Container tag use case

- Restricted lane scenarios
  - assumptions
    - any activity in/out/passing of a facility
  - Sub-scenarios
    - OCR portal
    - Gate
      - single lane
      - multi-lane
      - unidirectional
      - bi-directional
    - Pre-gate
    - train Gate
      - single track
      - multiple tracks
      - double stack
      - well cars
    - "fleet management"--in/out/passing of any facility
  - requirements
    - ability to separate by lane
    - speed in lane: 0--50km/h
    - Rail car possibly (in-transit): 0--120km/h
    - lane width of 3m to 6m
    - Identification of container ID on the train
  - limitation
- container handling equipment
  - assumptions
  - Sub-scenarios
    - stowage/loading operations
    - Crane
      - spreader mounted equipment
      - without spreader mounted equipment
    - top loader
    - Yard moves
      - inland and marine terminal have the same need
      - Subtopic
      - sub-scenarios
        - Stack
        - transfer points
        - empties in large pile
    - Empty container
      - It is not different for empty container from the full container
      - Empty containers makes it more important to have localization to the specific container
    - side loader
    - reach stacker
    - RTG-rubber tire gantry
    - straddle carrier
    - vessel operation--loading and discharging
  - requirements
    - ability to identify a container
    - sufficient hardened for appropriate level of shock and vibration
    - Need to localize to a specific container in a multiple-lift (max height limited by twistlocks: 3 high) and [bundle]
    - spreader mounted equipment
      - speed: 0 Km
      - range: 10m/30ft ---depending on antenna and tag location
    - non-spreader mounted equipment
      - crane
        - speed: 0-12m/s
        - system level coverage: 35m
      - mobile equipment
        - speed: 0-5Km/h
        - system level coverage: 27m
  - limitation
    - power needs to be available
- Assumption
  - reading container tag means
    - must have localization
    - know which container ID is attached to a specific container
  - passive RFID technology
  - license plate tag that lasts the lifetime of the container
  - no maintenance required
  - Type of equipment may include containers, chassis, Gensets and related equipment
  - WORM (write once read many) tag
- handheld
  - Sub-scenarios
    - lack of fixed structure
    - exception handling
    - "fleet management"--in/out/passing of any facility
  - requirements
    - ability to identify the container ID
    - short range
      - range: 5m/15ft
      - speed: 0-5Km/h
    - long range
      - range: 50ft/15m
      - speed: 0-12m/s (44Km/h)
- Vessel operation--reposition/shifting
  - sub-scenario
    - may have shifting
  - requirements
    - without spreader mounted equipment
    - spreader mounted equipment