

## Merry Christmas & Happy New Year

We wish everyone a Merry Christmas and a Happy New Year. Thank you for your support during the year 2017, and especially thanks to all the speakers at the seminars and the companies holding the seminars and workshops.

We hope to see you to some of our events in 2018. In the newsletter there is a list of activities in first quarter of 2018.

Merry Christmas & Happy New Year

Best regards

**SESAM**

Anne Marie & Carsten



## Come with your input for the coming events

SESAM would like to have your input or comments for the coming events. Please feel free to indicate if you or someone you know have an interesting presentation on one of the topics for the coming event. We would like the members to be more involved in the knowledge sharing within the SESAM network and the planning of the coming events. Below is an overview of the activities during first quarter of 2018, and further down in the newsletter a more detailed description is given.

The plan for the future is at the next page.



# SESAM and work group activities first quarter of 2018

## January 2018:

- 05.01.2018: SESAM Workshop: PackML & Line Integration workshop at Arla Foods, Taulov.  
29.01.2018: SESAM Workshop: Good Automation Project Processes (GAPP) workshop at Cabin plant, Haarby

## February 2018:

- xx.02.2018: SESAM seminar "Connectivity on Factory Floor – TSN, MQTT and OPC UA" at Siemens, Ballerup.  
06.02.2018: SESAM Workshop: Information security workshop at Aarhus Vand, Aarhus.  
08.01.2018: SESAM seminar "The Digital Manufacturing Journey", Malmö/Lund, Sweden.  
21.02.2018: SESAM International D-T-F start-up meeting at Bosch Packaging, Stuttgart (1<sup>st</sup> day)  
22.02.2018: SESAM International D-T-F start-up meeting at Bosch Packaging, Stuttgart (2<sup>nd</sup> day)  
27.02.2018: Education on KEA – Closed GAPP education program (Full booked)  
28.02.2018: Education on KEA – Closed GAPP education program (Full booked)

## March 2018

- 22.03.2018: SESAM seminar: Standardization of Electrical panels – Documentation and PLC control.

## April 2018

- 26.04.2018: SESAM seminar: Augmented Reality in Manufacturing. Novo Nordisk, Bagsværd

**Please send us an email if you have any input for a presentation or topic for an event !!!**

**[info@sesam-world.dk](mailto:info@sesam-world.dk)**

## SESAM Board

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# SESAM getting International, 21-22 February 2018 at Bosch Packaging

SESAM is getting more and more international companies as members, and many presenters are from outside Denmark. Furthermore, to establish common seminars where participants from Denmark and Sweden can join, is it necessary to have a common language. It is therefore decided to distribute future event descriptions in English, and to have seminars with combinations of languages (Danish, Swedish and English), but it is appreciable that presentation in general are done in English.



SESAM is today cooperating with a lot of international organizations, such as OMAC, OPC Foundation, Smart Industry Forum, etc. Some International companies have indicated an interest in establishing an International setup of SESAM, and it is therefore decided to startup SESAM on an International basis. The International part of SESAM is called "Digital Transformations of Factories" and the abbreviation SESAM stands for Society in Europe for System Application in Manufacturing.



SESAM : Society in Europe for System Application in Manufacturing.



D-T-F : Digital Transformation of Factories

The start-up meeting for SESAM International & D-T-F is scheduled for 21-22 February 2018 at Bosch Packaging, Stuttgart.

***Are you interested in being part of D-T-F, please contact us***

## SESAM seminar: Standardization of Electrical panels - Documentation and PLC control

**Date:** 22-03-2018.

**Place:** Place not yet defined

How do we design panels, control code and documentation when we are building machine systems and process control systems. Are there any way to automate some of the processes. See how other machine builders and end users are building control panels.

***Come with your input for a presentation***

***send your answer to [info@sesam-world.dk](mailto:info@sesam-world.dk) eller [can@sesam-world.dk](mailto:can@sesam-world.dk)***

# SESAM Workshop: PackML & Line Integration, Arla Foods, Taulov

**Dato:** 05-01-2018  
**Sted:** Arla Foods, Taulov mejeri, Danbovej 2, 7000 Fredericia



## Dagsorden

- Indskrivning på mejeriet er nødvendigt ved ankomst. Der foregår ved receptionen og vi skal være der og hjælpe.
- Opfølgning fra sidste møde
  - Connectivity: Opfølgning på Weihenstephan standard og OPC UA. Hvad skal der ske?
- PackML alignment – Se vedhæftede Guideline "PackML\_Unit\_Machine\_Implementation\_Guide V1-00"
  - Hvorledes har vi tolket standarden set ift. PackML Guideline
- Demo og rundvisning på Taulov mejeri, hvor flere linjer køre med PackML.
- OEE – hvorledes kan det implementeres ift. PackML
  - Hvad er kravet til maskiner og udstyr
  - Hvorledes skabe de enkelte KPI'er
  - Hvorledes kan der rapporteret og forbedres via OEE.
- Næste møde og arbejdsopgaver til næste møde - Dato, sted og dagsorden.

# SESAM Workshop: Good Automation Project Processes, Cabinplant, Haarby

**Dato:** 29-01-2018.  
**Sted:** Cabinplant A/S, Roesbjergvej 9, 5683 Haarby



## Dagsorden.

- Gennemgang af checkliste
- Gennemgang af case – Ny produktionslinje med flere maskinleverandører (Arla pakkelinje – Lars)
- Test check liste og ret og tilføj elementer ift. case.
  - Definer roller
  - Behov for at fastlæg, definere og anvende krav.
- Næste møde

# SESAM seminar: Connectivity on Factory Floor - TSN, MQTT & OPC UA Siemens, Ballerup

**Dato:** Final date in February not defined.  
**Sted:** Siemens, Borupvang 9, 2750 Ballerup



We live in a world with self-driving automobiles, and reusable self-landing rockets. Some Cyber-Physical Systems will operate at scales that will challenge comprehension. From autonomous vehicle convoys communicating with each other and highway infrastructure, to **Smart Cities** coordinating resources, avoiding traffic congestion, coordinating parking, reducing emissions and power consumption, to Smart national power grids and beyond.

To enable such automation, precisely **timed system control** must be possible. One prime example of the need for such precise timing is taking data from two or more sensors that are precisely timed along with the compute node where the data is merged and processed.

Prior to the availability of **Time Sensitive Networks (TSN)**, **MQ Telemetry Transport** and **OPC UA** various proprietary technologies (e.g. Fieldbus) have been used to provide such capability, or even more simplistic but costly approaches have been used, such as precisely measured sensor cabling to ensure a uniform delay

from sensor or actuator to controller. However, with an increasing number of IEEE standards adopted, the ability to use a standards-based approach to TSN has grown considerably.

TSN provides the three essential elements of precise timing: bounded jitter and latency, and guaranteed bandwidth on a network either Ethernet or wireless.

MQTT is an OASIS standard, and is a machine-to-machine (M2M) connectivity protocol. It is designed as an extremely lightweight publish/subscribe messaging transport, with low-bandwidth and high-latency. The design principles are to minimize network bandwidth and device resources requirements whilst also attempting to ensure reliability and some degree of accuracy of delivery. These principles also turn out to make the protocol ideal of the emerging “machine-to-machine” (M2M) or “Internet of Things” world of connected devices.



### Key mechanisms enabling a Time-Sensitive Network

IEEE TSN standards enabled a solution to be deployed with microsecond timing precision, across seven network hops or more hops with reduced timing precision, with guaranteed worst-case latency, and guaranteed bandwidth.

The TSN standards from 2011, had the essential elements for industrial and automotive environments, such as the need for static, dynamic configuration of stream paths and reservations to ensure rapid, robust operation in a known setting.

These changes are being driven by industry leading companies (eg: BMW, GE, Intel, Rockwell, CISCO, etc.) who recognize the benefits of establishing a common foundation across a disparate set of industries that share the need for reliable, networked solutions that are broadly supported and adopted.

Newer TSN standards are adding features for central control, time synchronization of all network devices, and even-lower latency. To achieve the absolute lowest possible latency, IEEE 802.1Qbv defines a Time Aware Shaper, which defies timed traffic gates which act as stop-lights on different priorities of traffic flowing through a switch.

The MQTT protocol specification is public, and openly published with a royalty-free license.

The Internet Assigned Numbers Authority (IANA) have reserved the TCP/IP port 1883 for MQTT traffic. TCP/IP port 8883 is also registered, for using MQTT over SSL.

This seminar will focus on the opportunities that TSN technologies offer in relation to the connectivity of Factory Floor application - automation world.

The presentations will try to illustrate what TSN gives of possibilities for interconnection of automation equipment.

MQTT supports security, for example by encryption across the network can be handled with SSL. Be aware that SSL is not the lightest of protocols, and does add significant network overhead.

Attend the seminar and hear about TSN, MQTT and OPC UA and the influence on factory floor automation environment. Get a picture of the future opportunities that TSN, MQTT and OPC UA will give in conjunction with automation connectivity.

### TSN Key Benefits

**Standards-based:** Part of IEEE 802 standards suite

**Partitioned:** Virtual separation of traffic classes, enables convergence of other protocols on one physical network.

**Compatible:** Integrates existing industrial Ethernet protocols including Profinet and EtherNet/IP.

**Scalable:** Scales from small to very large systems without compromising safety, security or performance.

**Secure:** Existing security standards and management features can be implemented, partitioning prevents denial of service.

### MQTT Key Benefits

**Standard:** Part of OASIS suite, and the Internet Assigned Numbers Authority (IANA) have reserved the TCP/IP port 1883 for MQTT traffic.

**Openness:** The protocol specification has been openly published with royalty-free license.

**Compatible:** The principle of MQTT turn out to make the protocol ideal of the emerging “machine-to-machine” (M2M) of “Internet of Things” (IoT).

**Secure:** Existing security standards and management features can be implemented via SSL or as an application encrypting of data.

# SESAM Workshop: Information security, Aarhus Vand, Aarhus

**Date:** 06-02-2018,

**Sted:** Aarhus Vand A/S, Gunnar Clausens Vej 34, 8260 Viby J

aarhusvand

## Dagsorden

1. System opbygning  
IT Sikkerhedsarkitektur (Søren Knudsen, Ezenta)
2. Adfærd (interne og eksterne medarbejdere)  
Gennemgang af setup i hver enkelt organisation  
Input til Best Practice guide
3. Kommunikation – synliggørelse af Informationssikkerhed  
Gennemgang af hvad enkelte virksomhed gør for at skabe bevidsthed om informationssikkerhed.  
Input til Best Practice guide
4. Planlæg næste møde  
CISCO & TSN  
Håndtering af utility anlæg

## SESAM seminar: The Digital Manufacturing Journey, Malmö, Sweden

### Experiences in the digital transformation of manufacturing and related business processes



**Date:** 08-02-2018,

**Sted:** Malmö/Lund, Sweden

In order to achieve a competitive advantage, it is necessary for the organization to understand how the new digital technology can be implemented and how it can transform the manufacturing and related business processes.

The Digital Manufacturing Journey is a one-day seminar including oral presentations from 5 companies, round-table discussions in ad-hoc groups, and networking opportunities.

Participate in the seminar and get a picture of the usage of digital technology, an understanding of how fast new digital technology comes to the market, how these technologies can change the manufacturing processes for many companies, and listen to how others have used or plan to apply these new concepts.

Participate in round-table discussions and consult experts who know the technologies and how these technologies can improve industry productivity and efficiency, discuss how connected applications in industry can change manufacturing processes and what new competencies they require. You have the opportunity to build your own agenda by choosing the round-table with topics that best suit your needs and priorities. This is your opportunity to discuss your point of view.

Throughout the day there will also be good networking opportunities e.g. to meet over a cup of coffee, lunch and through the activities of the day. There will be participants from many different industries with many thoughts on how to transform manufacturing into a digital world.

The objective of the day is to:

- Understand how the new digital technologies can be used in future manufacturing solutions.
- Have a dialogue about opportunities and challenges that the new digital technology creates.
- Create a picture of the experience gained by users of the new digital technology.
- Get a picture of what the introduction of digital technologies has required from the organization.
- Get minimum 3 advises from each speaker regarding the digital manufacturing journey.

# SESAM seminar: Augmented Reality in Manufacturing, Novo Nordisk, Bagsværd

Date: 26-04-2018, 09:00 – 16:30

Place: Novo Nordisk, Krogshøjvej 48, 2880 Bagsværd



Complex tasks on Factory Shop Floor such as assembly and maintenance were simplified by inserting additional information into the field of view. For example, labels were displayed on parts of a system to clarify operating instructions for a mechanic performing maintenance on a system. Assembly lines benefited from the usage of Augmented Reality (AR). In addition to some Danish Companies like Danfoss and Grundfos are incorporating this technology into assembly lines for monitoring process improvements. Big machines are difficult to maintain because of the multiple layers or structures they have. It is possible to obtain Quality checks that are faster, and Augmented Reality is also helpful for on-the-job training of new employees. Tetra Pak have incorporated Augmented Reality to their maintenance team, that permitted them to look through the machine as if it was with x-ray, pointing them to the problem right away.

This seminar will try to present the potential of using Augmented Reality at the industrial shop-floor with the aim of improving the capability of the shop-floor operators. At the seminar, a prototype system for augmented reality will be demonstrated. The usage of Augmented Reality system is presented and evaluated through different manufacturing companies' experiences.

Manufacturing companies of today face a global and rapidly changing market. To stay competitive, it is of critical importance for companies to continuously improve their shop-floor activities. A powerful tool in the future is Augmented Reality to improve shop-floor performance by enhance the capability of its operators. In their daily work, shop-floor operators constantly face complex and uncertain situations due to unpredictable events and uncontrollable variations, such as machine breakdowns, fluctuating product demand, reprioritizations, etc. There is a need of finding new methods and tools that increase productivity and quality by supporting the operators in making the right decisions and optimally operating the shop-floor.



*Augmented Reality on Shop-Floor. (Ref. CISCO Blogs)*

This seminar will try to illustrate different studies of improving the capability of shop-floor operators by using augmented reality. With augmented reality and artificial information about the environment and its objects gives the possibility to overlay the real world in order to enhance the operator's perception of reality.

Augmented Reality has recently begun to be discussed within the context of industrial shop-floors, but so far mainly as a concept and there exist few practical demonstrators. Grundfos, Danfoss & Tetra Pak will present their experience.

This seminar aims to advance the knowledge on augmented reality within the manufacturing domain by showing different implementations at manufacturing companies.

The aim of this seminar is to improve the participant knowledge of the Augmented Reality technology and how to use AR within industrial shop-floor context. Augmented reality might be one of the keys to fulfill the aim of improve shop-floor operations and maintenance.

Augmented Reality may be the application that serves as the pivot point for IoT adoption because of its proven applicability and readiness for core industrial activities such as quality inspection, work instructions and training.

The physical and digital worlds are converging into a single new reality thanks to IoT, and by pursuing augmented reality to connect the physical, digital and human experience. Augmented Reality will completely change everything - from engineering to manufacturing to sales.

Participate in the seminar and get a picture of the possibilities with Augmented Reality systems on shop-floor.

Hope to see you and your colleagues at the interesting seminar on January 10, 2018 in Copenhagen.

3P-Technology	Danish Crown	Lenze A/S	Linco Food Systems	Linco Food Systems	Siemens AB
Alfa Laval AB	Dansk Miljø- & Energistyring a/s	Linco Food Systems	Lunds Universitet	Lunds Universitet	Siemens A/S
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Arla Foods A.m.b.A.	Elcon Automation A/S	Mitsubishi Electric Europe B.V	NIRAS A/S	NIRAS A/S	Technodan Industrial Controls A/S
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Balslev Automation A/S	Epista IT A/S	Norconsult A/S	Novo Nordisk A/S	Novo Nordisk A/S	Tetra Pak Sverige AB
Bang & Olufsen	EPLAN Software & Service AB	Novo Nordisk A/S	Novotek A/S	Novotek A/S	Toms Gruppen A/S
Beckhoff Automation ApS	ETC Teknik A/S	Novotek A/S	Omron Electronics A/S	Omron Electronics A/S	Tresu Group A/S
Beckhoff Automation AB	Fjernvarme Fyn A/S	Omron Electronics A/S	Operator Systems	Operator Systems	Tricon Techsoft A/S
Beijer Electronic A/S	FPA Consult AB	Operator Systems	PC Schematic A/S	PC Schematic A/S	VandCenter Syd A/S
Beumer Group A/S	Frederiksberg Forsyning A/S	PC Schematic A/S	PD Automation	PD Automation	Velux A/S
Boliden Bergsöe AB	Frontmatec	PD Automation	Phoenix Contact	Phoenix Contact	VIA University College, Horsens
Biofos A/S	GEA Liquid Engineering A/S	Phoenix Contact	Perstorp AB	Perstorp AB	Vestforsyning Erhverv A/S
Bovbjerg Proces	Gram Equipment A/S	Perstorp AB	Picca Automation A/S	Picca Automation A/S	Wonderware Schneider A/S
Cabinplant A/S	Grundfos Holding A/S	Picca Automation A/S	Eltronic PJD A/S	Eltronic PJD A/S	Wonderware Schneider AB
Caljan	Hans Følsgaard A/S	Eltronic PJD A/S	Prevas AB	Prevas AB	Zenit Automation
Carlsberg Danmark A/S	Hild	Prevas AB	Rambøll Danmark A/S	Rambøll Danmark A/S	Öresundsbro Konsortiet
CGI Danmark ApS	HOFOR	Rambøll Danmark A/S	Ringkøbing-Skjern Forsyning A/S	Ringkøbing-Skjern Forsyning A/S	Ørsted
Chr. Hansen A/S	IGE+XAO Nordic A/S	Ringkøbing-Skjern Forsyning A/S	Rockwell Automation AB	Rockwell Automation AB	ÅF AB
CIM Electronics A/S	integra2r ApS	Rockwell Automation AB	Rockwell Automation A/S	Rockwell Automation A/S	ÅF A/S
Coloplast A/S	i2r A/S	Rockwell Automation A/S	Rockwool International A/S	Rockwool International A/S	Aalborg Energie Teknik a/s
Confirm A/S	Insatech A/S	Rockwool International A/S	Saint-Gobain Isover a/s	Saint-Gobain Isover a/s	Aarhus Karlshamn A/S
CORE A/S	Intego A/S	Saint-Gobain Isover a/s	ScandiStandard - Danpo	ScandiStandard - Danpo	Aarhus Karlshamn Sweden AB
CO-RO A/S	Intelligent Systems A/S	ScandiStandard - Danpo	Schneider Electric AB	Schneider Electric AB	Aarhus Vand A/S
CP Kelco ApS	Krüger A/S	LEGO Systems A/S	Schneider Electric A/S	Schneider Electric A/S	
Danfoss A/S	LEGO Systems A/S	Lemvigh-Müller A/S	Secomea A/S	Secomea A/S	
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