The Virtual Process Overview and Applications

Cape Software Inc.

Houston TX

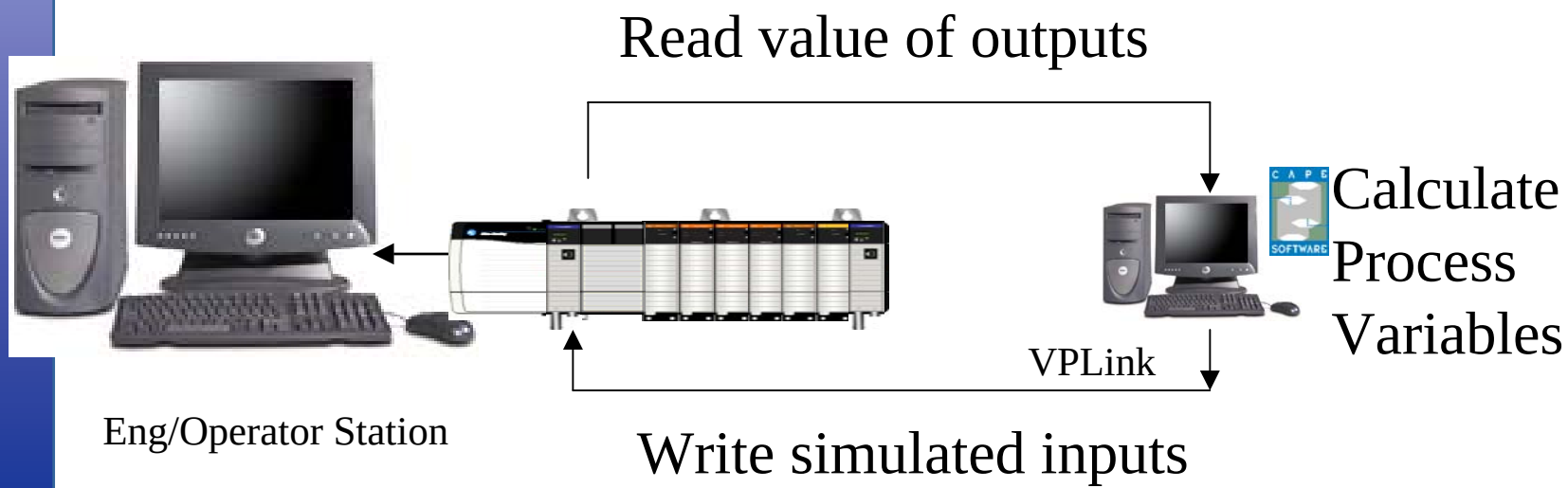
VP Link

What is VPLink ?

- A **representation** of the process **inputs** to an **offline control system**
- What does VP Link do?
  - **Read** control system **outputs**
  - **Calculate** the Virtual Process State – ie, Process Model
  - **Write values** for Process Variables
  - **Offer GUI** for engineer or instructor to present scenarios such as equipment fault, process upset, or transmitter drift (failure)

Virtual Process Overview

- Windows based interface: ***intuitive***
- No Changes to Logic programs: ***non-invasive***
- I/O board Hardware not required (cost advantage)
- Interfaces with ***emulated*** or ***real*** controllers



Some of our customers...

BASF – plants across several sites W/W

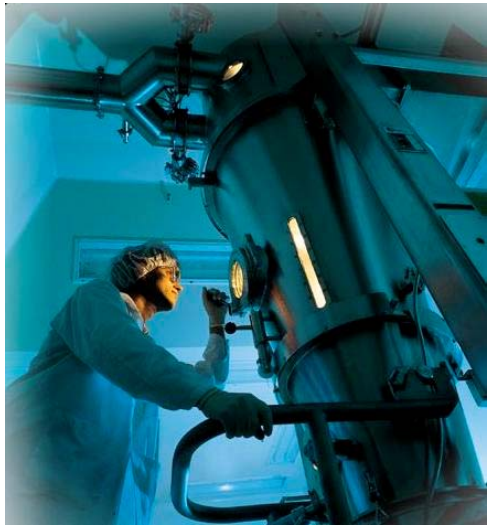
TOTAL refinery – Vlessingen,Netherlands

Eastman – several systems within Kingsport, TN

ConocoPhillips –San Francisco,CA

Phillips Refining – Several Sites Licenses

ChevronTexaco – San Pablo,CA



Lubrizol – several licenses within Deer Park, TX

BP – several licenses at several sites

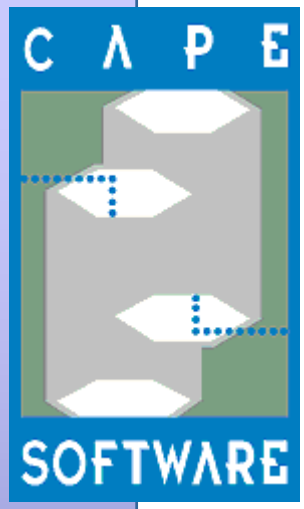
Shell Deepwater / Shell Chemicals,UK

Eli Lilly – Corporate licensing

Genentech – several licenses at different sites

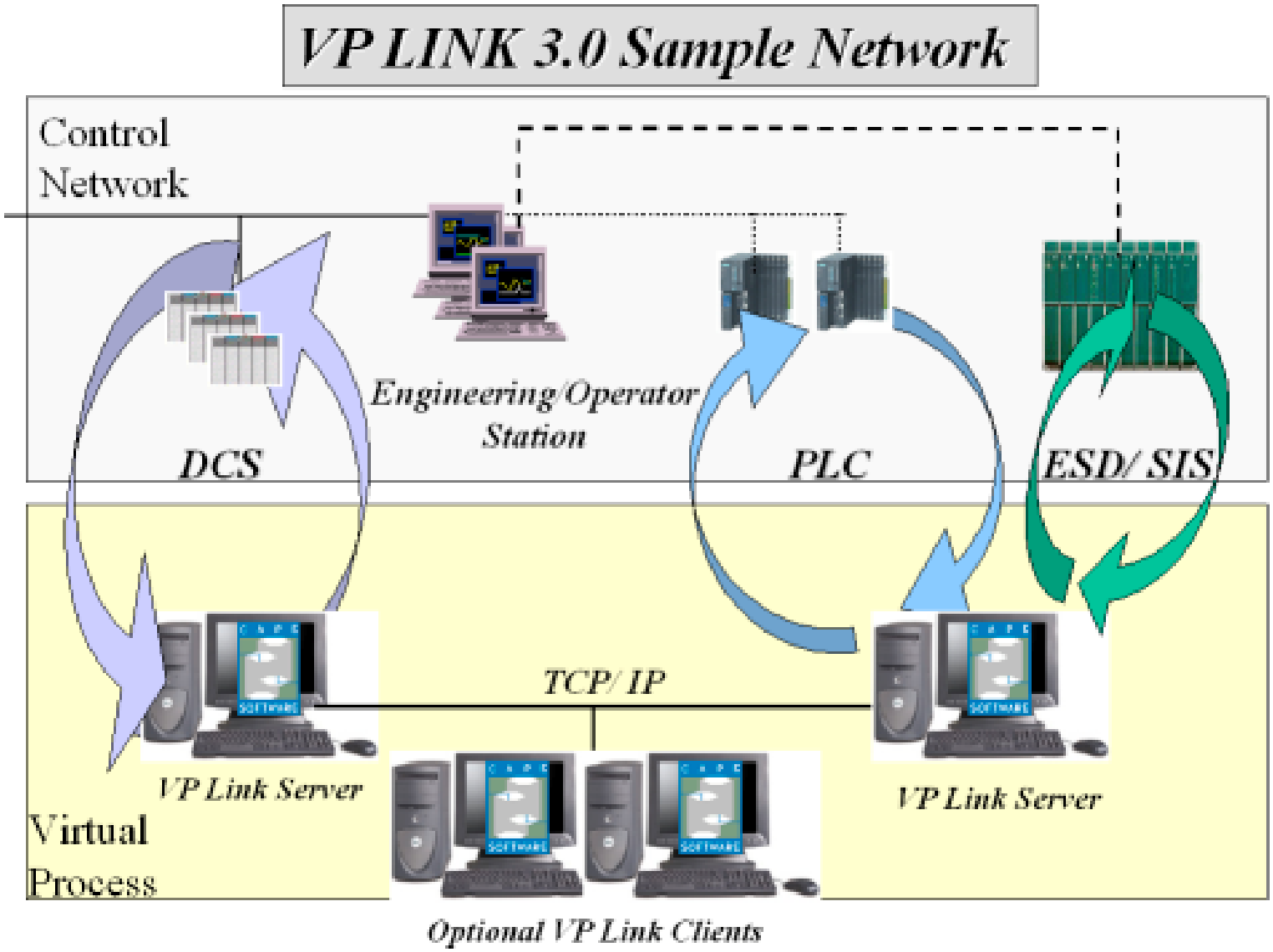
General Mills – W/W licensing

Murphy Oil - Mereaux, LA



Some Supported Systems

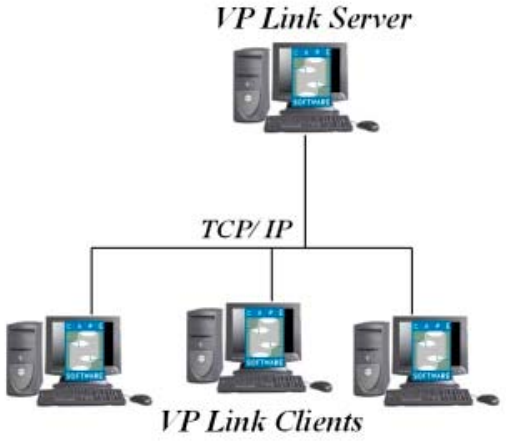
- Rockwell CLX,PLX
- Siemens APACS, PCS7, S7
- Yokogawa CS3000/R3/ ProSafe
- Honeywell Plantscape / Rockwell ProcessLogix
- Honeywell TPS Honeywell FSC,PKS
- Emerson DeltaV,PROVOX
- Triconex:Tricon/Trident
- ABB Mod300, Advant,Sattline
- Siemens Quadlog
- Foxboro I/A,Archestra
- A-B PLC5/SLC500, Modicon,Siemens-Ti 505
- Etc...



Control Network Systems are solving the logic, responding to simulated VP Link inputs

Different Architectures for different Applications

Training /Testing Setup



Engineers manipulate units PVs, sharing a chassis and simulation server

Parallel Training Setup

Engineers test identical units, in parallel simulation servers

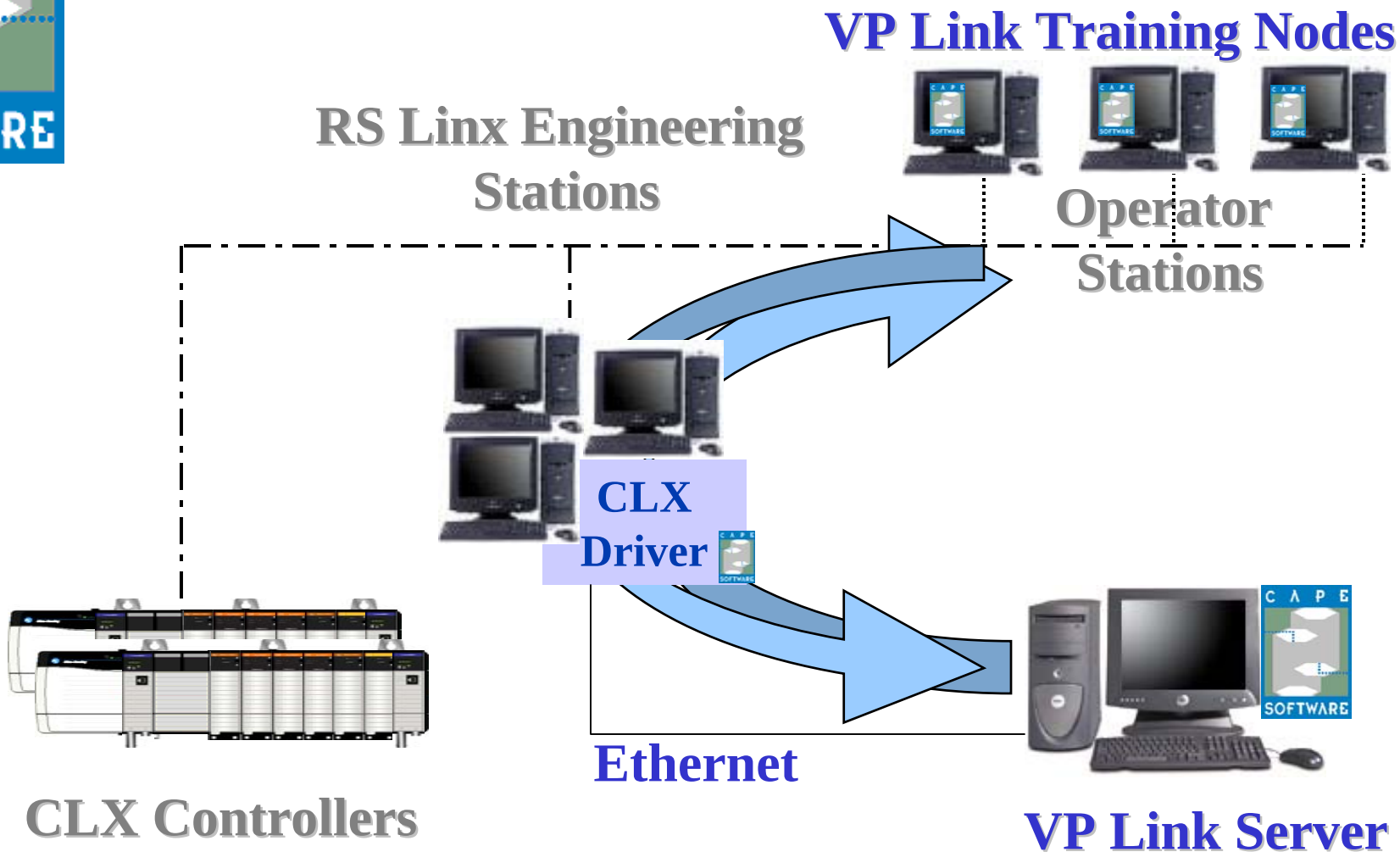
5 steps to Logic Validation with VP Link 3.x

- Extract the control systems I/O image, using platform specific tools
- Import the image in VP Link
- Write training/failure scenarios
- Connect to ESD
- Execute validation test (scenario based or manually)

Specifics: VP Link for Rockwell CLX Interface

- Fully Automated Extraction utilities
- Easy Graphics Import in Toolbook
- Interfaces with emulated controllers(RS Emulate) or Real Controllers
- TCP/IP connects to RS Linx OPC server, for fast and reliable data exchange

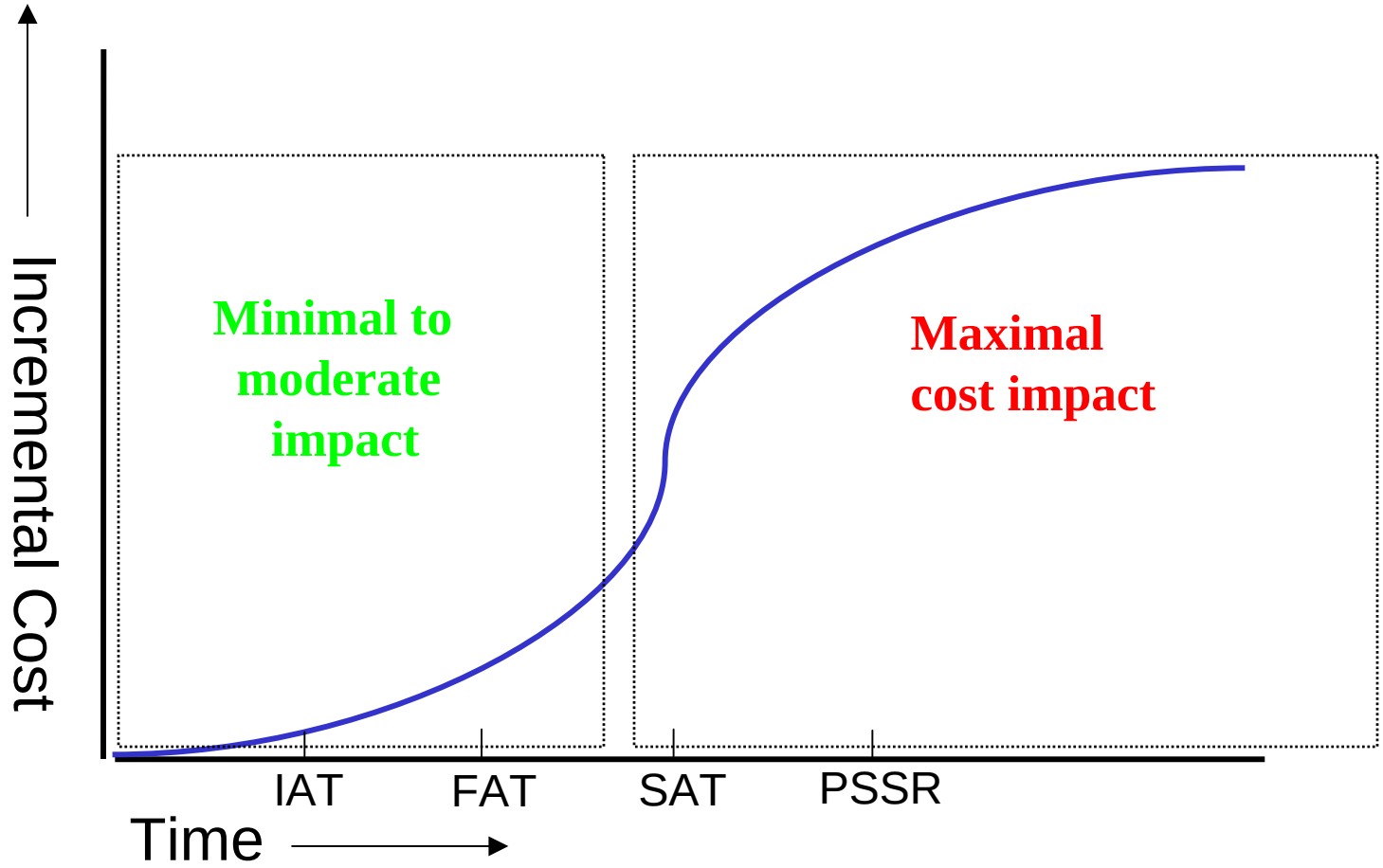
Sample VP Link Network Control Logix



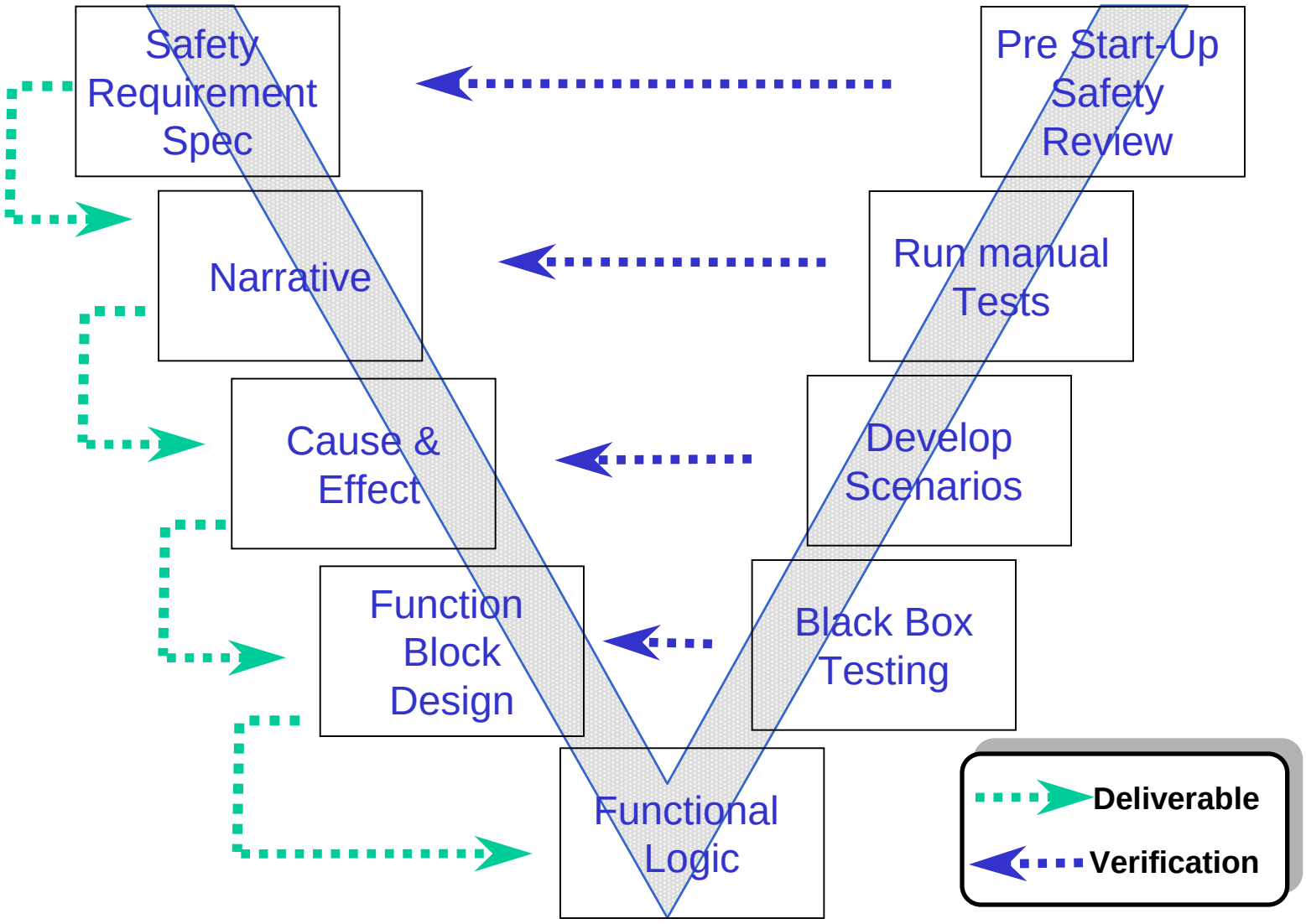
I - Logic Validation

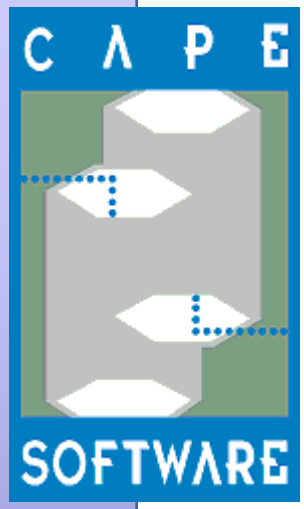
- **Graphics** verification
- **Logic** checkout
- **Automate** repetitive testing task (ie resets etc…)
- Facilitate Testing with practical graphics
- **Interlock** schedule approval
- **Mapping** to DCS and interaction between DCS/PLC logic (gateway points tests)
- Thoroughly debug prior to online download, ie, **Management of Change** and periodical testing
- **NO MODIFICATION to the application**

Cost of changes over a typical project development cycle



V-Approach methodology: application to validation





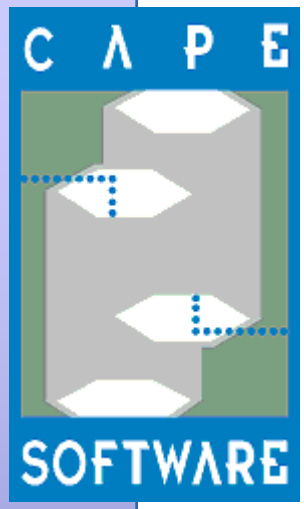
II-Operator Training

Goals of Operator Training

- Familiarize staff with HMI, Overlays, Navigation, Alarm Pages, Trend Displays
- Exercise Startup / Shutdown Procedures, using simulated ESD for real process trips
- Test Emergency Responses to Faults / Malfunctions / Upsets (Real or Instrumentation)
- Refresher Training or Re-certification
- Track trainee's proficiency (***Scoring Engine***)
- Knowledge Transfer Tool

Operator Training System using VP Link

- *Real control program* is used, in same field controllers for realistic control response
- Trainees operate the virtual plant using the real *field consoles, graphics and keyboards*
- *ESD* (Emergency Shutdown Systems) is easily integrated in the process model
- *PKS graphics are imported* in VP Link to offer a intuitive trainer interface
- *High Quality* process modeling tools, simulating the most complex chemical processes
- *Experienced* simulation staff in *LNG technology*



Conclusion

- VPLink solves simulation needs from **simple to sophisticated** modeling.
- Scenario Manager makes it **easy to** generate Failure scenarios for Operator Training.
- Modeling environment is **flexible**,**easy to learn and maintain**
- **Cost Effective** simulation package, for **OTS** And engineering **validation** needs
- **Cross platform** functionalites makes it an **evolutive investment**