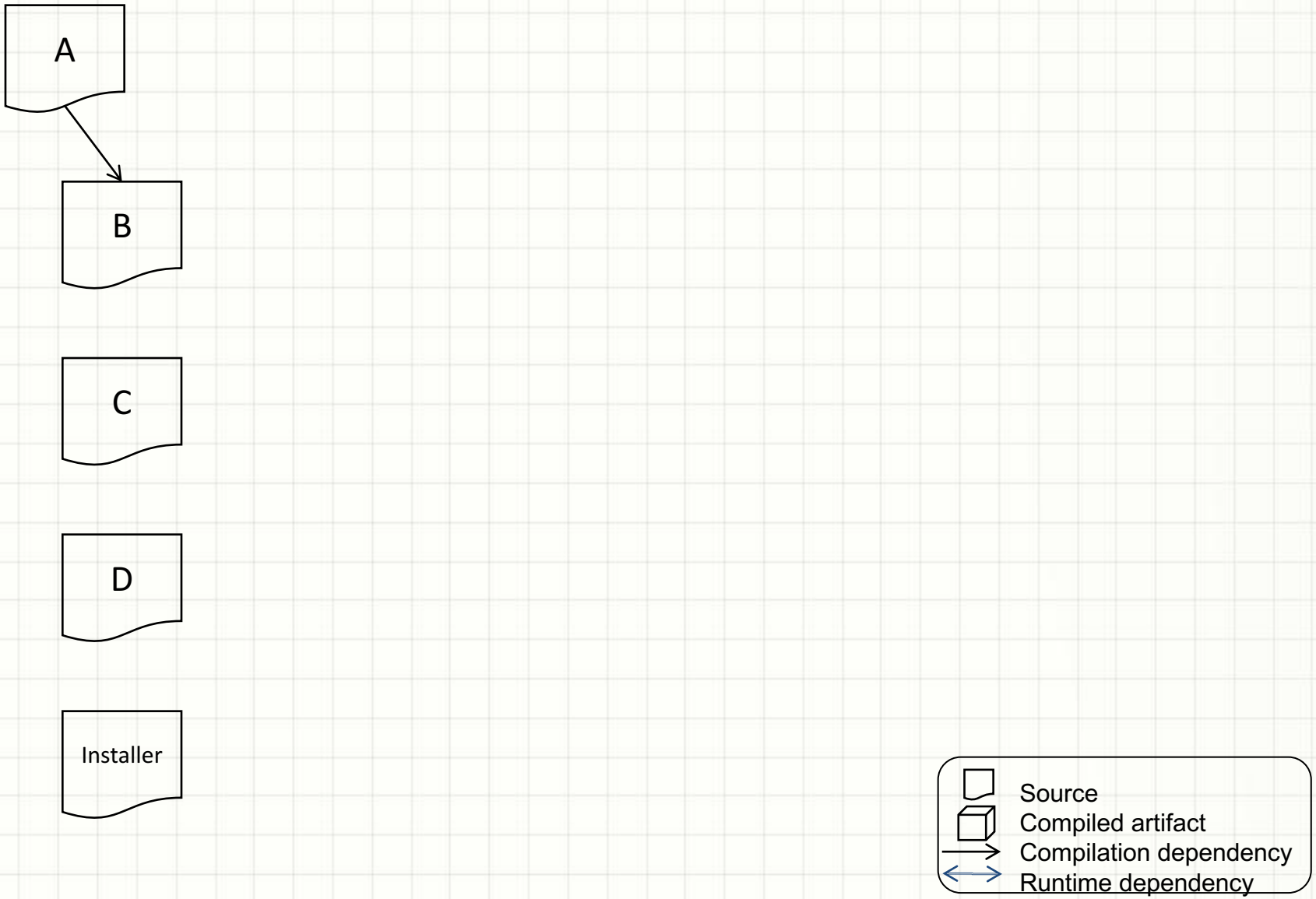


Volume

Run time

Functional vs. System

- Some make a big difference between Functional and System testing
- But
- It’s just a continuum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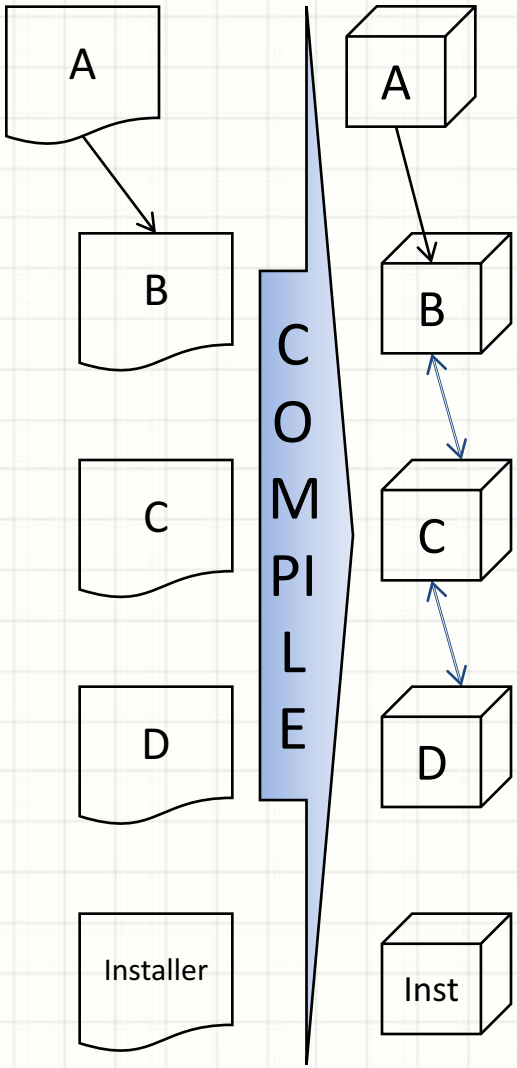
Installer
Source
Compiled artifact
Compilation dependency
Runtime dependency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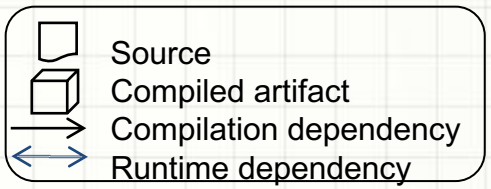
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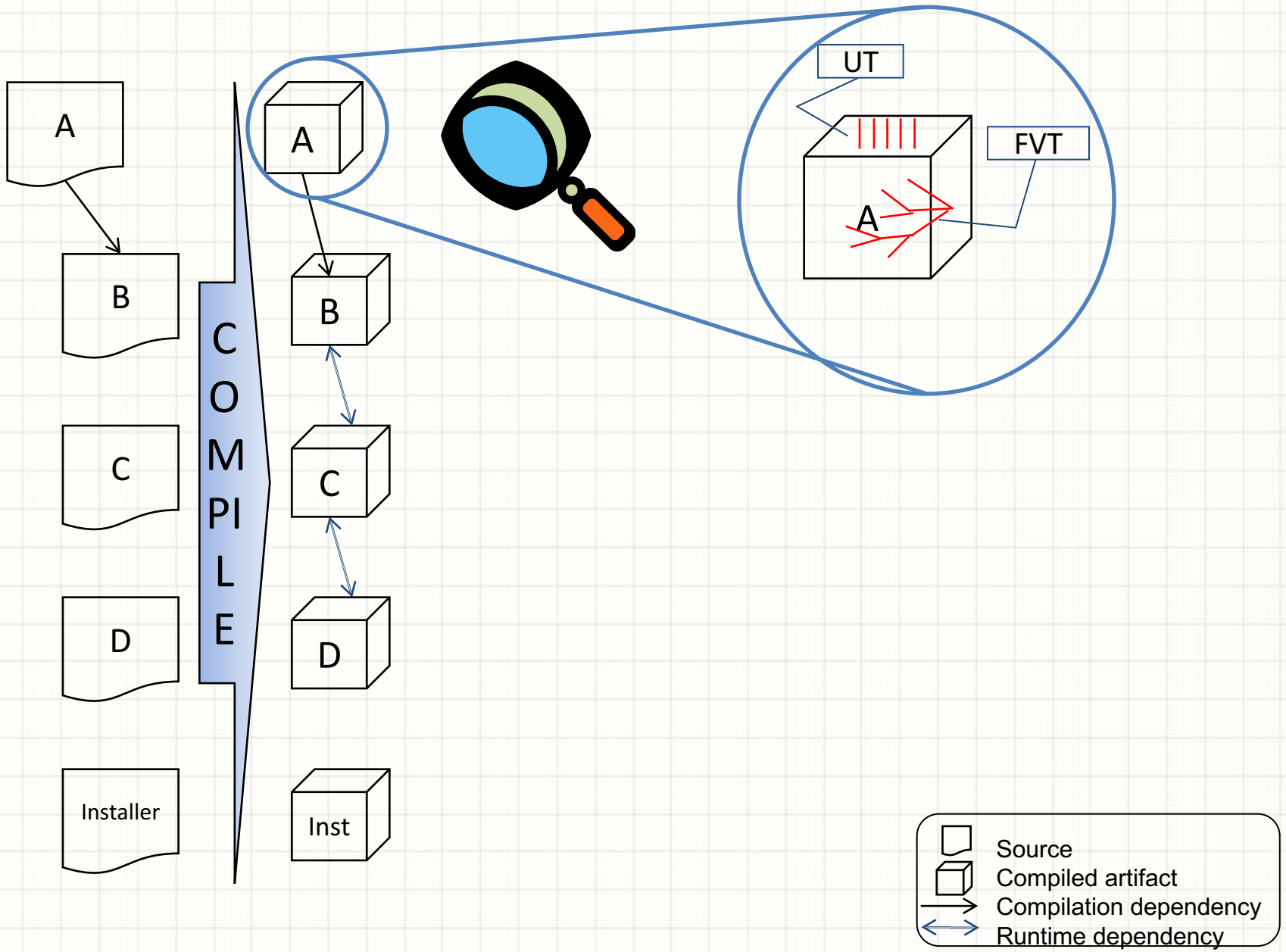
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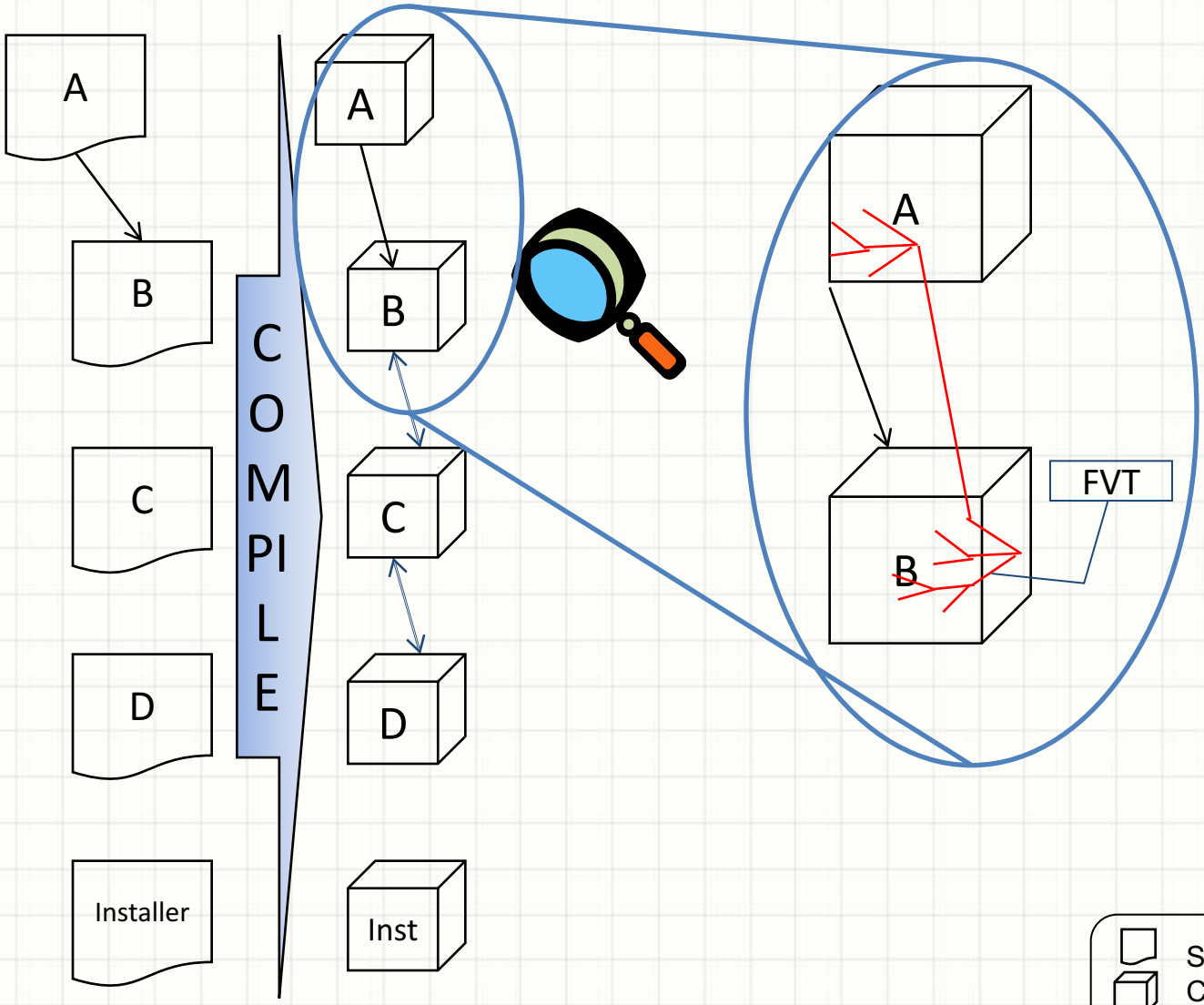
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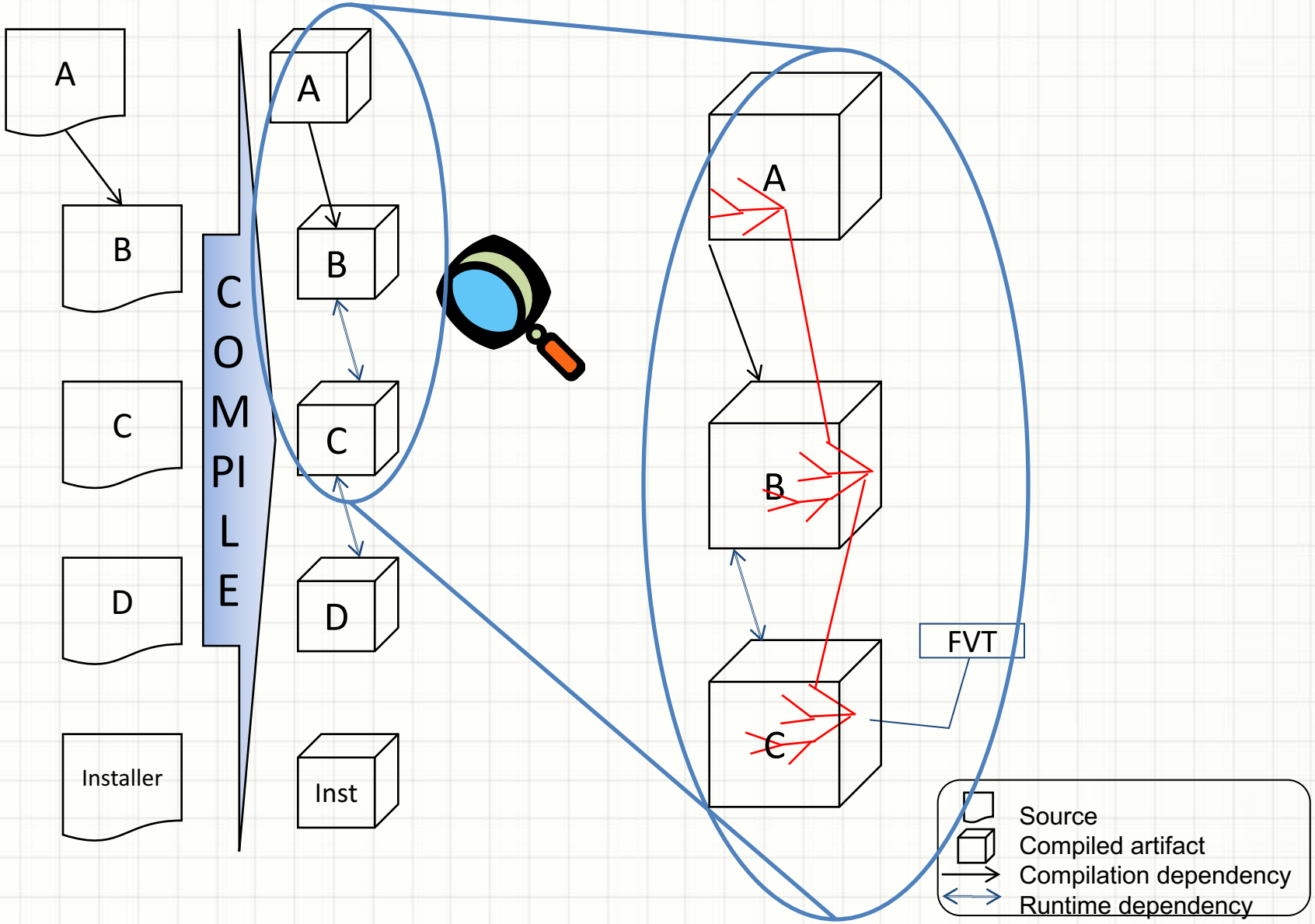
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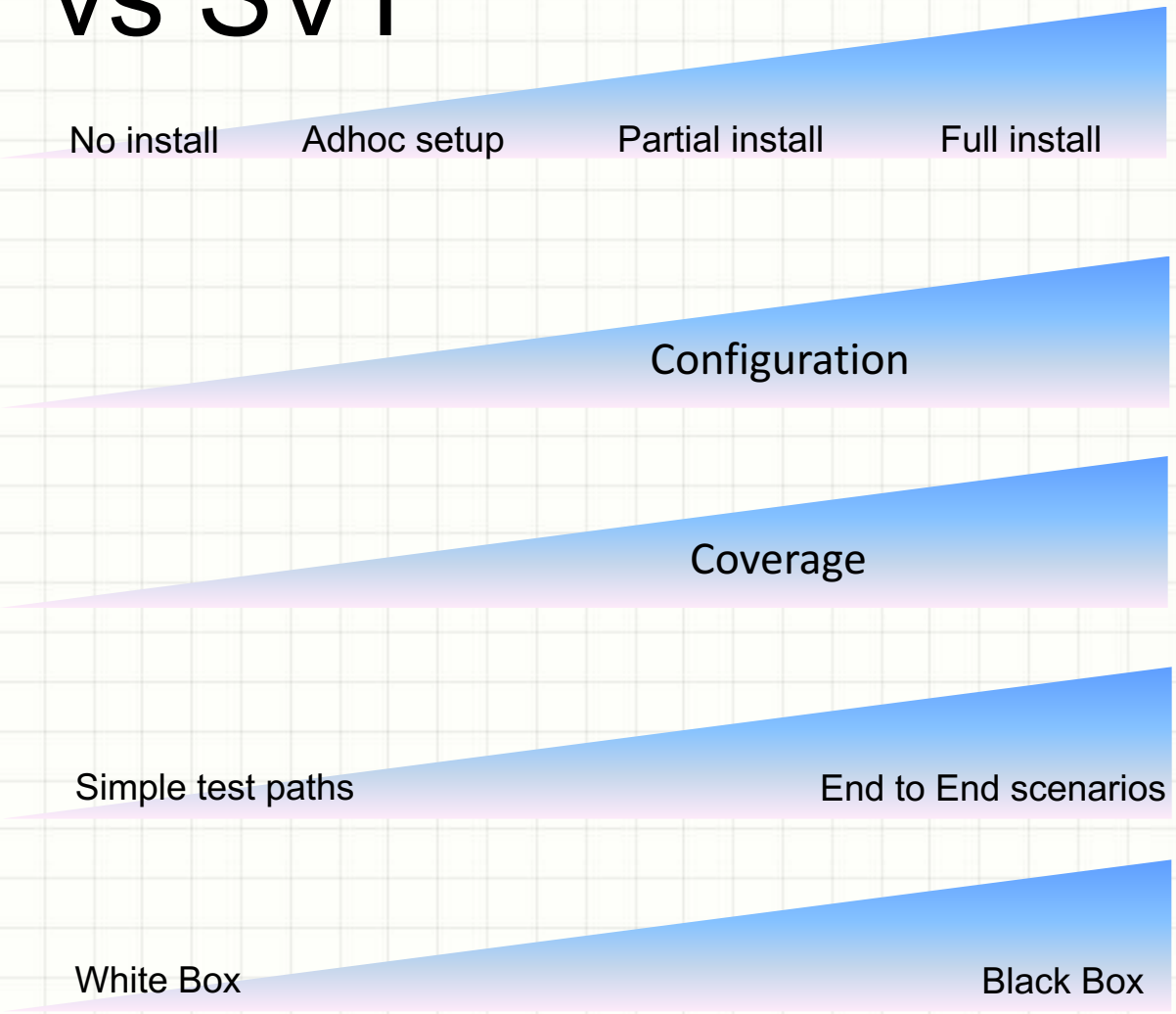
FVT vs SVT


No install
Adhoc setup
Partial install
Full install
Configuration
FVT
Coverage
SVT
Simple test paths
End to End scenarios
White Box
Black Box

QUESTIONS?

Next two weeks

- This week:
  - TD: Mutants
- Software factory
  - Functional & Integration Tests
  - TD: finish Mutants, start tests on TCF

APPENDIX