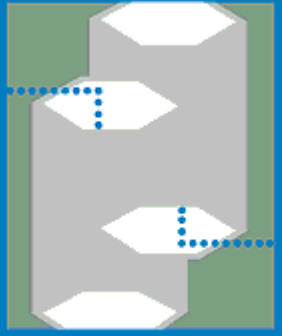


C A P E



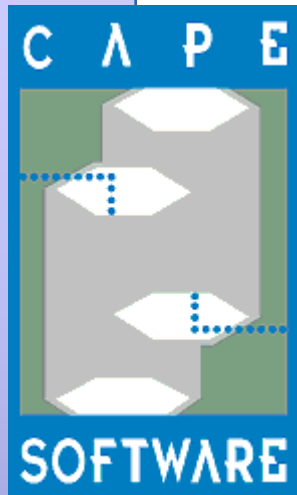
SOFTWARE

The background of the slide is a collage of various images related to industrial processes and software. It includes a green field with white circles, a glowing industrial structure, a person at a control panel, and a 3D model of an industrial plant.

The Virtual Process Overview and Applications

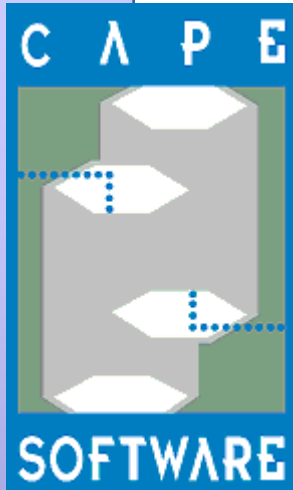
Cape Software Inc.

Houston TX



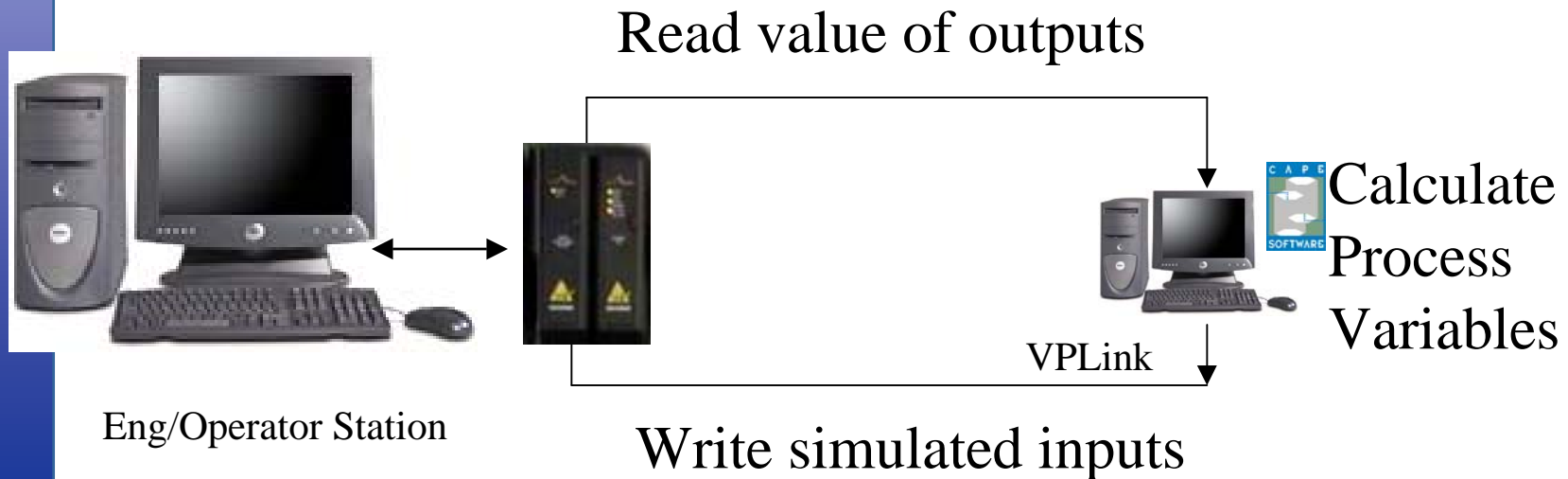
What is VPLink ?

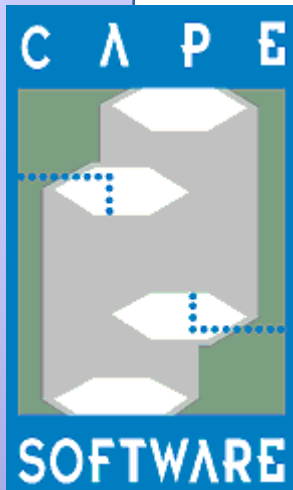
- A **representation** of the process **inputs** to an **offline control system**
- What does VP Link do?
 - **Read** control system **outputs**
 - **Calculate** the Virtual Process State – ie, Process Model
 - **Write values** for Process Variables
 - **Offer GUI** for engineer or instructor to present 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 – many plants across several sites W/W

TOTAL– Vlessingen, Netherlands

Eastman – Several Sites Licenses

Air Products & Chemicals – several systems W/W

ConocoPhillips –San Francisco, CA

ChevronTexaco – Several Sites Licenses

Phillips Refining – Several Sites Licenses

TrunkLine LNG – Baton rouge, LA



Lubrizol – multiple licenses Deer Park, TX

BP – several licenses at several sites

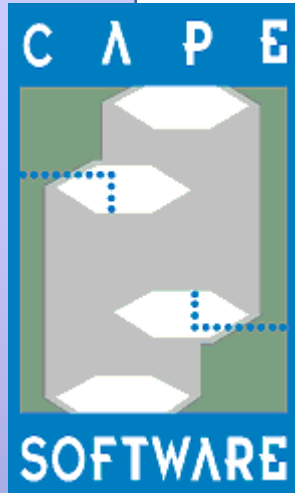
Shell Deepwater / Shell Chemicals, UK

Eli Lilly – Corporate licensing

Genentech – several licenses at different sites

General Mills – W/W licensing

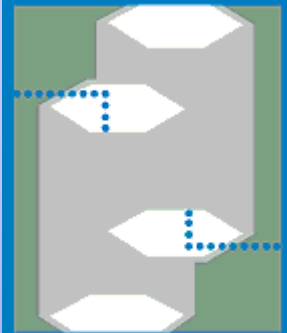
Murphy Oil - Mereaux, LA



Some Supported Systems

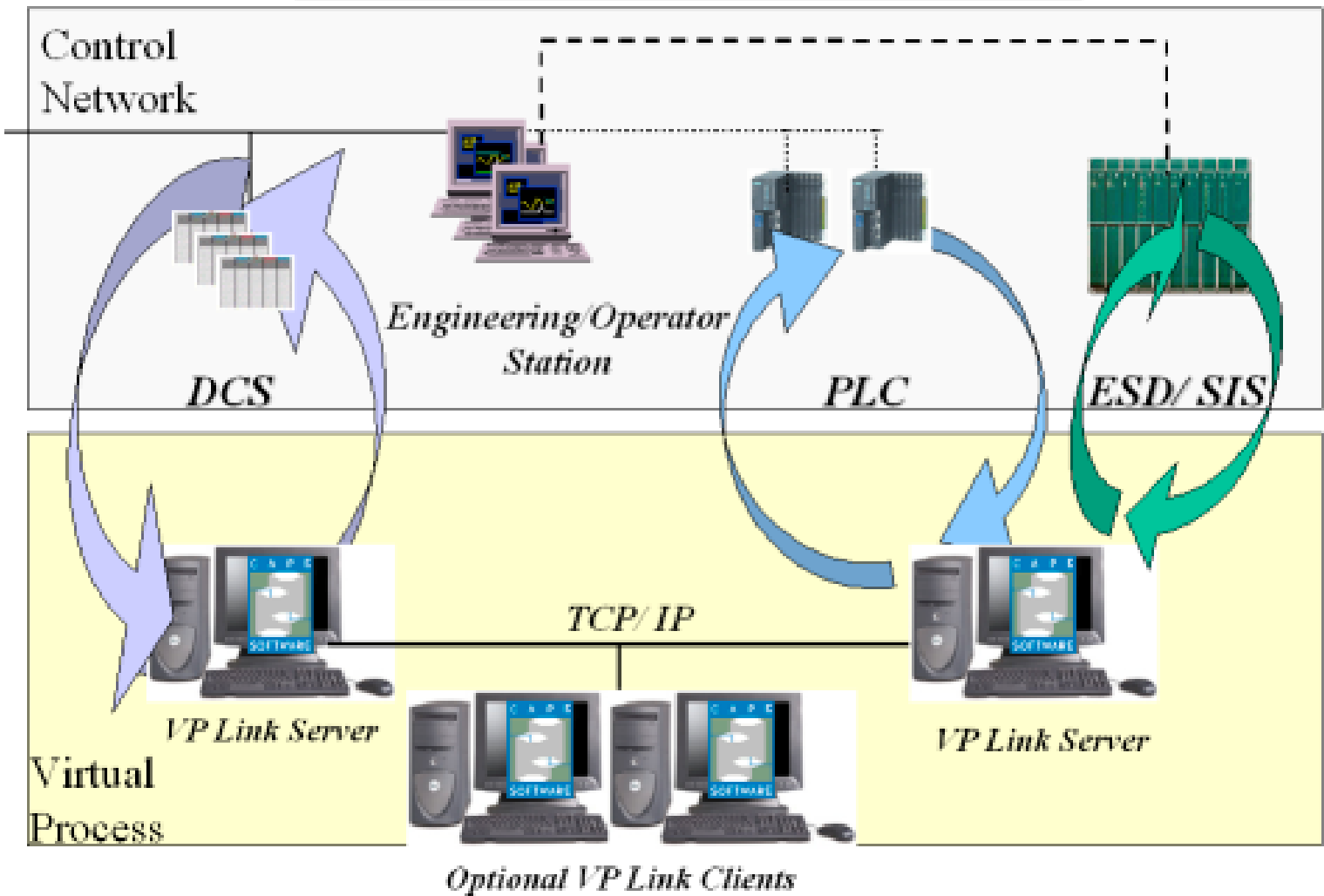
- Emerson DeltaV, PROVOX
- Yokogawa CS3000/R3/ ProSafe
- Triconex: Tricon/Trident
- ABB Mod300, Advant, Sattline
- Siemens Quadlog
- Foxboro I/A, Archestra
- Honeywell Plantscape / Rockwell ProcessLogix
- Honeywell TPS Honeywell FSC, PKS
- A-B PLC5/SLC500, CLX, Modicon, Siemens-Ti 505
- Siemens APACS,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

C A P E

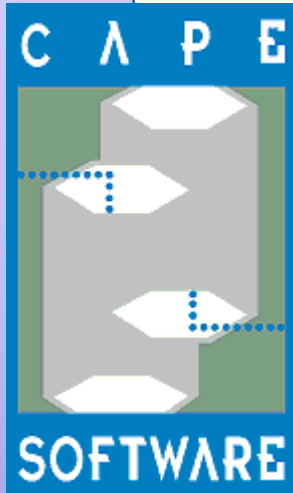


SOFTWARE

VP LINK 3.0 Sample Network

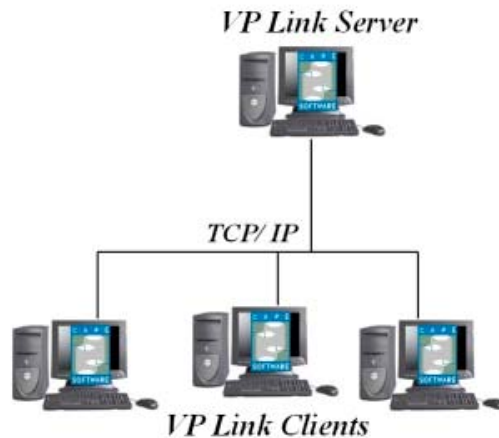


Control Network Systems are solving the logic, responding to simulated VP Link inputs



Different Architectures for different Applications

Testing Setup

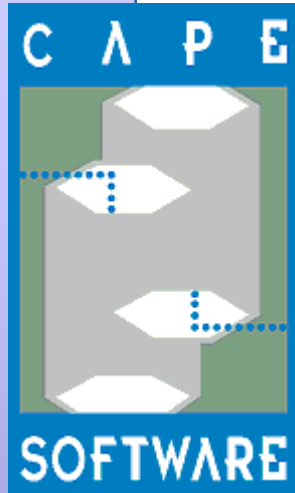


Engineers test logic in a collaborative fashion

Parallel Training Setup



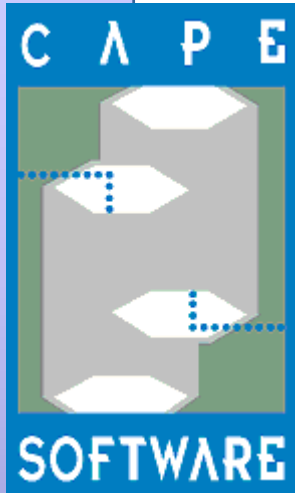
Trainees operate identical units, in parallel



VP Link 3.0

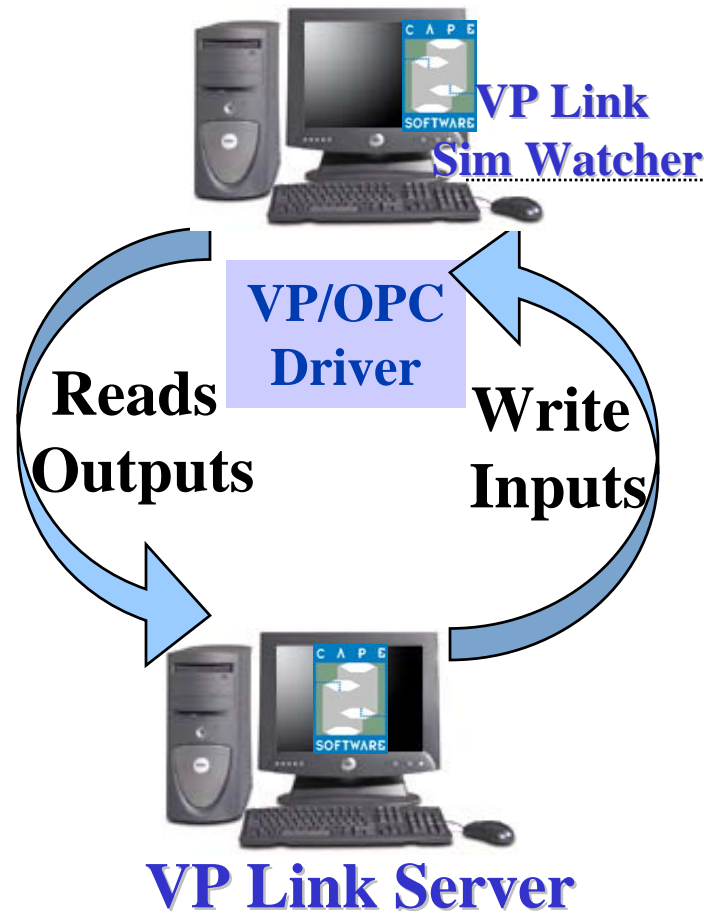
5 steps to simulation

- Extract the control systems I/O images, using platform specific tools
- Import the images in VP Link
- Model the process, using loop templates, algorithms and CalcBlock
- Write training/failure scenarios
- Connect to Controllers(real or emulated) through OPC



Sample VP Link Network For Emerson DeltaV

Proplus / DeltaV Simulate



Training Nodes

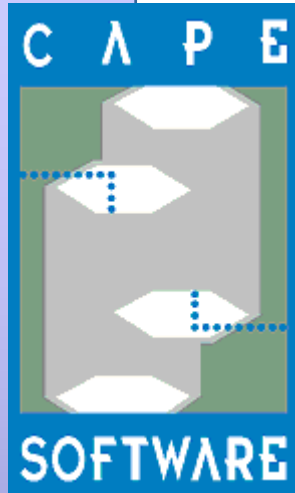


Operator Stations



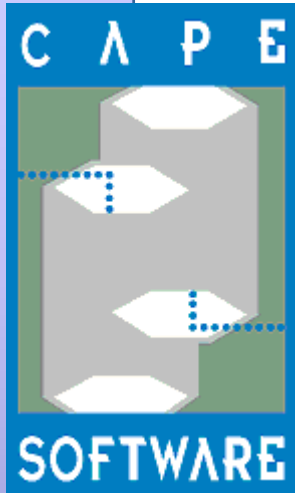
Optional DeltaV Controllers

DeltaV Network



Specifics : *VP Link for Delta V Interface*

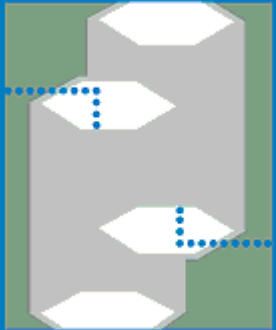
- Automated Extraction utilities
 - Based native fhx export file
- Easy Graphics Import in Toolbook
- Fieldbus conversion Tool
- DeltaV Sim Watcher
 - maintains blocks in Simulation mode,unattended
- Fast,Robust OPC Interface to Proplus /Stand Alone DeltaV Simulate



VP Link Applications

I - Logic Validation

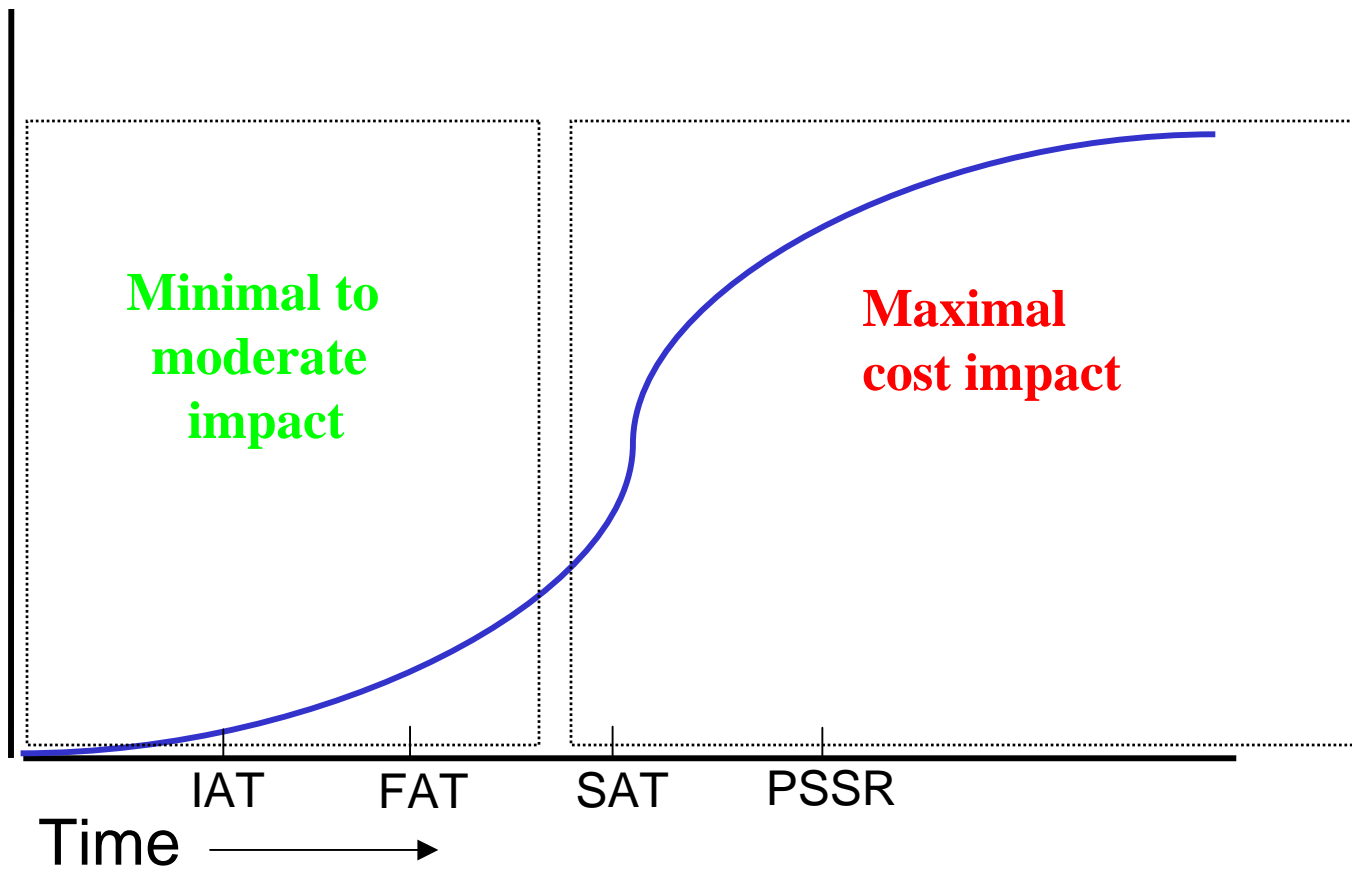
C A P E

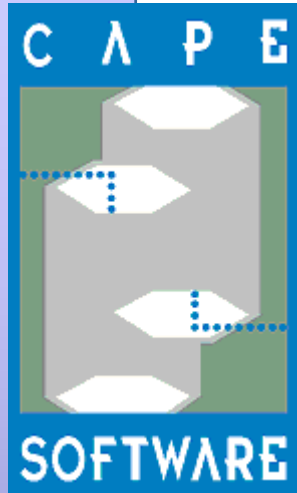


SOFTWARE

Impact of change during a project development cycle

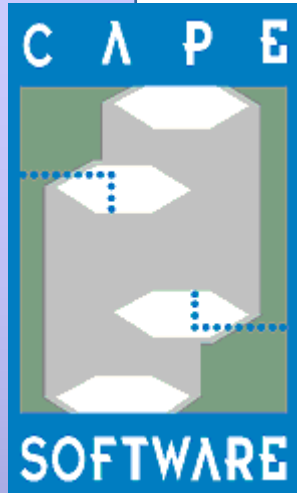
Incremental Cost





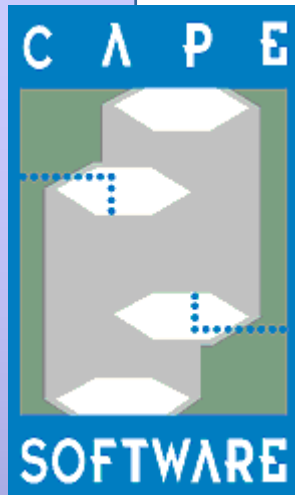
I - Logic Validation

- VP Link Allows:
 - Graphics verification
 - Logic checkout at I/O / block / module / system level
 - Interlock schedule approval
 - Integrated Testing :**Mapping** to DCS and interaction between DCS/PLC logic (gateway points tests)
- How ?
 - **Automates** repetitive testing task (ie resets etc...)
 - **Facilitates** FAT with customized graphics
 - **Collaborative** testing framework thru distributed architecture
- Thoroughly debug prior to online download, ie, **Management of Change** and periodical testing



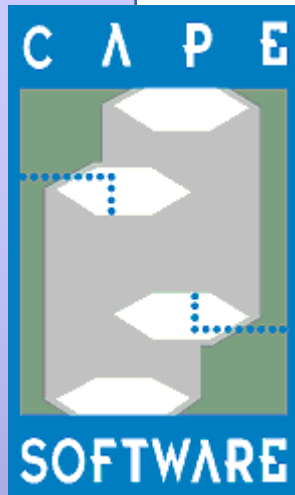
VP Link Applications

II- Operator Training Simulator (OTS)



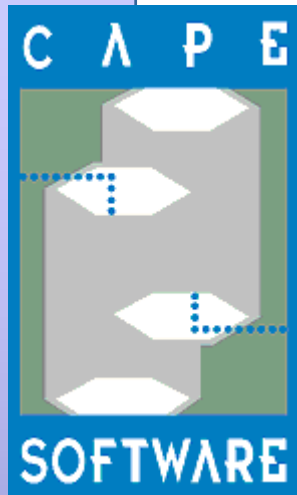
Goals of Operator Training

- 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 Module*)
- Knowledge Transfer Tool

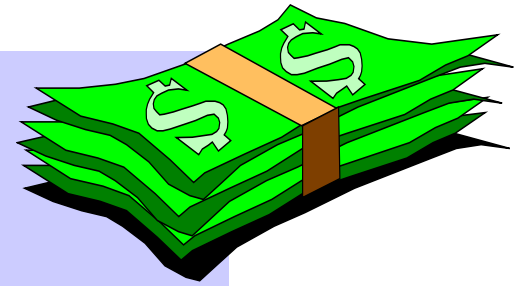


Operator Training System (OTS) using VP Link

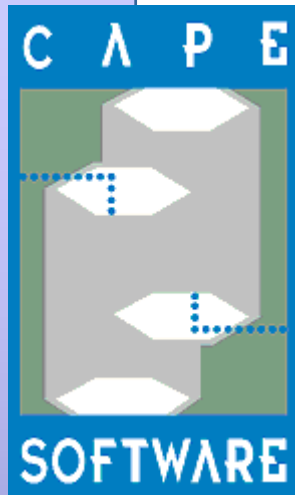
- *Real control program* is used, in same field controllers for realistic control response
- Trainees operate the virtual plant using the real *field consoles, graphics and keyboards*
- *ESD* (Emergency Shutdown Device) is easily integrated in the process model
- *HMI graphics are imported* in VP Link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



Resulting In...



- Reduced start-up time, due to thorough off-line testing of start-up logic.
- Reduced down time, due to on-going logic testing
- Reduced Factory Acceptance Test Time
- Reduced Risk of Equipment Damage
- Reduced Risk of Wasted Product.
- Reduced Risk of Environmental Release.
- **Documented, Validating Operator Sessions Logs**
- **Compliance with IEC/OSHA regulations**



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*