SMART MANUFACTURING BREAKOUT SESSION

ALEC McMILLAN MODERATOR

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QUESTION #1: DOES SMART MANUFACTURING HAVE SPECIFIC REQUIREMENTS FOR SMART CONTRACTS?

- **This was an especially challenging question to address since block chain, and more specifically, Smart Contracts are in their infancy in terms of development.**
- **In reality, only 4-5 of the requirements listed below would be specific requirements for Smart Manufacturing:**
  - Technological space
  - Data Sensitivity
  - Common Sensitivity
  - Interoperability
  - Taxonomy
  - Data Structure
  - (Potential) Anonymity of data
  - National/Regional regulation
  - Defined reaction times
  - Timed criticality
  - Access control
  - No data localization requirements
  - Special requirements for legal contracts
  - Business to business requirements
  - Traceability
  - Security
  - Ability to upgrade / Flexibility
  - Ability for interaction between Smart Contracts

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ACTION ITEMS

- Submit this report to the ISO committee for block chains (ISO TC 307) for information
- Highlight the 4-5 Smart Manufacturing Smart Contracts requirements for the USNC TAG and DKE mirror committee attention
- Ask ISO TC 307 to find out what's already available in industry
- Develop Block Chain Use Cases using invited industry manufacturing experts to participate within ISO TC 307

QUESTION #2: HOW CAN WE COMBINE SAFETY AND SECURITY? IS SAFETY EXTERMINATING SECURITY? HOW CAN WE ALIGN THE SHOP-FLOOR WITH THE OFFICE-FLOOR?

- The key element is Risk Assessment; the processes for safety apply also for security. In Smart Manufacturing both have to be taken into account simultaneously. Safety is static and security is dynamic
- Control access into the machine; access is not always necessary. What is needed for predictive maintenance is the data from the machine? If access is needed it must be restricted and monitored
- Build the digital twin and test the overall package (safety and security)
- More cooperation between ISO and IEC and other SDOs is required

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QUESTION #2: HOW CAN WE COMBINE SAFETY AND SECURITY? IS SAFETY EXTERMINATING SECURITY? HOW CAN WE ALIGN THE SHOP-FLOOR WITH THE OFFICE-FLOOR?

- The dialogue will lead to an evolution of the roles within an organization
- In standardization we have to implement a matrix-organization and put the system into focus
- Complement the existing work in silos of today
- Building resiliency into the design of the smart manufacture/plant

- ACTION ITEM:
  - Have ISO & IEC Groups work together in a more collaborative way.

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QUESTION #3: IS THE GERMAN MODEL OF THE STANDARDIZATION COUNCIL ADOPTABLE FOR THE USA? HOW IMPORTANT IS TRANSATLANTIC COOPERATION AND DO WE NEED AN INTERNATIONAL STANDARDIZATION COUNCIL?

- The German model of a Standardization Council was established initially by large German industrial companies. Strong anti trust rules.
- Some two years later, government become involved and reached out to SME's and extended the stakeholder interest.
- The Standardization Council promotes a top down RAMI model picture
- Trade associations (VDMA, ZVEI, BITCOM) are looking at bottom-up education for limited resource SME with focus on specific areas.
- Government funding is limited to international outreach and local market activities
- There are industry funding challenges for the standardization council

QUESTION #3: IS THE GERMAN MODEL OF THE STANDARDIZATION COUNCIL ADOPTABLE FOR THE USA? HOW IMPORTANT IS TRANSATLANTIC COOPERATION AND DO WE NEED AN INTERNATIONAL STANDARDIZATION COUNCIL?

- General consensus is that the USA needs a focal point to:
  - Provide education and training on what research, standards and industry programs exist in the US today
  - Provide assistance to US industry in identifying which activities and organizations are relevant to their individual goals
  - Promote links and action plans to bridge the gap from R&D implementation pilots to standards development activities
  - Engage large US manufacturing business in setting a US strategy
  - Engage government recognition and support of the initiative
  - Engage trade associations (SME), regulators, system integrators

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QUESTION #3: IS THE GERMAN MODEL OF THE STANDARDIZATION COUNCIL ADOPTABLE FOR THE USA? HOW IMPORTANT IS TRANSATLANTIC COOPERATION AND DO WE NEED AN INTERNATIONAL STANDARDIZATION COUNCIL?

- In the USA there is no central coordination entity
- Possible structures brain stormed include:
  - An independent industry funded consortium
  - A government sponsored initiative akin to "Smart Grid" at "NIST" could this be a component of US infrastructure investment?
  - Expansion of NIST smart manufacturing program office currently administrator of 14 independent US focused Innovation Institutes
  - ANSI company member forum – strong US manufacturing company initiative and support required with government recognition

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ACTION ITEMS

- Explore ANSI taking an initial role utilizing the resources of the Company Member Forum with support of Government and Organization Member Forums to communicate US smart manufacturing technology and standards programs
- Convene initial bilateral industry led meetings with DKE/DIN industry 4.0 organizations, and expand to other global leaders in smart manufacturing technology and standards to identify areas of interest
- INNOVATION INSTITUTES – Encourage the Innovation Institutes and other US based research activities to participate in the ANSI CMF program , provide presentations on their activities and identify standardization opportunities
- COMMUNICATION - There should be some kind of communication of all US and International smart manufacturing implementations to all stakeholders on a regular basis with a view to coordinating US participation efforts and leverage available resources to maximum effect

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SMART MOBILITY BREAKOUT SESSION

STEVE SILL MODERATOR

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QUESTION #1: HOW CAN MOBILITY STANDARDIZATION SERVE A GLOBAL MARKETPLACE, MEET LOCAL NEEDS AND FOSTER INNOVATION?

- **Scope: What can standardization resolve?**
- **Many "clean sheet" opportunities**
- **Pilots before large scale implementation**
- **Commercial and public sector, multi-SDO cooperation**
  - **Balance public and private interests**
- **Certification and testability are paramount**

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2. WHAT IS THE ROLE OF INDIVIDUAL AND PRIVATE TRANSPORT IN FUTURE MOBILITY?

- Definition:
  - Private: - under control of an operator
  - Public: - shared, scheduled, funded (individually, collectively)
- Answer depends on:
  - Geography (living in cities, suburbs, rural areas)
  - Economics (income)
  - Environmental situation (pollution)
  - Personal needs and abilities
  - Nature of the family unit
  - Dis/Connected to digital world

2. WHAT IS THE ROLE OF INDIVIDUAL AND PRIVATE TRANSPORT IN FUTURE MOBILITY?

- **Use-Cases can be derived from the circumstances and conditions mentioned**
- **The regulator has the chance to influence the transition process**
- **Fee on access to cities**
- **Fee on emissions**
- **Different speed of transition:**
  - **Cities, metropolitain area, rural areas (differs in time, need for funding)**

QUESTION #3: HOW CAN WE EFFECTIVELY MANAGE CYBERSECURITY IN A RAPIDLY EVOLVING MOBILITY ENVIRONMENT?

- Continuous monitoring of risks
- Implement the standards that already exist
- Setting the proper, effective incentives/penalties
- Formal compliance and certification
- Peer pressure/public shaming
- Larger credentialed cybersecurity workforce
- Learn from other industries
- Develop a quick way to share cybersecurity information
- Available repository of R&D results

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ACTION ITEMS

- Multi-SDO, stakeholder cooperation in mobility:
  - Facilitate pilot cooperation? Workshops?
  - Cooperation among traditional competitors – SDOs and businesses
- Near term:
  - Hold a workshop to develop a mechanism regarding cybersecurity information sharing
- Long term:
  - Develop cybersecurity educational programs for current practitioners
- Stakeholders need to cooperate on consensus on how to manage the integration of new transportation options for the public benefit.
  - e.g. Public transport funding can be rethought
- "De-emphasize private - promote public!"

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SMART AGRICULTURE BREAKOUT SESSION

DOROTHEE TORECKI MODERATOR

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1. WHY DO WE NEED STANDARDS TO SUPPORT THE REALIZATION OF SMART AGRICULTURE? HOW IMPORTANT IS TRANSATLANTIC COOPERATION (US/EUROPE AND/OR US/GERMANY) TO THE SUCCESSFUL DEVELOPMENT OF SMART AGRICULTURE STANDARDS?

- The problem – an increasing population to feed, a limited amount of farmland, and a decreasing farming workforce
- Nature hates a vacuum – there will be standards, either consensus industry-driven or government directed – standards are not the same as regulation
- Individual company or national solutions will arise if global or transatlantic solutions do not – this may not lead to sustainable solutions
- Consensus standards are a proven means to provide the process and platform to bring together/integrate diverse players for transatlantic or global solutions and be responsive to customer needs
- USA and Germany should join forces to lead directions for smart agriculture standardization as our approaches to agriculture are similar – and if we don't do it, this won't get done near term

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2. WITHOUT STANDARDIZATION, WHAT WOULD SMART AGRICULTURE LOOK LIKE AND HOW WOULD IT SUCCEED?

- Without standards, realization of smart agriculture will take longer and be more fragmented by competitive solutions
- Solutions may not be sustainable or responsive to customer needs
- Interoperability of equipment will not be optimized
- A common language will be lacking for collaboration between agriculture and other disciplines such as the finance community
- Agriculture will not be sustainable for some farmers over time
- Without standards, agriculture may face greater regulation

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3. WHAT STANDARDS MAY BE MISSING AND ARE NEEDED FOR SMART AGRICULTURE TO SUCCEED? BY WHAT TARGET DATES SHOULD SUCH STANDARDS BE DEVELOPED AND BY WHOM?

- **ANSI, DIN and DKE should establish a joint strategic-level study group on smart agriculture to understand:**
  - **the needs of farmers, parties that require data from farmers and consumers of agricultural products;**
  - **the possible future directions of regulations related to agriculture;**
  - **the range of existing standards available from ISO, IEC, ITU-T, other SDOs and consortia that may contribute to smart agriculture**
- **This joint strategic study group should develop a coordinated vision/roadmap/gap analysis with recommendations for possible new standards initiatives**
- **Consideration should be given to making this a broader initiative – Europe and North America**
- **Target date: mid-2019 for results**

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