

# *Tire RFID*



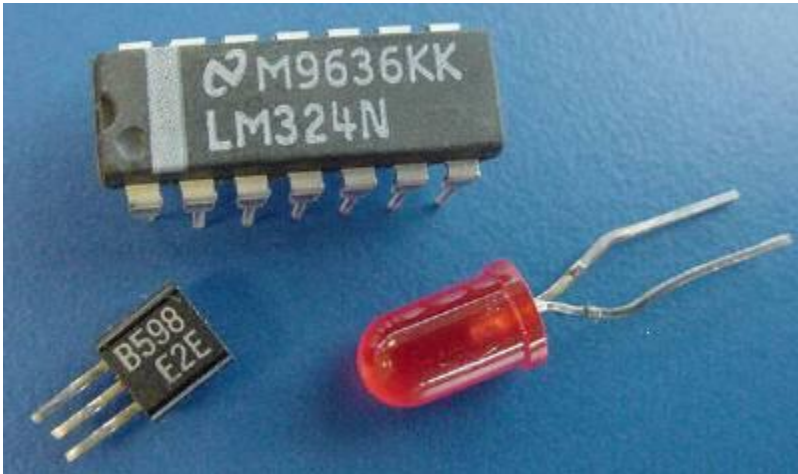
# Objectives

- **Why is tire industry using RFID?**
  - **History, purpose, Technology**
- **Why is this the right time to start implementing RFID?**
  - **Standards, Technology**
- **How has the Tire Industry helped to lead the process of Automotive Standards,?**
- **Moving Forward.**



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# Electronics in Tires



*The tire is a hostile environment for electronics.*

# It' All About The Data

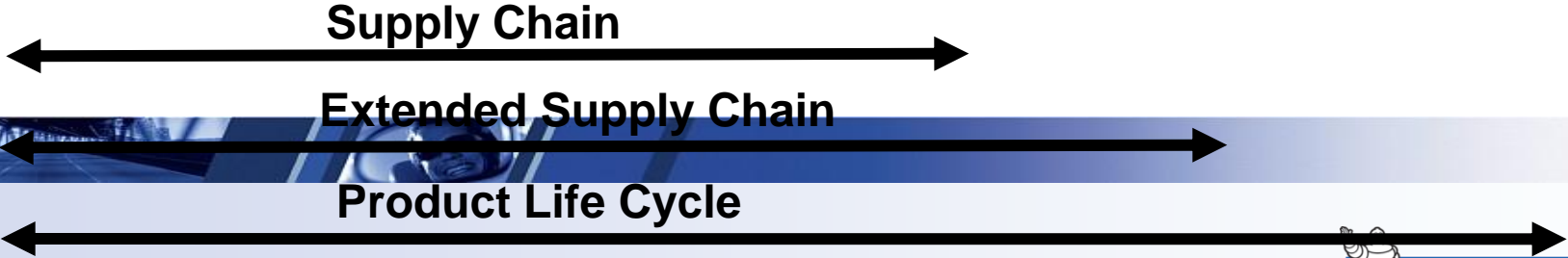
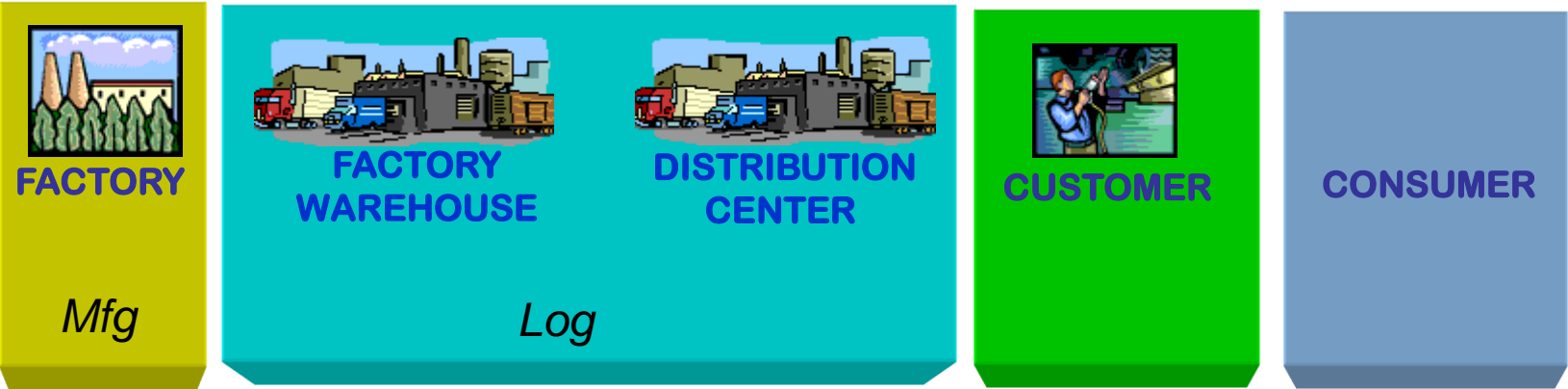
- **RFID is a tool, a means to an end**
  - It adds value by allowing one to track assets more easily and more accurately than other technologies.
  - Fleets and recappers, for example, can benefit by having efficient means for tracking their tires.
  - An RFID with memory can substitute for almost all of those labels.



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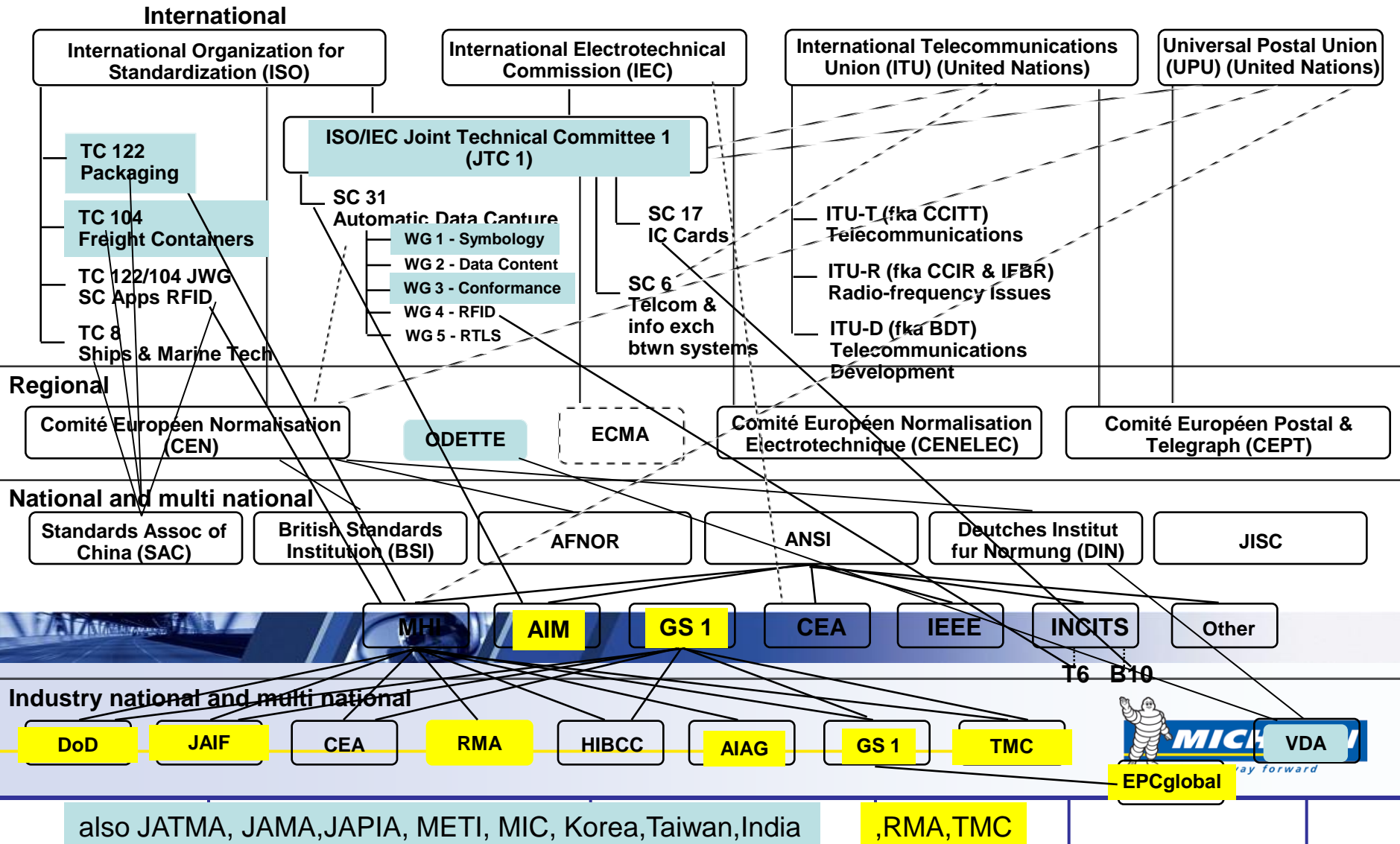
# The Total Picture

What impact could RFID have over the entire product life cycle?



# P King association

yellow = direct, blue = indirect



# Joint Automotive Industry Forum

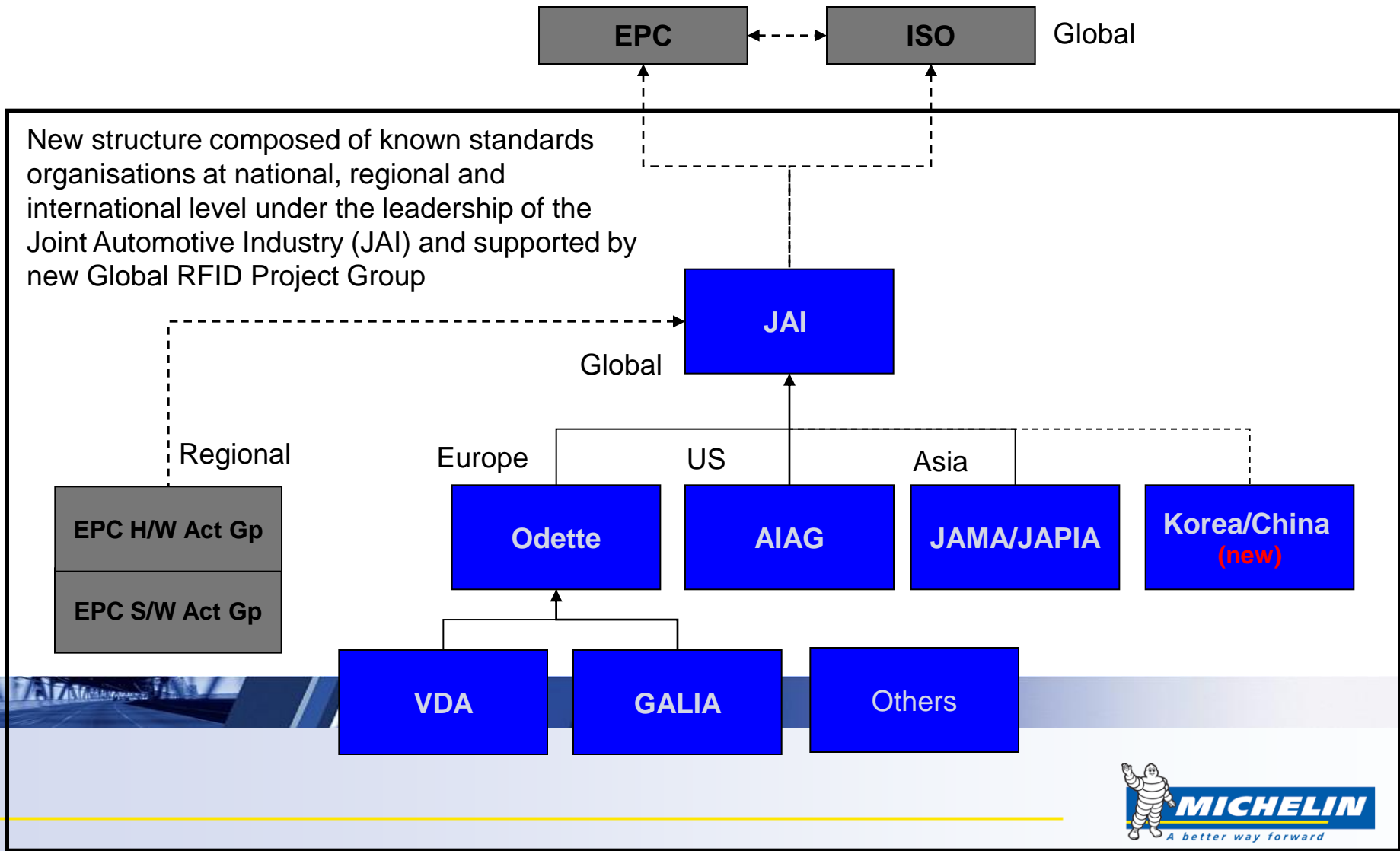
## Consituents

- JAMA - *Japan Automotive Manufacturers Association*
- JAPIA - *Japan Auto Parts Industries Association*
- ODETTE - **Europe**
- AIAG - **North America**



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# JAI (Joint Automotive Industry Action Group for Data Standards)



# Tire RFID Standards: Key Components

## ■ 3 Key Standards Components:

### 1. Allowed Frequency/Power

*(: regulated both regionally and country by country)*

### 2. Data Syntax

*(language for exchange: literally the language for machines to speak to each other)*

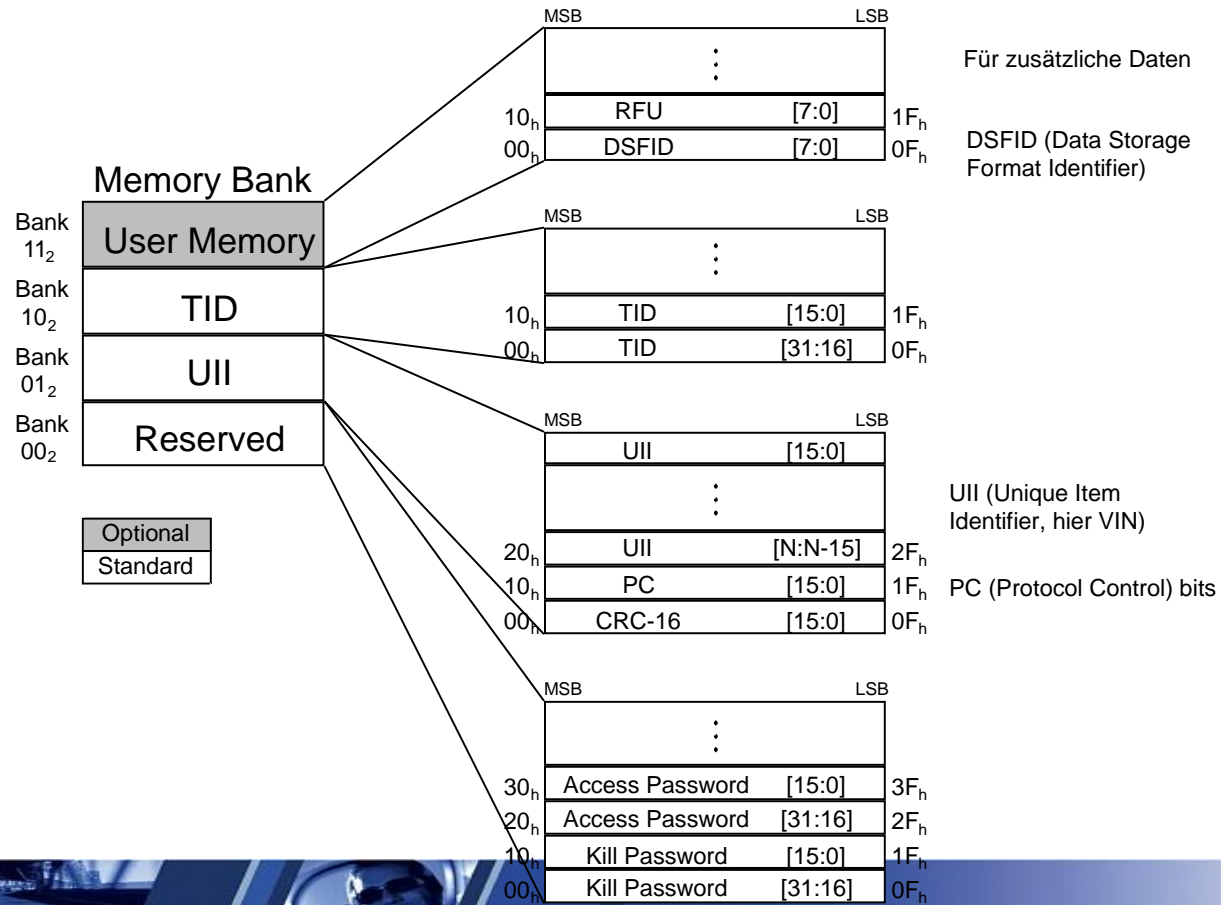
### 3. Applications

*( specific for tire needs: B2B or C2B specific industry norms for data exchange (human to machine)*



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# Structure of data storage



# AIAG B-11 Rev 8 (Odette 5510)

Table 3: SGTIN-96 Birth Record Example: When PC Bit 17<sub>h</sub> = 0<sub>2</sub>;

Reserved / AFI	UII					
	IAC			CIN	SN	
	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
00h	48 <sub>10</sub>	0 <sub>10</sub>	6 <sub>10</sub>	123456 <sub>10</sub>	012345 <sub>10</sub>	123456789012 <sub>10</sub>

Table 4: ISO Birth Record Example: When PC Bit 17<sub>h</sub> = 1<sub>2</sub>;

Reserved / AFI	UII				
	DI	IAC	CIN	SN	
				Part Number	Serial Number
A1 <sub>h</sub>	25S	UN	987654321 <sub>10</sub>	87654321 <sub>10</sub>	A2B4C6D8E



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# Tag data standards

- Global and harmonized between organizations
  - ◆ EPCglobal
  - ◆ AIAG B11
  - ◆ ISO/IEC 15962, 17367, 18000-6c...
- Michelin participates in developing these standards and supports EPC SGTIN-96 encoding for the tire industry with User Memory including Automotive DI's (data identifiers)

48.0.6. 086699. 059853. 051000000001

SGTIN-96-bit  
EPC Tag

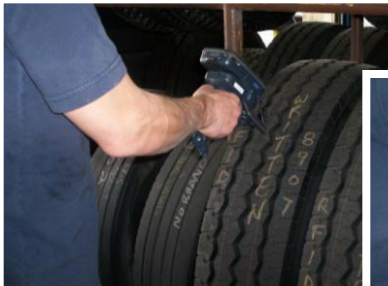
0Dh.21S.MKB5A8VWR2405.S.AAO1234567.D4.1006  
4.

User Memory  
with Two DI's

Example (DSFID/DOT/Number/date Julian)

# Fleet Management Pilots

- Tires are one of the largest maintenance costs for a fleet - the tire asset has a high \$ value, so there is a great need to track the asset
- Inventory Management for tires both on vehicles and in standing inventory is difficult, time consuming and open to manual error
- RFID pilots practically tested the application of RFID in this arena to determine actual gains available → RFID advantages show reduction in costs due to:
  - ◆ Reduction in time for collection of data - electronic collection of RFID Tag ID is considerably quicker than manual documentation of brand numbers
  - ◆ Improvement in accuracy – electronic collection is virtually error free as opposed to manual writing of brand numbers ... and is an environmentally friendly option!
  - ◆ Electronic feed of data for analysis and monitoring – electronic data feed is quicker and more accurate than keying from paperwork
  - ◆ Overall, RFID is a more cost effective method of uniquely tagging tires to allow improved asset management



# Moving Forward

1. **B2B : Truck tires, including retread, with service improvement for the client (ROI) and efficiency gains for.**
2. **B2B : Other high-value tyre segments such as aircraft, earthmover, agriculture and competition (Traceability).**
3. **B2C : Low cost /high volume passenger car tires (Security). *Probable only if imposed by government regulation.***



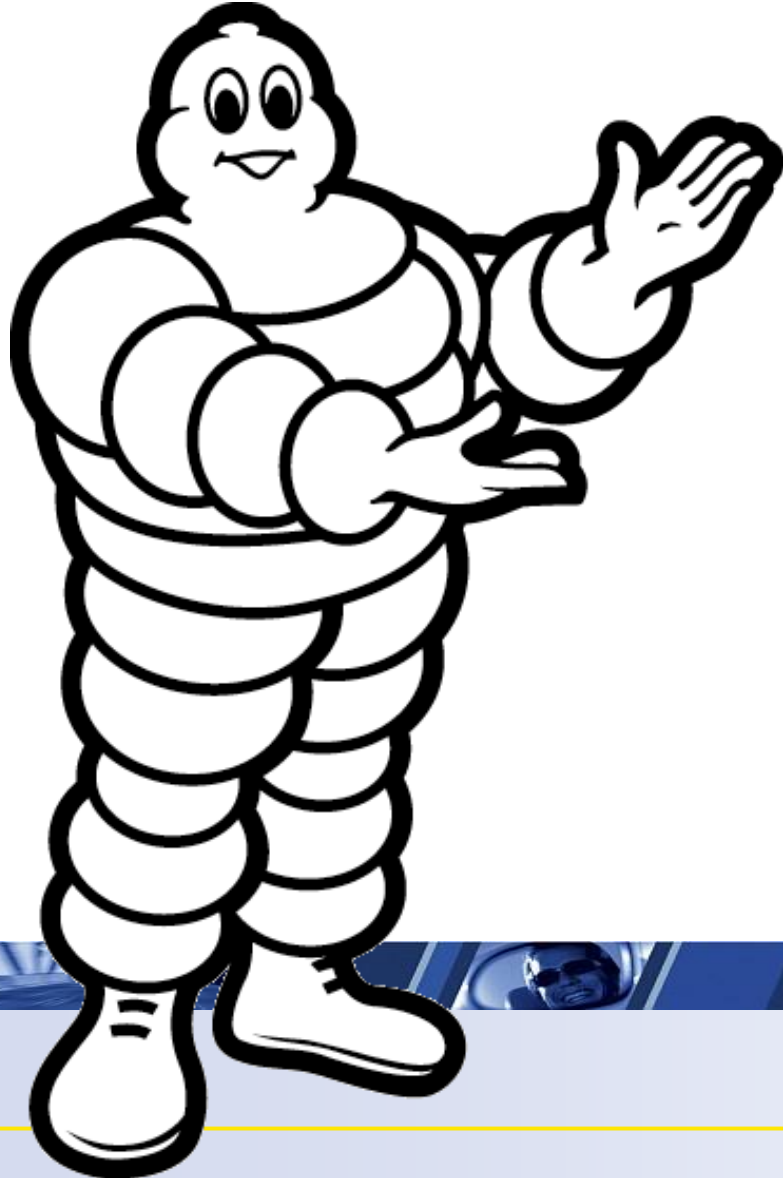
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# Conclusions

- **World Community seeking common standards**
  - ◆ Retail driving many standards
- **Tire Industry leading many activities**
  - ◆ Industry benefit
  - ◆ Industry risk avoidance



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**Thank you!**

**Additional information:**

**[pat.king@us.michelin.com](mailto:pat.king@us.michelin.com)**

**Google: “Michelin RFID”**

**[www.aiag.org](http://www.aiag.org)**

**[www.odette.org](http://www.odette.org)**

