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Software Engineering Configuration Management (1)

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Adapted from materials provided by Byron DeVries, Jagadeesh Nandigam

Outline

Classic view of configuration management (Part 1)
- Development Configuration Management
- Release Configuration Management

Modern configuration management (i.e., Git) (Part 2)
- Comparison
- (More) Git Demo

Quick Demo!

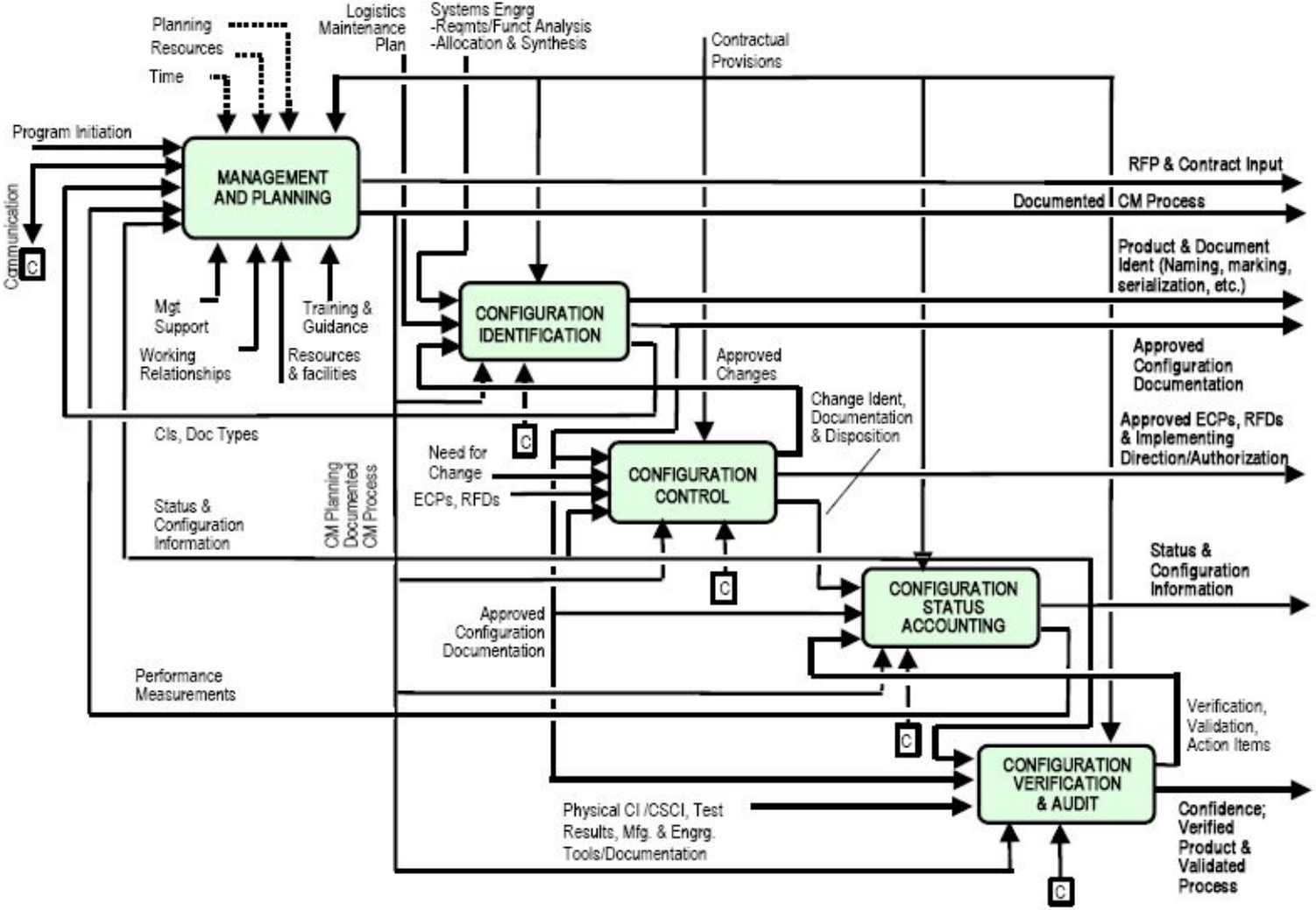
I've been talking about *a lot* about **project boards**, let's take a brief look at GitHub Projects.

1) Create a Project
2) Add an Issue
3) Create a Milestone (and link)
4) Close them all!
5) ...
6) SUCCESS!

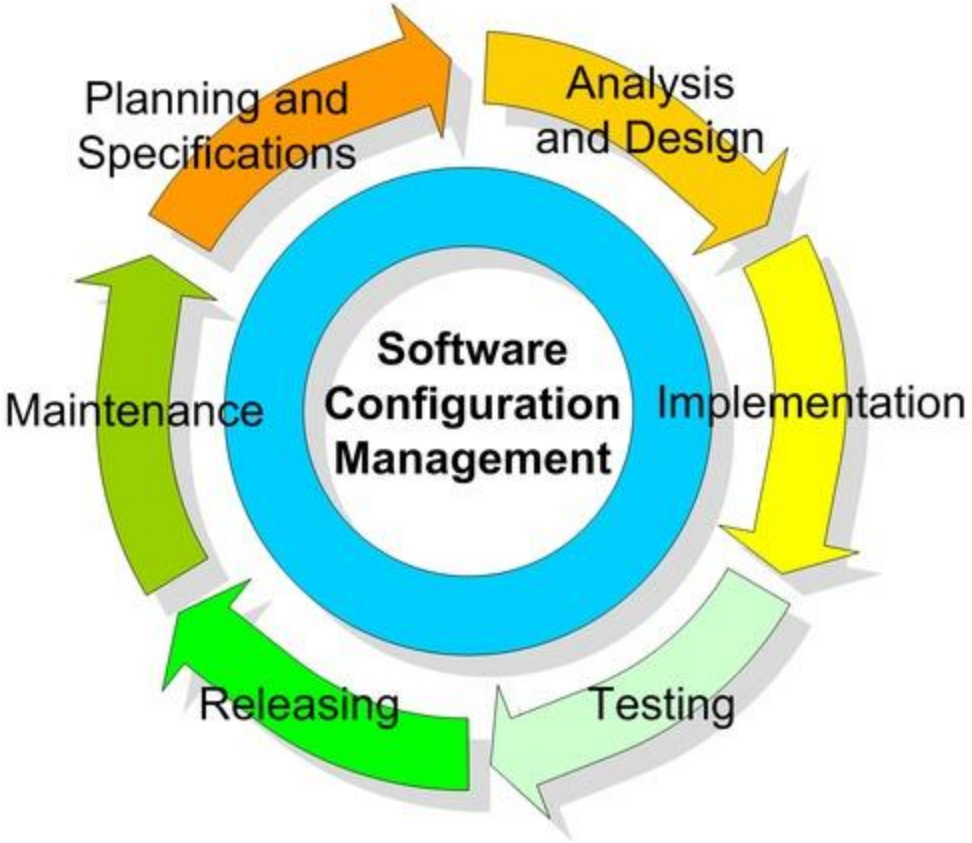
How many of you have used some kind of source code repository or source code control system?

Revision control

And did you know you can use it for more than just source code?


Planning
Resources
Time
Logistics
Maintenance
Plan
Systems Engrg
-Reqmts/Funct Analysis
-Allocation & Synthesis
Contractual
Provisions
Program Initiation
Communication
C
MANAGEMENT
AND PLANNING
RFP & Contract Input
Documented CM Process
Mgt
Support
Working
Relationships
Training &
Guidance
Resources
& facilities
CONFIGURATION
IDENTIFICATION
Product & Document
Ident (Naming, marking,
serialization, etc.)
Approved
Changes
Approved
Configuration
Documentation
Change Ident,
Documentation
& Disposition
Approved ECPs, RFDs
& Implementing
Direction/Authorization
Cls, Doc Types
Need for
Change
ECPs, RFDs
CONFIGURATION
CONTROL
Status &
Configuration
Information
CM Planning
Documented
CM Process
Status &
Configuration
Information
CONFIGURATION
STATUS
ACCOUNTING
Approved
Configuration
Documentation
Performance
Measurements
Verification,
Validation,
Action Items
CONFIGURATION
VERIFICATION
& AUDIT
Physical CI /CSCI, Test
Results, Mfg. & Engrg.
Tools/Documentation
Confidence;
Verified
Product &
Validated
Process

% DOD


Planning and Specifications
Analysis and Design
Implementation
Testing
Releasing
Maintenance
Software Configuration Management

Keyword:

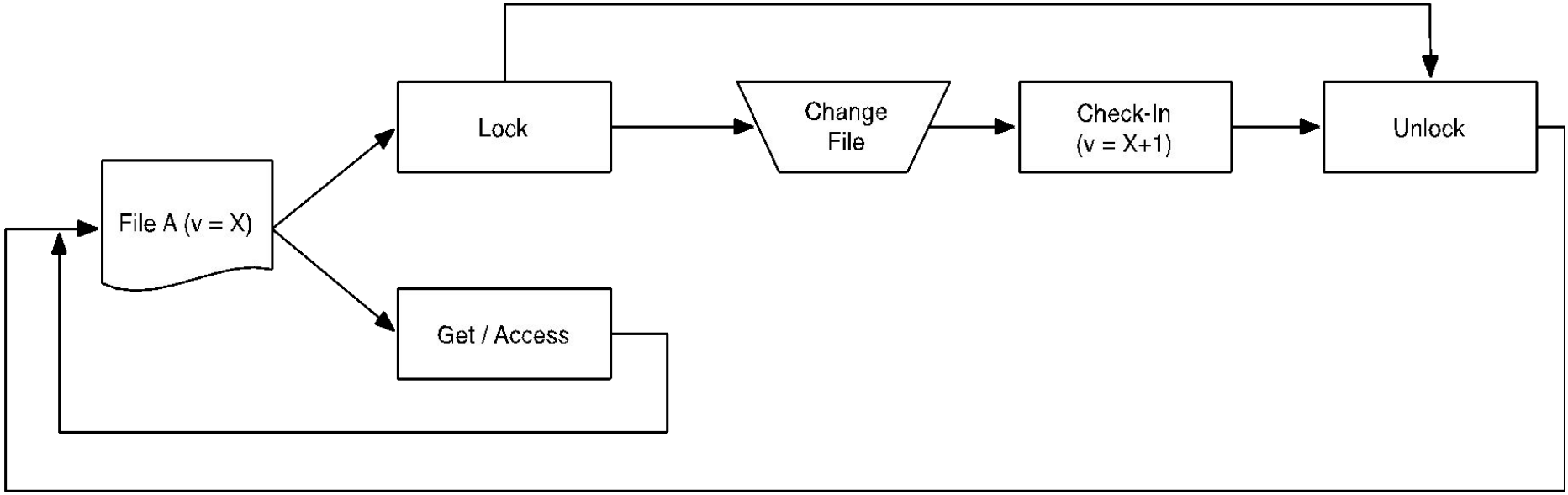
Consistency

Development configuration management

Activities include:

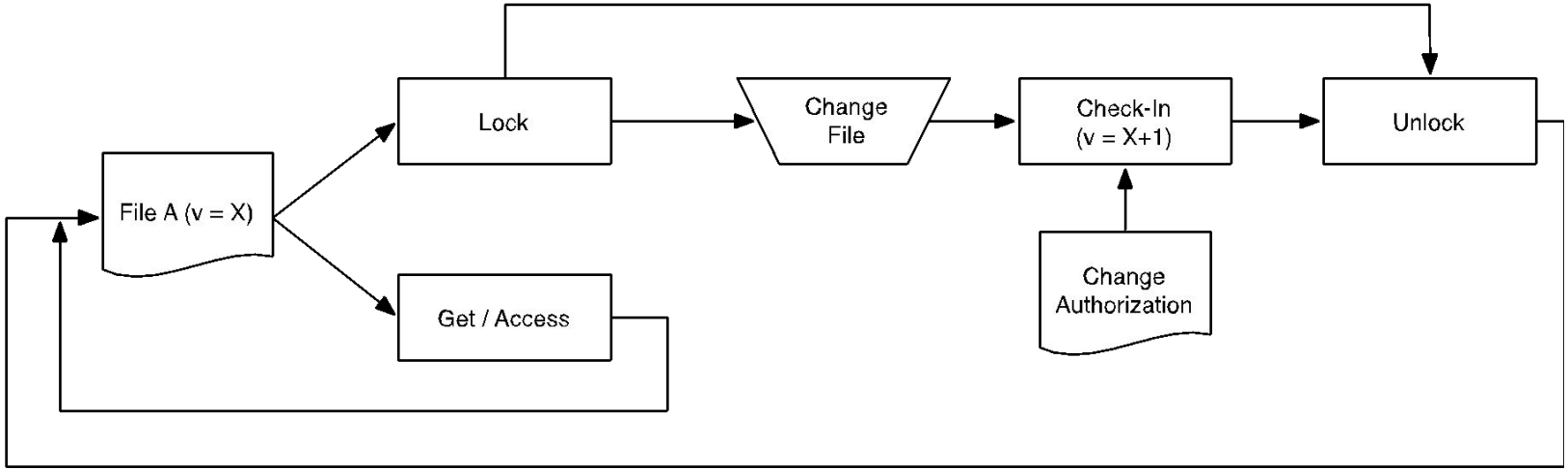
- Get files & sets of files
- Lock & unlock files
- Check-in files
- Tag / baseline sets of files
- Branch / Merge files (& sets of files)

Development Configuration Management: Individual Files



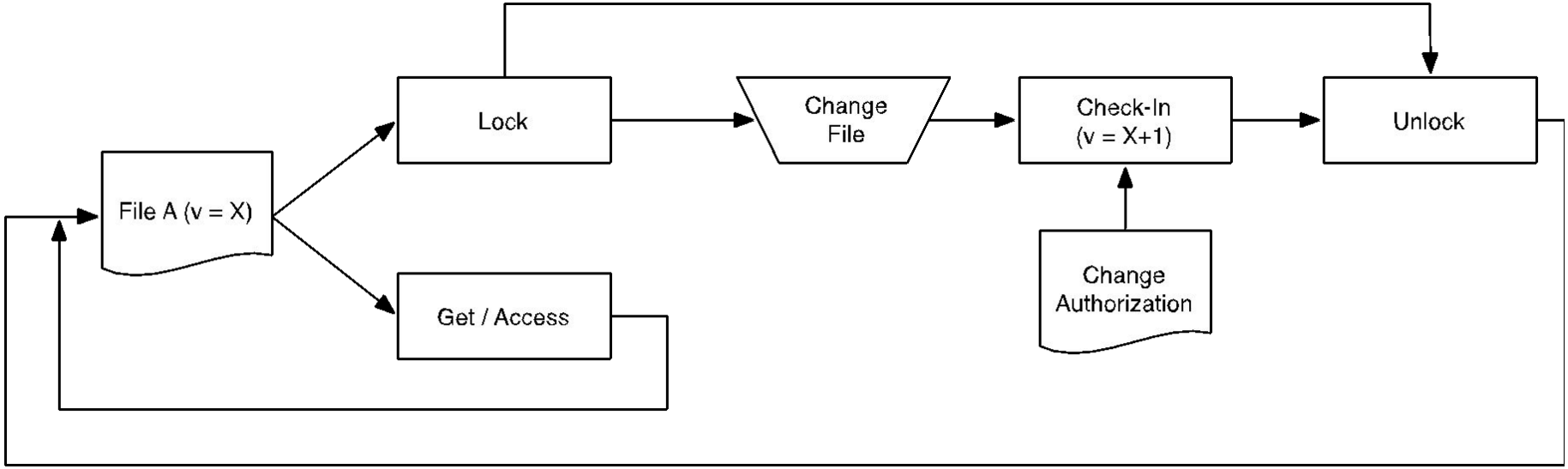
These operations can often be done on *sets* of files.

Development Configuration Management: Individual Files, Issues



These operations can often be done on *sets* of files.

Development Configuration Management: Individual Files, Change Authorization



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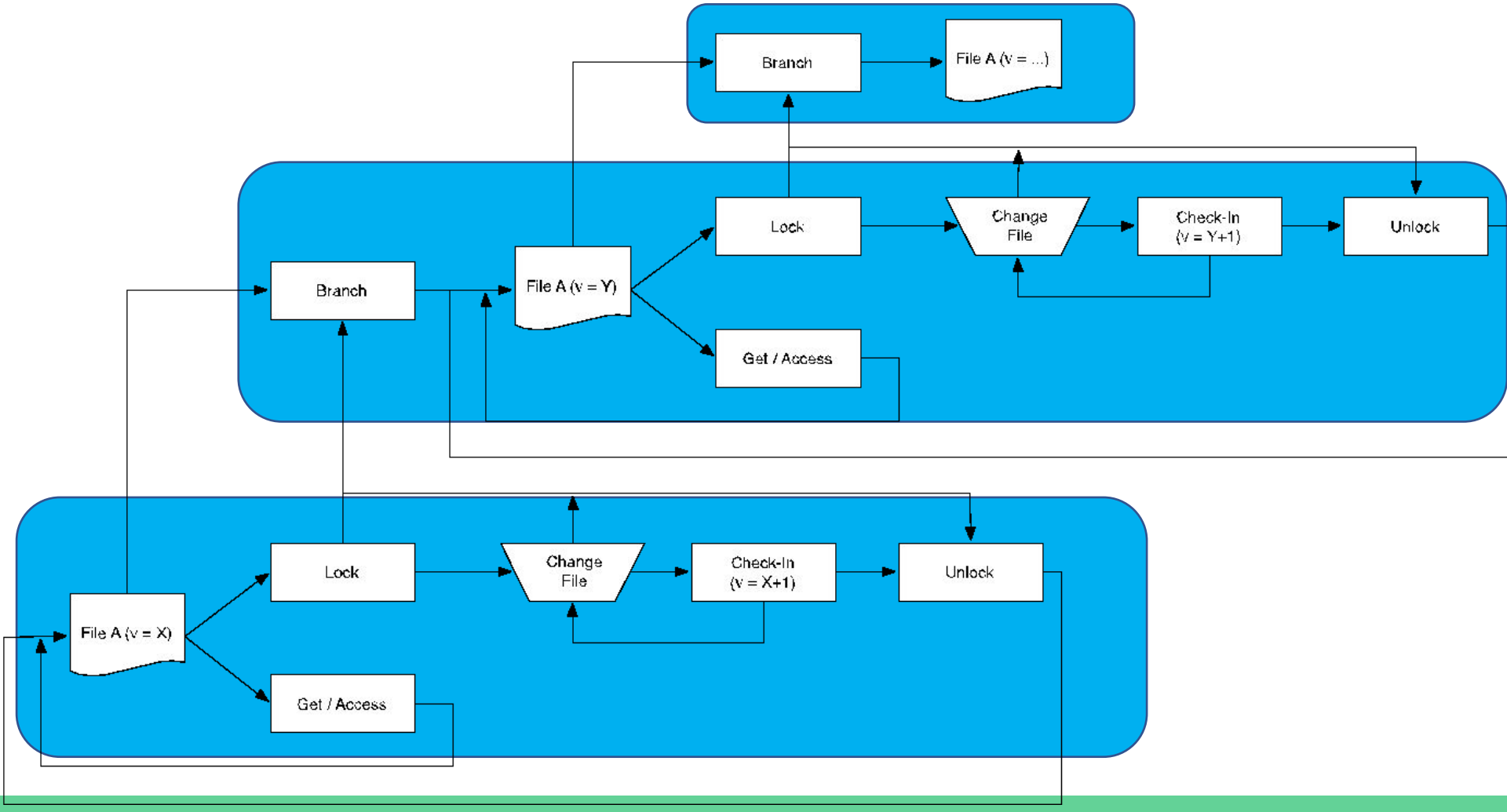
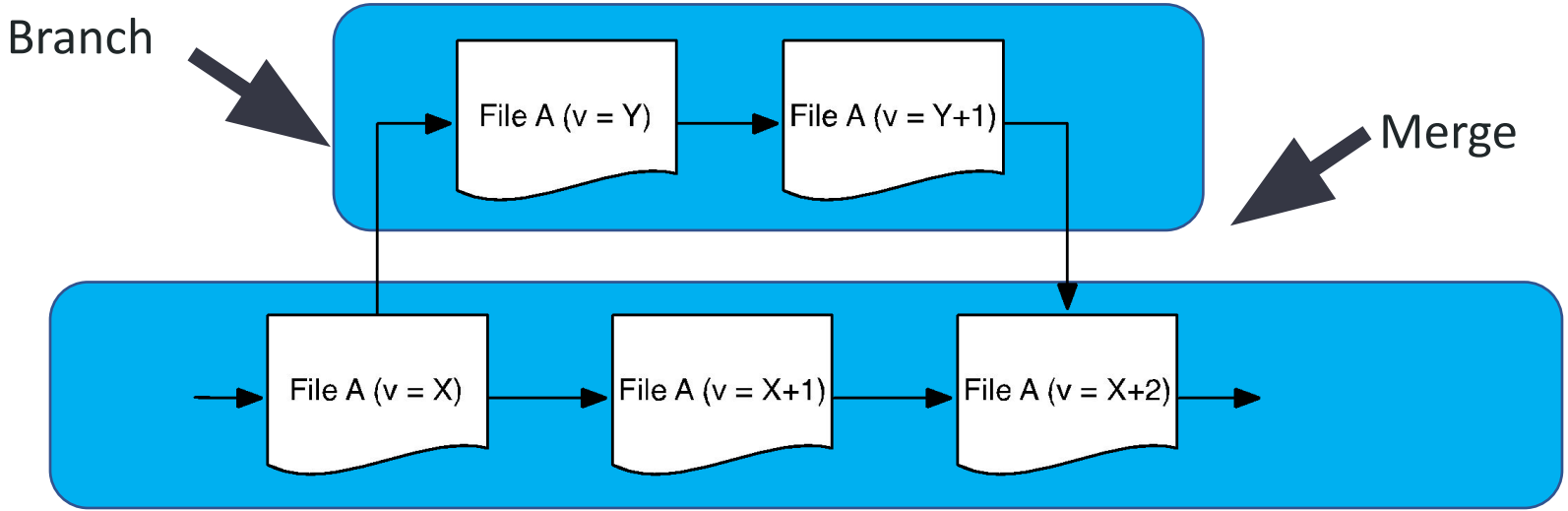

Branch
File A (v = ...)
Branch
File A (v = Y)
Lock
Change File
Check-In (v = Y+1)
Unlock
Get / Access
File A (v = X)
Lock
Change File
Check-In (v = X+1)
Unlock
Get / Access

Development Configuration Management: Merge

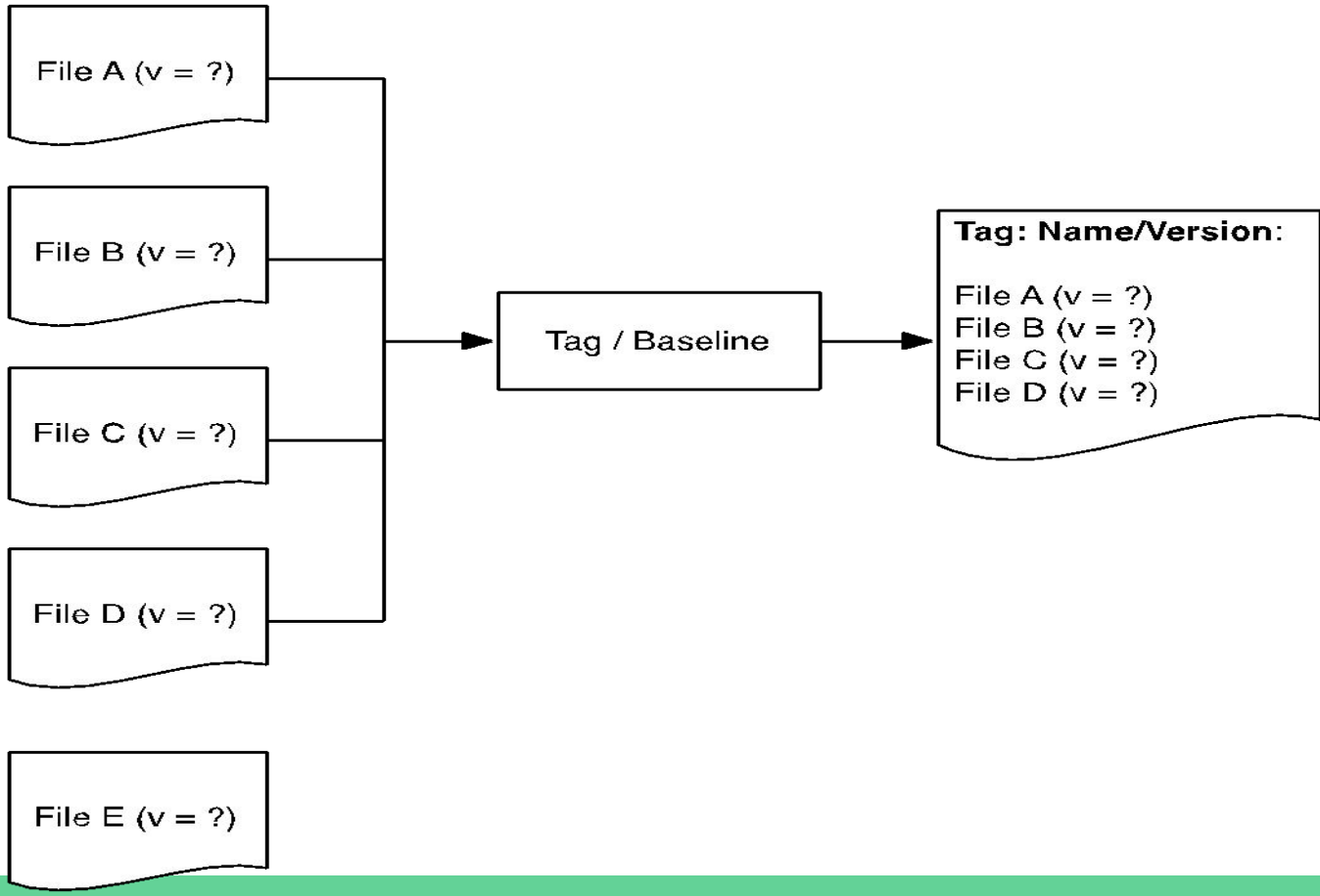


Development Configuration Management: Tag / Baseline

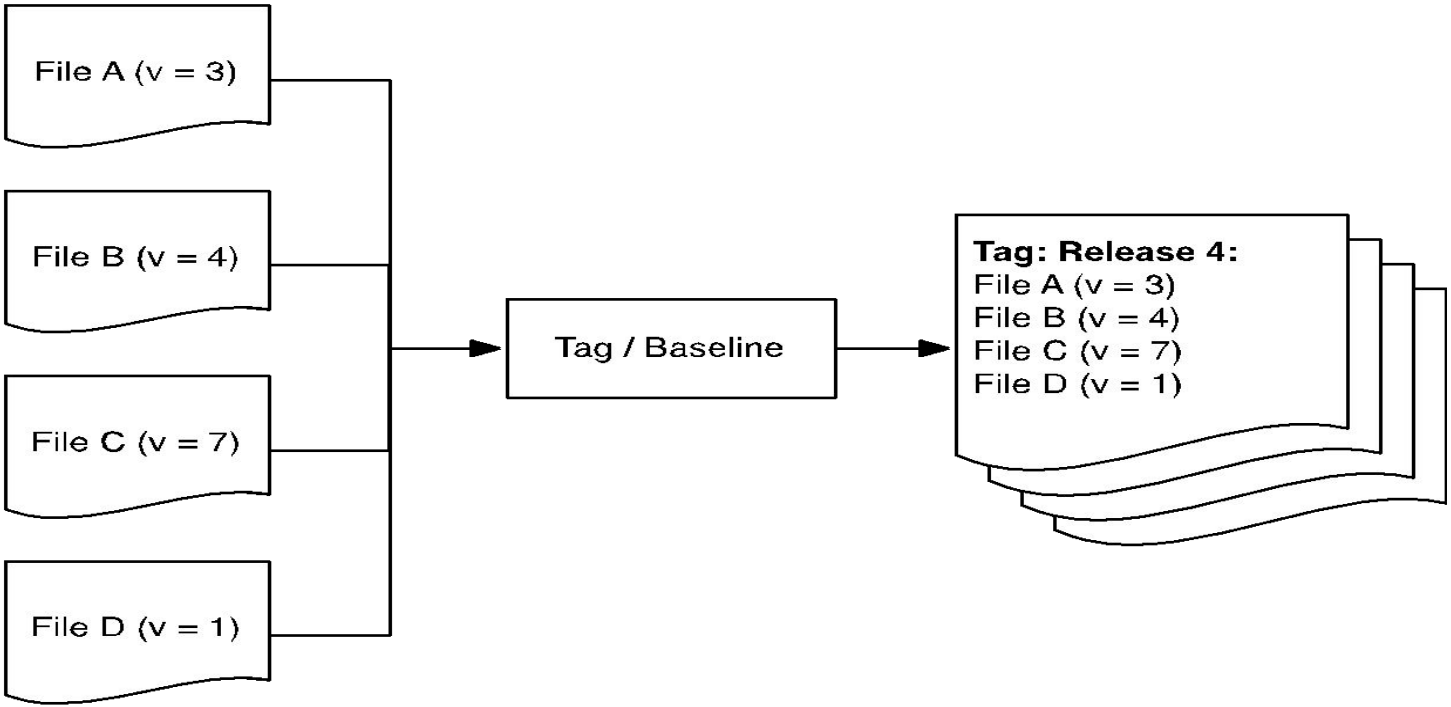
Baseline:

- Approved state
- Milestone

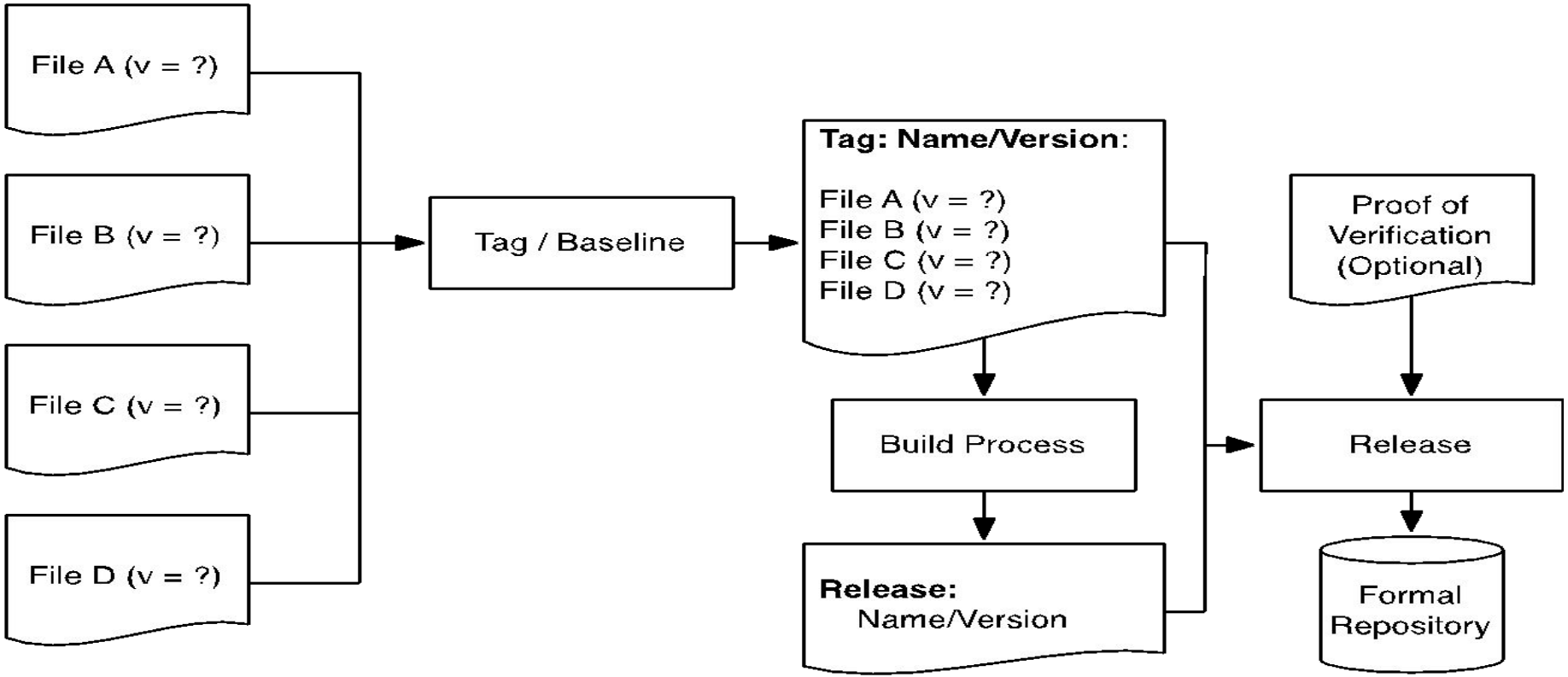
- Serves as a basis for change



Development Configuration Management: Tag / Baseline



Release Configuration Management



Development vs Release CM

What is the difference between development and release configuration management?

https://www.axelos.com/news/blogs/november-2015/the-big-3-change-release-configuration-management

Development vs Release CM

How do development and release configuration management work together? How are they related?

A workflow (of sorts!)

Assume you have a **project**

- That project probably has ***milestones***

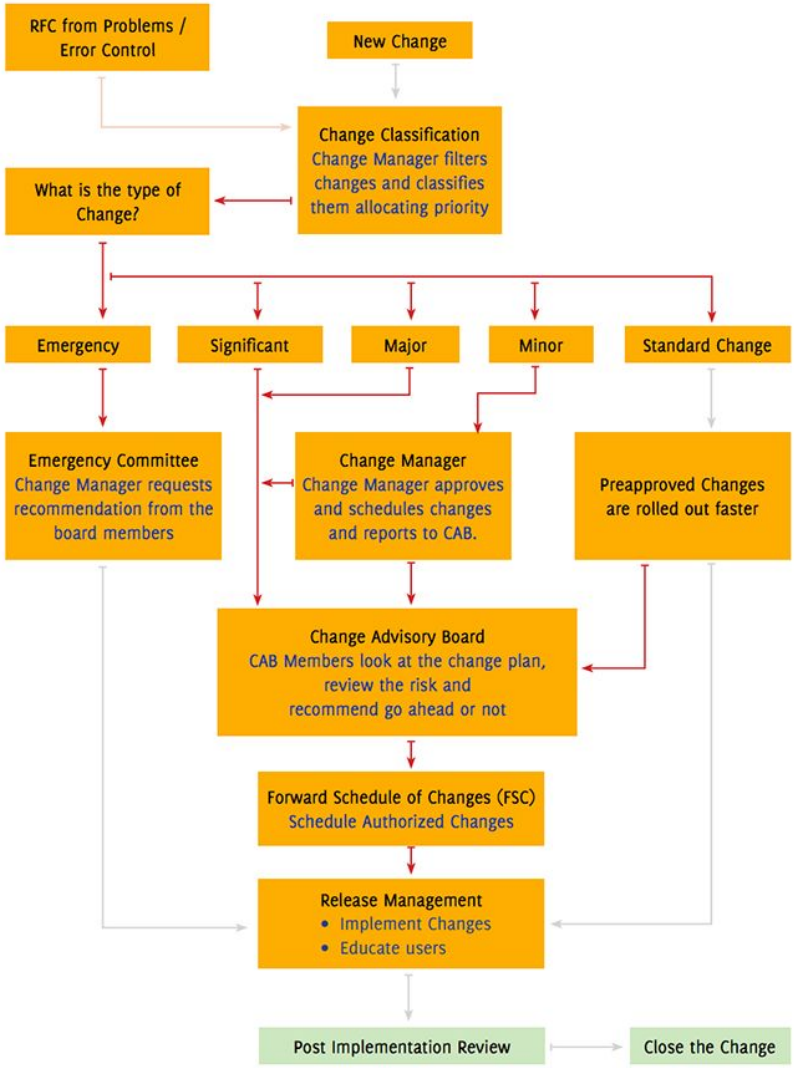
To make that project succeed, a series of tasks/issues/(word of choice) will be created to move implementation/testing/etc. along

1) Create a project
2) Create a series of tasks assigned to a project
3) Assign those tasks to various activities

4) Complete all tasks == complete project?

Change mgmt.

!= config mgmt!

Change generally occurs when something must … change

- e.g., a baseline