Welcome to PRoVOX Migration to DeltaV Including Migration Tools

Migration Overview

By

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PRoVOX Migration Implemenation Philosophy

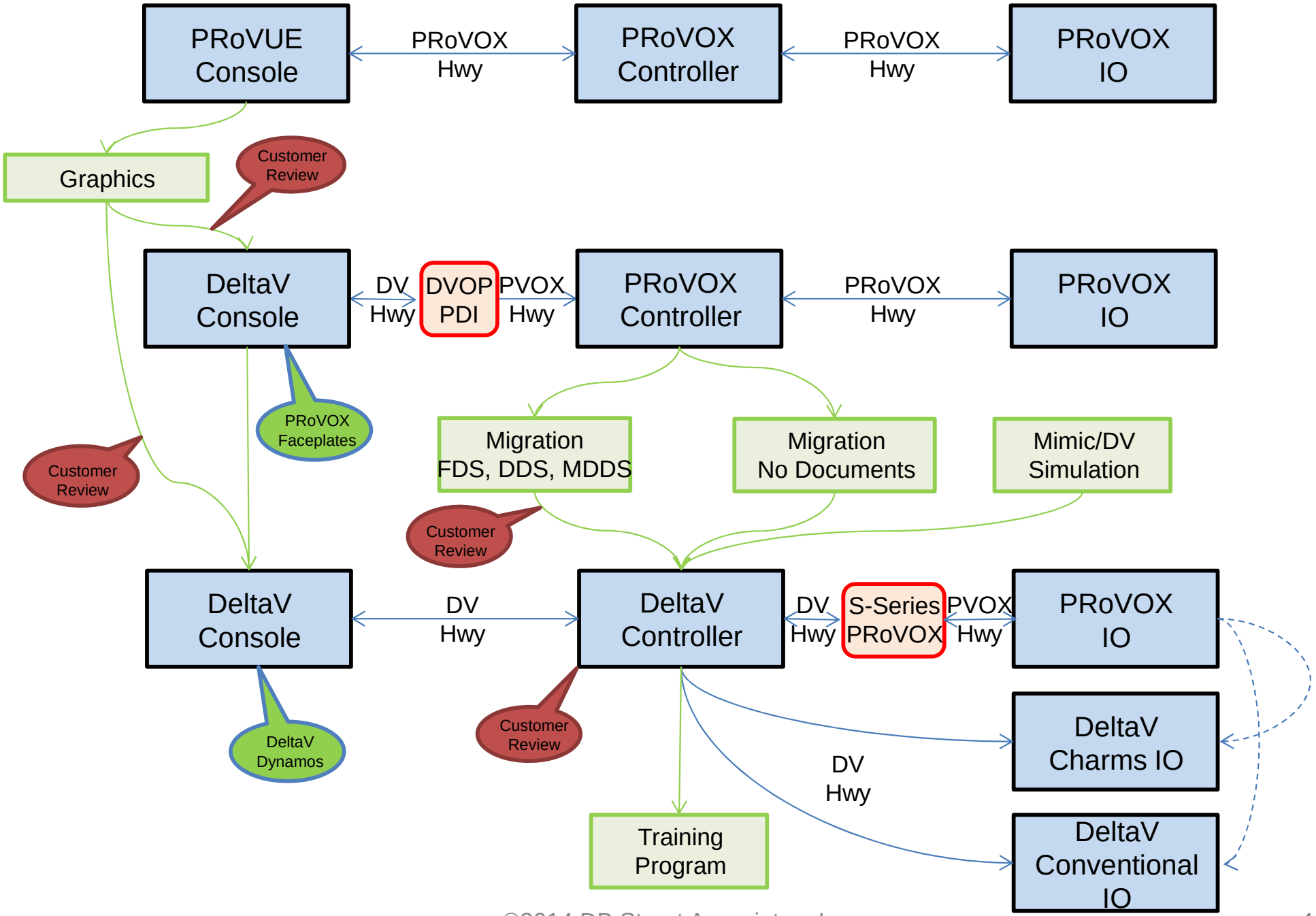
Migration Plan	Migration Implementation
Define PRoVOX Configuration	Document Continuous and Batch Control Configuration including any PLC and external devices communications
Define IO Projections	Define DVOP, S-Series PRoVOX, Charms, and/or Conventional IO
Define Plan for staging of move of IO to either Charms or Conventional IO	Identify which PRoVOX IO (ISTs) will be migrated and which will remain PRoVOX IO. If split then define DeltaV DSTs for all IO in anticipating of moving all IO to DeltaV
Define DeltaV PRoPlus for migration.	Identify if migration is new database (ProPLUS) or to add to existing database.
Review Progress Design Documents.	Review all documents and get approval on plan.
Design DeltaV database.	Use PBL, PCSD or customer classes to build DeltaV Database. Build database for control system.
Design DeltaV Console Graphics	Determine if for DVOP or Standard DeltaV Graphics. Build Graphics.

Continued Next Sheet

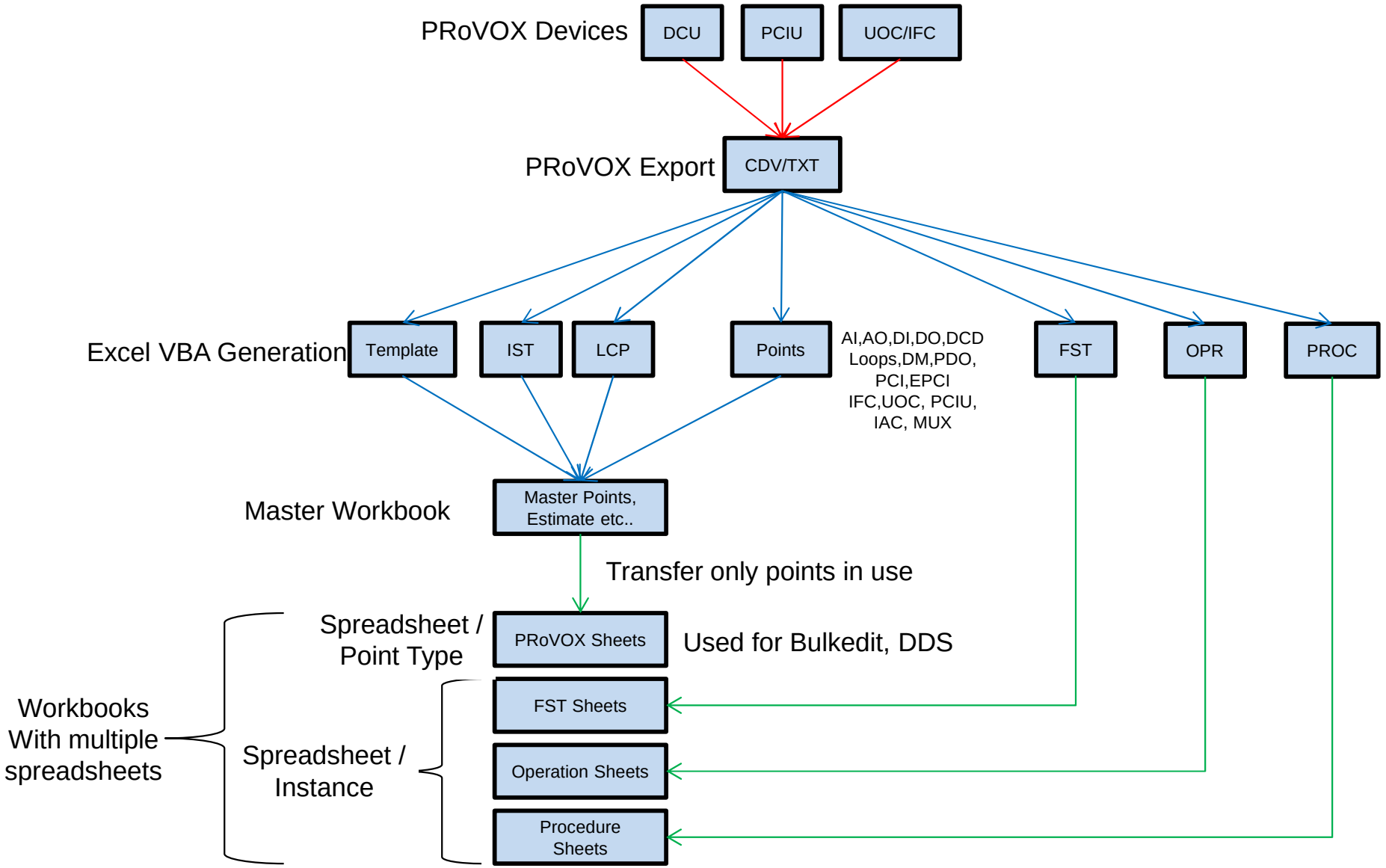
PRoVOX Migration Implemenation Philosophy

Migration Plan	Migration Implementation
Design Simulation and Perform Internal Testing	Use Mimic or special build DV modules to create process simulation to verify graphics and functionality of system.
Customer Review	Customer Acceptance Testing (CAT)
Training	Provide Operator and Engineer Training as requested.
Start-Up	Provide support as needed. Usually Time and Material costs.

PRoVOX to DeltaV Migration Overview



Migration Overview



DeltaV Definitions

Item	Definition
DVOP	DeltaV Operate for PRoVOX (DV HMI for PRoVOX Controller and IO)
PDI	PRoVOX to DeltaV Intergrator (Pre DVOP)
S-Series (SQ or SX) DeltaV Controller to PRoVOX IO	DeltaV Controller Interface to communicate with PRoVOX control IO or distributed Mux IO
Functional Design Specification (FDS)	Usually created at beginning of installing 1st DCS system and defines how the control systems is to control the Process. Detail description of the plant process (Does not reference a specific DCS System).
Detail Design Specification (DDS)	Defines details of how the specific DCS systems (DeltaV) is to control the process, detailing exactly how modules will function.
Migration Detail Design Specification (MDDS)	Defines both the existing PRoVOX configuration and the new DeltaV configuration. Provides code from FSTs as used in PRoVOX and converted to DeltaV process actions, interlocks, permissives and forced setpoints.

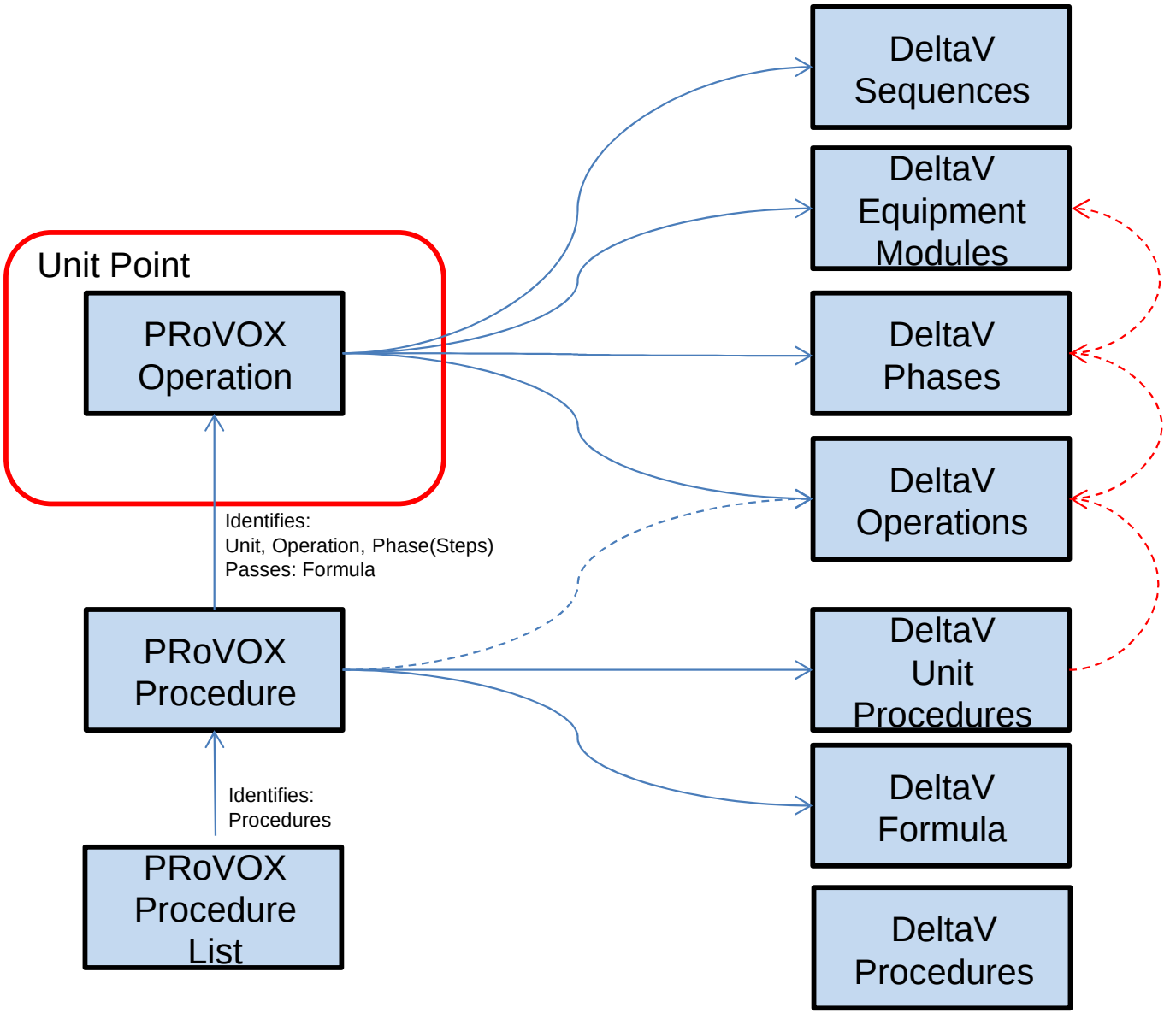
DeltaV Implemenation Philosophy Using Migration Tool

Migration Tool	
Procedure	**Resulting Items Created**
Export EnVOX Database to “cdv” files.	
Analyze “cdv” files	Identify, count and sort all “cdv” EnVOX database types (There are 90 types). Produce report of different types and complexity.
Import “cdv” database into Migration Tool Database (Templates, ISTs, LCPs, All Points, FSTs and Operations).	Creates Spreadsheets for all EnVOX point types, Templates, ISTs, FSTs, Operations and Database Point indexes (DBIs). Create text files for FSTs and Operations.
Analyze DCDs, Loops and FSTs instructions to identify process conditions.	Build Interlock Tables identifing Interlocks, Permissives, Process Actions and Forced Setpoints.
Analyze Operations Instructions.	Build Spreadsheets of Steps and Instructions.
Create Documentation to reflect the PRoVOX Process Design.	Create FDS, DDS, or MDDS Word document.
Build BulkEdit Tables of points for import to DeltaV.	Build BulkEdit Tables of PBL, PCSD52, PCSD120 or PCSD130 Classes for all points (Also can adapt to customer’s own classes).
Review Interlock Tables.	Build Bulkedit Tables of Interlock Tables.
Review Operations.	Build Equipment Modules, Phases and Operations to reflect PRoVOX Operations.

DeltaV Batch Implemenation Philosophy

Pharma & S-88	Chemical and Other
Operator Starts, Aborts, Restarts	Operator full access to Phases and Equipment Modules – Start, Stop, etc…
Batch is tightly controlled – Validation and run from Unit Procedures, Procedures or Campaigns	Phases and Equipment Modules can be run individually.
Difficult and time consuming to modify because of combined EMs and combined Phases.	Ease of modification because EMs and Phases are independent of each other.
Typical design includes combining Phases and EMs to reduce number of items but uses a wide variety of parameters for tracking.	Individual Phases and EMs reduce the need for parameters and tracking of what part of modules are active. Easy to maintain and modify.
Typical design has only up to 5 Operations and uses Unit Procedures pointers for controlling which Phases are activated from the Operations. This effectively moves the standard Operation control functions to the Unit Procedures.	Phases continue to be the main controlling function, activated by Operations. Unit Procedures are utilized for plant/area control.
Emerson's Standard Procedure for designing all Batch systems.	Our Independent design based on Customer desires.

PRoVOX Batch Implemenation Philosophy in DeltaV



Execute Commands

Fill Tanks
Drain Tanks
Measure Flows
Measure Levels

Execute EMs
Confirm Process
Is Ready to Continue
Run Process

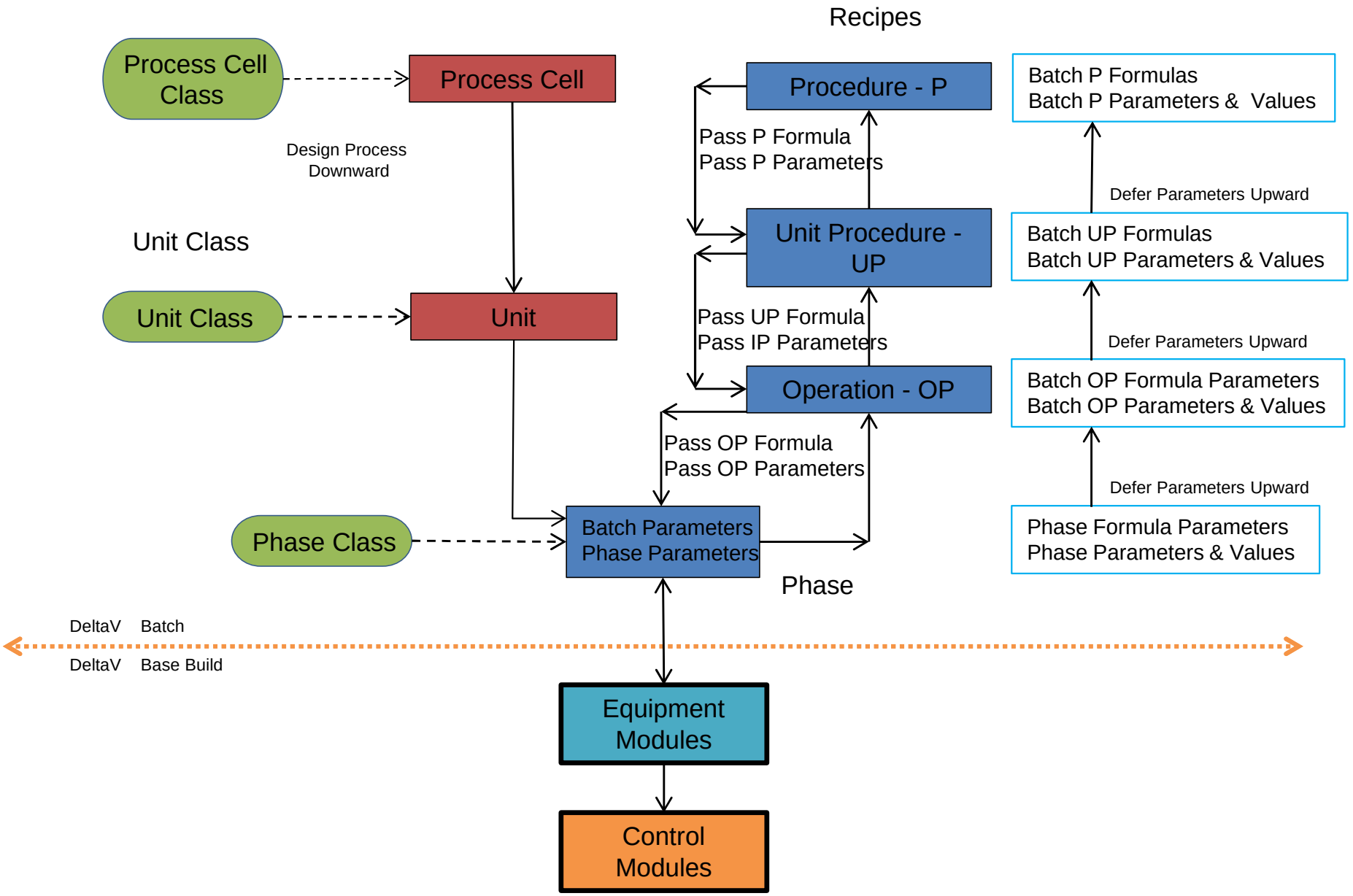
Organize Phases
To Fill, Process
and Drain Tanks.
Set up Parallel Processing

Organize Operations
For Plant Processing
Utilizing Recipe Formulas
Per Class Units

Store Predetermined
Formulas for Product
Production.

Execute Units
For Plant Multiple
Productions

Batch Overview



The following slides describes several
Procedures for implementing Batch Control
And laying out the Recipes logic.

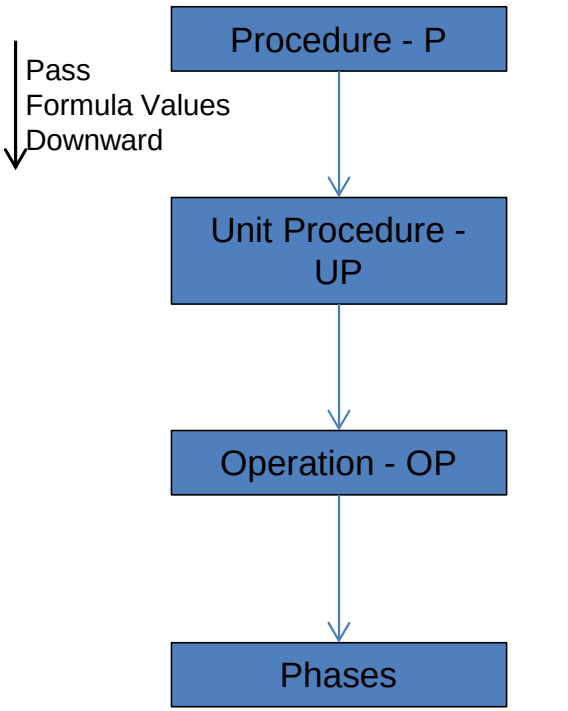
The Type of facility will denote several of these
Procedure types.

The Type of products produced will denote
the procedure layout:
Pharmaceutical, Chemical,
Pulp & Paper Mills, Refining

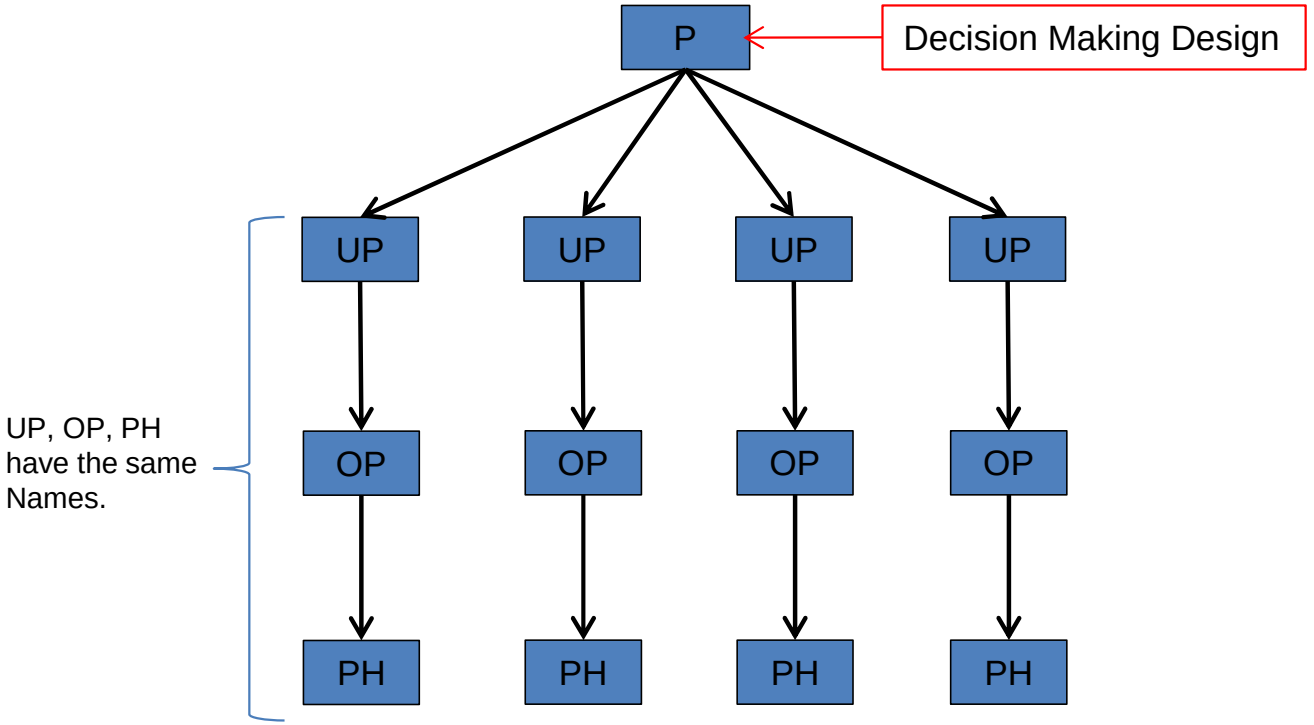
Also notice that there are several points
where Operations can begin.

Recipe Type Design Overview

Recipe Calling Procedure
To pass Control and Formula



Type: Procedure is Process Control Point



Example:
P = Specific Skid Control
UP = Functions (CIP, etc)
OP = Functions (CIP, etc)
PH = Execute Function

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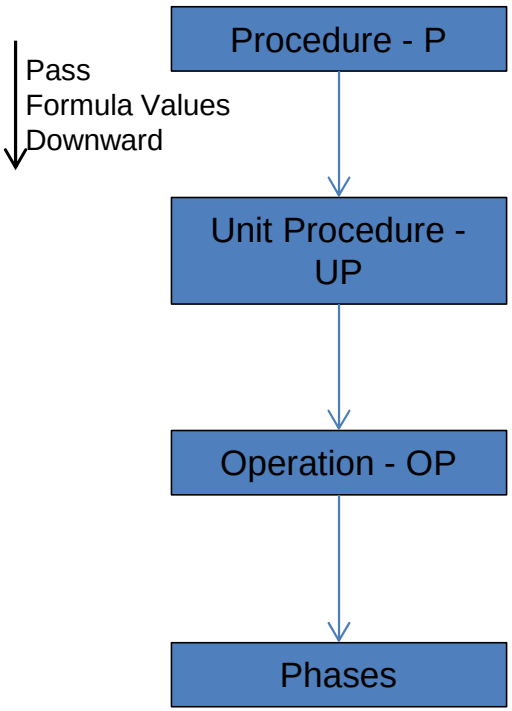
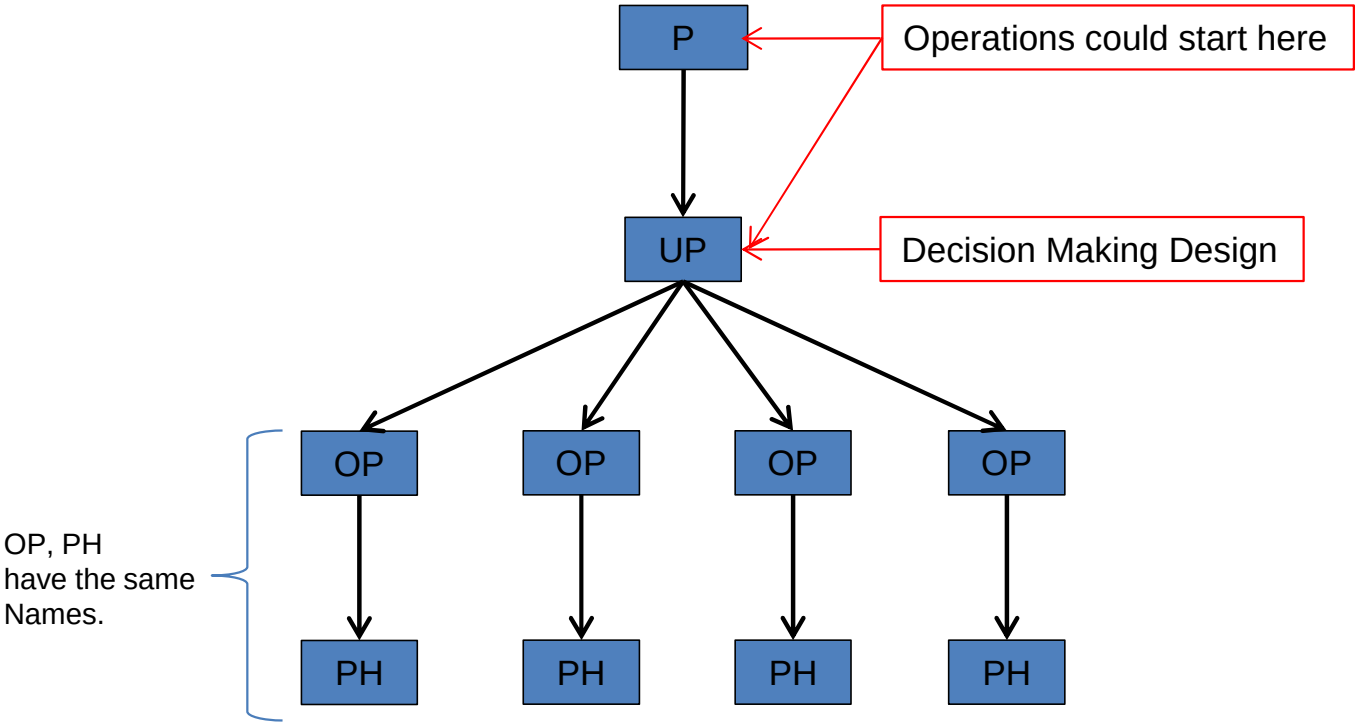


Type: Unit Procedure is Process Control Point



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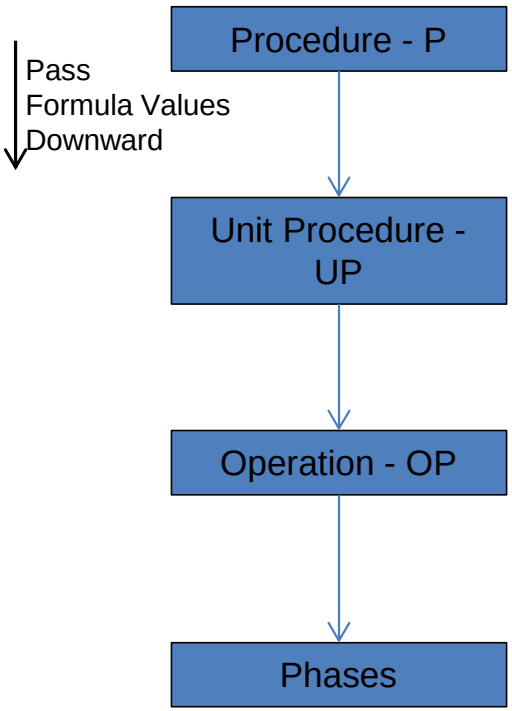

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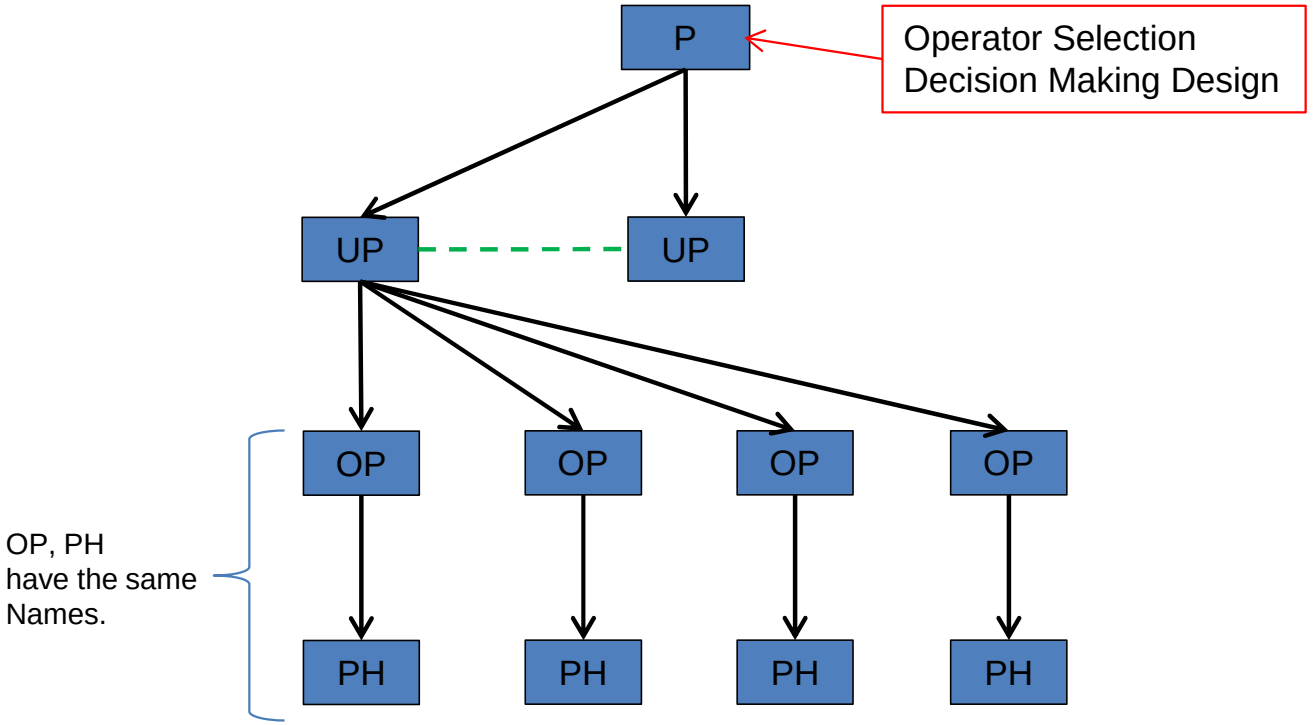

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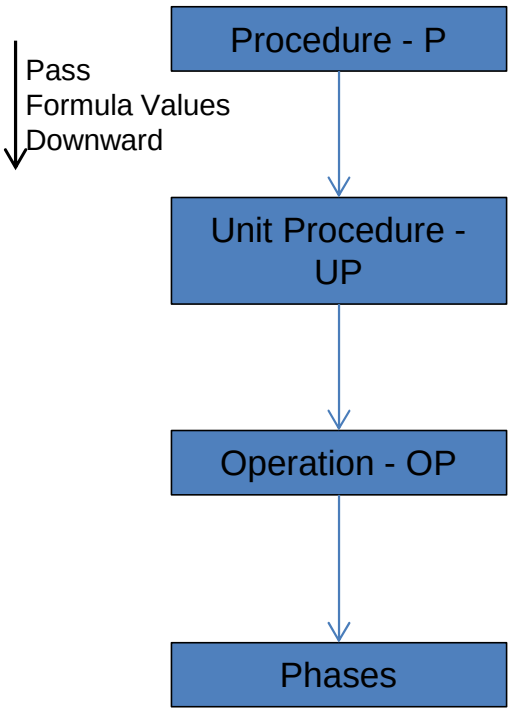

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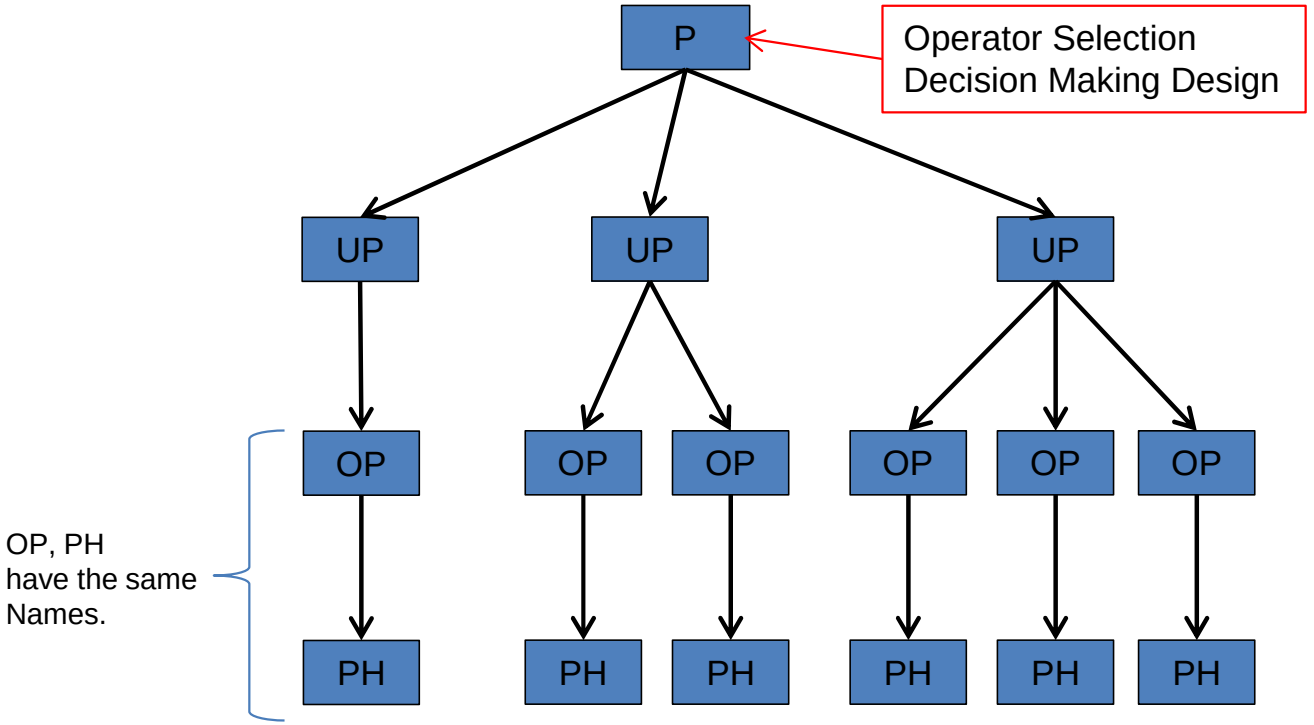

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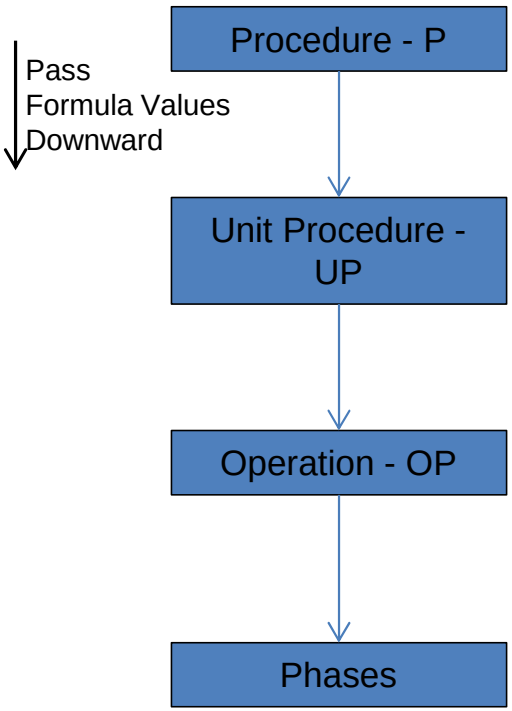
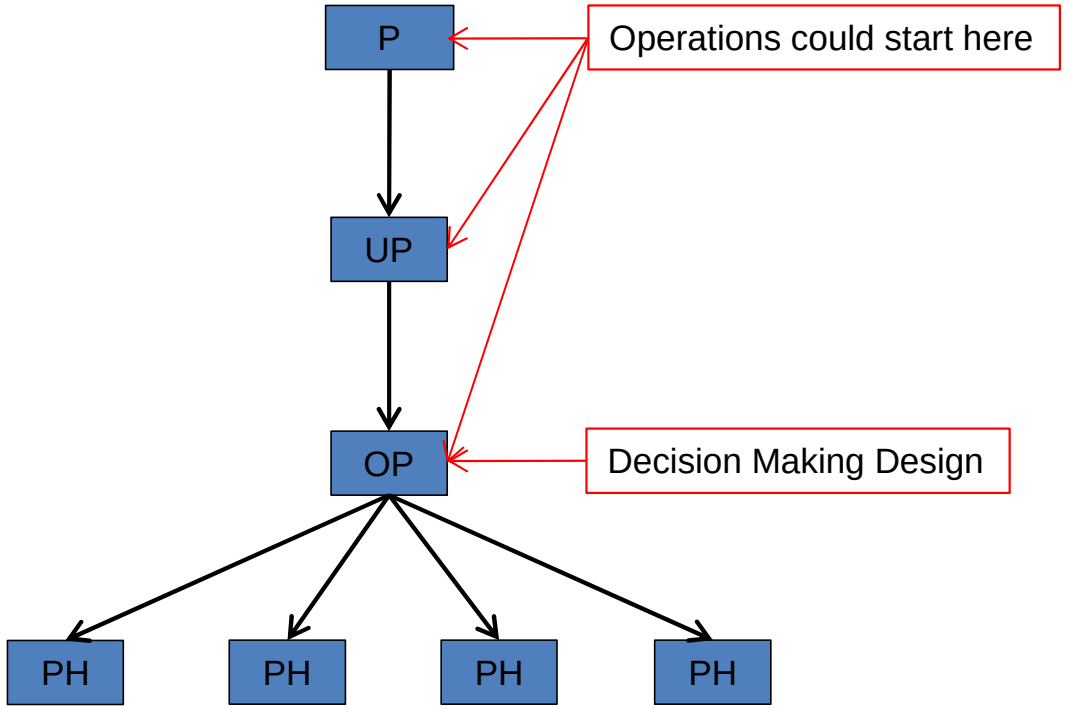


P, UP, OP
have the same
Names.

Type: Operation is Process Control Point



Note: The Phases are individual phases designed to perform a specific function.

Example:
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OP = Process
PH = Execute Specific Function

Recipe Type Design Overview

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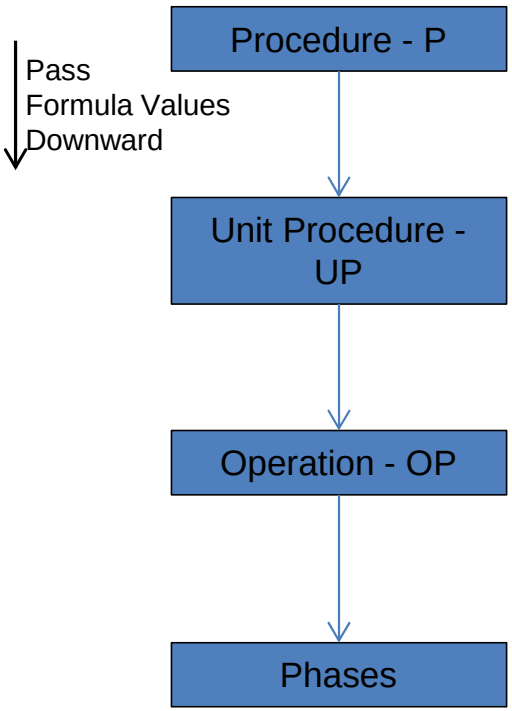

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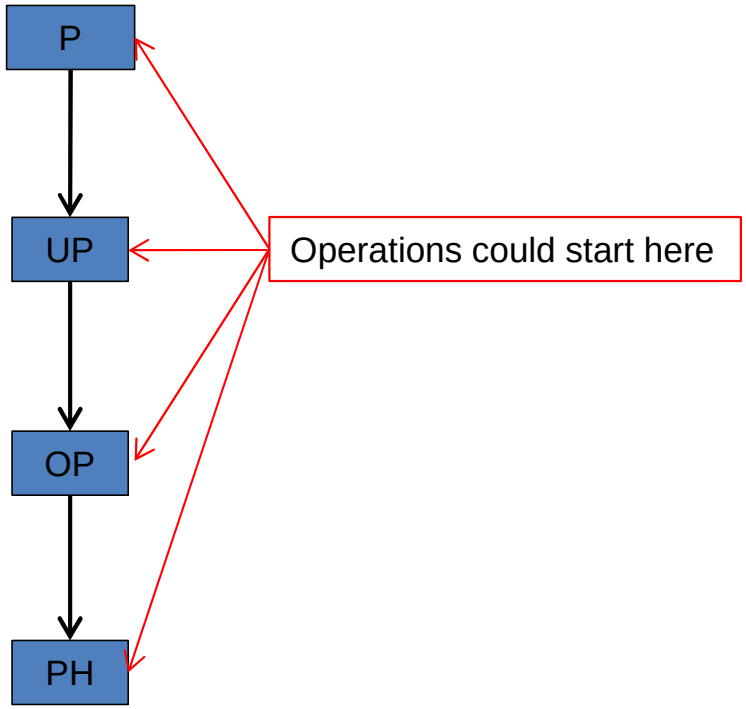

Note: The Phase is one big phase
That uses recipe parameters or
specific parameters to determine what
is executed: CMs, EMs, etc..

The EM could also be one big EM.

This PH/EM procedure make changes very difficult.

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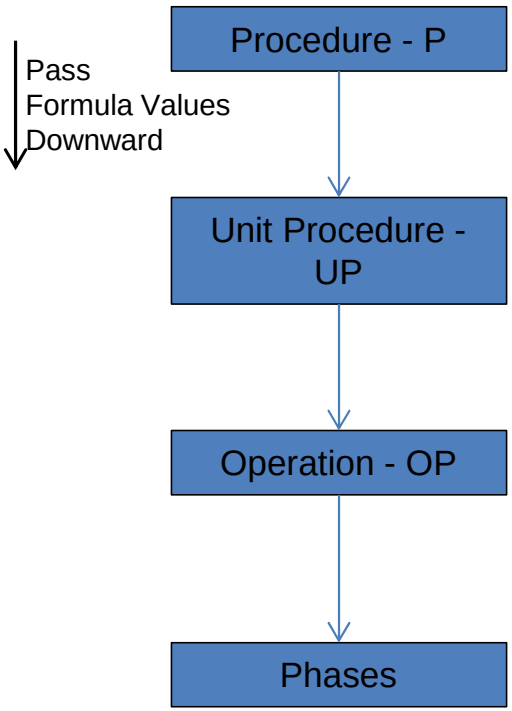
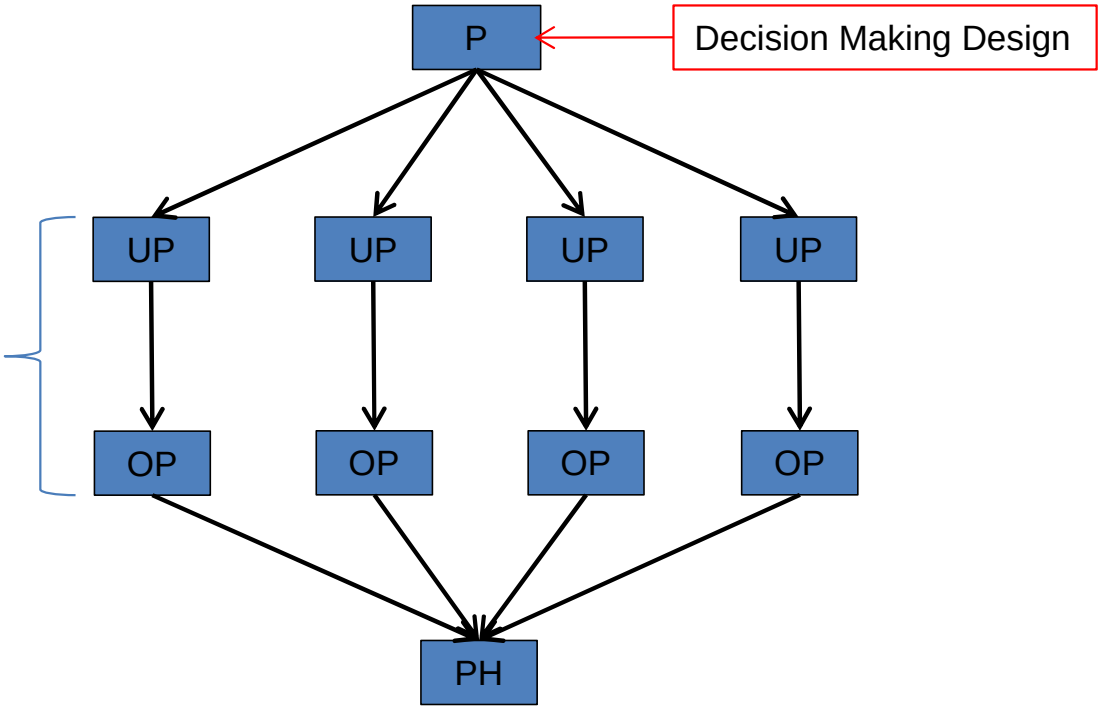


Type: Procedure is Process Control Point



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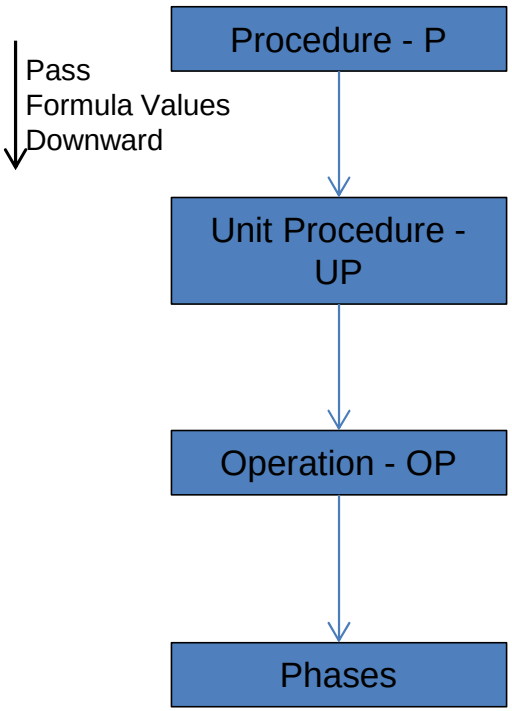
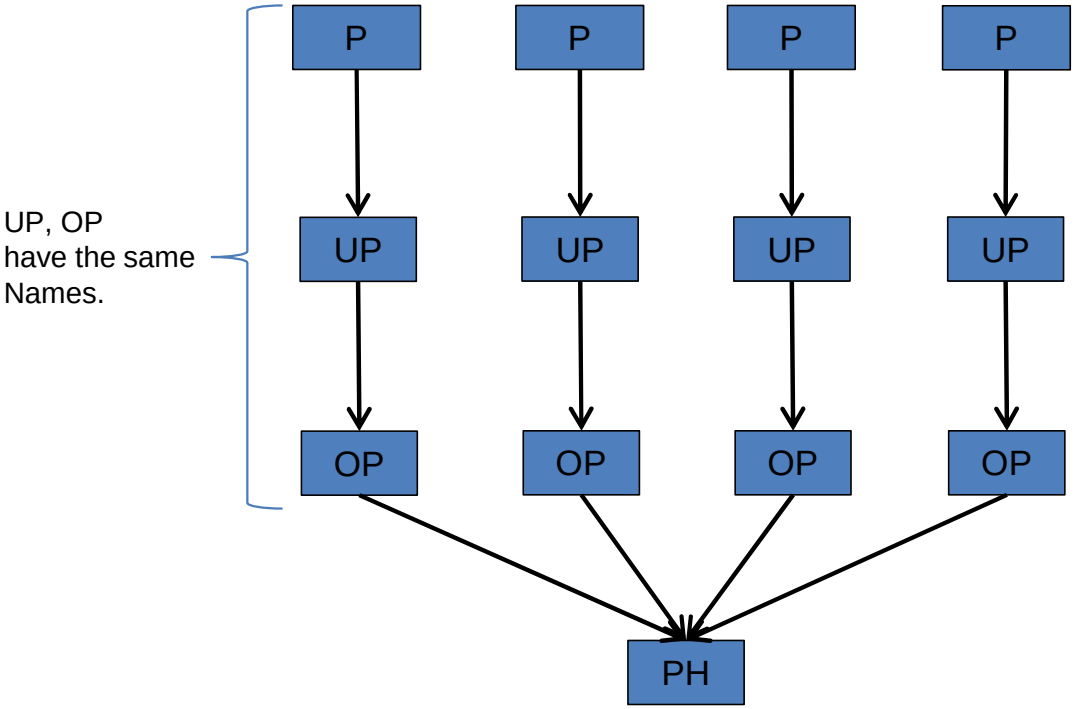


Type: Operations select Procedure



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Example:
P = Specific Procedure
UP = Continue
OP = Continue
PH = Execute Function