



# Operational challenges in the F&B Industry

Marc Olivé i Torralba  
Alex Destruel

# Agenda

- AG Solution Group
- AG Solution & OSIsoft
- Typical client in F&B sector
- Business challenges
- Project challenges
- Some business cases

# About AG Solution Group



**respect**  
customer focused  
**QUALITY**  
**flexible**  
**collegial**  
**positive**  
**Honest**  
**Human**

# We come from where your data come from

## Industrial & Process Automation solutions

- PLC/SCADA & DCS Systems / Batch



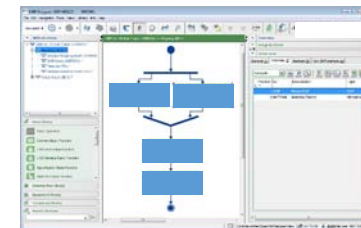
## Big Data & Operational Intelligence solutions

- Data infrastructure/ Big data & BI: OSIsoft PI



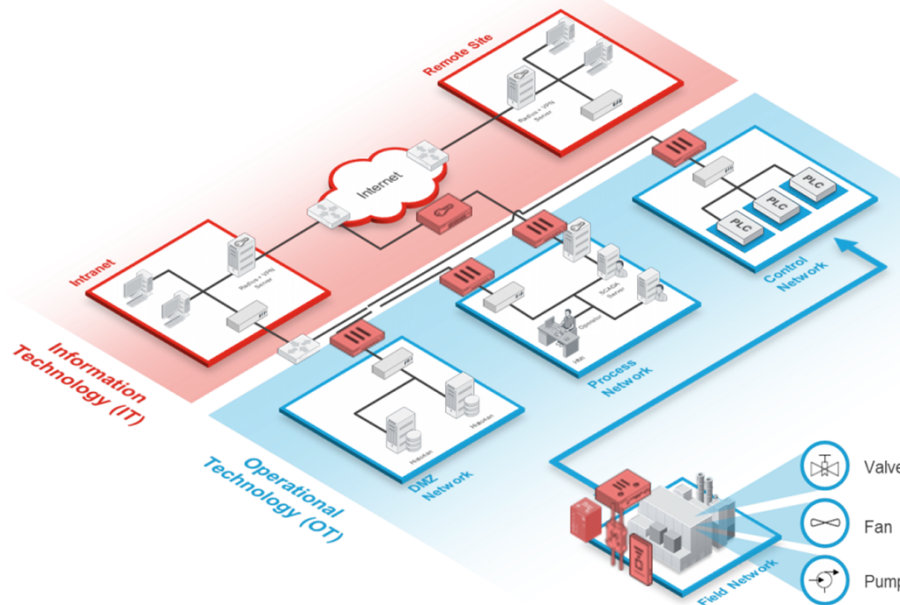
## MES/MOM solutions

- Wonderware – Savigent



# Security

The importance of Security in IT/OT convergence

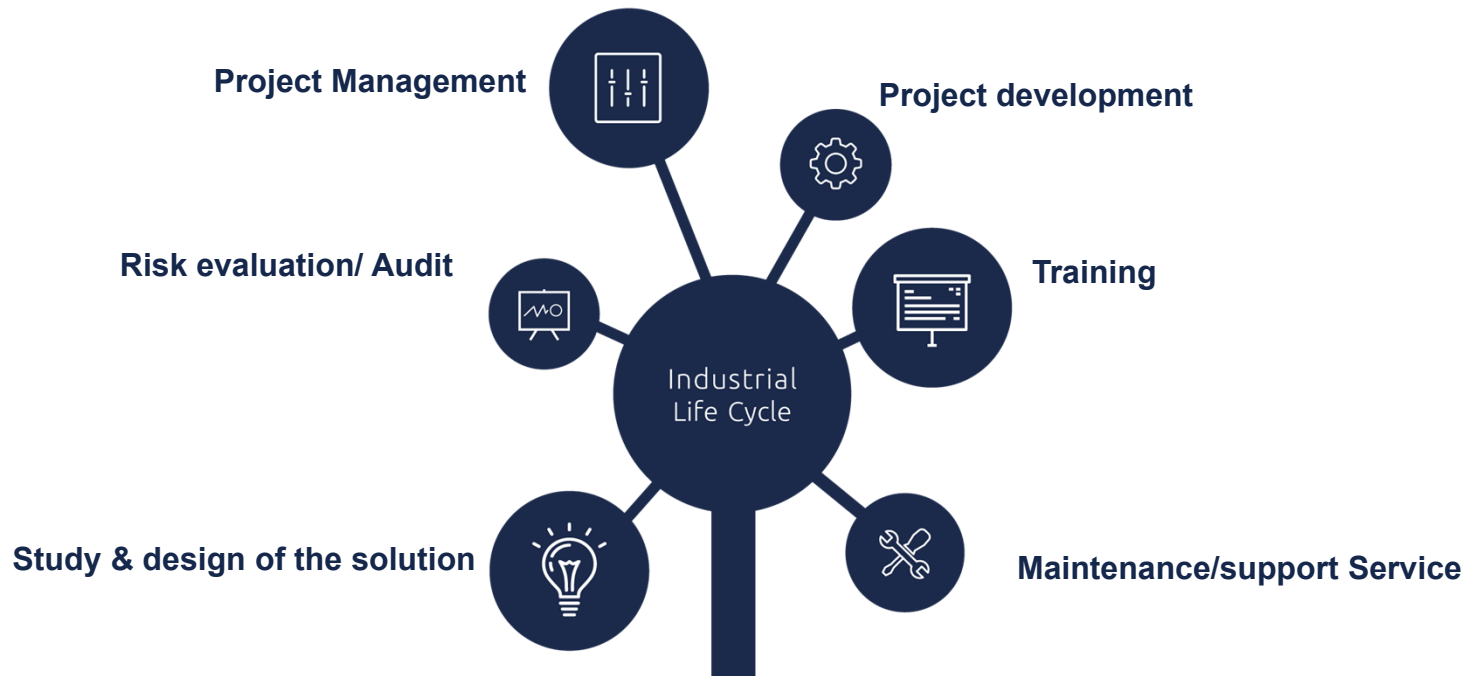


## IT and OT Convergence

- Hardened Security Appliance
- Network Segmentation
- Access Control (Device, User)
- Secure Wireless Access
- ICS Protocols for Threat Prevention



# Services



AG Solution is a solutioning partner, not a traditional application integrator

# Experience in process industry



# Long & successful history AG Solution – OSIsoft





# Our Client profiles in the sector

- Worldwide presence
- Multisite
- Combination of Batch, continuous & semi continuous processes
- Different regulations in different countries



# Business challenges

## Common challenges in the industry:

- Improve reliability
- Improve performance
- Reduce losses – costs



## Particular challenge in F&B:

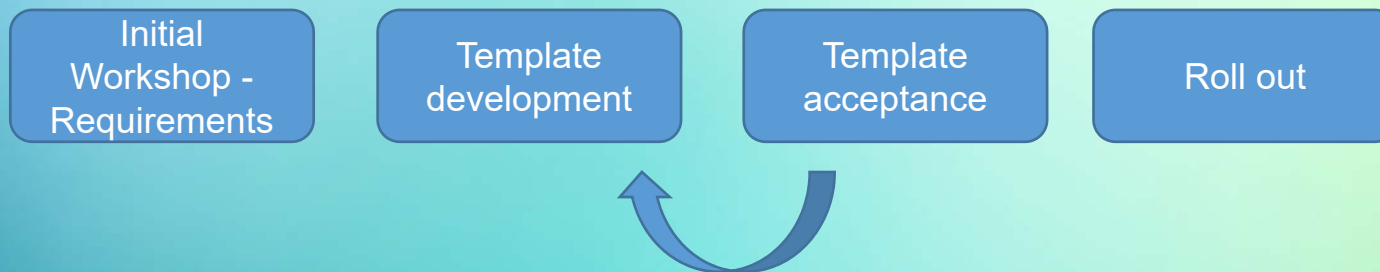
- Increase maturity in the discipline of regulatory compliance (**Quality**)

# Project & Solution challenges

- Need of a multi purpose information system (quality, operations, management...)
- Scalable
- User adoption for non-IT audience
- Business engagement

# Our agile *methodology* & strategy → PI AF

- Template based
- To engage user from the initial stage
- Leverage user adoption
- Focus on **what to do**, not on **how**



# Our solution portfolio

# Continuous Process verification



## CHALLENGE

- Need to assess if Process is **in Control**
- Need to guarantee traceability
- Need to eliminate batch dumps

# Continuous Process verification

## CHALLENGE

- Need to assess if Process is **in Control**
- Need to guarantee traceability
- Need to eliminate batch dumps

## SOLUTION

### **Process Verification in PI Vision and PI AF**

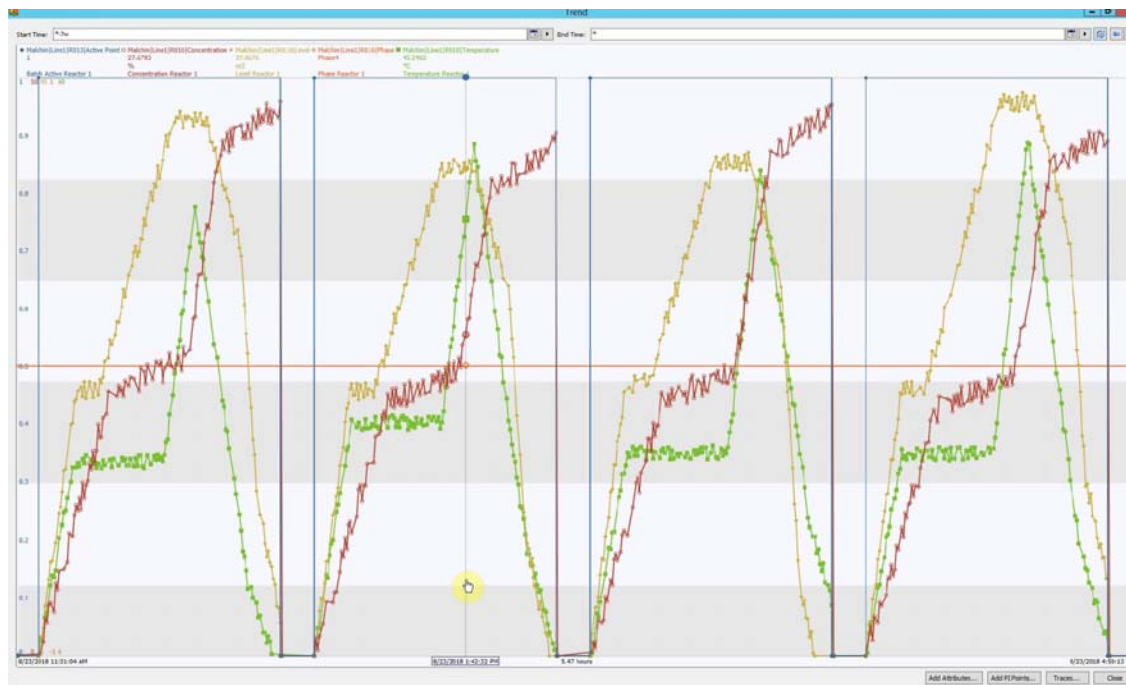
- Continuous follow-up of process (Batch & Continuous)
- Set up threshold and/or Golden Batch limits
- Deviation detection

# CPP continuous monitoring

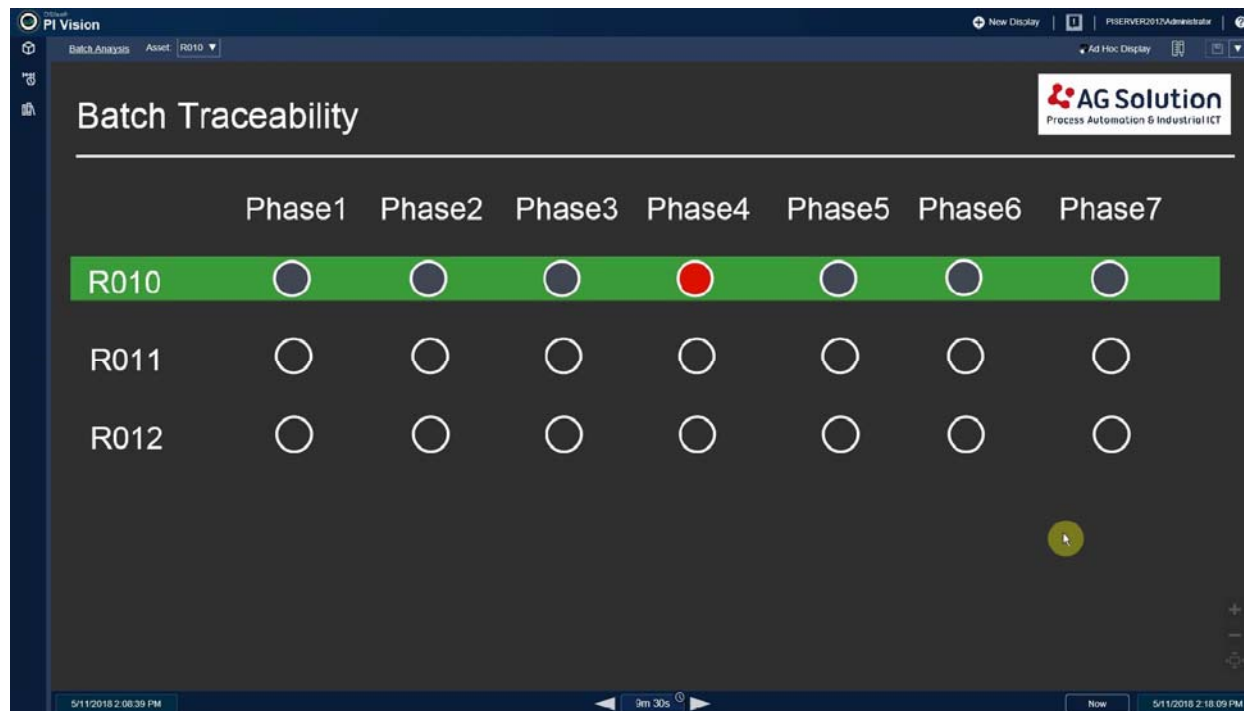




# Monitoring per Event/Batch



# Phase overview



# Deviation report per Phase

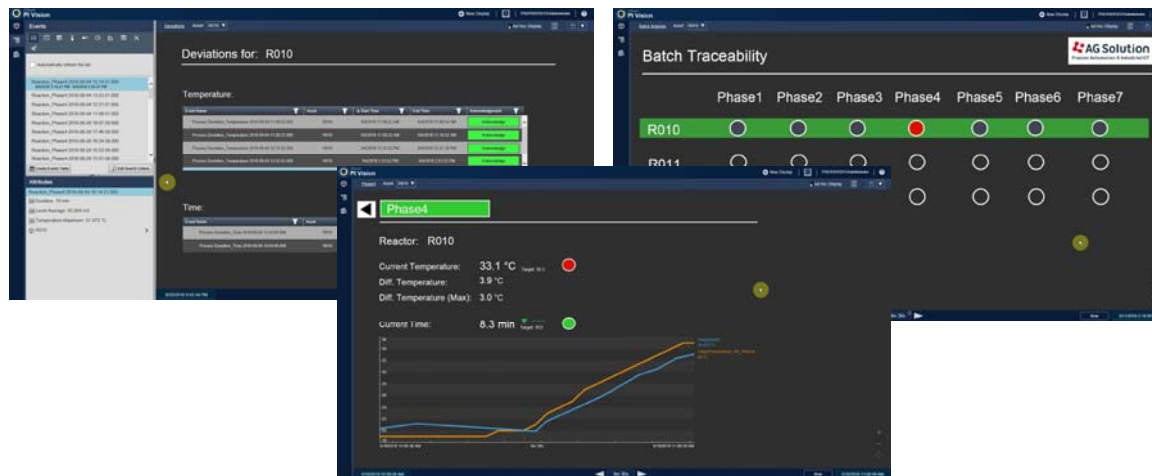
The screenshot displays the PI Vision interface for asset R010. The main area shows a deviation report titled 'Deviations for: R010'. The report is organized into two sections: 'Temperature' and 'Time'. Each section contains a table of events with columns for Event Name, Asset, Start Time, End Time, and Acknowledgement. The 'Temperature' section lists four events, and the 'Time' section lists two events. Each event has a green 'Acknowledge' button next to it. On the left side, there is a list of events and an 'Attributes' panel for the selected event, showing details like Duration (10 min), Level Average (42.804 m3), and Temperature Maximum (51.473 °C). The bottom of the interface shows a timeline with a 'Now' button and a 9m 30s duration indicator.

Event Name	Asset	Start Time	End Time	Acknowledgement
Process Deviation_Temperature 2018-09-04 11:08:52.000	R010	9/4/2018 11:08:52 AM	9/4/2018 11:08:54 AM	Acknowledge
Process Deviation_Temperature 2018-09-04 11:09:22.000	R010	9/4/2018 11:09:22 AM	9/4/2018 11:10:52 AM	Acknowledge
Process Deviation_Temperature 2018-09-04 12:31:52.000	R010	9/4/2018 12:31:52 PM	9/4/2018 12:41:36 PM	Acknowledge
Process Deviation_Temperature 2018-09-04 13:53:52.000	R010	9/4/2018 1:53:52 PM	9/4/2018 2:03:22 PM	Acknowledge

Event Name	Asset	Start Time	End Time	Acknowledgement
Process Deviation_Time 2018-09-04 12:42:00.000	R010	9/4/2018 12:42:00 PM	9/4/2018 12:42:22 PM	Acknowledge
Process Deviation_Time 2018-09-04 14:04:00.000	R010	9/4/2018 2:04:00 PM	9/4/2018 2:04:22 PM	Acknowledge

# Continuous Process verification



## RESULTS

### Improvements in:

- Guarantee quality
- Traceability → Audits
- Process knowledge
- Can be done also for non-quality parameters (like Energy or Mass balance)

# OEE measurement

## CHALLENGE

- Measure and analyse OEE
- Downtime Event Manipulation
- Reporting capabilities

# OEE measurement

## CHALLENGE

- Measure and analyse OEE
- Downtime Event Manipulation
- Reporting capabilities

## SOLUTION

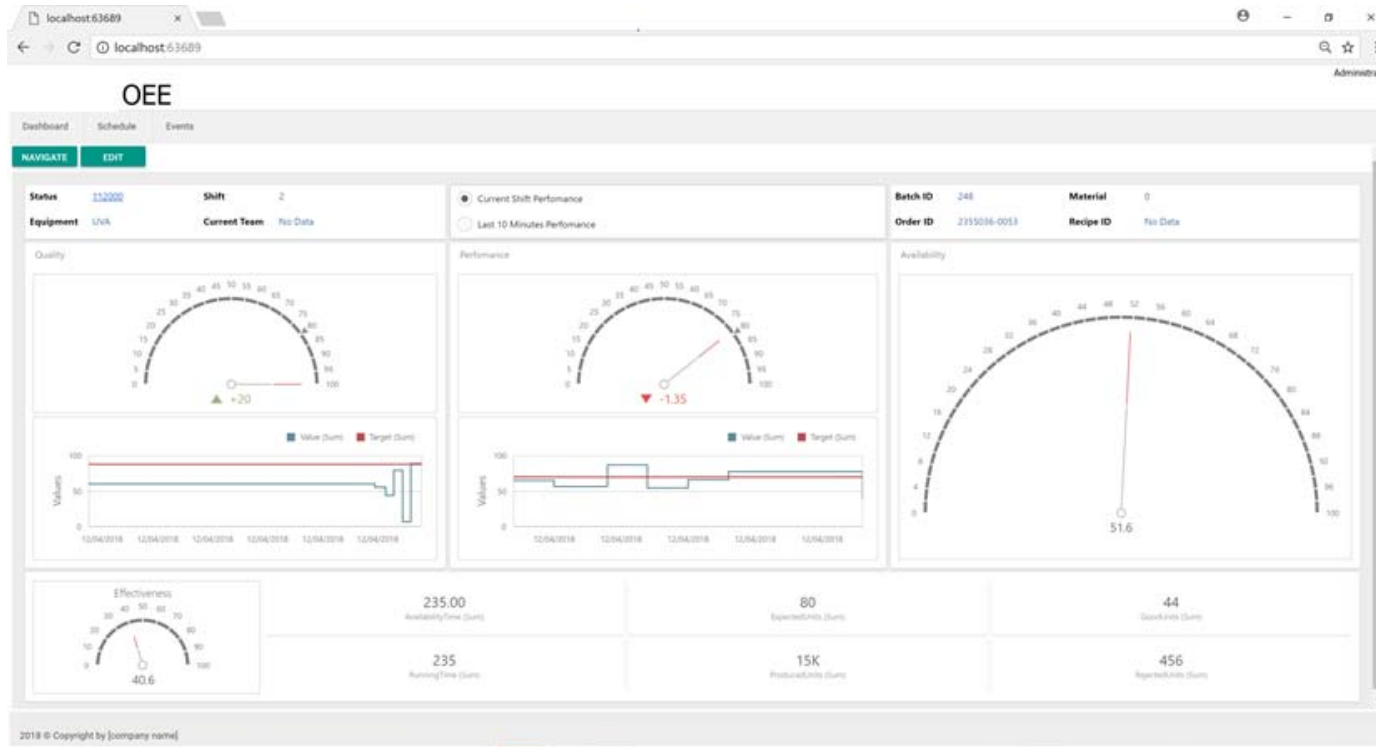
- Combined solution



+

Custom  
frontend

# OEE calculation and visualization

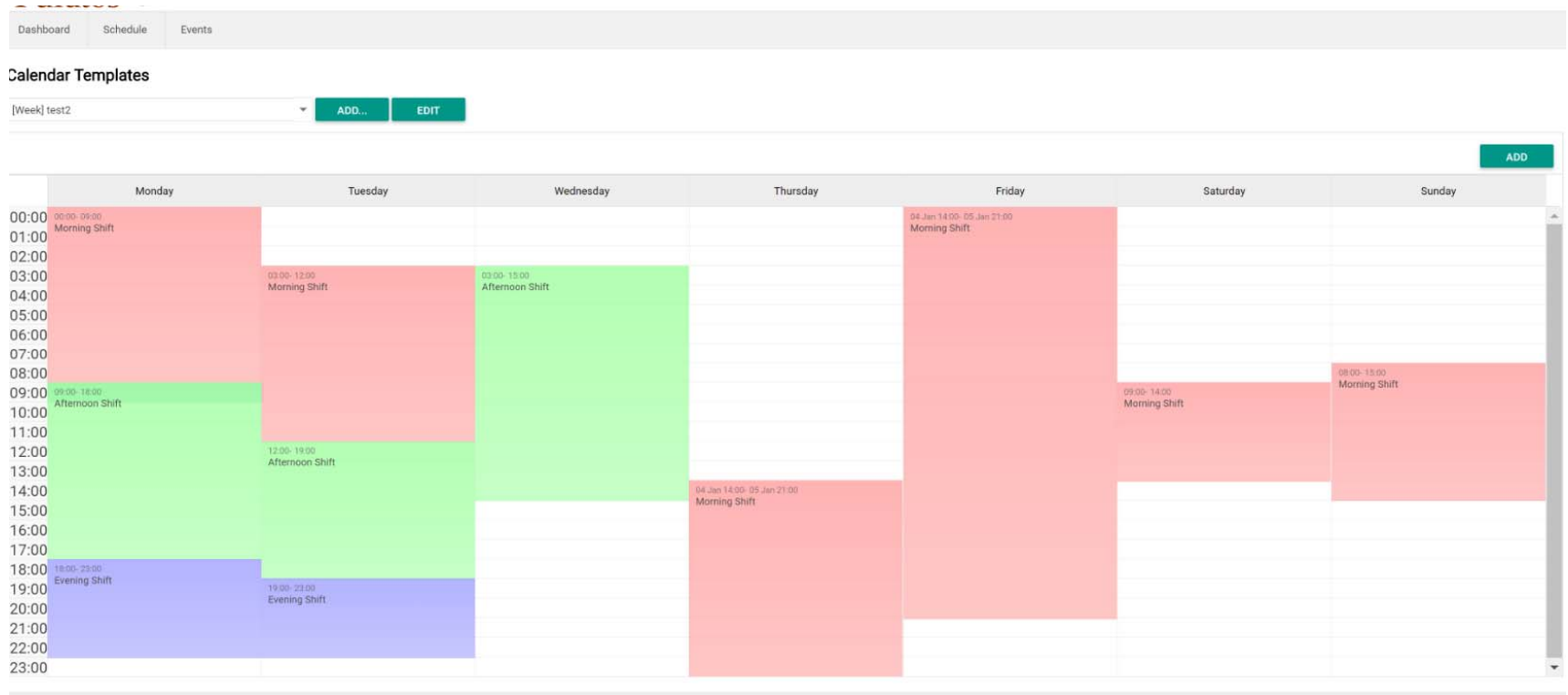


# OEE: Smart Reason-tree justification

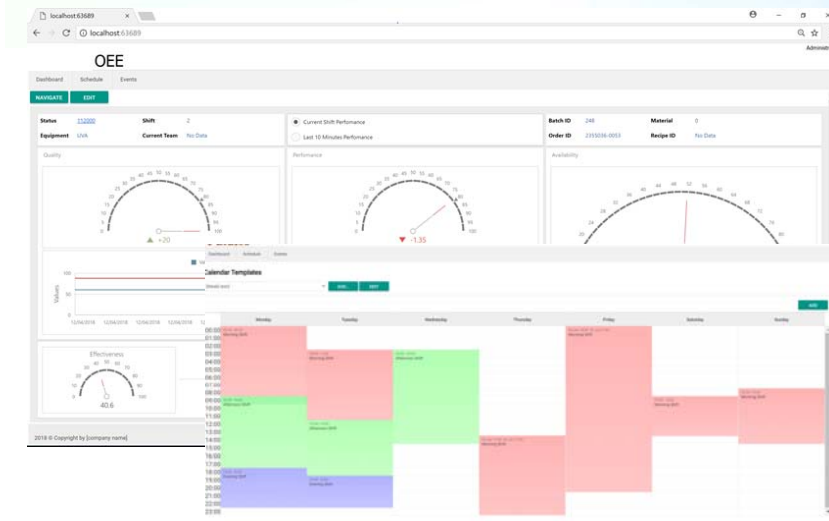
The screenshot shows an OEE dashboard with a 'Change reason' dialog box open. The dialog box has three green buttons for selecting reasons: '213601 Downtime Loss Setup & Adjustments Waiting Planning L70 - Attente de planning', '221102 Downtime Loss Breakdown Technical Failure Machines L70 - Problème vis site 01 (001U01UM01)', and '213800 Downtime Loss Setup & Adjustments Waiting Upstream equipment'. Below these buttons are five dropdown menus for Level 1 through Level 5, with Level 1 set to 'Planned downtime', Level 2 to 'Production Not Scheduled', and Level 3 to 'No Production'. The background dashboard shows various OEE metrics: Status 112000, Shift 2, Equipment LVA, Current Team No Data, Quality gauge at 51.6, Effectiveness gauge at 40.6, Availability Time (235.00), Running Time (235), Production (15K), and Receipts (44 and 456).



# OEE: Machine calendar allocation



# OEE measurement



Change reason dialog box with the following content:

- 213601 Downtime Loss (Setup & Adjustments) / Waiting / Planning / L70 - Attente de planning
- 221102 Downtime Loss (Breakdowns) / Technical Failure / Machines / L76 - Problème lié au DL (201102110201)
- 213800 Downtime Loss (Setup & Adjustments) / Waiting / Maintenance Requirement

Level 1: Planned downtime  
Level 2: Production Not Scheduled  
Level 3: No Production  
Level 4:   
Level 5:   
Buttons: OK, CANCEL

## RESULTS

- Analysis of OEE parameters (quality, performance, availability)
- Analysis per Batch, shift, period
- Downtime Event manipulation
- Advanced reporting integrated

# AKTool: Alarm KPI tool

## CHALLENGE

### Lack of Alarm Management

- Alarm display is full of alarms, even if nothing is wrong
- Operator ignores alarms
- Poor visibility of Bad actors

Date	Class	Type	Priority	Source	Area	Event	Quantite	Average d'ystat	Total duration
1	30/10/14	Warning	Low	PCS300C	02_Reforming	Synthesis Gas Pressure Control PV - High warning limit	3061	1.766	1.30.34.000
2	30/10/14	Operator Message	Operator Message	0	ESD@ESD/Cause-AL-1-16	02_Reforming	(Acknowledgment Alarm High on	50	0.000
3	30/10/14	System does not require acknowledgment	Process control system	0					
4	30/10/14	Alarm	High	12	ESD@ESD/ESD	02_Reforming	group display Alarm	23	18.55.545
5	31/10/14	Operator Message	Operator Message	0	StartUpReformer	02_Reforming	Shft_Operator Executing 'Start' command	21	0.000
6	17/09/14	Operator prompt	Request for Operator Input	0	StartUpReformer	02_Reforming	Operator prompt	10	31.42.233
7	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77 Trip Tag active	10	10.57.700
8	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77 Trip Tag active	10	10.57.700
9	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77 Trip Tag active	10	10.57.700
10	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77 Trip Tag active	8	41.03.429
11	31/10/14	System does not require acknowledgment	Process control system	0					
12	31/10/14	OS process control system messages	Failure	0	ES23A		PERFORMES23A/CPU Idle Time in % is ok	8	0.000
13	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77 Trip Tag active	7	19.40.714
14	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
15	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
16	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
17	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
18	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
19	30/10/14	Alarm	High	0	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 77	6	57.02.000
20	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 6 active	5	26.16.800
21	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 6 active	5	26.16.800
22	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 2 active	5	20.51.200
23	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 2 active	5	20.51.200
24	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 2 active	5	20.51.200
25	17/09/14	Alarm	High	12	ESD@ESD/Cause-AL-1-16	02_Reforming	Cause 8 active	5	20.49.400
26	30/10/14	Warning	Low	8	T3111	02_Reforming	Measurement PV - Low alarm limit violated	4	33.57.000
27	30/10/14	Warning	Low	8	T3101	02_Reforming	Measurement PV - Low alarm limit violated	4	33.56.667
28	30/10/14	Warning	Low	8	T3121	02_Reforming	Measurement PV - Low alarm limit violated	4	33.56.667
29	30/10/14	Warning	Low	8	T3131	02_Reforming	Measurement PV - Low alarm limit violated	4	33.56.667
30	30/10/14	Alarm	Medium	8	T3181	02_Reforming	Measurement PV - Low warning limit violated	4	33.44.000
31	30/10/14	Alarm	Medium	8	T3121	02_Reforming	Measurement PV - Low warning limit violated	4	33.45.000
32	30/10/14	Alarm	Medium	8	T3131	02_Reforming	Measurement PV - Low warning limit violated	4	33.45.000
33	30/10/14	Alarm	Medium	8	T3111	02_Reforming	Measurement PV - Low warning limit violated	4	33.44.667
34	30/10/14	Warning	Low	8	T3141	02_Reforming	Measurement PV - Low alarm limit violated	4	33.34.000
35	30/10/14	Warning	Low	8	T3161	02_Reforming	Measurement PV - Low alarm limit violated	4	33.33.333
36	30/10/14	Warning	Low	8	T3181	02_Reforming	Measurement PV - Low alarm limit violated	4	33.33.333
37	30/10/14	Warning	Low	8	T3171	02_Reforming	Measurement PV - Low alarm limit violated	4	33.33.333
38	30/10/14	Warning	Warning - low	8	PCS300C	02_Reforming	Synthesis Gas Pressure Control PV - Low warning limit 2	18.000	38.000
39	30/10/14	Alarm	Medium	8	PCS300C	02_Reforming	Synthesis Gas Pressure Control PV - Low alarm limit U 2	9.000	19.000

# AKTool: Alarm KPI tool

## CHALLENGE

### Poor Alarm Management

- Alarm display is full of alarms, even if nothing is wrong
- Operator ignores alarms
- Poor visibility of Bad actors

## SOLUTION

### Create an Alarm KPI tool based on OSIsoft PI System

- Capture, document and analyse alarms via OPC A&E
- Setup alarm performance KPI's
- Alarm reporting and statistics
- Export to .csv files

# Alarm report

ALARM REPORT

AG Solution

Monthly Alarm Report

AG Solution

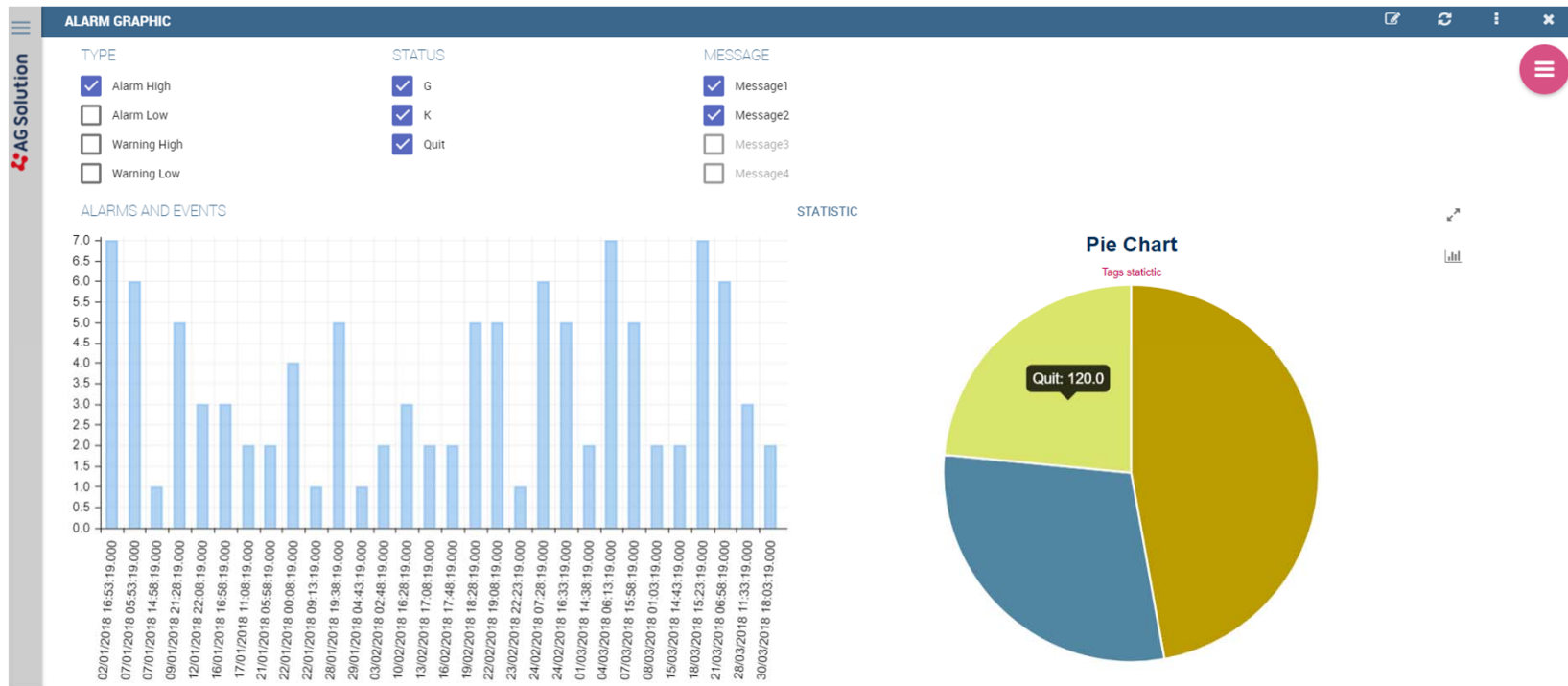
DateTime_Start ↑	DateTime_End	Channel	TagName	MessageType	Message	Priority	Status
01/01/2018 04:33:19.000	01/01/2018 04:40:24.000	PCS7	TAG-4	Warning Low	Message3	1.00	G
01/01/2018 13:38:19.000	01/01/2018 14:00:24.000	PCS7	TAG-0	Warning High	Message3	7.00	K
01/01/2018 22:43:19.000	01/01/2018 23:20:24.000	PCS7	TAG-3	Alarm High	Message3	3.00	K
02/01/2018 07:48:19.000	02/01/2018 08:40:24.000	PCS7	TAG-3	Alarm Low	Message3	7.00	K
02/01/2018 16:53:19.000	02/01/2018 18:00:24.000	PCS7	TAG-5	Alarm High	Message2	7.00	G
03/01/2018 01:58:19.000	03/01/2018 03:20:24.000	PCS7	TAG-7	Alarm Low	Message3	3.00	K
03/01/2018 11:03:19.000	03/01/2018 12:40:24.000	PCS7	TAG-7	Warning Low	Message3	1.00	G
03/01/2018 20:08:19.000	03/01/2018 22:00:24.000	PCS7	TAG-0	Alarm Low	Message1	4.00	K
04/01/2018 05:13:19.000	04/01/2018 07:20:24.000	PCS7	TAG-9	Warning Low	Message1	3.00	G
04/01/2018 14:18:19.000	04/01/2018 16:40:24.000	PCS7	TAG-0	Warning High	Message4	2.00	G
04/01/2018 23:23:19.000	05/01/2018 02:00:24.000	PCS7	TAG-1	Alarm High	Message3	3.00	K
05/01/2018 08:28:19.000	05/01/2018 11:20:24.000	PCS7	TAG-4	Warning Low	Message4	6.00	G
05/01/2018 17:33:19.000	05/01/2018 20:40:24.000	PCS7	TAG-2	Alarm High	Message3	3.00	Quit
06/01/2018 02:38:19.000	06/01/2018 06:00:24.000	PCS7	TAG-8	Warning High	Message4	3.00	Quit
06/01/2018 11:43:19.000	06/01/2018 15:20:24.000	PCS7	TAG-5	Warning High	Message4	5.00	G

1 / 67 < >

# Alarm Gantt chart

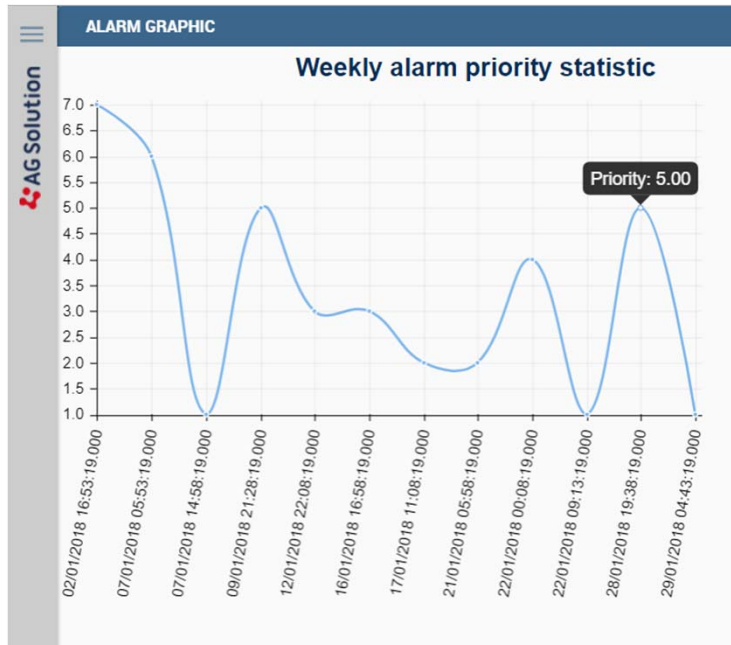


# Alarm chattering





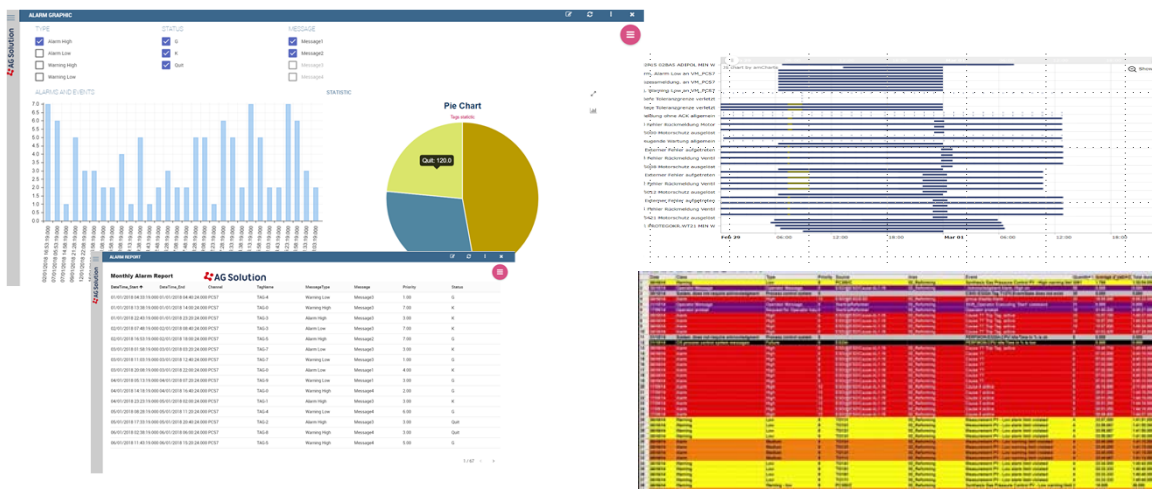
# Alarm Statistics by source



Channel	Last Event	Total	Last 10 Minutes		Last 30 Minutes		Last Hour	Delayed
PCS7TEST	2017/05/19 20:49:35.920	70904906	0	50.00% ▲	0	50.50% ▲	0	80.80% ▲ False
PCS7DEMO02	2016/04/26 15:04:05.647	5006328	0	-50.00% ▼	0	-20.00% ▼	0	-4.00% ▼ False
Teleperm	2017/05/19 19:37:50.000	152821	0	25.00% ▲	0	-12.00% ▼	0	11.00% ▲ False
Teleperm 2	2017/05/19 19:37:50.000	152813	0	-25.00% ▼	0	15.00% ▲	0	-12.00% ▼ False
PCS7_Server	2017/05/19 20:46:15.870	614597	0	0.00% ▲	0	11.00% ▲	0	-46.00% ▼ False
		Min=152813	Min=0		Min=0		Min=0	
		Avg=15366293	Avg=0		Avg=0		Avg=0	
		Max=70904906	Max=0		Max=0		Max=0	
		Sum=76831465	Sum=0		Sum=0		Sum=0	



# AKTool: Alarm KPI tool



## RESULTS

### Better Alarm Management

- Visibility of **bad actors**
- Prevention of important failures
- Improve **safety**

# Conclusions

- Still a long way ahead in Operational Intelligence
- A trustable real time data and event infrastructure is needed: PI System
- Pilot → Strategic implementation
- Involvement of Customer SME is a must!
- Smart Standardization

## Questions?

Please wait for  
the **microphone**



State your  
**name & company**

## Please rate this session in the mobile app!



# Contact Information



- Marc Olivé Torralba
- Senior System Engineer
- [marc.torralba@agsolution.es](mailto:marc.torralba@agsolution.es)



- Alex Destruel
- Business Development Manager
- [alex.Destruel@agsolution.be](mailto:alex.Destruel@agsolution.be)

謝謝 KEA LEBONA  
 DZIĘKUJĘ CI TAPADH LEIBH 고맙습니다  
 NGIYABONGA БАЯРЛАЛАА MISAOTRA ANAO  
 TEŞEKKÜR EDERIM OBRIGADO شكرا SALAMAT  
 DANKIE TERIMA KASIH GRACIES DANKON TANK TAPADH LEAT  
 KÖSZÖNÖM СПАСИБО MULTUMESC  
 PAKMET CIZGE OSiSoft. HVALA FAAFETAI  
 GO RAIBH MAITH AGAT PIWorld ESKERRIK ASKO  
 БЛАГОДАРЯ GRACIAS HVALA ХВАЛА ВАМ  
 ТИ БЛАГОДАРАМ TEŞEKKÜR EDERIM  
 TAK DANKE MAHADSANID DANK JE ΕΥΧΑΡΙΣΤΩ GRATIAS TIBI GRAZIE  
 RAHMAT MERCI AČIŪ SALAMAT MAHALO IĀ 'ŌE TAKK SKALDU HA ДЗЯКУЙ  
 HATUR NUHUN GRAZZI ПАККА ПЕР ありがとうございます ĐAKUJEM  
 PAXMAT CAҒA SIPAS JI WERE TERIMA KASIH MATUR NUWUN  
 CẢM ƠN BẠN UA TSAUG RAU KOJ  
 WAZVIITA ТИ БЛАГОДАРАМ  
 СИПОС