Analyzer Reliability System based on OSIsoft's PI System in MOL Refining & Marketing Division

Presented by

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MOL

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“Trust, but verify”

Ronald Reagan

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Agenda

- Problem
- Connection
- Structure
- Solution

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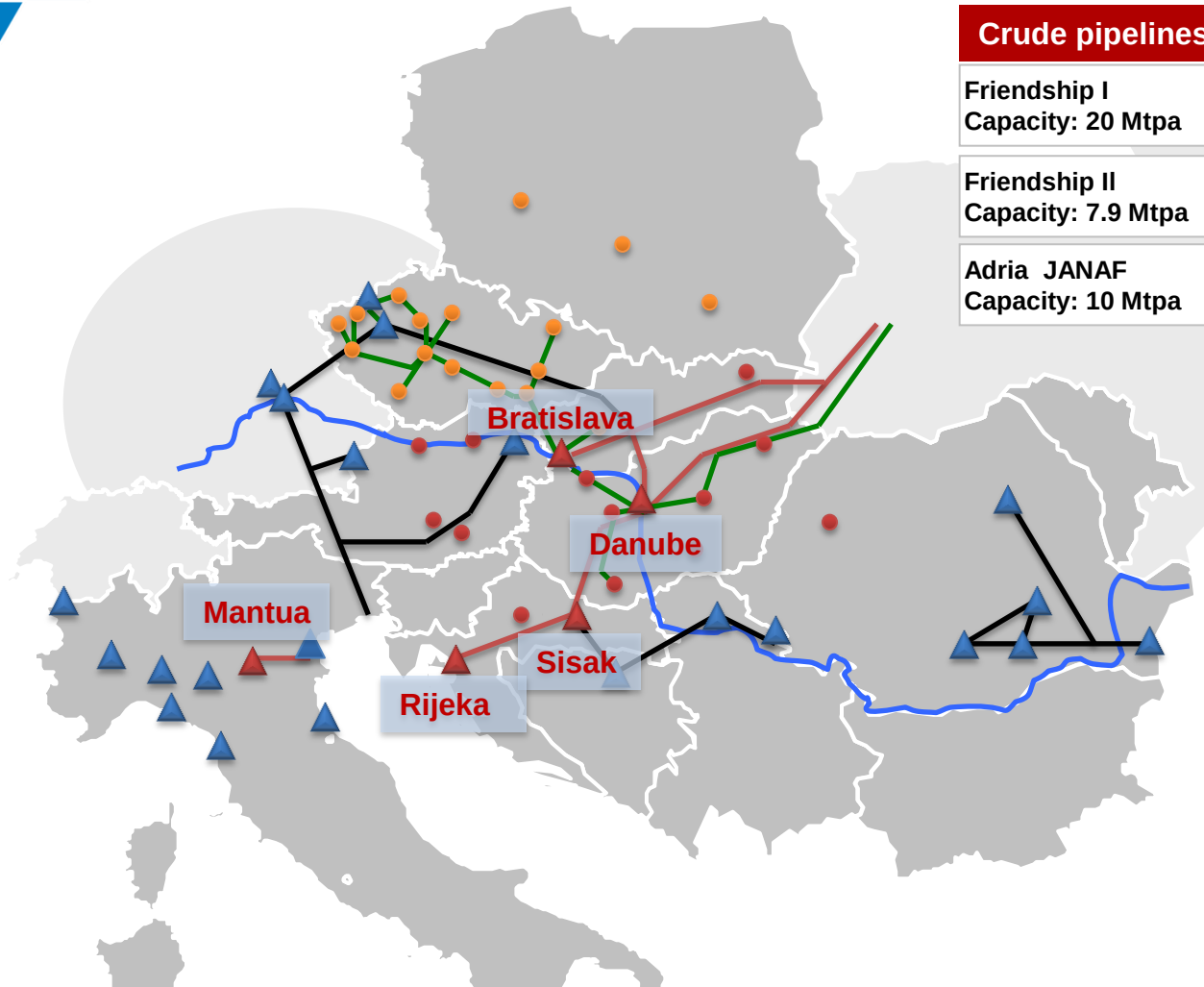

Crude pipelines

Friendship I
Capacity: 20 Mtpa

Friendship II
Capacity: 7.9 Mtpa

Adria JANAF
Capacity: 10 Mtpa

Refineries

DUNA
Capacity: 8.1 Mtpa
NCI: 10.6

BRATISLAVA
Capacity: 6.1 Mtpa
NCI: 11.5

Mantua - IES
Capacity: 2.6 Mtpa
NCI: 8.4

RIJEKA
Capacity: 4.5 Mtpa
NCI: 5.8

SISAK
Capacity: 2.2 Mtpa
NCI: 6.1

- MOL Refinery
- MOL Own depot
- MOL Rented depot

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About MOL Group

- One of the largest multinational corporations in Central Europe
- 2009 Net sales revenue: ~ 15,94 mn. USD
- 2009 Market capitalization: ~ 9,4 Bn. USD
- 32,410 employees

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About MOL Group

Exploration & Production

- Activities in 15 countries
- Producing assets in 7 countries 142.5Mboe/day

Refining & Marketing

- 5 refineries in 4 countries (Hungary, Slovakia, Italy, Croatia)
- 23,5 mtpa capacity
- 1686 filling stations in 10 countries

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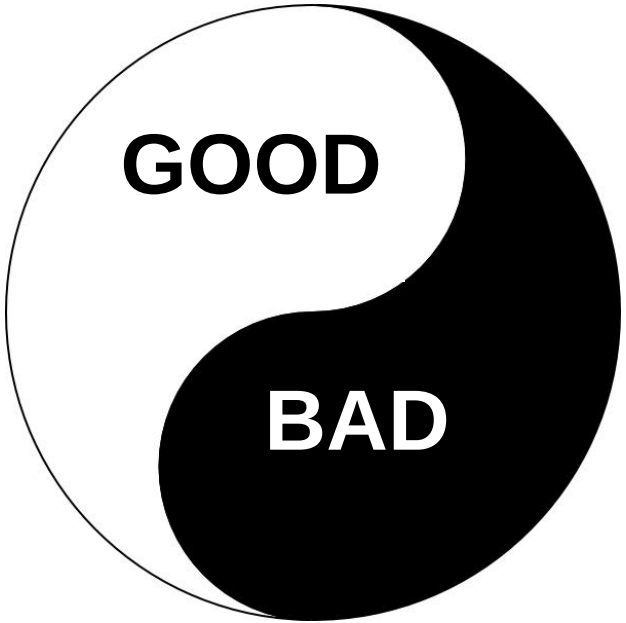
The problem itself

On-line analyzers

- Measure process quality
  - Control
  - Calibration
  - Sampling



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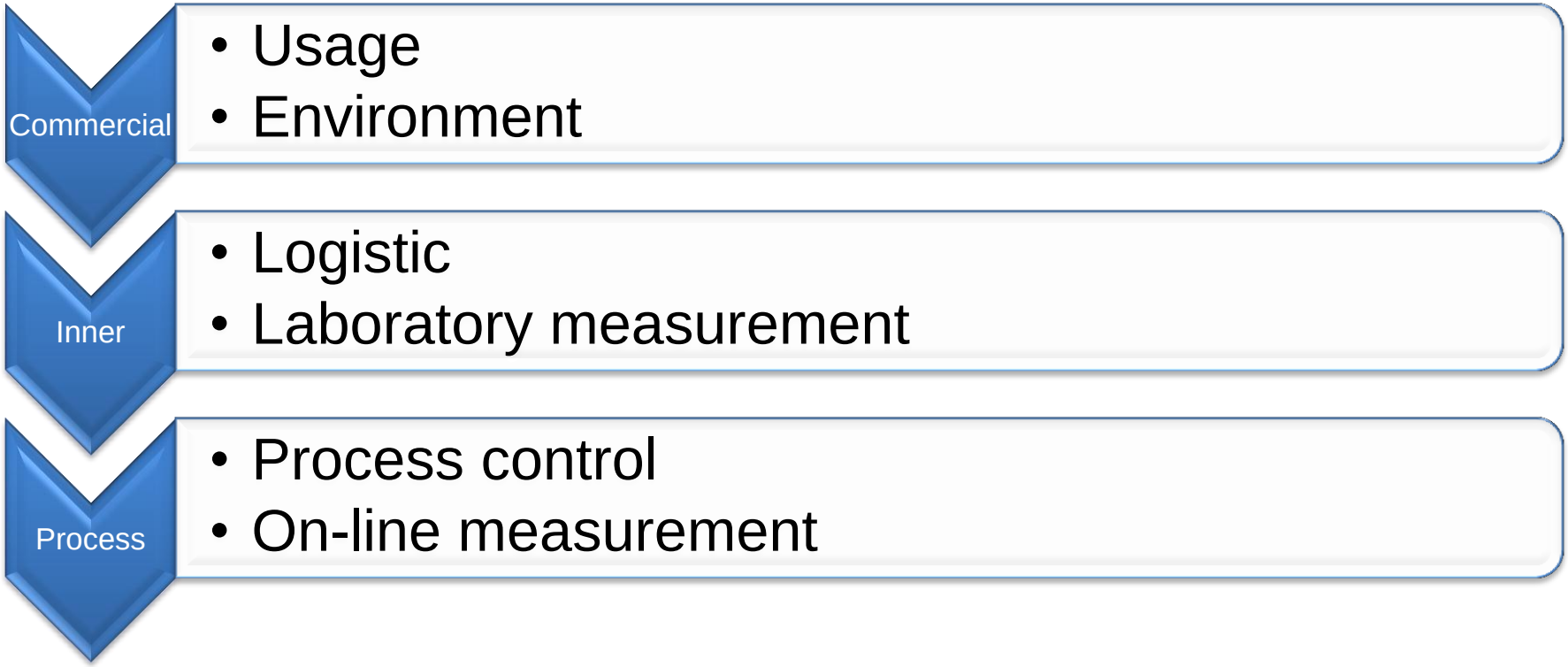
Quality limits



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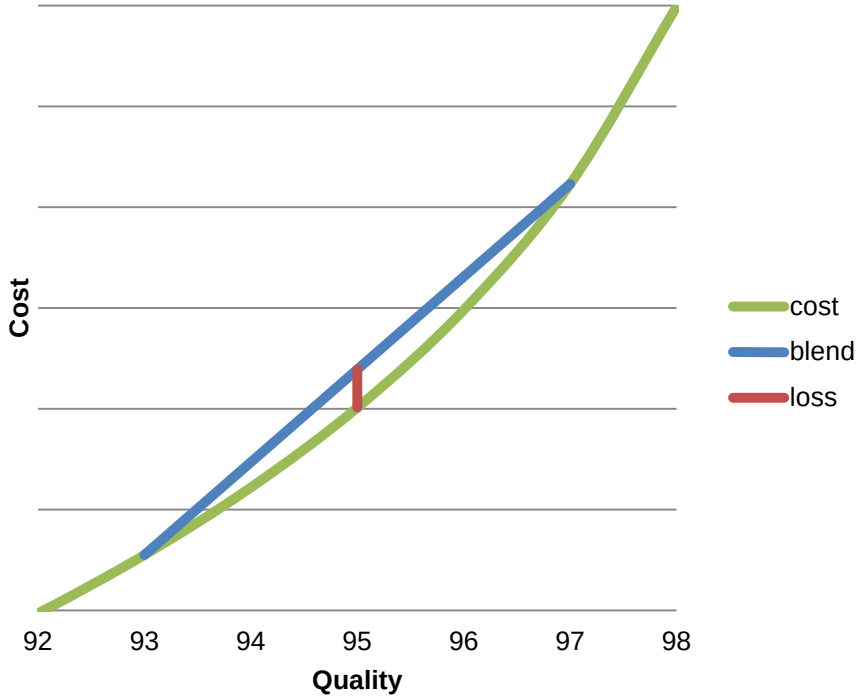
Quality control



Close to limits

- Energy
- Quantity

Variability

- Energy

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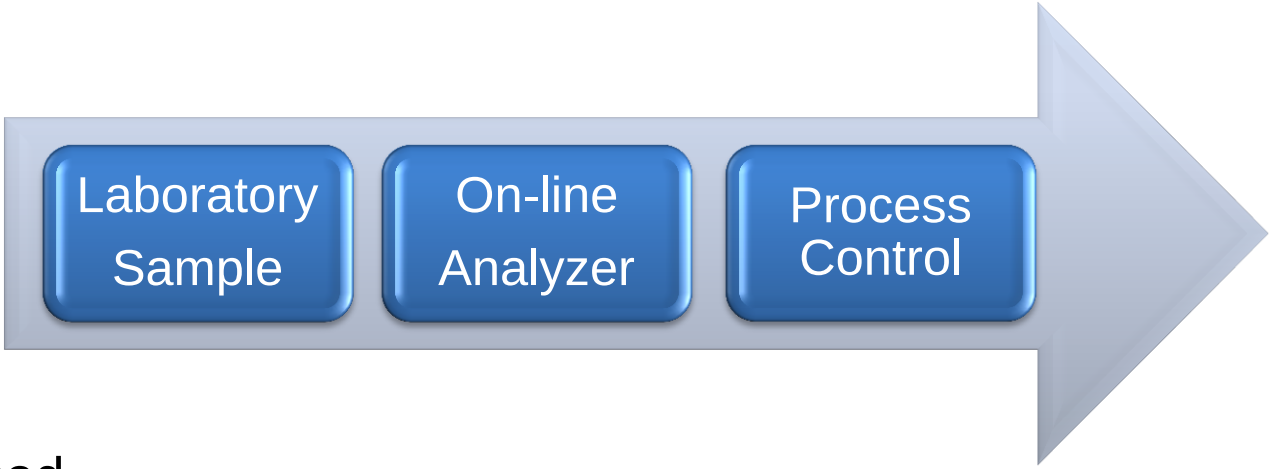
Calibration and sampling



Calendar based

Why calibrate, if it’s good?

Why measure by lab if the analyzer stable?

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The Basis

- Analyzer values – PI System
- Laboratory values – LIMS

- Cross check by operators

- Calibration by maintenance
- Sampling by laboratory
- No one used the other system

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PI System

- PI Server
- PI DataLink – Data browsing, small applications
- PI ProcessBook, PI WebParts – SPS based website
- PI API – for application development
- PI MDB – used at a later point in time
- Sigmafine – material balancing

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Connection

- PIMS module
- LIMS add-in
- Uses PI API
- Full compatibility
- UoM converter

Server	Tag	Order...	Acce...	Analysis	Component	Time ...	Time field	..	Status	Pr...	Sampling point
FIR_PI	DARDRQI011A.PV	1046	Read	7000_PI_KOMP	Össz. Paraffin	Sample	sampled_date	0	Active		DARD101FJKI_M
FIR_PI	DARD101FJKI_NAROM...	645	Write	5318_ARTRM	Nehezebb aromások	Sample	sampled_date	0	Active		DARD101FJKI_M
FIR_PI	DARD101FJKI_OXILOL...	643	Write	5318_ARTRM	o-Xilol	Sample	sampled_date	0	Active		DARD101FJKI_M
FIR_PI	DARD101FJKI_TOLUO...	1014	Write	5318_ARTRM	Toluol	Sample	sampled_date	0	Active		DARD101FJKI_M
FIR_PI	DARD101FJKI_PARAF....	1015	Write	5318_ARTRM	Össz. Paraffin	Sample	sampled_date	0	Active		DARD101FJKI_M
FIR_PI	DARDADE002	557	Write	0050_SURUS	Sűrűség 15 °C-on	Sample	sampled_date	0	Active		DARD108FEN_M
FIR_PI	DAROAROMATKI_O_X...	1031	Write	5208_AR1GC	o-Xilol	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROAROMATKI_IPR...	52	Write	5208_AR1GC	i-Propil-benzol	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROAROMATKI_M_H...	181	Write	1170_SZINH	Szín HAZEN egységben	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROAROMATKI_NAR...	1032	Write	5208_AR1GC	Nehezebb aromások	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROAROMATKI_OSS...	1033	Write	5208_AR1GC	Összesen (megosztott)	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROAROMATKI_PAR...	1034	Write	5208_AR1GC	Össz. Paraffin	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROADE004	559	Write	0050_SURUS	Sűrűség 15 °C-on	Sample	sampled_date	0	Active		DAROAROMATKI_M
FIR_PI	DAROADE003	560	Write	0050_SURUS	Sűrűség 15 °C-on	Sample	sampled_date	0	Active		DAROC9FRAKCIO_M
FIR_PI	DAROOXILOLKI_BT.LA	1019	Write	5208_AR1GC	Benzol	Sample	sampled_date	1...	Active		DAROOXILOLKI_M
FIR_PI	DAROOXILOLKI_OXIL...	1021	Write	5208_AR1GC	o-Xilol	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DAROOXILOLKI_IP_BE...	1022	Write	5208_AR1GC	i-Propil-benzol	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DAROADE002	561	Write	0050_SURUS	Sűrűség 15 °C-on	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DAROOXILOLKI_C9.LA	1024	Write	5208_AR1GC	Nehezebb aromások	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DAROOXILOLKI_PARA...	1023	Write	5208_AR1GC	Össz. Paraffin	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DAROOXILOLKI_M_XIL...	1020	Write	5208_AR1GC	m-Xilol	Sample	sampled_date	0	Active		DAROOXILOLKI_M
FIR_PI	DXILAAGB5BE_PARAF...	1025	Write	5208_AR1GC	Össz. Paraffin	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DXILAAGB5BE_MXILO...	1030	Write	5208_AR1GC	m-Xilol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DXILAAGB5BE_PXILOL...	1029	Write	5208_AR1GC	p-Xilol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROADE001	562	Write	0050_SURUS	Sűrűség 15 °C-on	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_M_XILO...	37	Write	5208_AR1GC	m-Xilol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_P_XILO...	19	Write	5208_AR1GC	p-Xilol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_ETIL_B...	49	Write	5208_AR1GC	Etil-benzol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_O_XILO...	48	Write	5208_AR1GC	o-Xilol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_OSSZ_...	47	Write	5208_AR1GC	Össz. Paraffin	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DAROXILOLKI_TOLUO...	46	Write	5208_AR1GC	Toluol	Sample	sampled_date	0	Active		DAROXILOLKI_M
FIR_PI	DXILAAGB5BE_TOLUO...	1026	Write	5208_AR1GC	Toluol	Sample	sampled_date	0	Active		DAROXILOLKI_M

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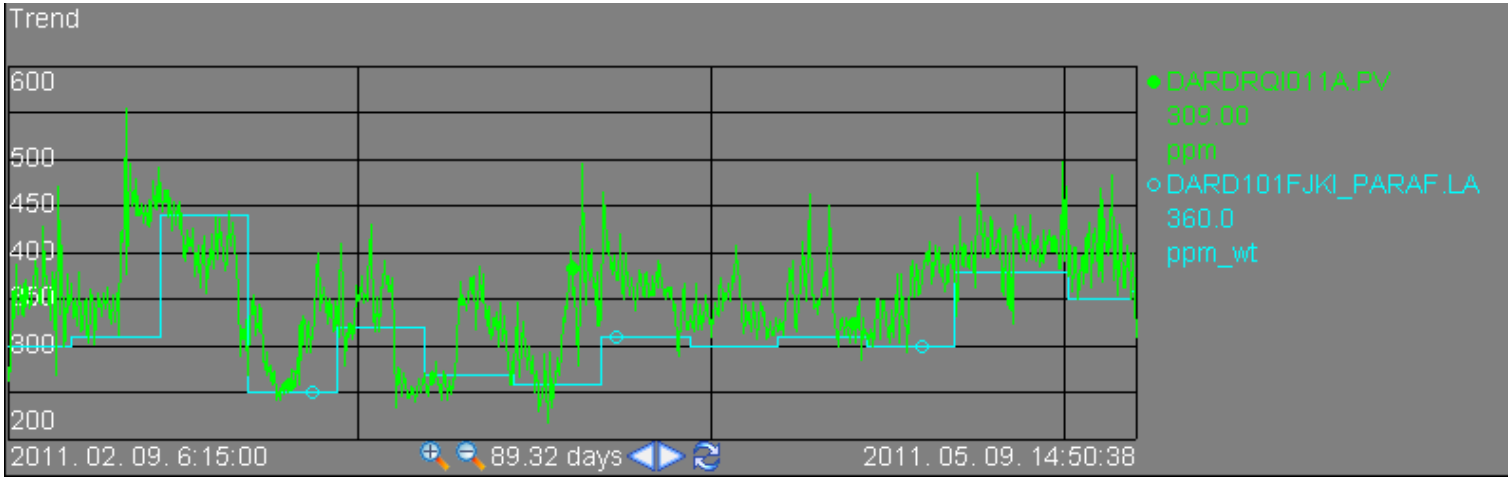
Connection

- Fast
- Graphical
- Excel PI DataLink vs. ODBC
- Great popularity



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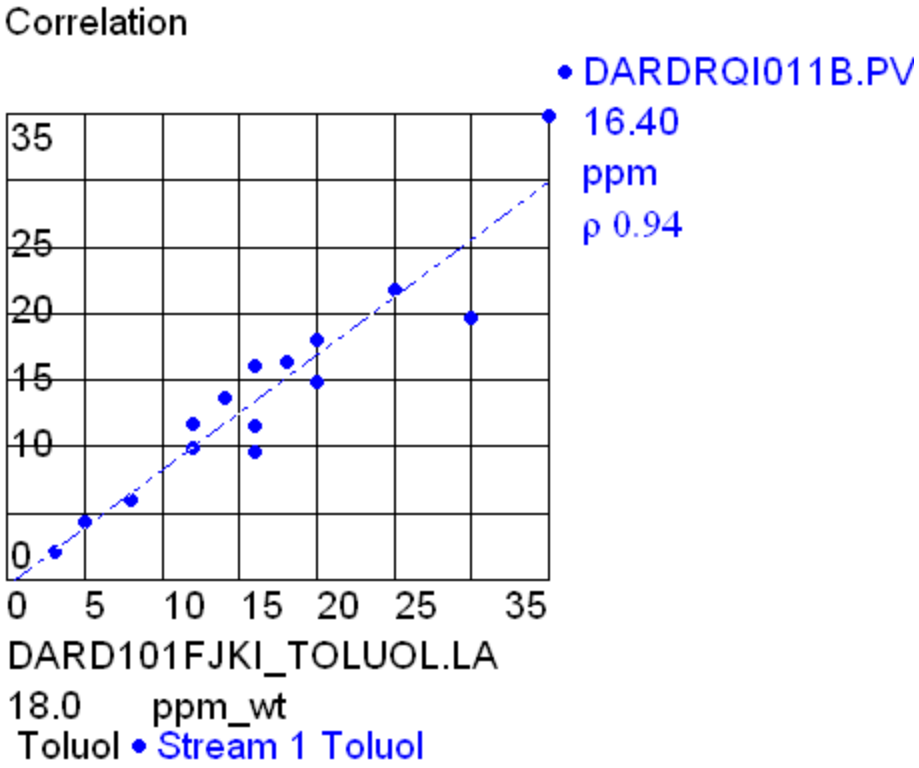
Graphical Interface

PI ProcessBook
- Trend
- XY plots
- SQC charts

Analyses



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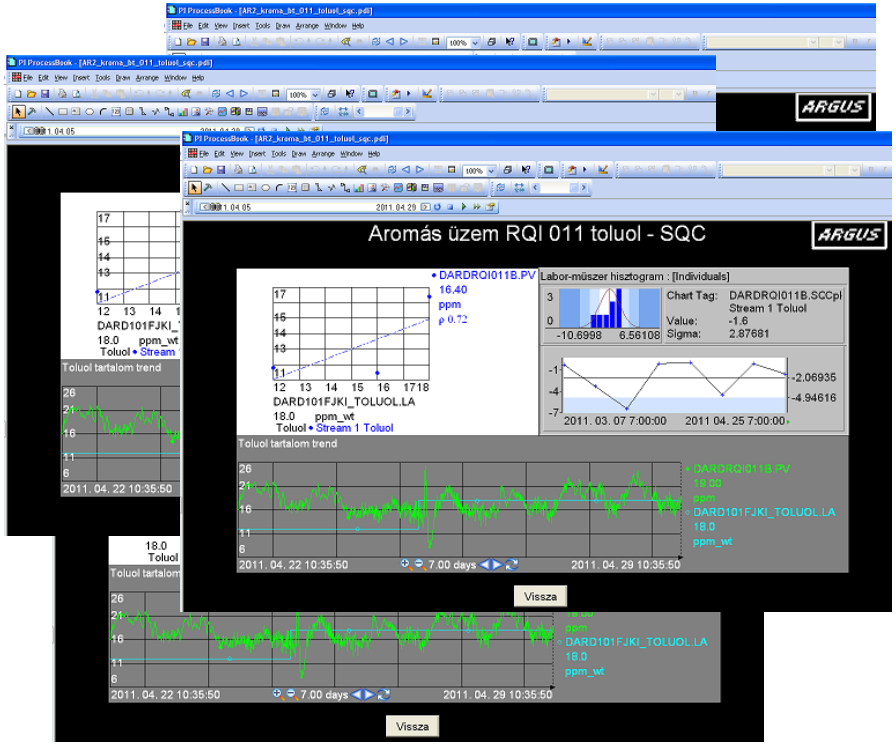
One System, But Connectivity?

Great efforts to map

PI ProcessBook displays

- Size
- Navigation
- Distribution

One version of truth?



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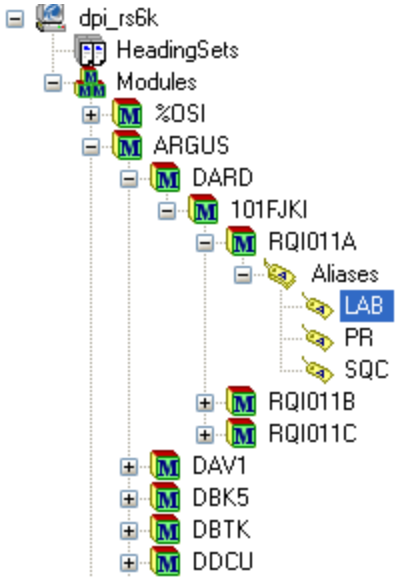
PI Module Database

- Only **one display**
- Easily used by PI-SDK
- Built-in tree control
- One system
- Available
- No further install

Graphic controls need programming



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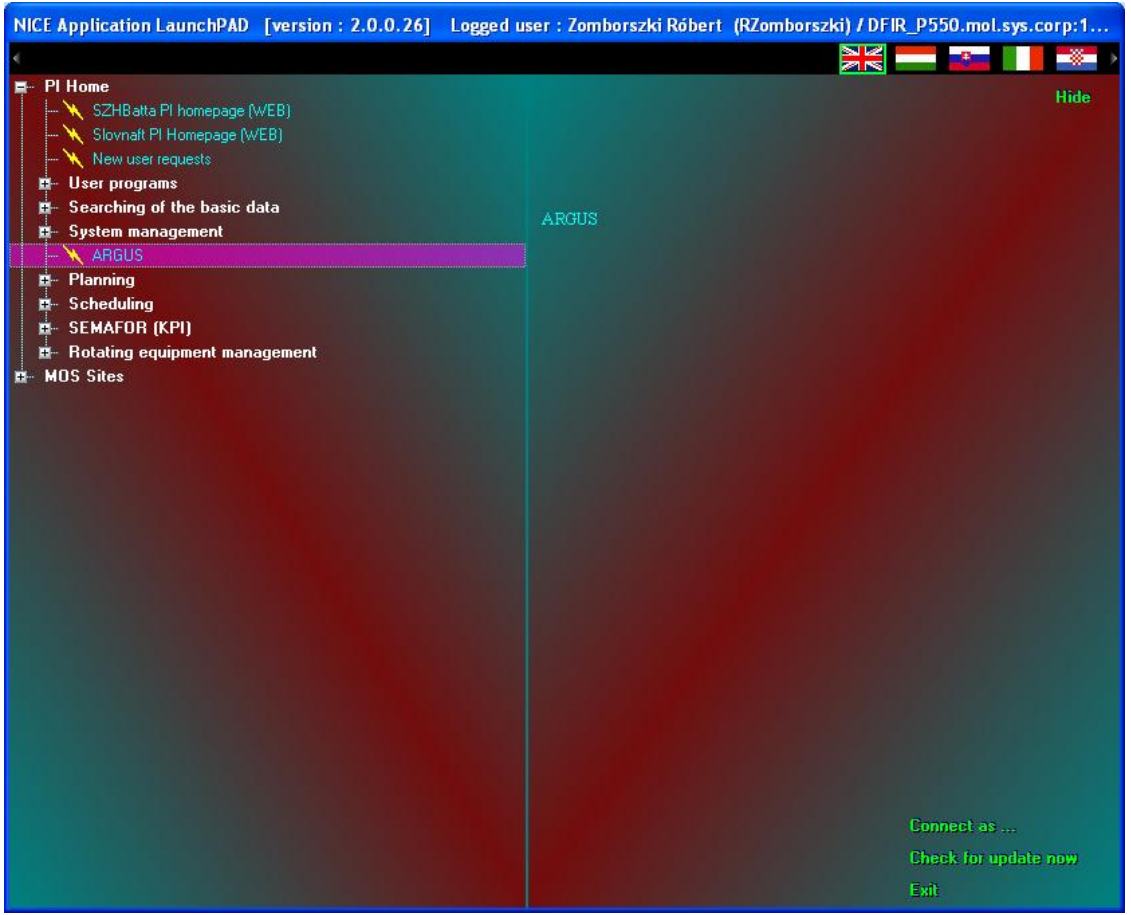
Deployment

NICE

- LaunchPad
- Available
- Updated

PDI in oracle

- Safe



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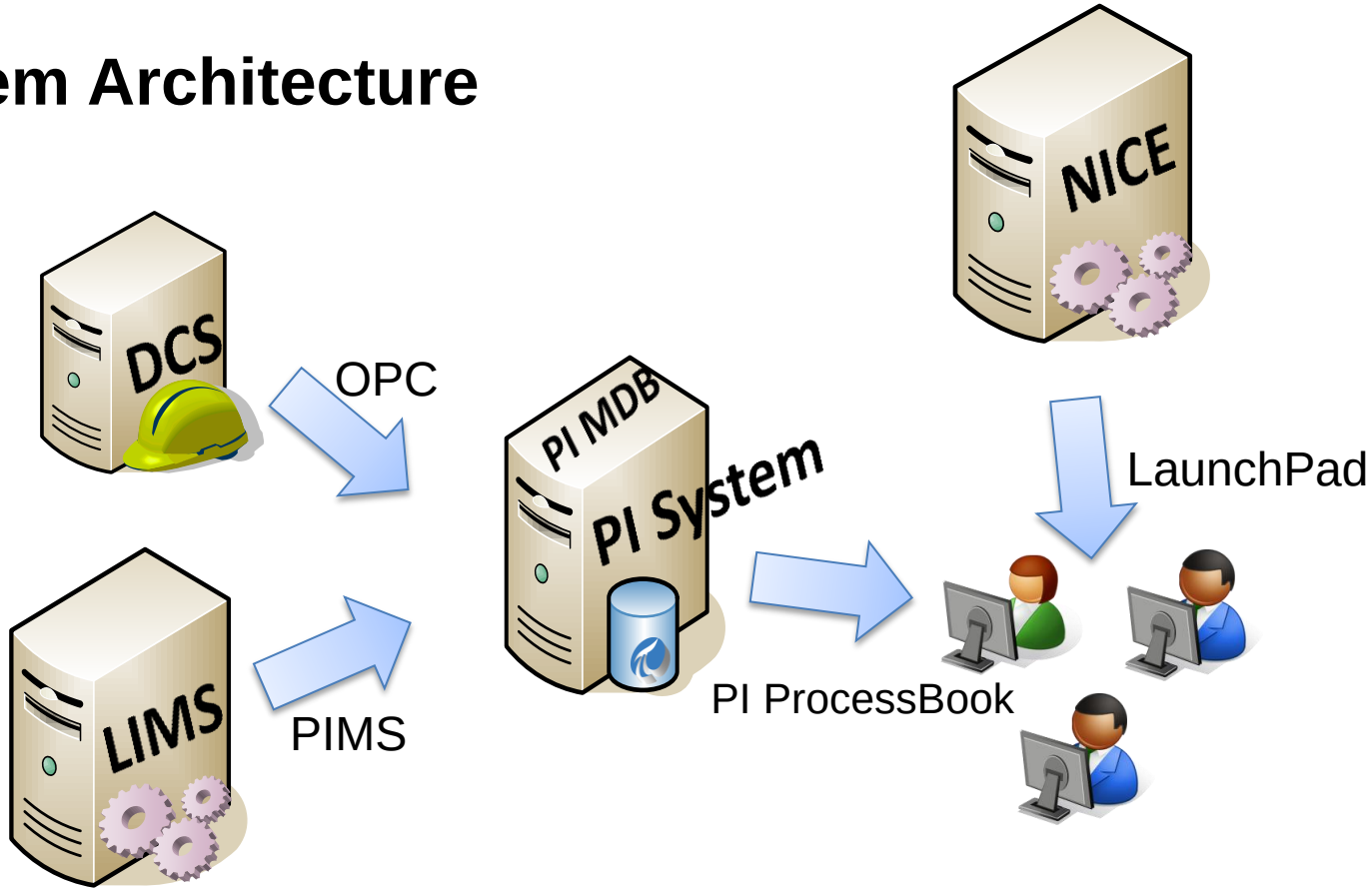
System Architecture



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Measurement

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Measurement

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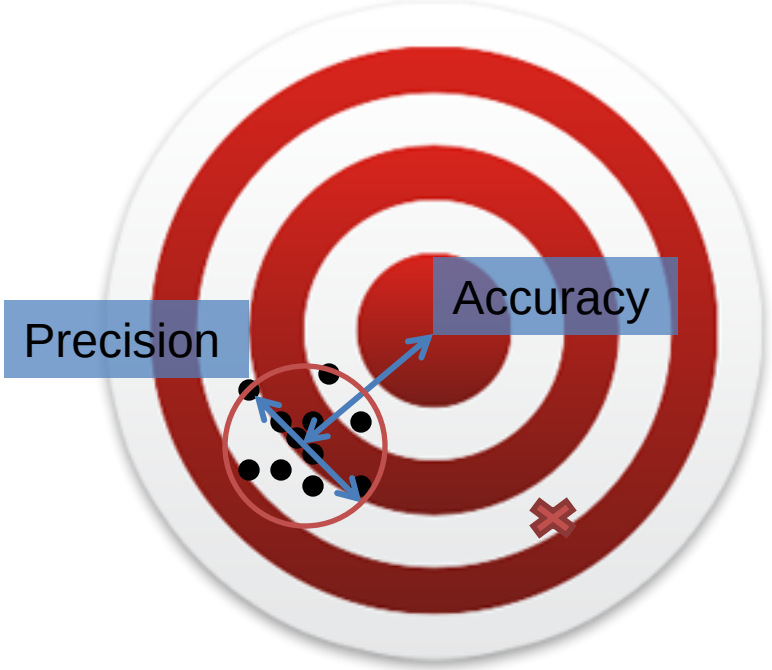
Measurement



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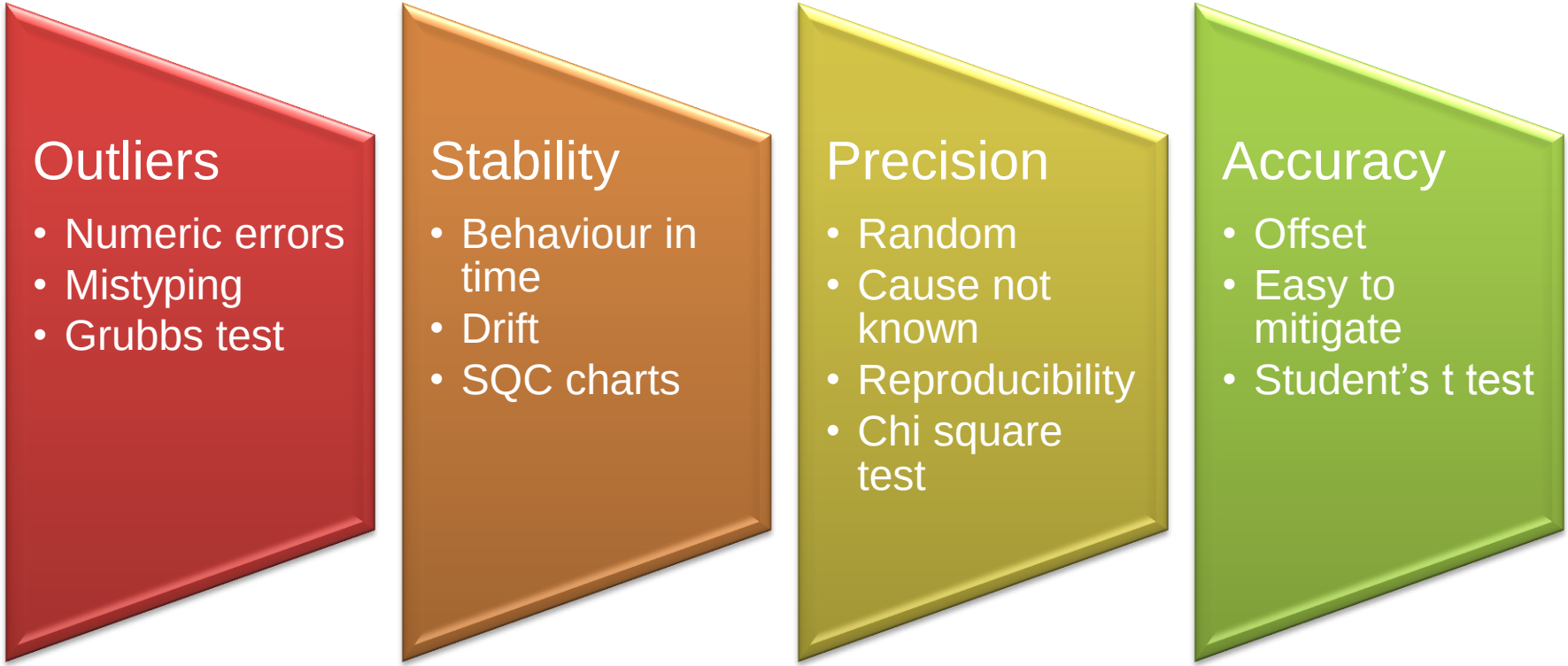
Validation



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Results

- Trust
  - Productivity
  - Energy
- One version of truth
- Availability
- Visibility
- Reliability

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Future Plans and Next Steps

- PI AF migration
- Notification
- SAP PM interface
- Full ASTM compatibility
- Other validations

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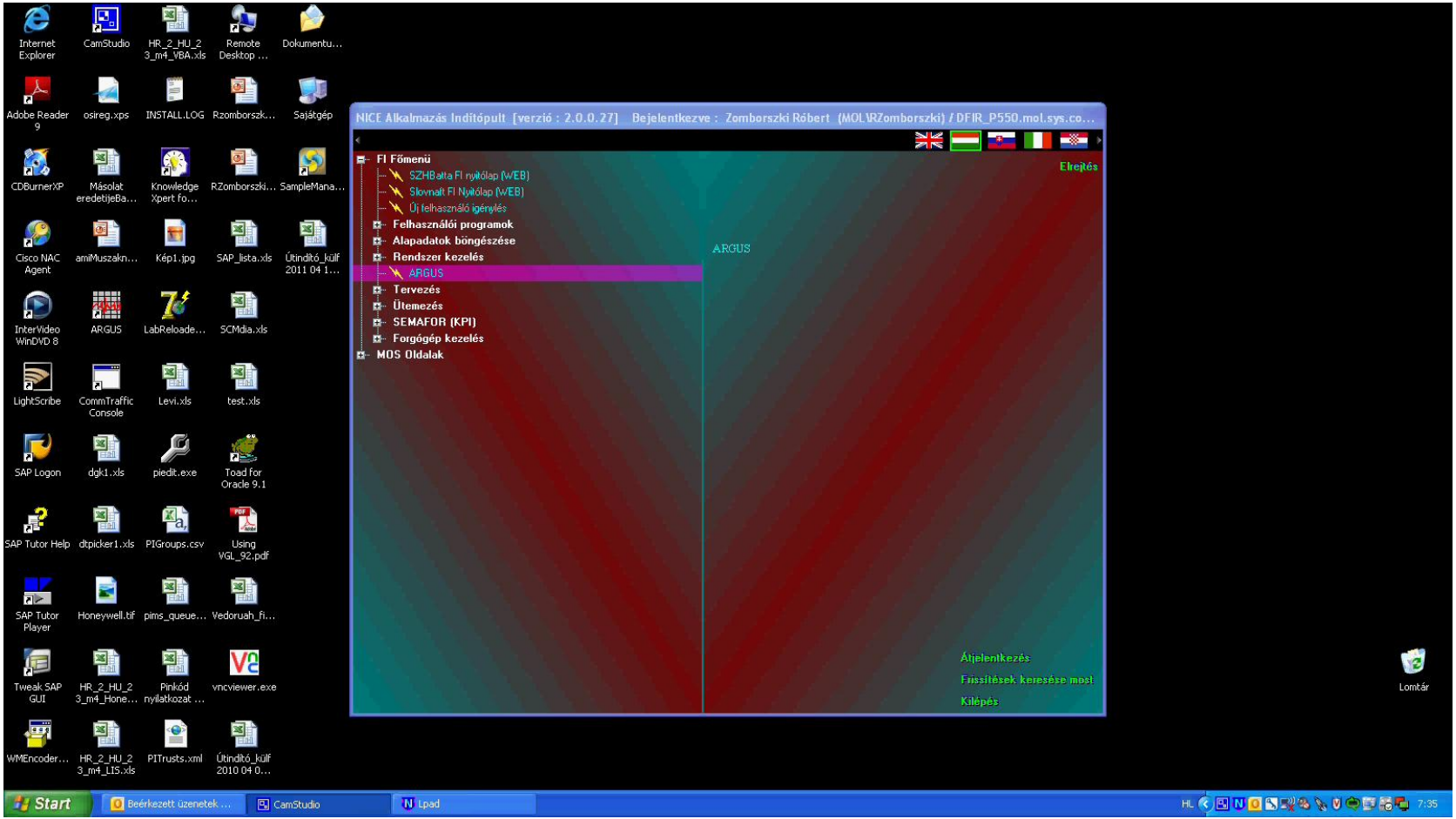

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Questions

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Thank you

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