

Honeywell CAPE-OPEN Update

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Honeywell

Today's Agenda

- **About Honeywell and UniSim Design**
- **CO-LaN Consulting Project Update**
- **Some Other Thoughts about CAPE-OPEN**
- **Closing Remarks**

Honeywell Today

**Automation and
Control Solutions
(ACS)**

34%

Transportation Systems

10%

Aerospace

31%

**Performance Materials
and Technologies (PMT)**

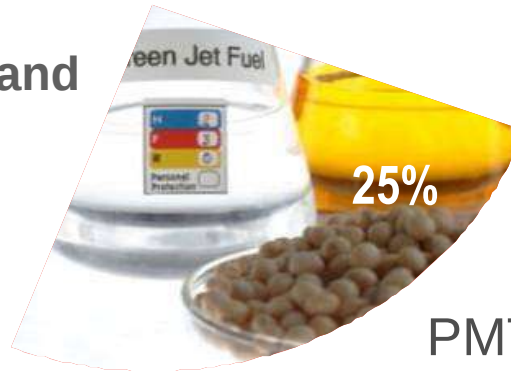
25%

- A Fortune 100 company – \$39.2B in sales
- 122,000 employees in over 80 countries
- Over \$1.5B spent annually on R&D

Diverse Businesses, Technologies and Products

Honeywell PMT Today

Performance Materials and Technologies (PMT)



PMT Portfolio of Businesses:

- **Process Solutions (HPS)**
- UOP
- Fluorine Products
- Resins and Chemicals
- Specialty Products
- Electronic Materials



Synergy in R&D, Products and Customers

Honeywell Process Solutions (HPS)

World leader in automation solutions for the process industries

Strengths:

- Installed base (>\$16B)
- Global coverage
- Applications and domain knowledge
- Legacy system evolution
- Innovative technology
- Project execution capability

Customer Offering:

Greenfield Services



Provides automation solutions for new plants, led by Oil & Gas, BioPharma, Chemicals in emerging regions.

Migration, Maintenance Services



Provides maintenance services and technology modernization to enable existing plants to run smoothly.

Advanced Software Solutions



Provides services and software which enhance the performance of a plant beyond original expectations.

Field Solutions



Provides products (field devices, sensors, wireless controllers) sold direct & thru channels. Enabler for Performance Services.

Our Business is Aligned to Meet Customer Needs

Challenge

UniSim CAPE-OPEN Unit-Op Socket was based on Visual Basic 6 (VB6). It has several language related weaknesses:

- The code structure is much more difficult to understand than C++, maintenance and improvement are very difficult.
- The VB6 program in general is more computational expensive than a well structured C++ program.

The small print:

- Socket uses current registered UniSim type library, in our case, it will use the last launched UniSim Design, easy to make mistakes.
- Socket not compatible with earlier UniSim Design versions
- Identification of reasons for calculation failure not easy to determine.

Scope of the Project

- Convert the current VB6 based CAPE-OPEN Unit-Operation (UO) socket to a new one based on C++
- All the original supported functionalities should be supported by the new UO socket.
- Support older cases stored by UniSim with the CAPE-OPEN UO

More Details:

- A Dll should be registered with UniSim to operate as a plug-in unit operation.
- Allow the user to select a third party CAPE-OPEN based UO
- Provide the bridge between UniSim and UO
- Implement the material objects (MO), representing the streams, connected them to the UO and provide stream conditions and physical property calculations to the UO
- Allow store and recall of the UO
- Allow editing of the UO
- Interact with the reporting facilities of the UO
- Interact with the parameters of the UO

Difficulties Overcome

- A COM-C++ new structure for the new CAPE-OPEN UO socket has been well designed
- Some functionalities have been changed in the new version to allow for an efficient and error free operation of the new CAPE-OPEN UO socket.
- Keeps backward compatibility so the old cases stored in UniSim with CAPE-OPEN UO can be recalled by using UniSim with the new CAPE-OPEN UO socket.

Improvement and Defects Fixed in the New UO Socket

- The UI has been improved for better user experience
- Implement the energy material object for CAPE-OPEN UO socket
- The CAPE-OPEN Unit-Op icon has been improved so that user can use mouse to connect the streams with UO now
- The phase property access has been improved by using single phase flash.
- Add unit of measure support in the new CAPE-OPEN UO socket View
- Improve the unit of measure persistence in the saved case

Outcomes

- CO-LaN consultancy service helped accelerate development.
 - Access to expert services
 - Technology transfer and training
 - Expert Stakeholder input to development process
- CO-LaN consultancy service improved user experience
 - Improved GUI design and workflow
- CO-LaN consultancy service improved product quality
 - Reported defects addressed

➤ Customer Needs

- Desirable to link flowsheet to specialty technologies that are well recognized in industry.
 - HON Position - Understand needs and develop with stakeholders
- Expand the reach of UniSim Design into many specialized areas.
 - HON Position – Provide solutions to user problems
- Simplify the engineering workflow and improve the productivity of the process/design engineer.
 - HON Position – Understand and develop through engagements
- Protect customer IP.
 - HON Positioning – Flexibility in meeting need through partnership and collaboration.

[Discussion point: CO value prop is interoperability. How does this map to our understanding of customer needs?]

- Technical Approaches available
 - Embedded technologies – very tight integration
 - Custom Direct Links with specific API
 - Generic Links OLE and CAPE-OPEN

[Discussion point: CAPE-OPEN approach has not disrupted/displaced other integration approaches in the market]

How do users view
CAPE-OPEN approach?
What problem does it solve today?

- Option for integration
- Protection of IP
- Re-use of assets

CO value prop is
interoperability.
How to quantify business
value of this benefit
vs. cost vs. alternative?

Value is derived through use.
When do users “rent” CO
Technology to do a job and when
do users “rent” alternative to
get the job done?

- CO-LaN consulting service very successful – **Definitely recommended.**
- Honeywell CAPE-OPEN positioning
 - Continued support and involvement in the CAPE-OPEN
 - Important Integration solution option
 - Work with customers to understand business value and trade-off investment effort based on prioritized needs

Thank you for your attention