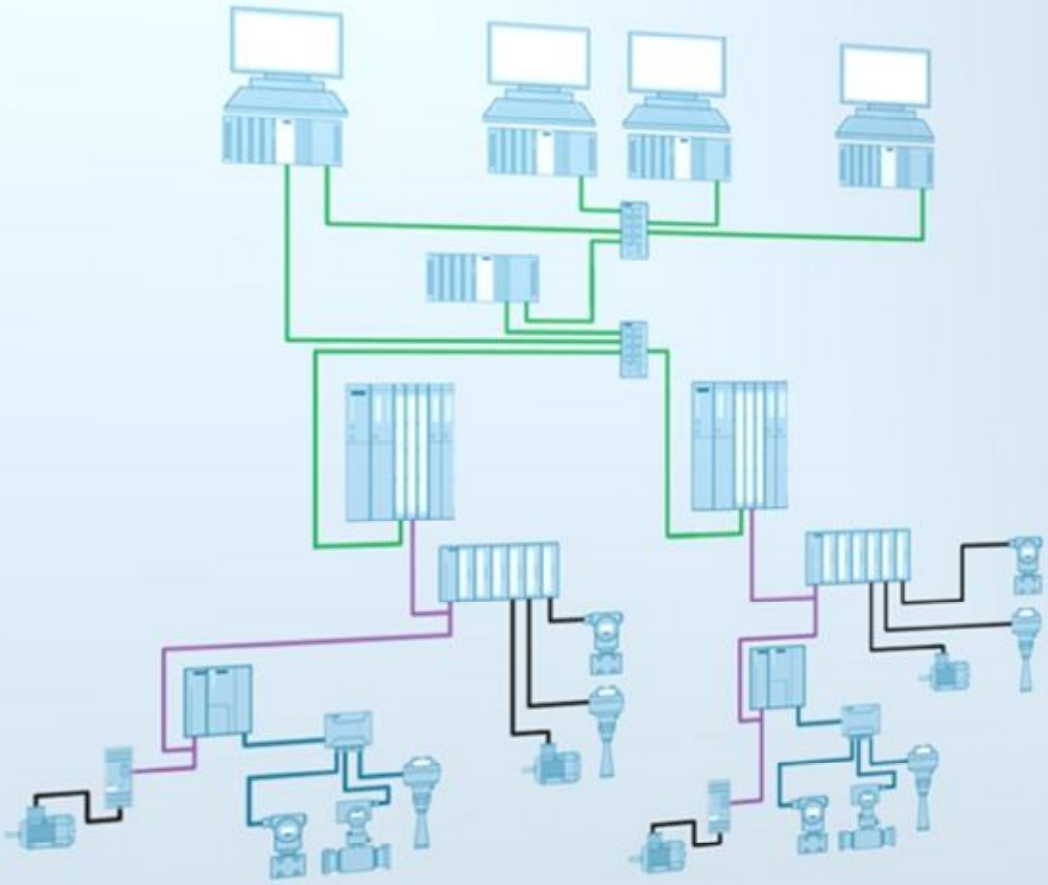
SIEMENS



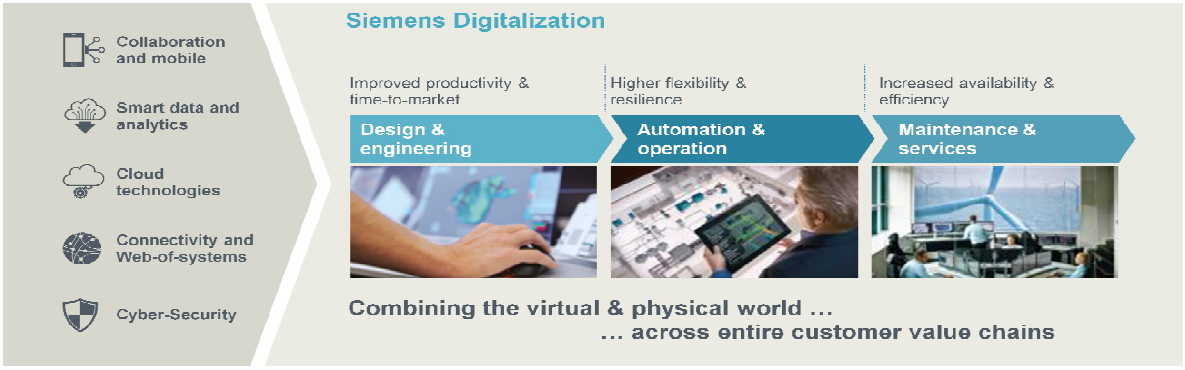
Siemens DCS with Simulation

Scalable, Flexible and Powerful DCS for Training, Simulation & Research

Offer exclusively for Educational Institution

Siemens terms its approach to Digitalization in industry and its way towards Industrie 4.0 the "Digital Enterprise"

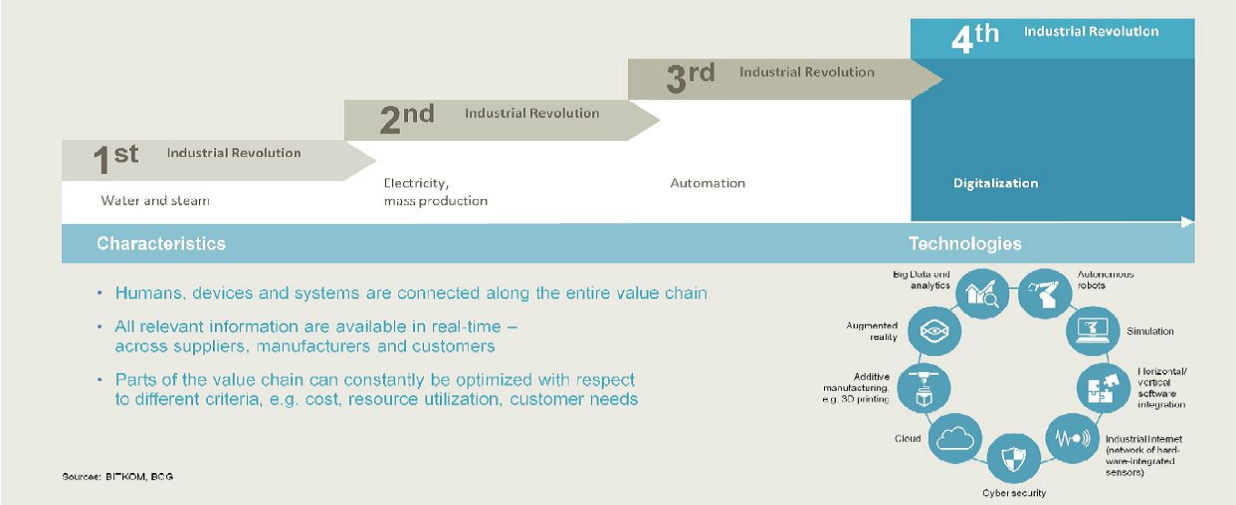
Siemens Digitalization-Leveraging digital technology trends for concrete customer benefits



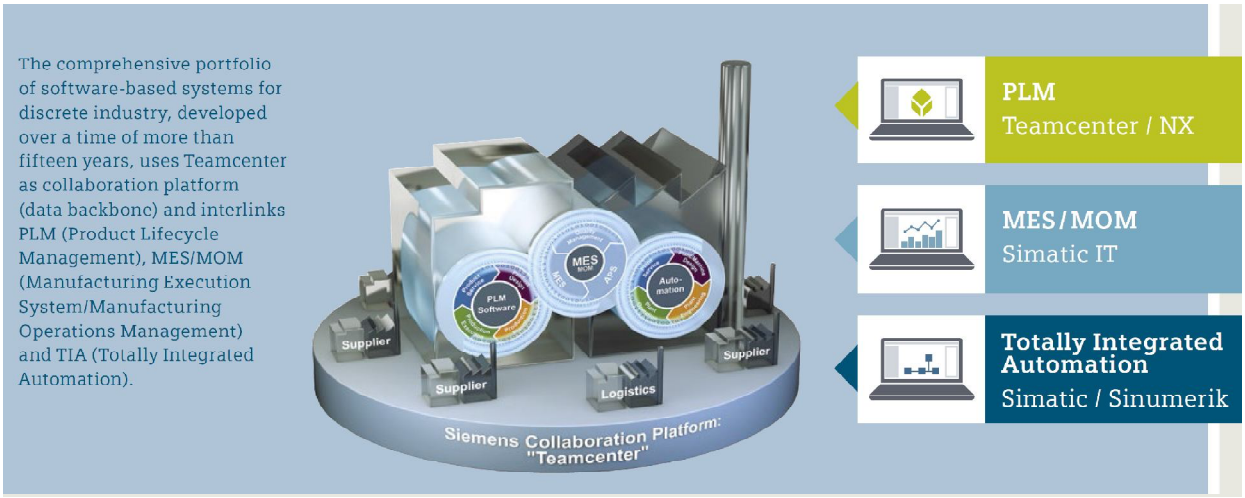
Our World is becoming ever more connected. Billions of intelligent devices and machines generate massive amount of data, creating a bridge between real and virtual worlds. Turning these vast amounts of data into value is a key success factor. In addition to regular automation, digital solutions are helping plant owners and operators to increase productivity, efficiency and create progressively innovative products. We are already able to offer the technologies of tomorrow – both hardware and software, for more efficiency, sustainability, and security.

Digitalization starts with the layout and design of the production process. Using an optimum software solution is essential to minimize design cost and time and provide for consistent data management. This digital thread is continued during installation and commissioning. Virtual testing and pre-commissioning of all automation and technological functions using state-of-the art simulation tools reduces setup times and failures alike.

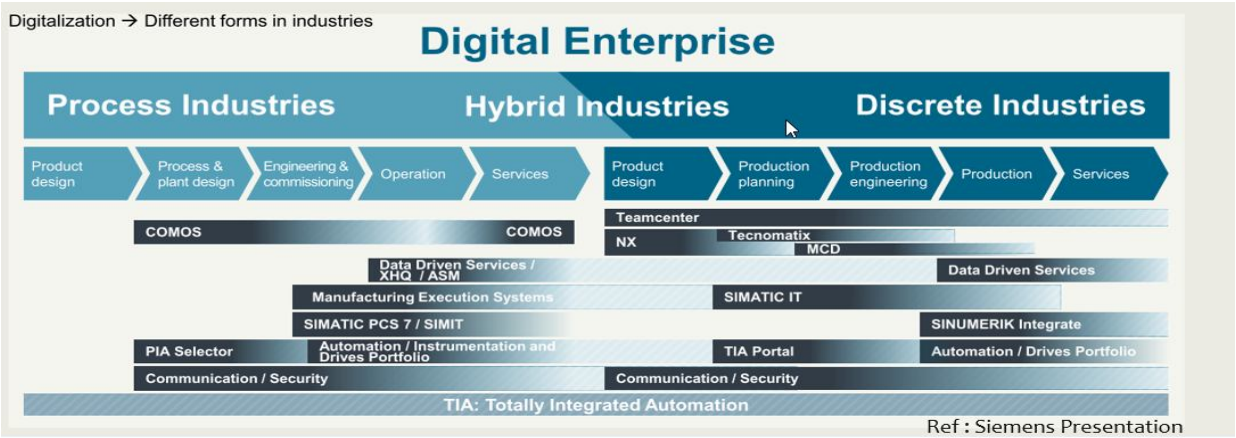
Industry 4.0 – The next level of Manufacturing

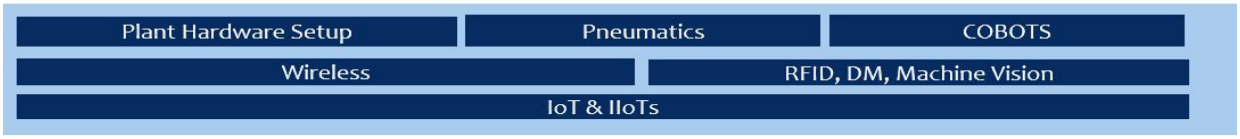


Digital Enterprise Software Suite

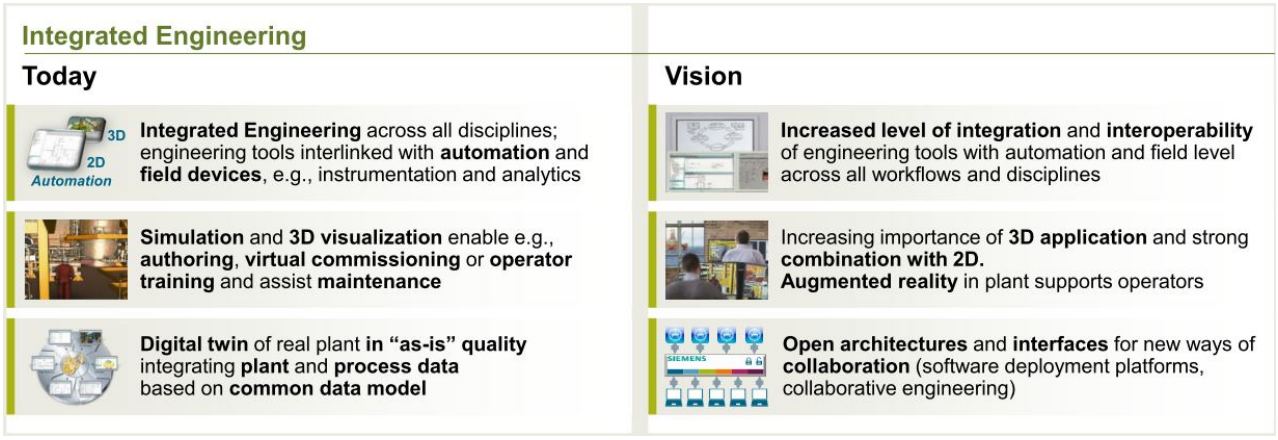


Add-ons Hardware and Software for Digital Twin Lab





Integrated Engineering: Virtual and Physical environments are being brought together.



With COMOS, SIMATIC PCS 7 & SIMIT, Siemens is the only company in the world to offer the process industry a software solution for the integrated management of plant projects – from engineering and operations to modernization as well as dismantling.

COMOS ensures that engineers and operators can access all project-relevant data at all times, across all company levels and in all project phases. SIMATIC PCS 7 is more than a DCS; it is Powerful, Flexible and Scalable. SIMIT is the automation simulation tool to simulate the automation and the process of any complex plant.

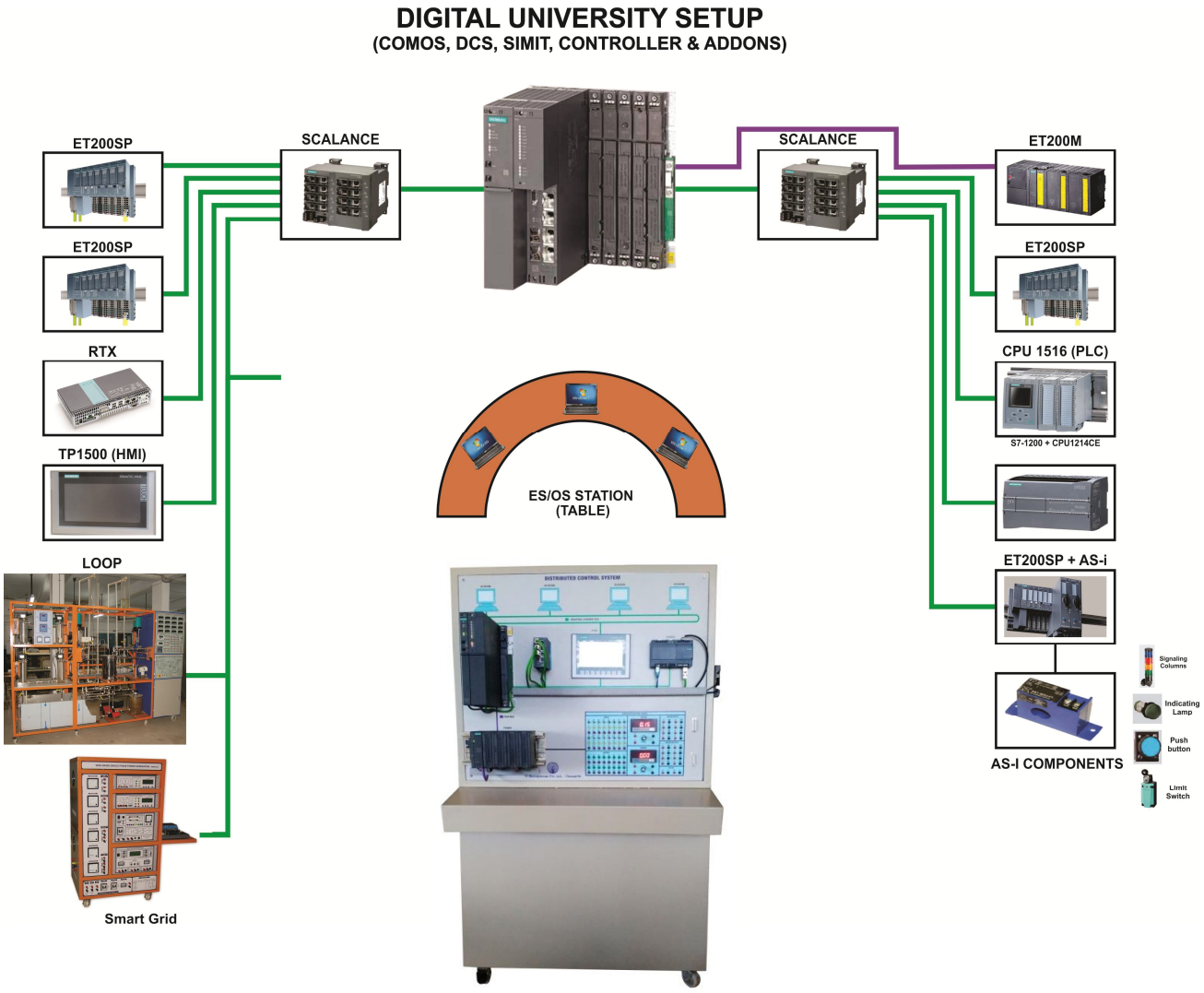
Industrial DCS-SCADA Trainer to build a Digital Factory or Digital University

Based on Siemens DCS Software PCS7 with its AS410 controller, a Industrial DCS has been designed. The basic unit consists of following Components.

i) Virtual Design/Simulation /Implementation Software
   # SIMIT : Simulation Software for Virtual Commissioning of a Plant
   # DCS Software : SIMATIC PCS7 Version 9.0
ii) Distributed Control System-SIMATIC PCS 7 Controller
   # AS410 Smart DCS Single/Redundant Controller for PCS7.
iii) Distributed I/Os
   # ET200PA – Distributed I/O Module

COMOS –SIMIT- PCS7 Integration can bring a Plant on a Desktop

Optional : COMOS Plant simulation Software

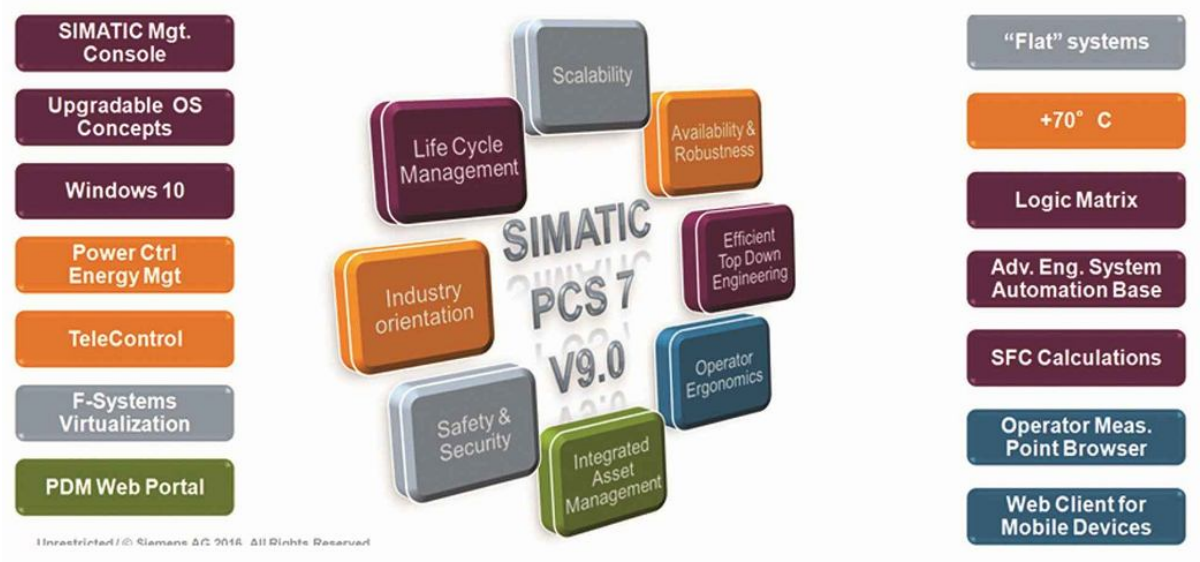


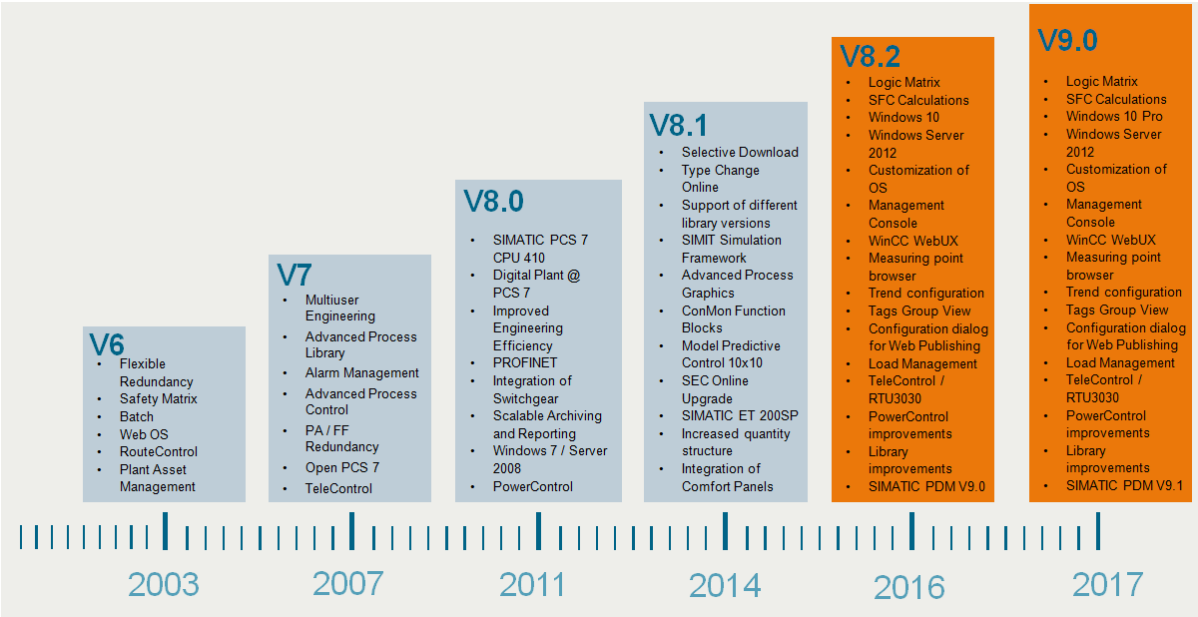
i) DCS Software SIMATIC PCS 7 Ver9.0 (3 Licenses)

* Ideal Software for control system in various infrastructures that can be implemented in Energy, Power Plant, Transportation, Pharmaceutical, University etc.,
* Supports Profinet for Industrial Networking in Digital Transformation of Discrete & Process Industry by providing plant wide communication in realtime for BigData.

List of PCS 7 Software Packages:

- Advanced ES V9.0 (FL)
- AS RT PO (CO: 2000, FL)
- AS Engineering V9.0 (FL)
- BATCH Units (CR: 10, SL)
- BATCH Single Station User V9.0 (SL)
- BATCH Single Station System V9.0 (SL)
- BCE V9.0 (FL)
- IEA V9.0 (FL)
- Maintenance ES V9.0 (FL)
- Maintenance RT (CR: 200, SL)
- Management Console V9.0 (SL)
- Management Agent (CR: 10, FL)
- OpenPCS 7 Station / OS V9.0 (SL)
- OS Engineering V9.0 (FL)
- OS RT PO (CR: 2000, SL)
- OS Server V9.0 (SL)
- OS Single Station Basic V9.0 (SL)
- OS Web Server Basic V9.0 (SL)
- OS Web Server (CR: 5, SL)
- PDM Basic V9.1 (FL)
- PDM Extended V9.1 (FL)
- PDM Integration in STEP 7 V9.1 (FL)
- PDM Routing V9.1 (FL)
- PDM Server V9.1 (SL)
- PDM TAG (CR:100, FL)
- Route Control Routes (CR: 10, SL)
- Route Control Center V9.0 (FL)
- Route Control Engineering V9.0 (FL)
- Route Control Server V9.0 (SL)
- S7-PLCSIM V5.4 (FL)
- SFC-Visualization V9.0 (FL)
- SNMP-OPC-Server Basic V14.0 (SL)
- SNMP-OPC-Server Power Pack V14.0 (SL)
- Version Cross Manager V9.0 (FL)
- Version Trail V9.0 (FL)
- Logic matrix V9.0





ii) Distributed Control System – Simatic PCS 7 Controller

AS410 Smart DCS Single/Redundant Controller for PCS7.

SIMATIC PCS7 AS 410 SMART UC PO800,CPU410 smart process Automation for S7-400 and S7-400H with 1X 120/230V UC 4A power supply, with UR2(9 slots) steel sub Rack, with system expansion card up to 800 process objects, already assembled and tested.

- Supply voltage : 5 VDC @1.7A
- Ram
  For program : 4 MB
  For Data : 4 MB
- Load Memory, Integrated : 48 MB
- Number of S7 Connections: 120
- Interface X1 : PROFIBUS DP
- CPU : Multiprocessor, 450MHz
- Interface X5 : PROFINET IO WITH 2 PORTS
- Interface IF1 : Sync module slot
- Interface IF2 : Sync module slot

iii) ET200PA –Distributed I/O Module

ET200PA is a Scalable and extremely flexible distributed I/O system for connections of Process Signals to PCS7 via Profibus.

i) D/I Module – 32Channel
ii) D/O Module – 32Channel
iii) AI Module – 8 Channels
iv) AO Module - 8 Channels

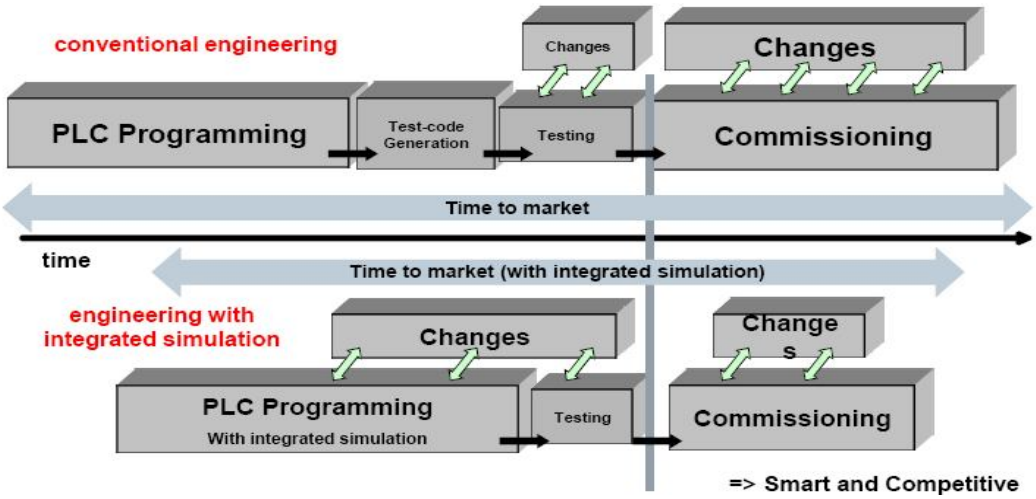
iv) SIMIT – Siemens Solution for Automation Process Simulator

Simulation is one of the key essential tools in Process Automation, which helps to address all customer needs during project execution phase. This is mainly required to:

- Reduces risk and time during commissioning phase
- Improves Program code quality by pre-testing and analysis
- Assures shorter Time-to-market; as it shortens project duration and delivery time

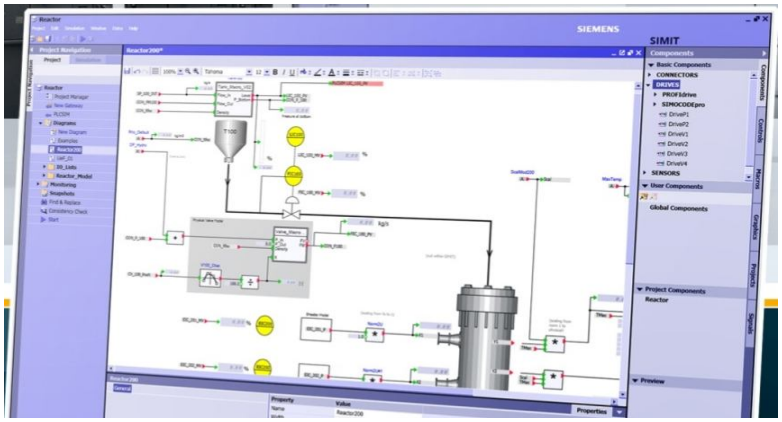
Why SIMIT Simulation

- With training simulators one can repeat the steps as many times to keep updated with mandatory knowledge of safe plant operation.
- Training on simulator is much safer and less costly than on actual plant
- Extreme situations can only be trained on a simulator as training on an actual plant might result in loss of people and equipment.
- Supports import of schematic from COMOS and PCS7
- Provided with Chem basic library for chemical and pharmaceutical plant simulation
- Integration of various 3D designing software like NX with flexible interfacing option like SHM coupling
- To Improve automation engineering & easy configuration of PLC Sim Advanced
- An ideal tool to study the Switch gear components
- Tight Integration of COMOS, SIMIT, PCS7 & NX (CAD,CAM,CAE)



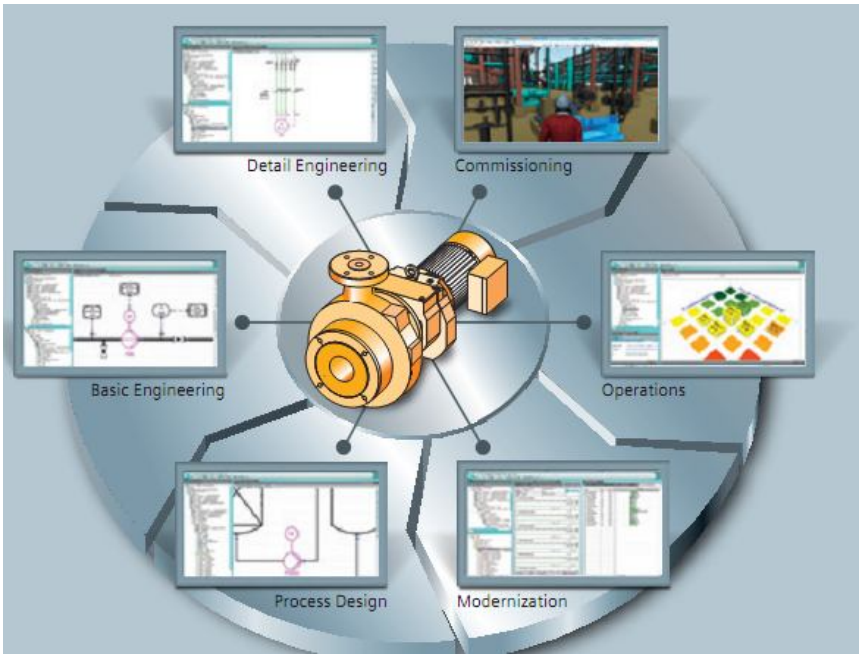
SIMIT provides real time dynamic simulation for S7/PCS 7 projects, with or without hardware availability. Typical simulation purposes:

- I/Os and connection check Logic and Control loop check
- Alarm and messaging test
- Sequence test
- Interlock check
- HMI controls and visualization test
- Acts as Virtual Controller
- Operator training system
- For simple to complex processes
- Virtual commissioning and operator training of challenging automation projects and plant operation.
- Faster commissioning of complex projects
- Tight integration of SIMIT is connected to proper actuators and sensors.



Optional:

COMOS Plant Simulation Software



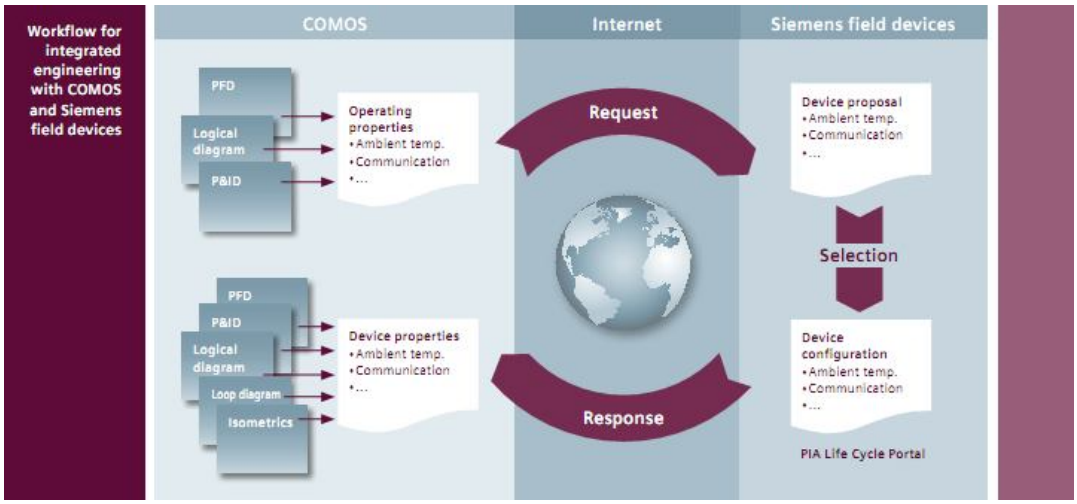
COMOS: Comprehensive Information Management Life Cycle with PCS7 & SIMIT Integration

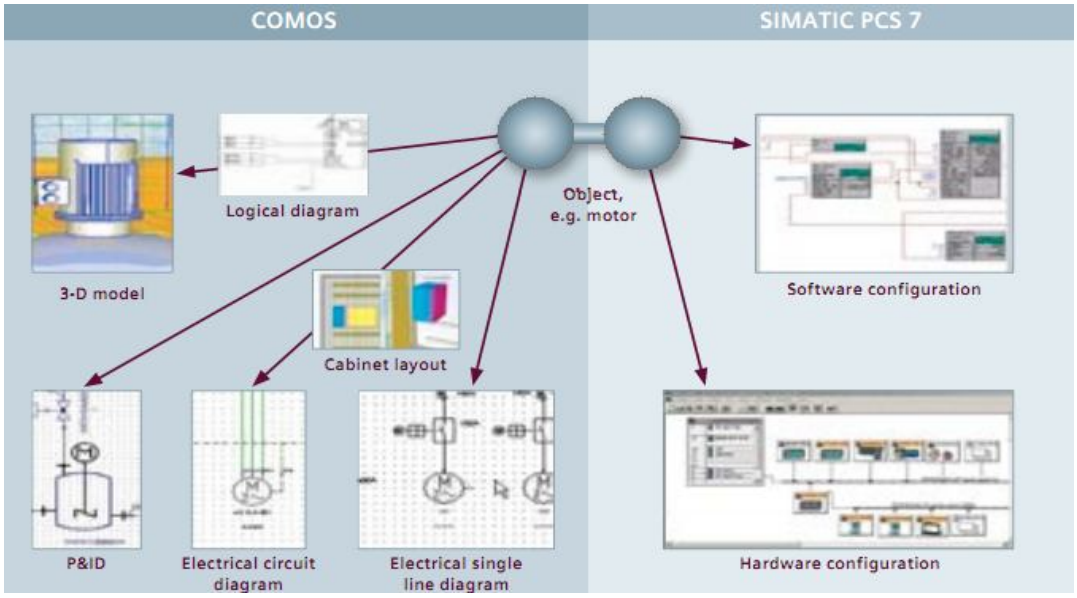
Integrated software solution for EI & C and fluidics as well as function and automation planning in a single system.

Electrical, instrumentation and control engineering as well as the automation of processes represent important parts of plant engineering and may comprise of a large amount of data. The safe and reliable transfer of this data necessitates optimum integration of the individual disciplines.

This is where COMOS Automation comes in as the ideal software solution as it guarantees seamless data consistency from the electrical engineering right down to the full automation of complete systems. With COMOS EI&C, COMOS Fluidics and COMOS Logical, all areas of EI&C technology, control technology, fluidics, function planning and automation are covered and optimally interlinked.

This facilitates consistently controlled bidirectional data flows between the individual disciplines. Also optimum interlinking with the COMOS Process and COMOS Operations modules is ensured. This results in improved quality, minimized expenditures and increased productivity.





The complete plant information is stored in a central database. As a result, COMOS allows all disciplines and departments involved in the engineering and operating phases to always access the same data for a given object. Objects can be processed in COMOS bidirectional on data sheets as well as in technical drawings. This means that changes to objects or documents are always available to every user worldwide, whatever the time zone, and that they are up-to-date and consistent. The entire plant, right down to the individual components, can be examined and further developed from a functional and interdisciplinary perspective.

The open system architecture of COMOS can be adapted to exactly meet company-specific requirements, allows links to third-party systems and can be integrated into existing EDP (Electronic Data Processing) landscapes.

The Add on unit consists of

SIEMENS IoT 2040 Gateway based IoT Development System

SIMATIC IoT 2040 is an Industrial IoT Gateway, reliable open platform for collecting, Processing and transmission data. It helps the students to get the industrial IoT experience and develop Industry 4.0 Projects rapidly.

*** IoT 2040 Gateway**

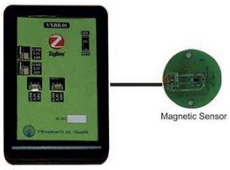
- PLC and sensors of many brands can be integrated through Ethernet & Serial ports.
- Open Protocols: Modbus, Profinet, REST or MQTT, AMQP, OPC UA
- Based on Intel Quark X1020 , (x86)@400MHz
- Compatible With Open Source Software Arduino IDE and Yocto Linux
- High level language support : Java, Python, C/C++
- 1 GB RAM, 8MB Flash ,256KB SRAM
- Micro SD card Slot up to 32GB
- Arduino Uno – R3 Compatible
- Intel Wi-Fi + Bluetooth Module for 300MB data rate

WiFi Device

Add on Modules in IoT2040

* 2Nos of RS485 slave modules with feature like
  - 2 Nos of Digital Inputs and 2 Nos of Digital Outputs

* 1No of RS232 module with feature like
  - 2 Nos of Digital Inputs and 2 Nos of Digital Outputs



ZigBee Device

* 802.11 b/g/n standard

* 1Mbps data rate

Zigbee End Device with sensor

* 802.15.4 protocol

* 250Kbps data rate

LoRaWAN End Device with sensor

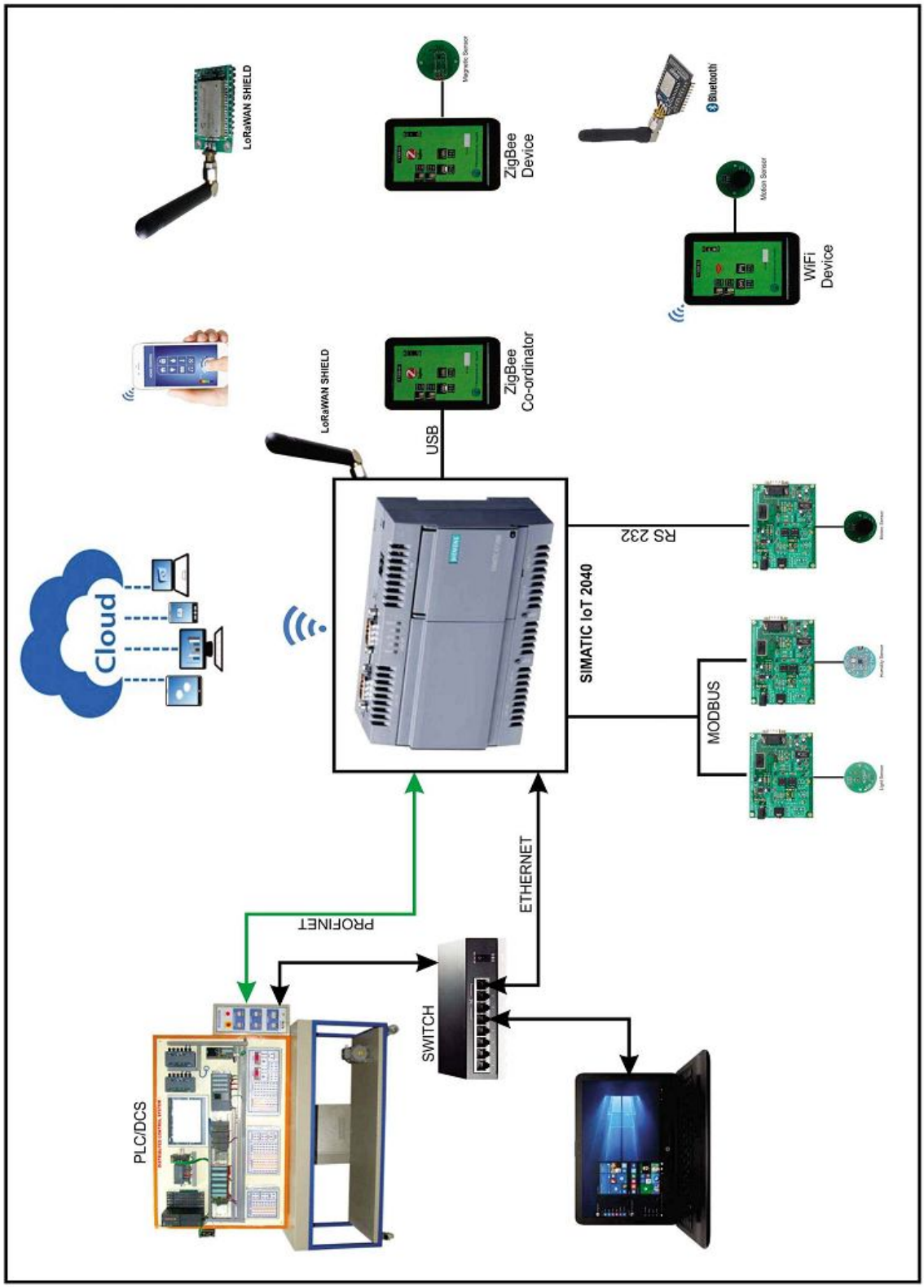
* LoRaWAN uses lower radio frequencies with 8 longer range

* LoRaWAN uses the 863-870 MHz

Wi-Fi Bluetooth Card

* Dual-stream (2x2) & Dual-band.

* Wi-Fi plus Bluetooth 4.0 product with Wi-Fi Direct combines faster speeds (up to 300 Mbps).



Vi Microsystems Pvt. Ltd.,

Plot No.75, Electronics Estate, Perungudi, Chennai - 600 096, Ph: 044 2496 1842
E-mail: sales@vimicrosystems.com, web: www.vimicrosystems.com