Smart Registers and Controls

Panelists:

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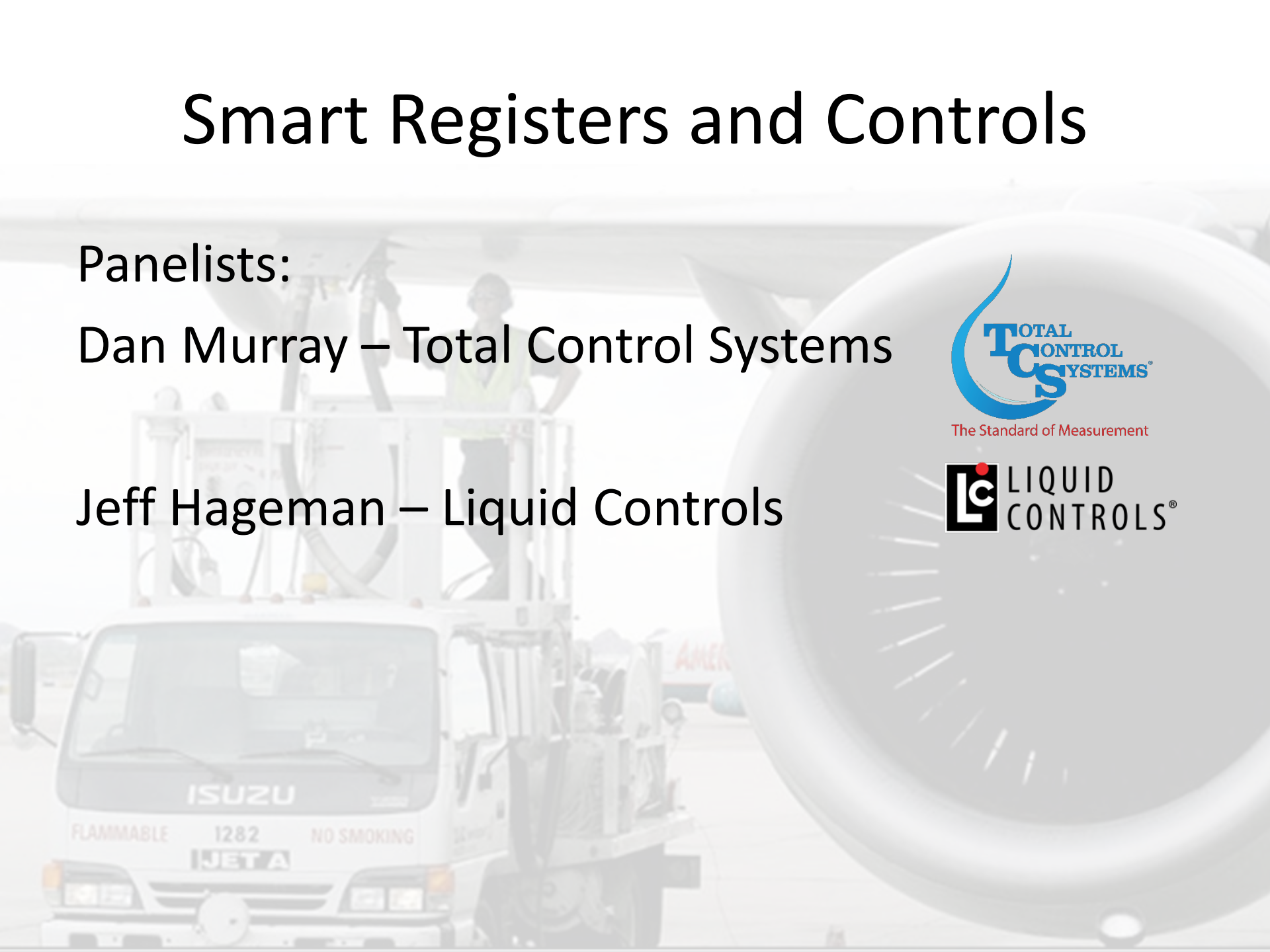


Smart Registers

- What is a “Smart Register” vs. a Meter?

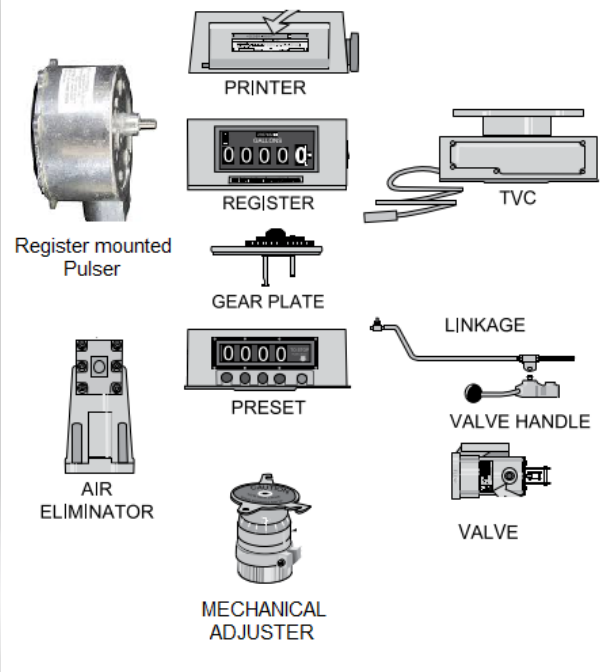
Meters

Smart Registers

Smart Registers

Where did it all start?

- Mechanical Register -
  - The core function of a mechanical register and flow meter is to accurately measure and record the custody transfer of aviation fuel.
  - Simple device/provided limited data (delivery amount / Totalizer)
  - Printers, presets, microswitches, ROF's, TVC's, gear plates, external pulsers… Etc. could be added to in
  - crease functionality.



Smart Registers

- **How do legacy electronic registers differ from mechanical registers?**

  - Legacy Electronic Registration
    - Greater Accuracy
      - Linear Calibration
      - Temperature Compensation
      - Expanded Delivery Ticket Information
    - Less maintenance and no torque distortion in accuracy
    - Simple and easy to use
    - Provided metrological data transfer to 3rd party POS systems

Smart Registers

How do smart registers differ from the previous generation of electronic registers?

- Smart, but easy to use.
- Flexible Meter, Remote or Panel Mounting Configurations
- LED Back lit Keypad
- Configurable interface/user experience
- Configurable ticket data
- Configurable Languages
- Large, easy to read color display with Day/Night mode
- Expanded I/O - get information to and from register (Serial, Wi-Fi, Bluetooth, digital and analog inputs and outputs)
- Internal Database

Smart Registers

- **Beyond metrological data, what other data is a smart register able to collect and transfer?**
  - Additive Volume/Concentration, Level, Water Content, dP, Density, Asset Management, Fuel Operation, Personnel Security, Flight Management
  - Diagnostics / Logging
  - Recordkeeping & Reports: Tickets, Calibration, Shift, Error, Inventory, etc.
  - Expanded Memory
  - Database Management
  - Upgraded User Interface
  - Increased I/O

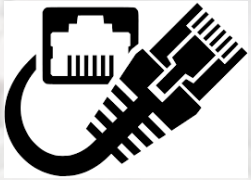
Smart Registers

- **How can a Smart Register improve airport operations? Safety? Efficiency?**
  - Integration to other controls
    - Deadman
    - dP trending and threshold shutdown
    - Additive Injection Control and threshold shutdown
    - Water trending and threshold shutdown
    - Visual & Audible Indications
    - Tank Level
    - Various Interlocks
    - Indication for Volume & Mass

Smart Registers

- **How well do smart registers integrate with into plane automation and data collection systems?**
  - How is data exchanged between the register and back office?
  - What means of connectivity are available?





Smart Registers

- **What is the downside, if any, to owning a smart register?**
  - Misfuelling if not installed properly
  - Foul Programming
  - Power or Wiring Problems
  - Communication Failures
  - Data Storage versus Privacy
  - Lack of “OWNERSHIP” of the customer
- **Common misconceptions about Smart Registers?**
  - Communication failure is the result of a corrupted Smart Register
  - Read Inventory and Fuel Quality information outside of a delivery
  - Cannot solve all W&M functions: Diverted Flow, Meter Creep (hose charge), “As Is” Meter calibrations, Density Correction (not W&M approved), Throttle Controls, etc.

Smart Registers

- **What do you feel is the biggest impact for each of your smart registers?**
  - Speed and Efficiency
  - Accuracy
  - Safety
  - Quality
  - Security

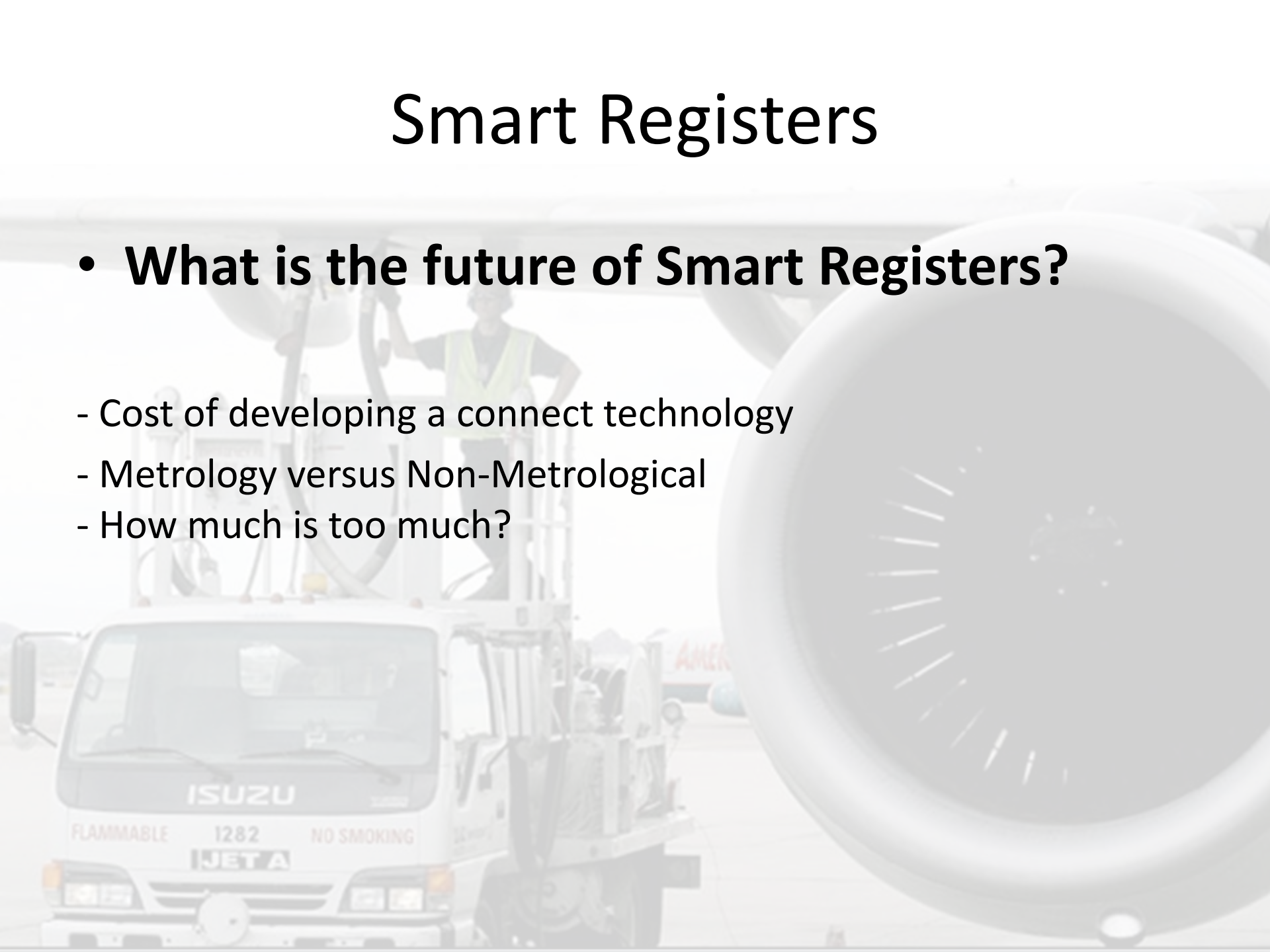
What is the expected life span of a Smart Register?

- Register will never be out of date
- Relevant to new technologies in the industry
- Register should outlive the truck chassis
- Register Repair & Exchange

Smart Registers

- **What is the future of Smart Registers?**

- Cost of developing a connect technology
- Metrology versus Non-Metrological
- How much is too much?



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