The Virtual Process Overview and Applications

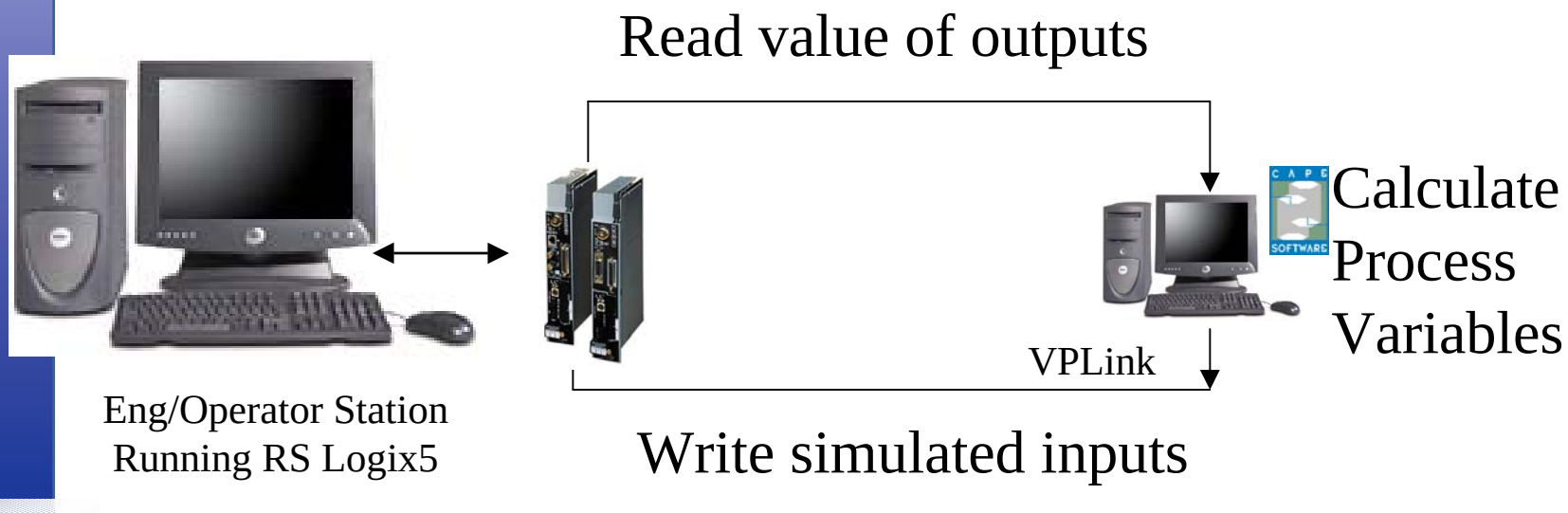
Cape Software Inc.

Houston TX

VP Link

Virtual Process Overview

- Windows based interface: intuitive
- No Changes to the PLC program: non-invasive
- I/O board Hardware not required (cost advantage)
- Multiple interface to PLC5,including
  - KT-1,Ethernet,serial



Some of our customers...

BASF – many plants across several sites W/W

TOTAL refinery – Vlessingen,Netherlands

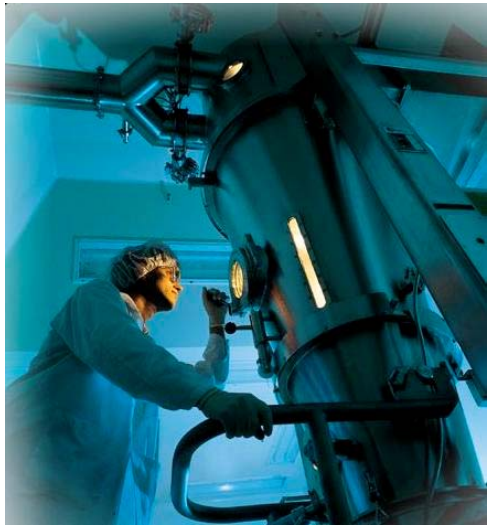
Eastman – several systems within Kingsport, TN

Air Products & Chemicals – several systems W/W

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

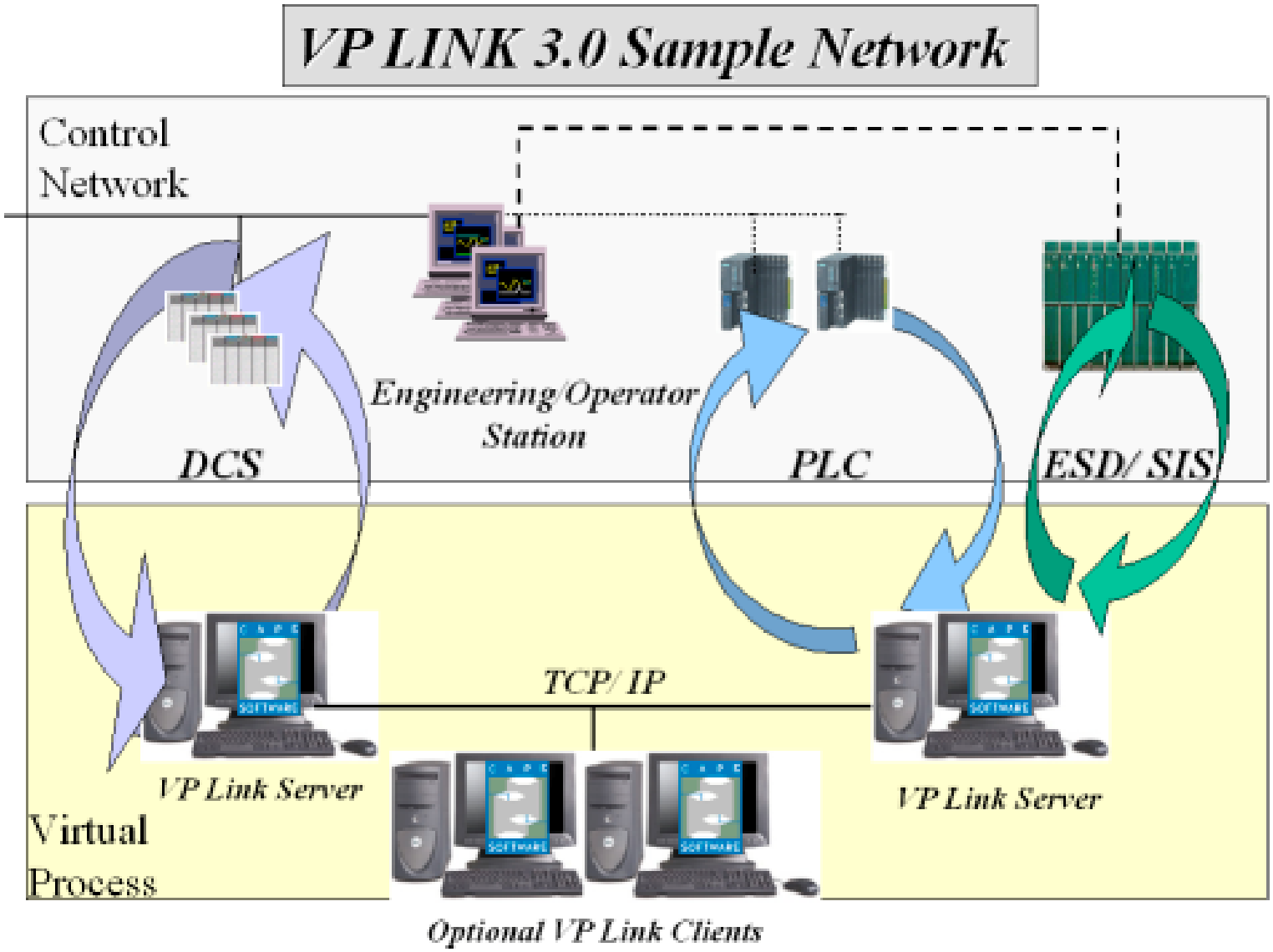
Genentech – several licenses at different sites

General Mills – W/W licensing

Murphy Oil - Mereaux, LA

Some Supported Systems

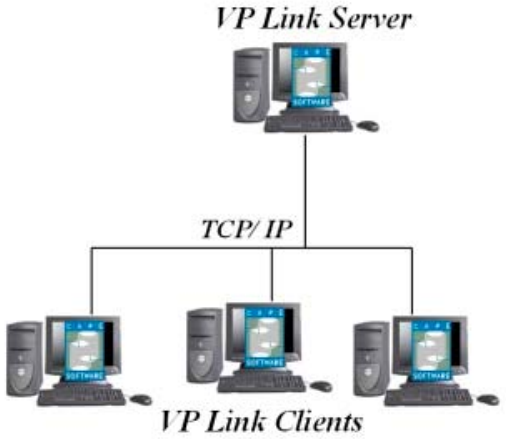
- Triconex:Tricon/Trident
- Foxboro I/A,Archestra
- Honeywell Plantscape / Rockwell ProcessLogix
- Honeywell TPS Honeywell FSC,PKS
- A-B PLC5/SLC500,CLX, Modicon,Siemens-Ti 505
- Emerson DeltaV,PROVOX
- Siemens APACS, PCS7, S7
- ABB Mod300, Advant
- Yokogawa CS3000/R3/ ProSafe
- Etc...



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

Different Architectures for different Applications

Integrated Training Setup



Trainees operate different units, interacting with each other

Parallel Training Setup

Trainees operate identical units, in parallel

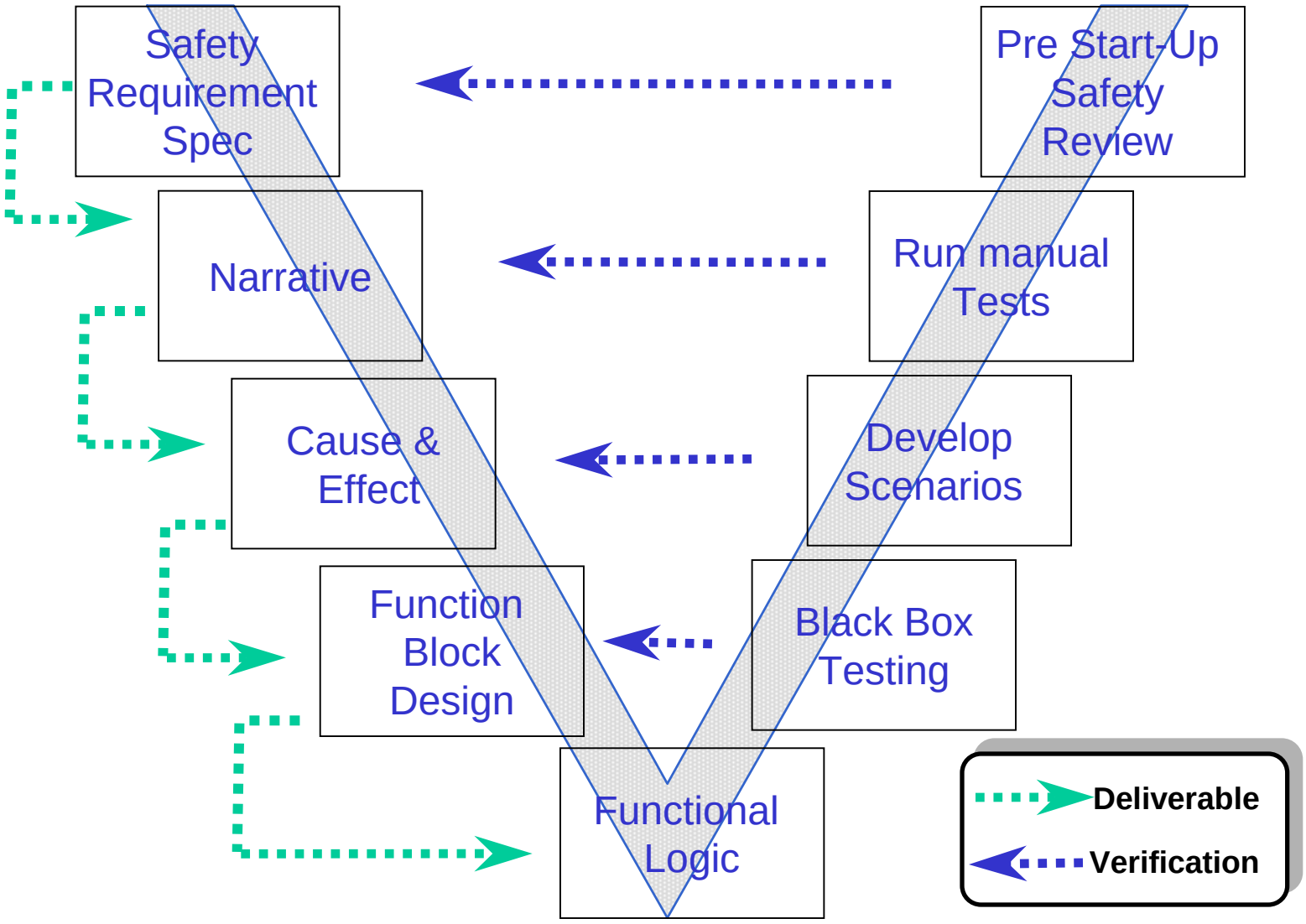
VP Link Advantages

- **Safer**, off the critical path, many more events can be **examined without damage** to actual equipment
- **No I/O required** , no wiring necessary, eliminate panel devices.
- **Easy to create** scenarios and/or automate the model
  → Valuable for repeated testing (**Off Line Test Bed**)
- **No changes to logic**, ie, test code which will execute in the field – fits **FDA and ESD** needs in particular
- **Flexible environment** specifically designed to create process response models and complete validation
- **Minimal** implementation time
- Improved Test quality (**“ 6 σ ”** objectives)

VP Link 3.0
5 steps to simulation

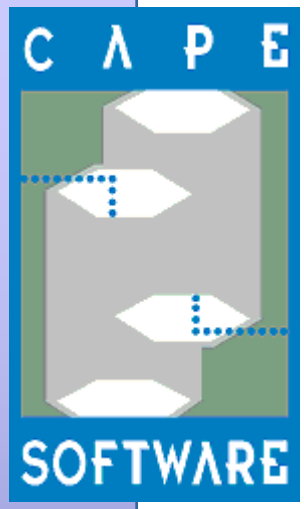
- Extract the I/O image,using built-in platform specific tools
- Import the image in VP Link
- Model the process, using loop templates, algorithms and CalcBlock
- Write tag based failure scenarios
- Connect to Control Components

V-Approach methodology: application to validation



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
- **Test Compiler complies with IEC61508/61511**

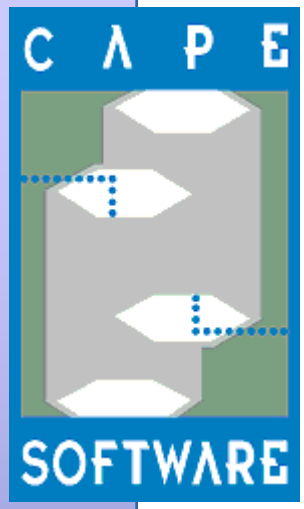


II - Goals of Operator Training

- Familiarize staff with HMI, Overlays, Navigation, Alarm Pages, Trend Displays
- Utilizing actual Programs / GUI for efficient training
- 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 (OTS) 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 Device) is easily integrated in the process model and OTS
- *HMI 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 *many industries*



Conclusion

- VPLink solves simulation needs from *simple to sophisticated*, rigorous modeling.
- OTS node can used as an engineering Test Bed system, for *preventive / periodical logic validation*
- *Unattended Real Time* trainee performance logs
- Modeling environment is *flexible,easy to learn and maintain*
- Available *New Version Service* keeps VP Link components up to date,with *free* technical support
- *Cost Effective* simulation package for *OTS*,using Off the Shelf components for process model and control or emulated control
- *Cross platform* functionalites makes VP Link an *evolutive investment*