



# Safety Culture in the age of the 4<sup>th</sup> Industrial Revolution

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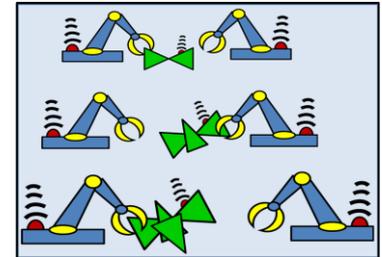
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# Scope

- **Safety Culture & the 4<sup>th</sup> Industrial Revolution**
- **Safety & Security**
- **Safety (& Security) Regulation**
  - Up-front vs Ongoing Regulation
- **Summary & Questions**

# Industrial Revolutions

4<sup>th</sup> – Cyber-Physical Systems & IoT (~2016)



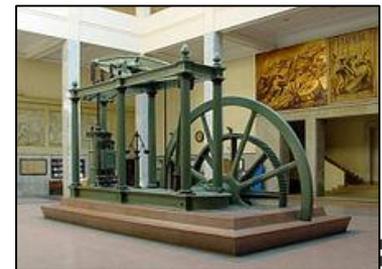
3<sup>rd</sup> - Electronics & IT (~1970)



2<sup>nd</sup> - Steel & Mass Production (~1850)



1<sup>st</sup> - Factories & Steam Power (~1760)



# Aspects of the 4<sup>th</sup> Industrial Revolution

## 2020 Internet of Things

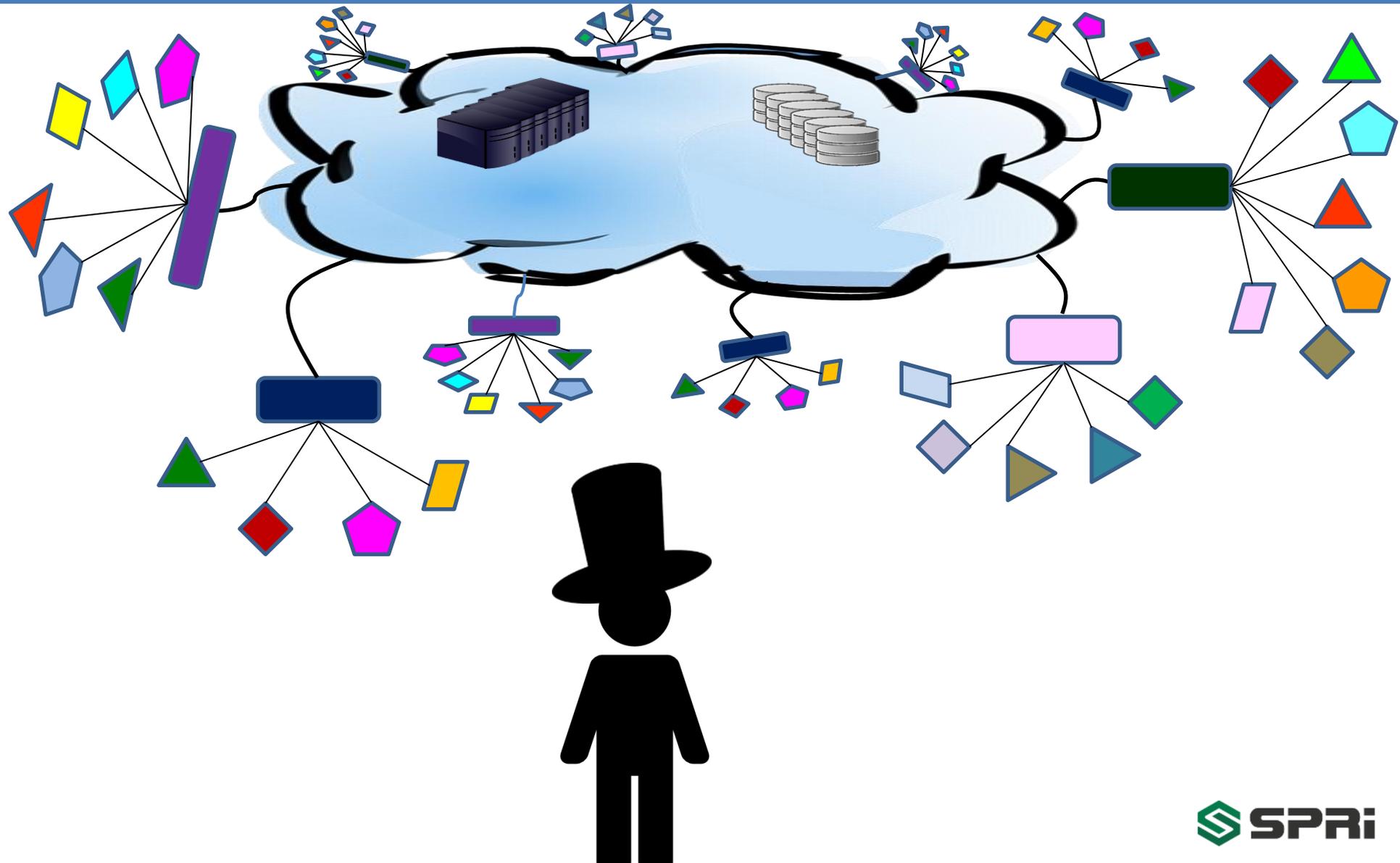


~212 Billion 'Things'  
(up to US\$5 Trillion)

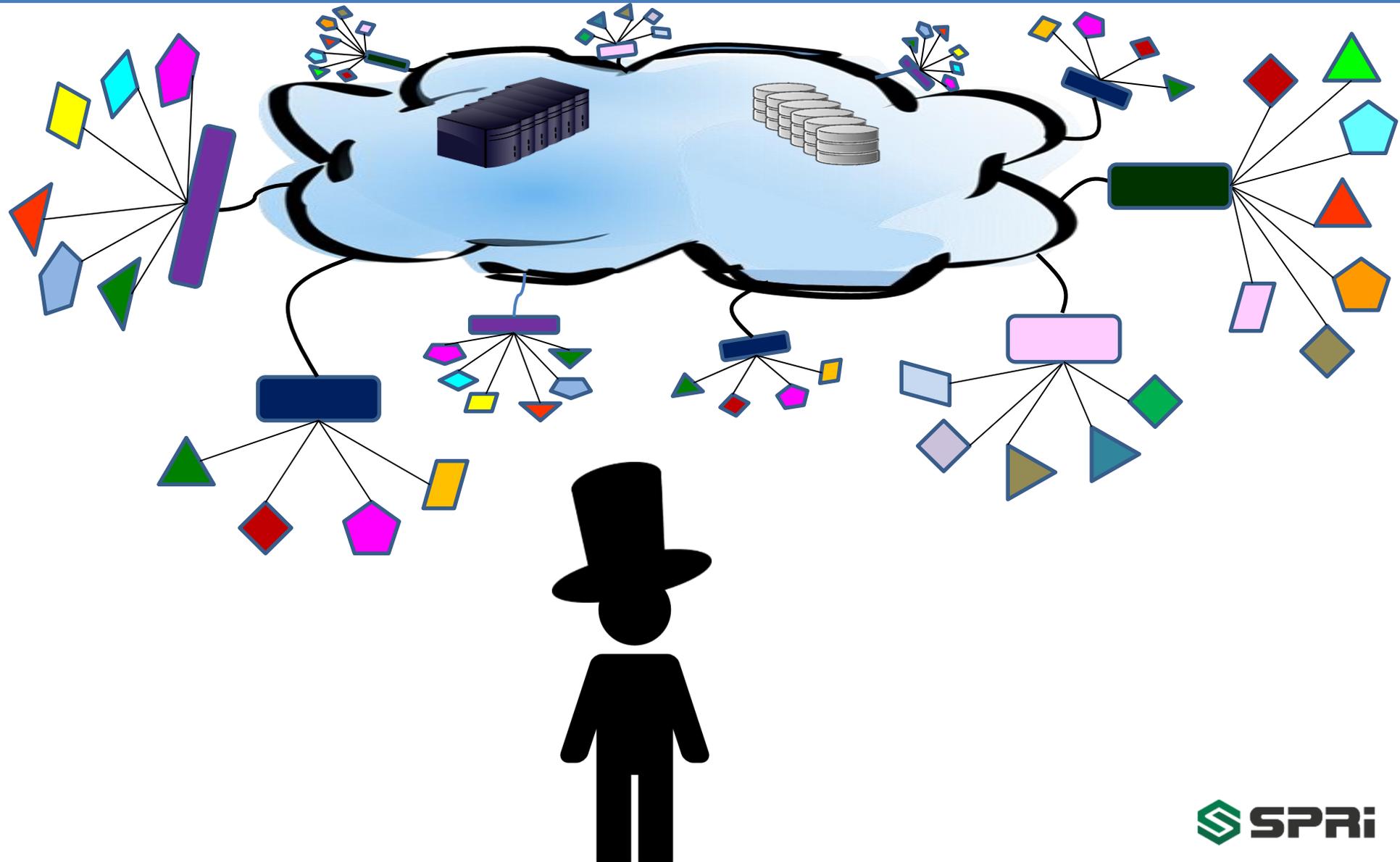
**CONNECTED  
EVERYTHING!**

- Smart Factories
- Smart Cities
- Smart Buildings
- Smart Energy
- Smart Wearables
- Smart Health
- Smart Retailing
- Smart Transport
- Smart Agriculture
- :
- Smart Everything!

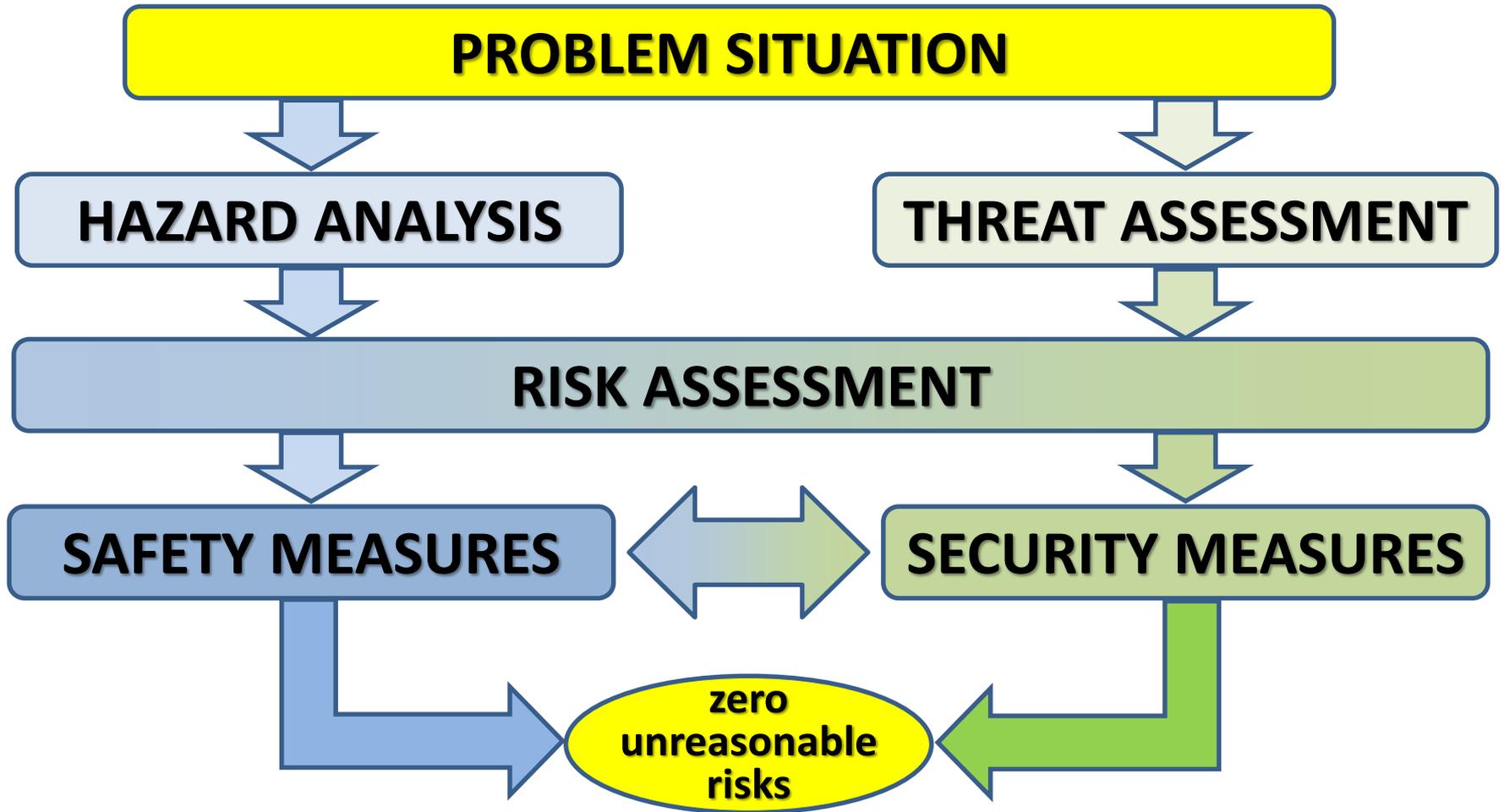
# IoT – Higher possibilities for accidents



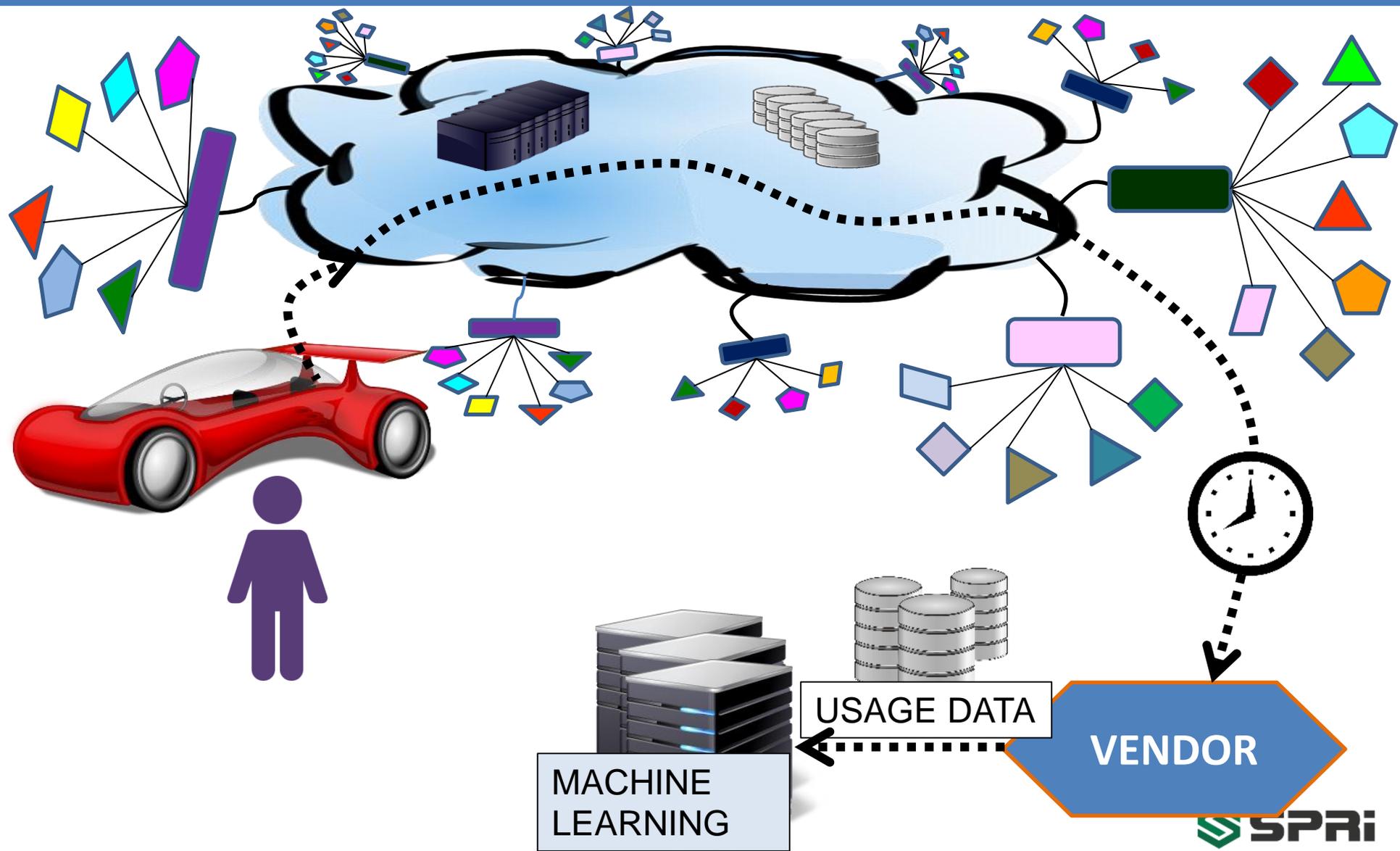
# IoT – More Opportunities for Bad Guys



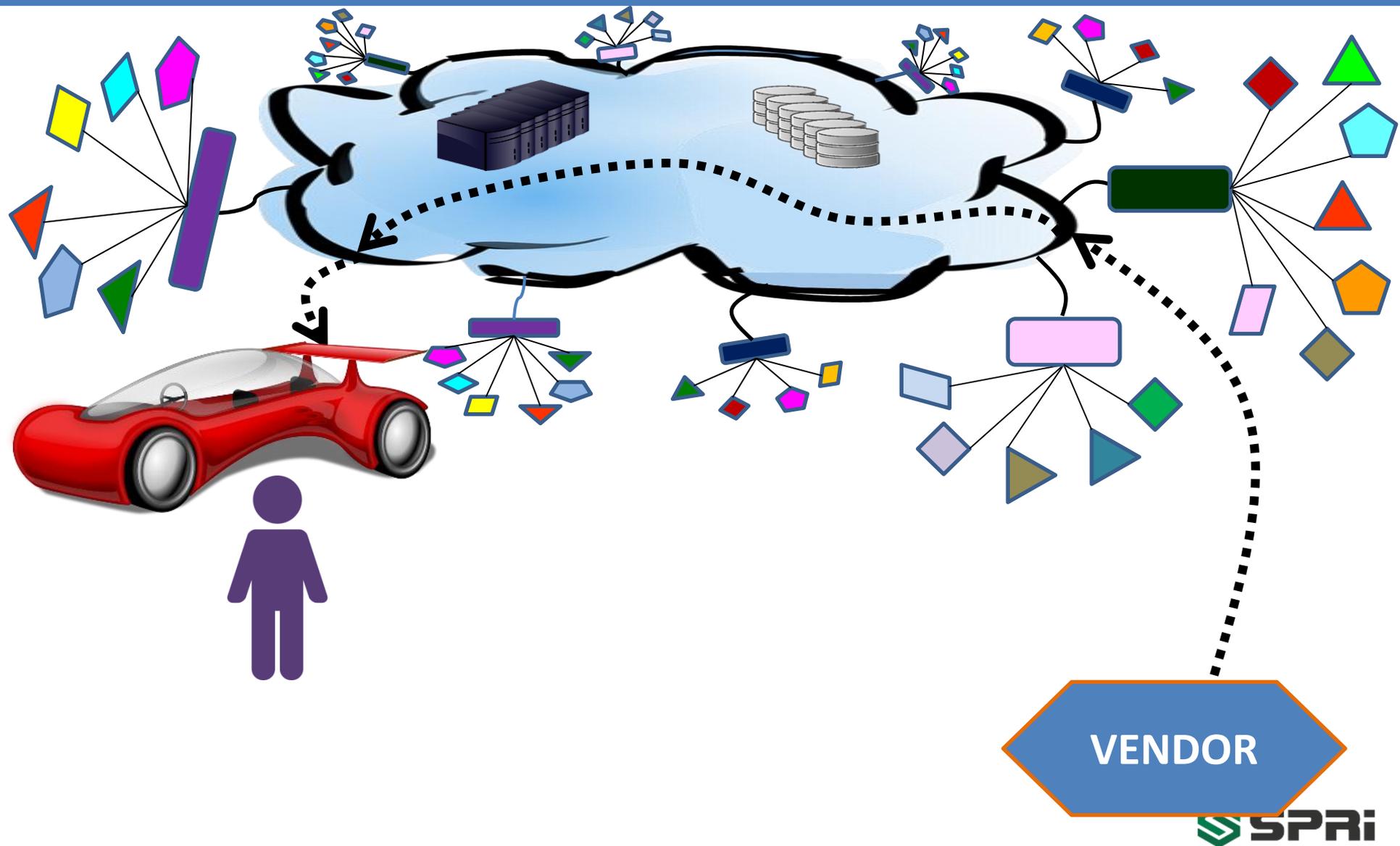
# Safety ↔ Security



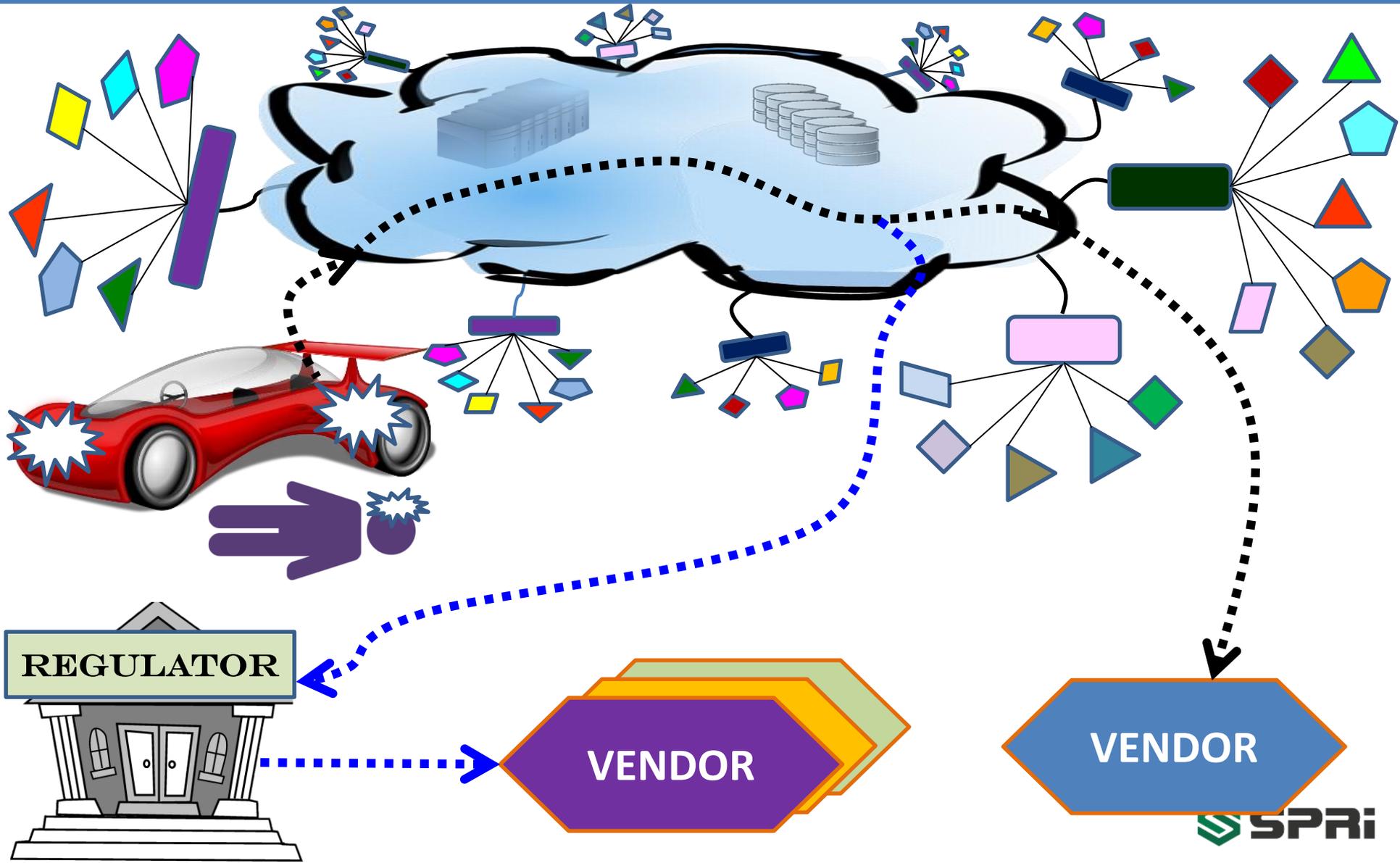
# Learning – from Day-to-Day Use



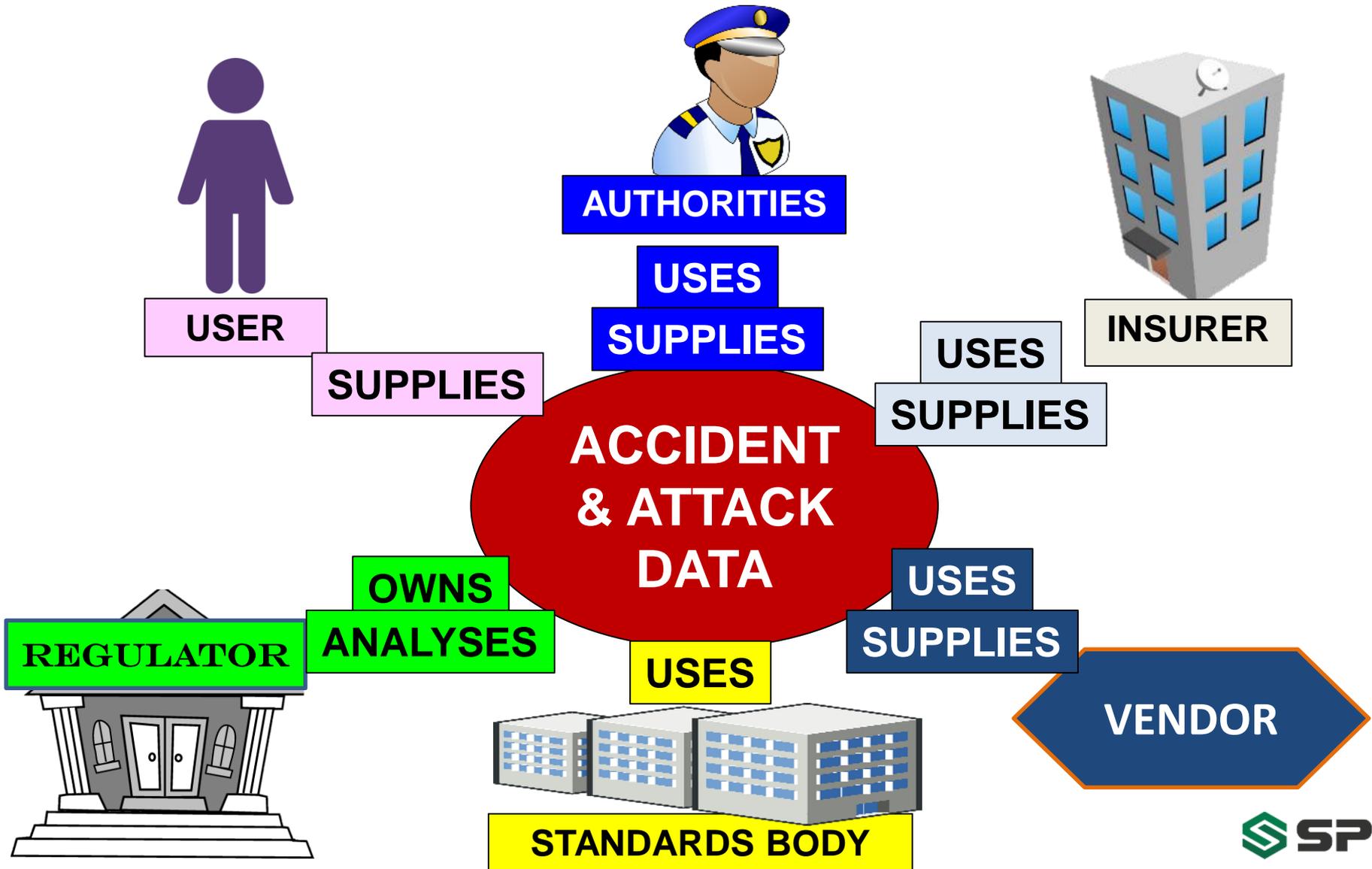
# Performance - Over-The-Air (OTA) Updates



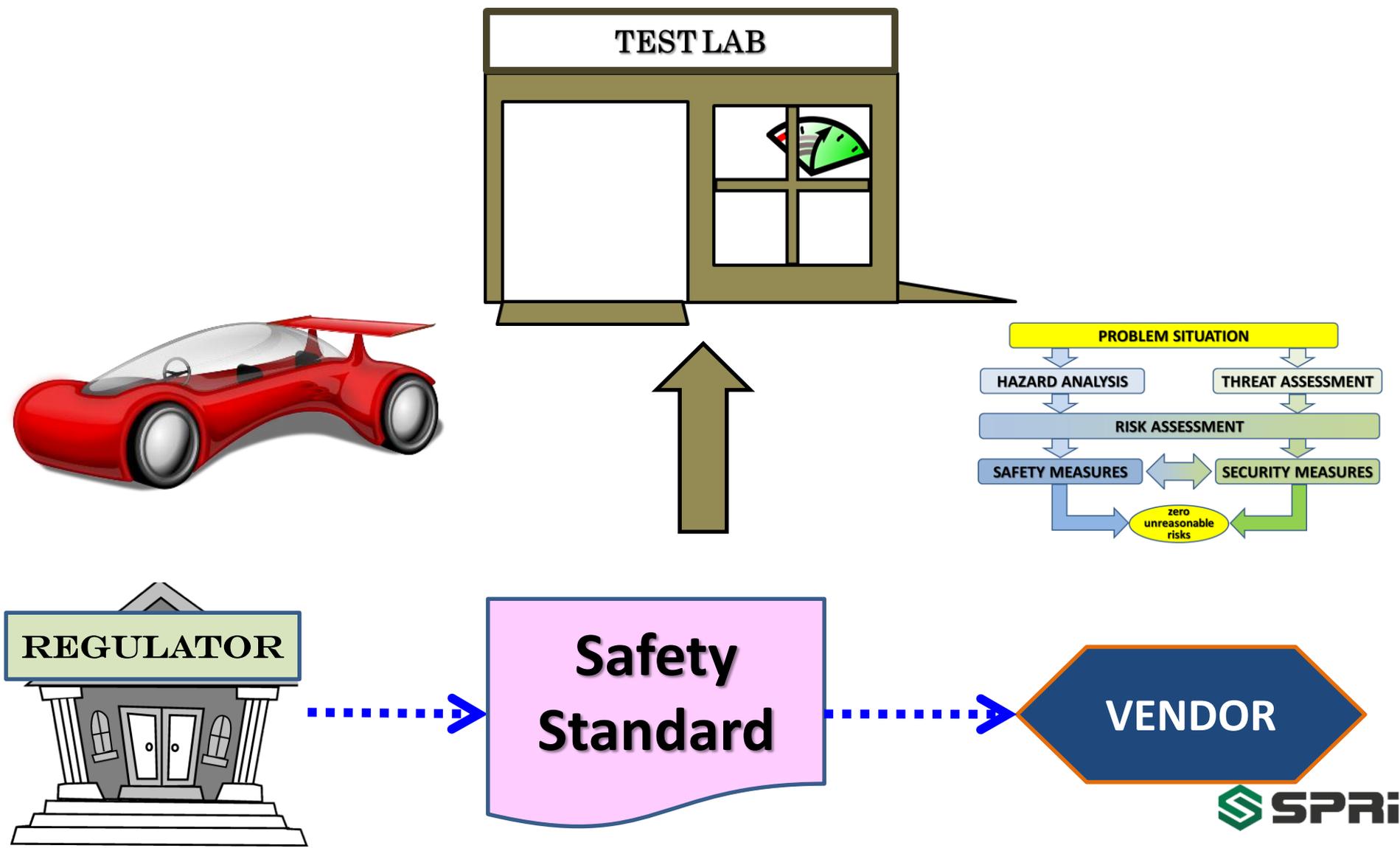
# Learning – from Accidents & Attacks



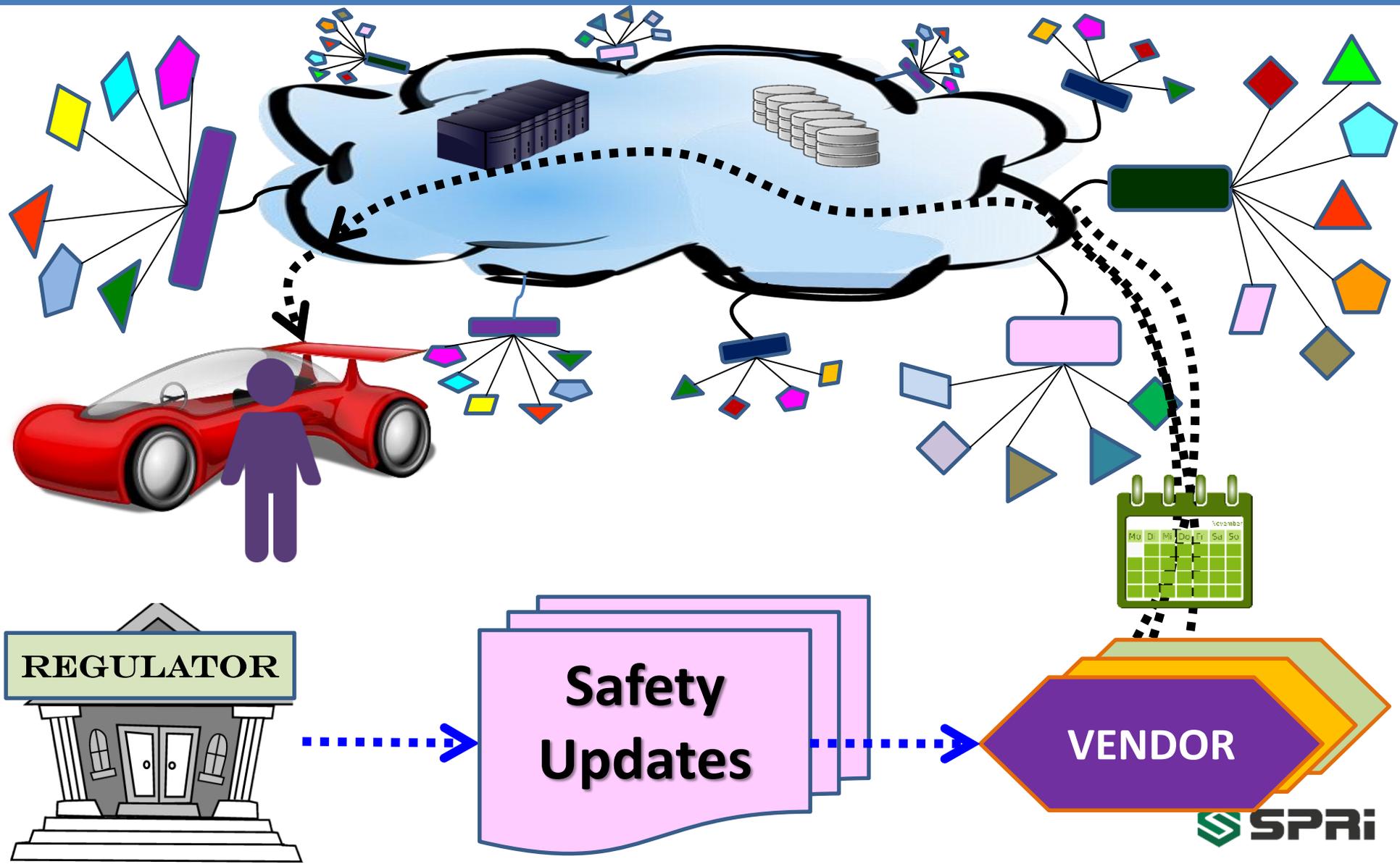
# Accident & Attack Data



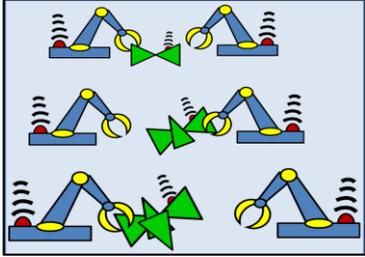
# Up-front Safety Regulation



# On-going Safety Regulation – OTA



# Safety Culture & Industrial Revolutions



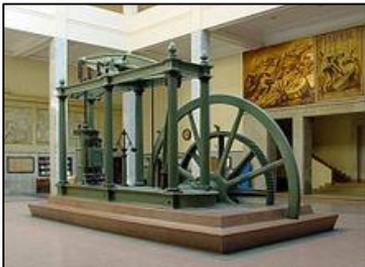
- **4th – Society-oriented**
  - We need a holistic approach to safety as we all interact with the technology



- **3rd – Organization-oriented**
  - ‘The way we do things around here’



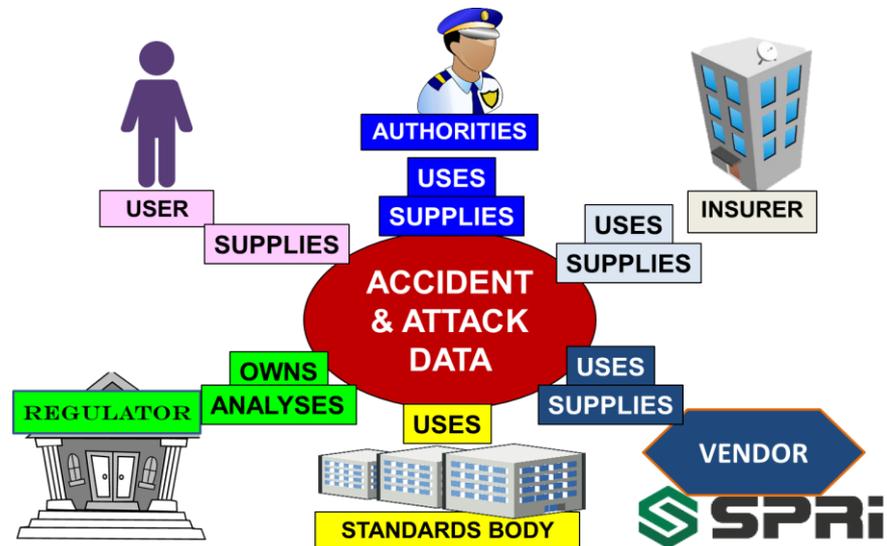
- **2nd – Technology-oriented**
  - Management-imposed technical solutions



- **1st – Worker-oriented**
  - The workers looked after themselves

# Summary

- **Safety & Security** both need to be considered - together
- Regulation of connected devices needs to change from an **up-front activity** to also include an **ongoing activity** that can take account of a continuously-changing threat environment
- Our Safety Culture needs to become **society-wide** with the 4<sup>th</sup> Industrial Revolution



# Ref. : Safety, Security or Sector Skills?

## Needed Skills

