

Modeling and CAPE-OPEN

How CAPE-OPEN technology may help in the development and maintenance of models?

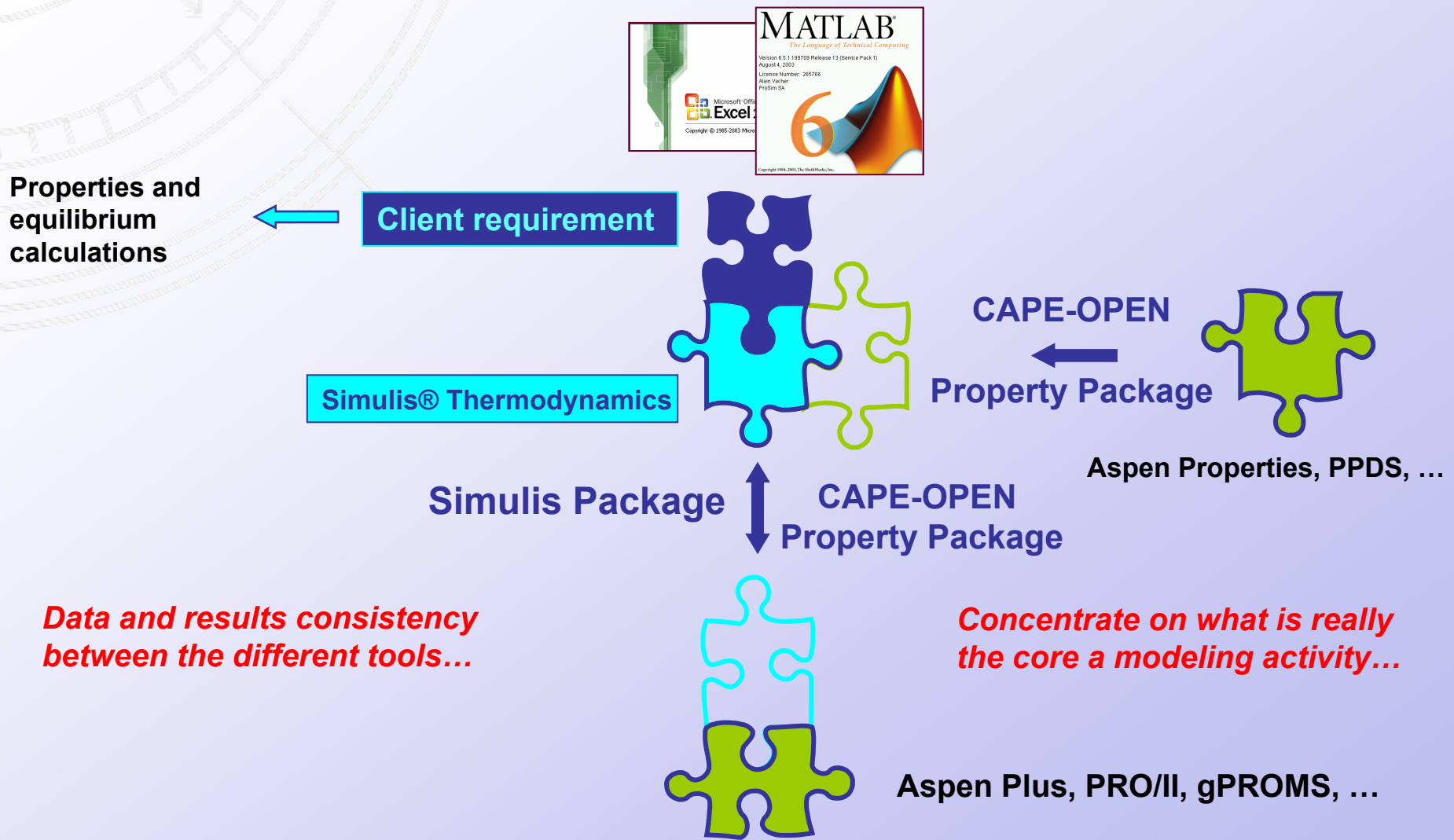
CAPE-OPEN Laboratories Network



2nd US Annual CAPE-OPEN Meeting

- ▼ **Linking Fluent to process simulators**
 - ⇒ Increased usage by US DOE
 - ⇒ New Vision 21 project incorporates CO technology
- ▼ **CO compliant process simulator from US EPA**
 - ⇒ Released as open source
- ▼ **Demonstration of increased interoperability in thermodynamics and unit operations**
- ▼ **IPOPT NLP optimizer made CO compliant by CMU**
- ▼ **Commitment by Honeywell on UniSim CO features**

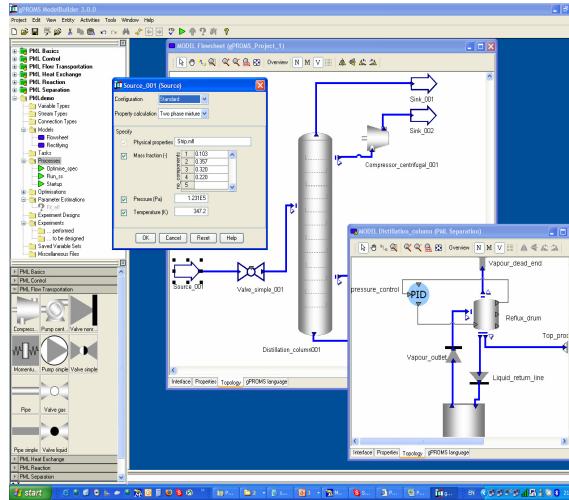




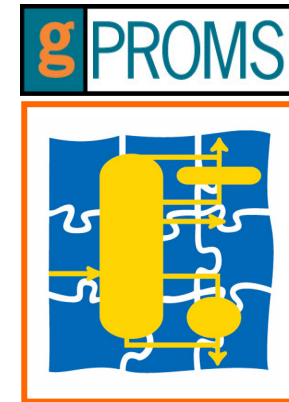
gPROMS CAPE-OPEN Unit Operation



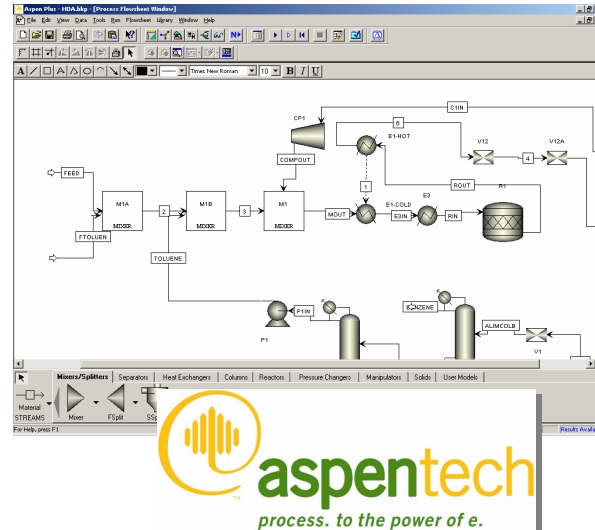
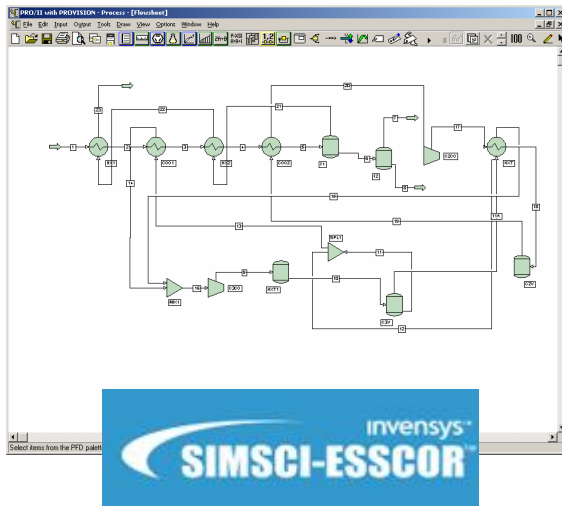
gPROMS ModelBuilder



Making advanced models deployable



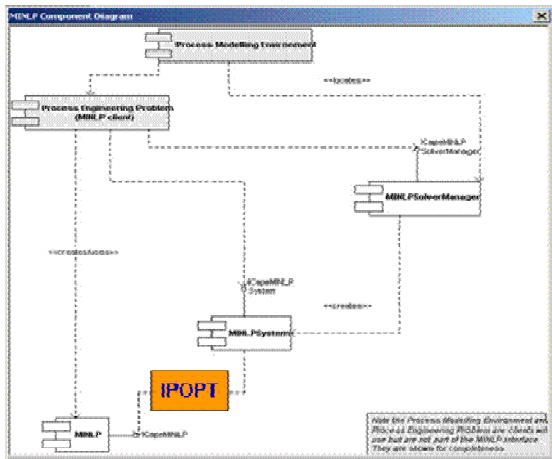
gO:CAPE-OPEN



User Meeting
2005

IPOPT NLP Solver from CMU

- State of the art algorithm
- Made CO Compliant as a COM component



Tested for CO compliance
In the CO Tester

MINLP Problem Creation - C:\Documents and Settings\Yidong\My Documents\My DATA\CAPE-OPEN\From Michel\Tester\CO...

	X1	X2	X3	Y1	Y2	Y3	Log(X2+1)	Log(X1-X2+)	Constant	Type
OF	0	0	0	-7	5	6	7	18.0	19.2	10 Min

	X1	X2	X3	Y1	Y2	Y3	Log(X2+1)	Log(X1-X2+)	LB	UB
C1	0	0	0	-8	0	0	0	0.8	0.96	-Inf 0
C2	0	0	-1	0	0	-2	0	1	1.2	-Inf 2
C3	-1	1	0	0	0	0	0	0	0	-Inf 0
C4	0	1	0	1	-2	0	0	0	0	-Inf 0
C5	1	-1	0	0	-2	0	0	0	0	-Inf 0
C6	0	0	0	1	1	0	0	0	0	-Inf 1

	X1	X2	X3	Y1	Y2	Y3
Integers	False	False	False	False	False	False
LowerBound	2	0	0	Inf	0.1	0.2
UpperBound	4	2	3	1.1	1.2	1.3

Buttons: Load, Save, Clear, Launch

MINLP Solver Tester

CAPE-OPEN MIHLP Tester

GCOpoptWrapper_v6.CapeMINLPSolverManager
 GCOpoptWrapper_NET.CapeMINLPSolverManager
 GCOWrapper.CapeMINLPSolverManager.1
 GCOpoptWrapper.CapeMINLPSolverManager.1

MINLP Solver ProgID: GCOpoptWrapper_NET.CapeMINL

MINLP Solver Tester

MIHLP Solver

	Is supported ?
IUnknown	YES
IDispatch	YES
ICapeIdentification	YES
ICapeMINLPSolverManager	YES
ICapeNumericSolver	YES

All needed interfaces are implemented

MINLP Solver ProgID: GCOpoptWrapper_NET.CapeMINL