Dedicated Image Based Vehicle Identification & Classification Subsystems For AET

MIAMI, FL JULY 12-14, 2015

Summit on All-Electronic Tolling, Managed Lanes & Interoperability

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Introduction

- AET has presented us with some real operational challenges when it comes to the need for identifying a vehicle from an image
- Customer expectations also place a particularly high burden on getting image based identifications right
 - An understandable and seamless AET experience
 - Confidence the same rules apply to everyone (trust)

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Introduction

• Looking back a bit - IBTTA 2014 AET Summit Thematic report

- "... much of the discussion in San Diego focused on the systems and strategies that would enable even more agencies to convert to allelectronic tolling. With orders of magnitude more license plate images to process, a panellist said agencies were going through "a ton of system changes, tightening the bolts and making sure nothing is slipping through the gaps."" (weathering the storm)
- This presentation: a quick look at 'traditional' solutions to identification by image and can we do better?

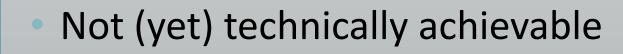
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Identification by Image – Technology Limits

Ideal technology solution

- Full automation on all cases
- Perfect accuracy
- No leakage (false rejects)
- Accept any quality image data stream
- Scales without negative impacts



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Identification by Image – Trade-offs in Real Solutions

- Real world AET systems face a need to make trade-offs
- Directed at the best outcome their business model and technical platform (RS/imaging systems) will allow
- The standard trade-off is to apply some degree of manual effort (image review), in order to balance business targets for accuracy and leakage against total cost... but..
 - Systems with MIR quickly become more complex
 - How to make informed decisions?

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Identification by Image – "Traditional" Approaches

- Broad brush but .. standard approach involves rolling the whole problem into system integrator / integrated BO space
- Technical splits of automation (core ALPR / VSR), then manual review to handle the less confident 'remainder'
- Upgrading an existing BO for AET can be very tricky
 - Robustness risks
 - Difficulty in addressing operational optimization and tuning

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Identification by Image – How can we do better?

- Think in terms of a Dedicated Image Based Vehicle Identification & Classification Subsystem
 - Input: Transaction data stream with images
 - Output: Fully identified/classified vehicle (LPN) or 'not-identifiable'
- A single, easily understood, well defined scope (good building block)
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- Both technical and business advantages

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Identification by Image – How can we do better?

Technical advantages

- A subsystem with clean integration points
- Addressing a broader problem can exploit a wider range of synergies
- Ability to take a holistic AIP & MIR workflow for fine grained efficiency trade-offs & control design for robustness
- Design can leverage consolidated relevant data for exploiting statistical and pattern analysis for efficiencies
- Provide focused operational insight into all aspects of this critical business process (visibility of trade-offs)

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Identification by Image – How can we do better?

Business advantages

- A single sub supplier can be engaged to provide the needed capabilities
- Clear, business relevant, KPIs/SLAs can be defined & applied
 - Throughput, turn-around time, identification error rate, false reject rate, data quality
- Enables better apples to apples comparisons between vendors
- Potential for opening up vendor competition
- Complete business process outsourcing is fully possible and in fact proven to work well.

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Identification by Image – How can we do better?

- Q-Free have developed an integrated Image Based Vehicle Identification & Classification Platform (EIP) based on this philosophy
- A technical solution addressing a whole process approach to Image based Vehicle identification (AIP & MIR)
 - Close customer co-operation during implementation and adoption
 - Proven to deliver on its potential, including ability to transition
- Operationally proven at scale, delivering tangible business value

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Concluding Remarks

- AET's need for image based vehicle identification not going away soon, and neither is Manual Image Review
- Moving toward a Dedicated Image Based Vehicle Identification Subsystem approach with a holistic focus offers strong technical and business advantages.
- A limited set of clear, business process relevant KPIs can be defined that promote focus on outcomes not details and open for apples-to-apples vendor comparisons
- A real world, operationally proven, approach

Thank you for your attention!





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