



A Virtual Conference presented by AIM & RAIN  
9 - 10 December 2020



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# RAIN RFID Alliance

Engage Again event  
9-10 December 2020

Philippe Lallement, Michelin  
Claude Tételin, GS1 Global Office



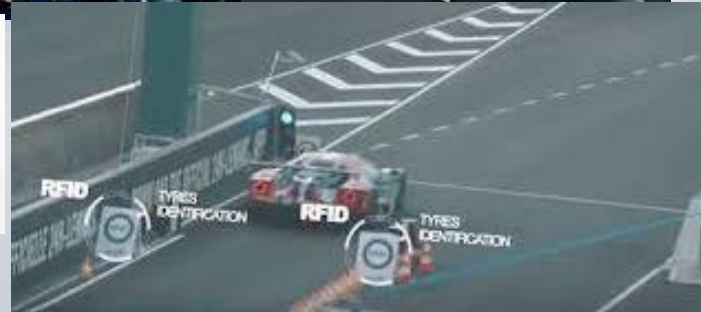
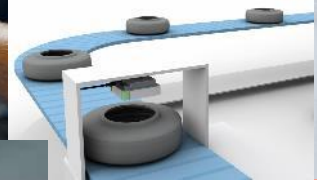
# *RAIN RFID tire tagging: a major step toward end-to-end traceability*

## **Agenda**

- *Tire tagging is the solution to many traceability use cases ...*  
*... along a complex product life cycle*
- *4 major ISO standards have been recently published*
- *RAIN Tire Guidelines*



# Internet Search “Tire RFID”



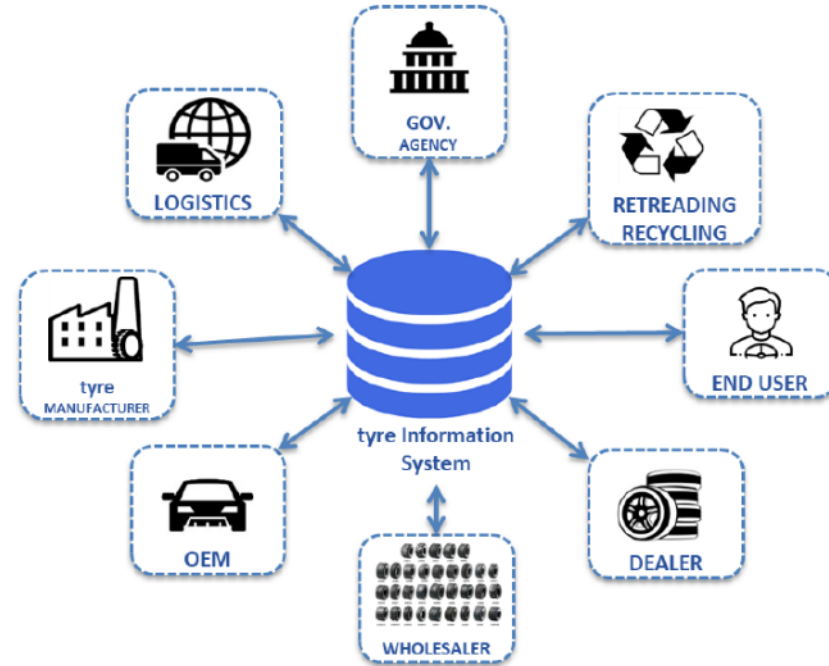


# More than 1 stakeholder requirement

## Tire Information Service



AFTER TYRE **UNIQUE ITEM IDENTIFIER** IS CAPTURED, THE TYRE INFORMATION SERVICE IS AN ENABLER TO PROVIDE NEW SERVICES TO DIFFERENT STAKEHOLDERS THROUGH INFORMATION TECHNOLOGY SOLUTIONS



# Many value points

## Gain efficiency and optimize operations

*of tire management during the whole tire lifecycle*



## Improve customer experience

*By enabling **connected services** for OEMs, customers and consumers to ease driver journey and tire replacement*



*Optimized logistics /  
Delivery / Order out*



*Better stock / inventory  
management*



*Right assembly  
tire / rim*



*Right tire  
on the right car*



*Better  
joint tests*



*Better lifecycle  
management /  
Recycling*



*Better certification  
management*



*Better claim / recalls  
management*



*More safety /  
More trust*



*Peace of mind / trust  
vs fake /  
Car control*



*Better maintenance &  
**after sales enabler***



*CRM enabler /  
Loyalty driver*



*Winter wheel / Tire  
Hotel management*



*Predictive  
maintenance & eco  
performance*



# From local initiatives to ISO

## ***SUPPORTIVE TIRE RFID STANDARDS INITIATION***

- *JAIF , AIAG, VDA*
- *TMC , RMA, ETRTO, USTMA, TC-19*

## ***4 ISO standards published from Mid 2019 to Q1-2020***

- *Kickoff: 2016*
- *Conveners : China & France*
- *Active participant countries : Austria, China, Finland, France, Germany, Italy, Japan, Korea, USA*
- *Participants : tire manufacturers , RFID tech*





# 4 ISO Standards #RFID enabled tire

## ***ISO 20909 - Radio Frequency IDentification (RFID) tire tags***

- *UHF RFID technology / "RAIN"*
- *Basic requirements for "Embedded", "Patch", "Sticker"*
- *15 cm minimum read distance*

## ***ISO 20910 - Coding for Radio Frequency IDentification (RFID) tire tags***

- *SGTIN96 coding permalocked by tire manufacturer. Optional User Memory*

## ***ISO 20911 – Tagging technology classification for RFID tire tags***

- *Basic technology definition for "Embedded", "Patch", "Sticker"*
- *Sidewall marking*

## ***ISO 20912 - Conformance test methods for RFID enabled tires***

- *Open Space Method*
- *Semi Anechoic Method*



# RAIN Tire guideline

- **Primary goal of the Workgroup**
  - *Educational material to support ISO standards (focus on ISO 20910)*
  - *Understanding GS1 numbering system (creating and encoding SGTIN-96)*
- **Main sections**
  - *GTIN (Global Trade Item Number), GCP (GS1 Company Prefix) and Item Reference*
  - *From GTIN to Serialized GTIN (SGTIN)*
  - *How to create Serial Numbers*
  - *Commissioning RAIN tags*
  - *Summary and Operating Mode*

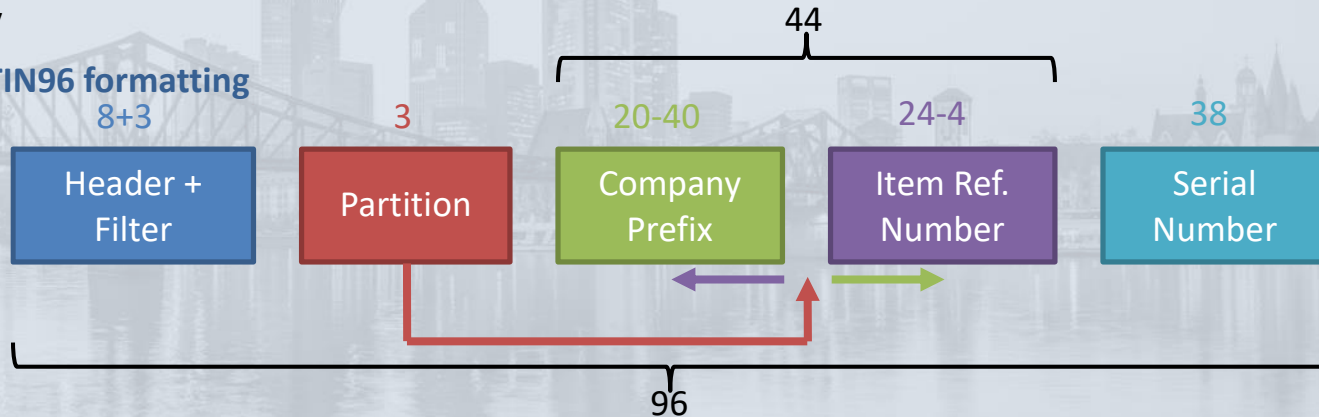


# SGTIN-96 coding

SGTIN-96 coding, as specified in ISO 20910, provides a **Unique Item Identification (UII)** capability within the scope of the whole Tire Industry (**Worldwide, All tire manufacturers, All brands**)

- Every single tire produced in the world can have a Unique ID number (encoded in the EPC memory of a RAIN tag)
- Benefit from small capacity RAIN tags with GS1 SGTIN-96 format (38-bit long serial number)
- Every tire manufacturer can decide how to implement and generate the SGTIN96 within its organization with some (but limited) flexibility

## Typical SGTIN96 formatting



### Company prefix/code

- Is specific to the tire manufacturer and is assigned through the GS1 organizations
- Can be selected as « company » or « brand »

### Item Ref. Number

- Is unique for every single type of tire
- Is defined by the tire manufacturer

### Serial Number

- Is defined by the tire manufacturer such a way that every individual from the same item will have a specific serial number



# RAIN Tire tag commissioning

- **It's not only about encoding SGTIN-96**
  - *Proper SGTIN-96 encoding allows unique identification of tires, no more, no less*
  - *Other parameters have to be properly set in order:*
    - *to avoid Acid Rain (interference with other applications)*
    - *to protect the content of Tire tags*
    - *to avoid misuse of RAIN RFID features like Kill or Untraceable*
- **Tag commissioning**
  - *Encode PC bits (EPC length, Toggle bit and Attribute bits) and optional XPC\_W1*
  - *Permalock EPC memory*
  - *Disable Kill function*
  - *Protect from misuse of Untraceable command (hide the entire EPC...)*



# Tentative planning



# Thank You !





# Thank you for Attending



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**Presentations will be available on-line soon. You will receive an email with a link when they are available.**