

Revenue leakage

ITS Summit 2013
Rupert Brown
Holman Benitez
ConnectEast
19 September 2013

Revenue Leakage - questions



Where does revenue leakage occur within the context of a multi-lane free flow tolling system?

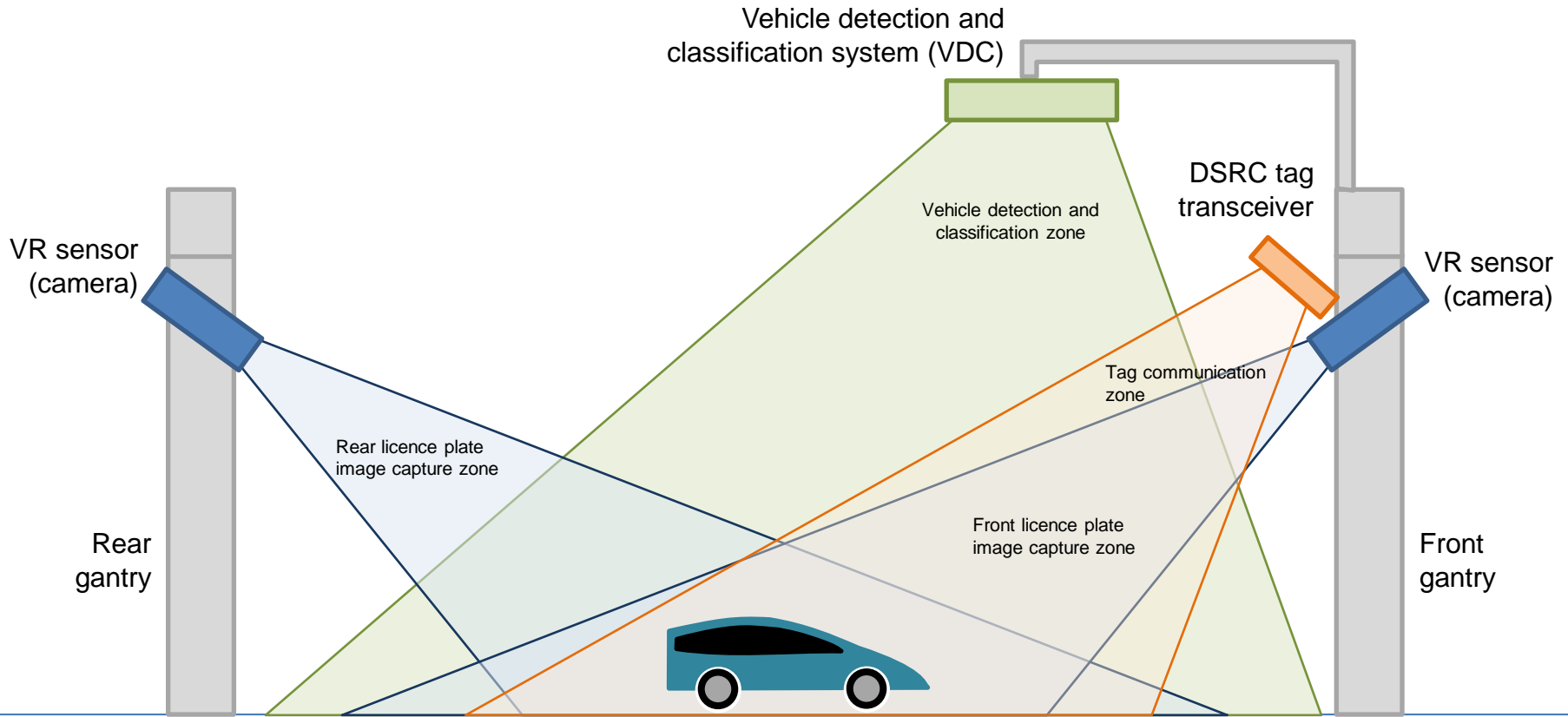


If we had better or additional data at that point in the processing chain, could we stop or at least reduce that leakage?



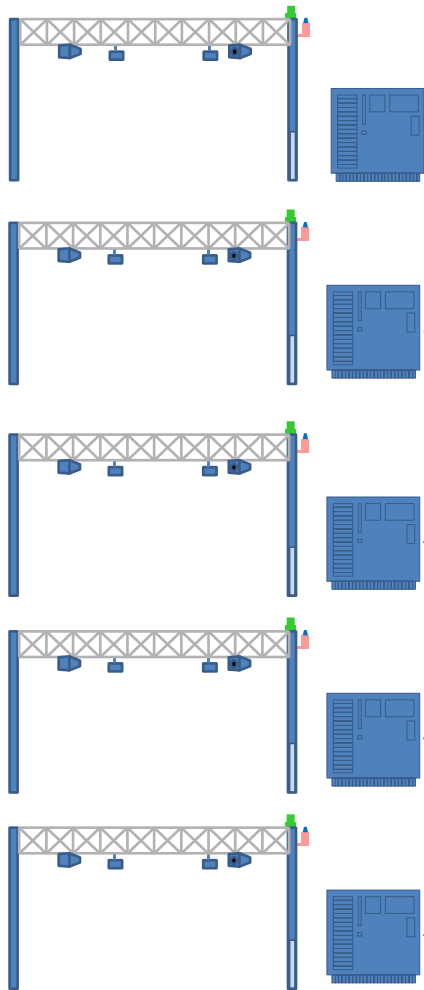
If so, can we obtain and use that data cost effectively?

Roadside equipment configuration

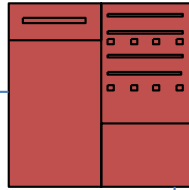


Multi-lane free flow configuration

Roadside Equipment



Trip Reconstruction and Rating



CRM and Billing

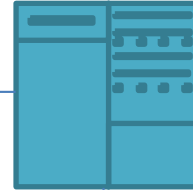
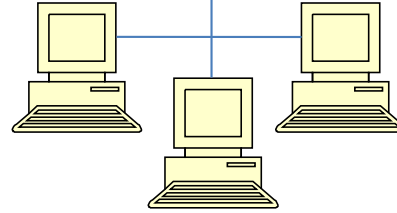
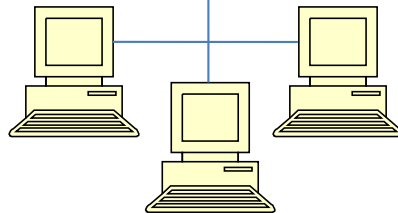


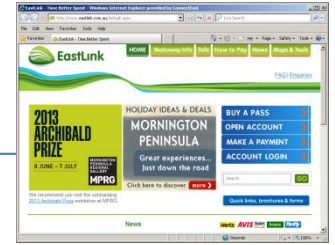
Image Processing



Customer Service Operators



Manual Image Processors



Website



IVR



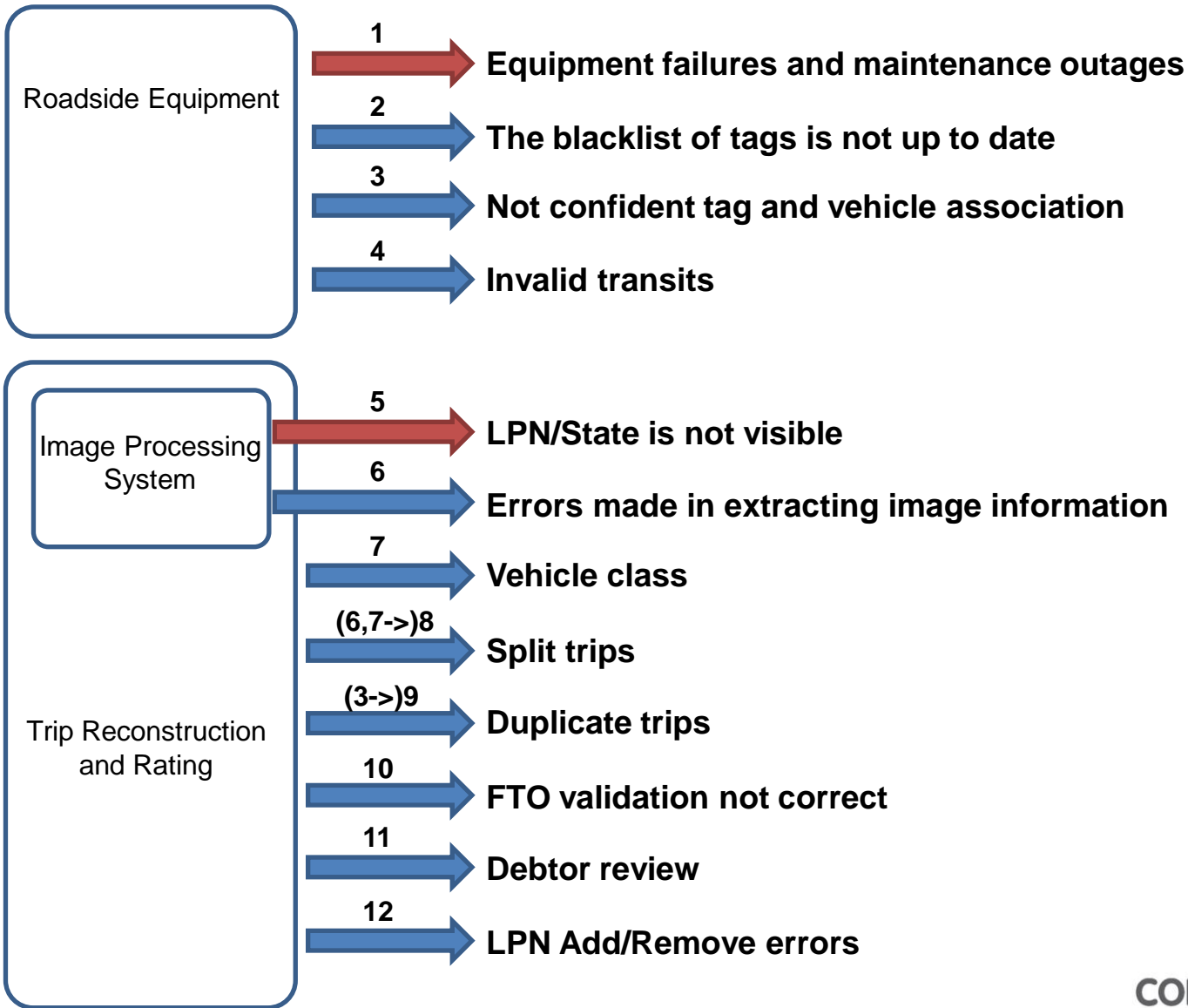
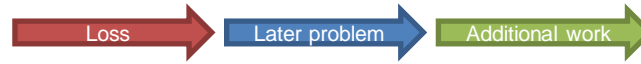
Interoperability



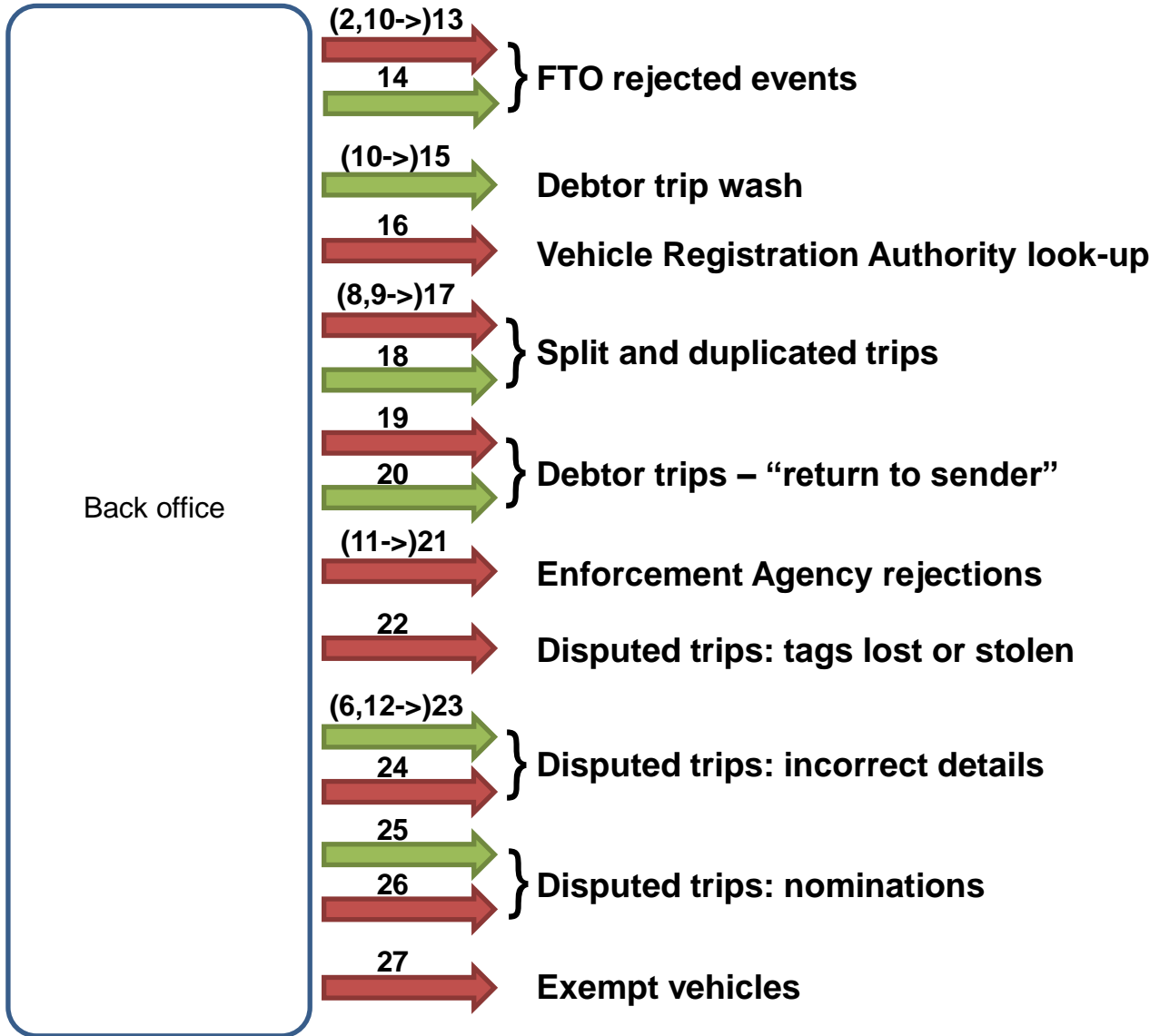
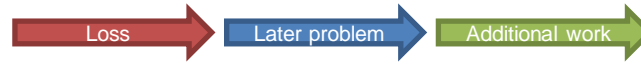
Other interfaces



Revenue leakage map – part 1




Revenue leakage map – part 2



Camera failure

Location: Toll Zone - Merriandah Hwy to Canterbury Rd
Date and Time: Wednesday 19 June 2013 06:13:01
Key: 38242f438283a4d82311d6a66652e26

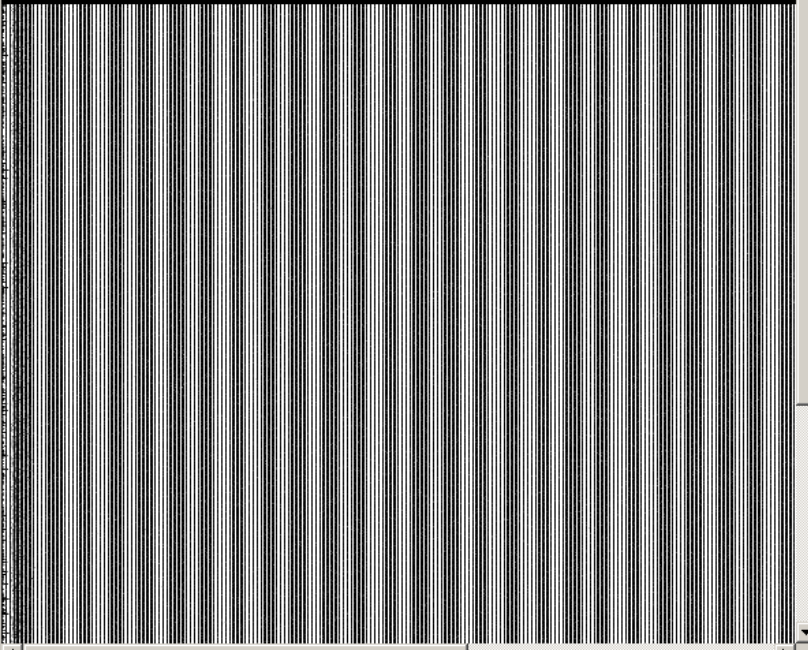


YUW 318

RSS YUW318

EEPCS

Location: Toll Zone - Merriandah Hwy to Canterbury Rd
Date and Time: Wednesday 19 June 2013 06:13:01
Key: e504810fac0d251385057ab557431c94



Licence Plate not found

RSS NO READ

EEPCS

Not confident tag and vehicle association

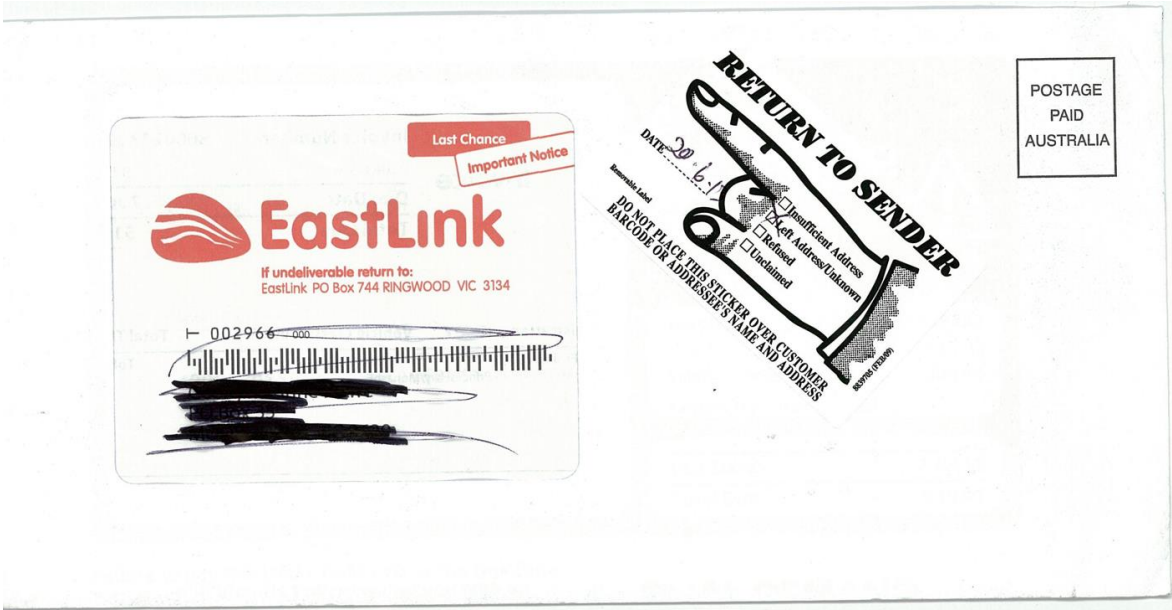


Obscured licence plate

Location:	Toll Zone - Maroondah Hwy to Canterbury Rd	Toll Collection Point:	Tolling Point 02M
Date and Time:	Friday 07 June 2013 10:31:44	Direction of Travel:	Mitcham
Key:	505ee69d215b4b20b5af227f74eae86b		



Return to sender



Incorrect licence plate

Colac Herald, Friday 14th June 2013

www.colacherald.com.au

Toll road bungle angers woman

by Alex White

A toll road company charged a Colac district woman for driving on Melbourne's Eastlink on a motorbike which had been parked in her shed for seven years.

And Yeodene's Heather Shalley said she had also never driven on the Melbourne toll road.

Mrs Shalley said she was bemused when she received a bill from Eastlink for \$7.01 for the registration number of her disused farm bike.

"I couldn't believe it, especially when it's a little old motorbike sitting in our shed on the farm," she said.

Mrs Shalley contacted the company and the State Government about the bungle and the toll company called her on Wednesday and explained the mistake stemmed from a misread registration number.

"They said they made a mistake and would I take an apology and I said 'no, I won't, I want it written and only by mail'," she said.

"They said it should have been an O not a U, unbelievable," Mrs Shalley.

"I've never been on the road - I don't even know where it is."

Mrs Shalley said she wanted people to be wary of such mistakes.

"I'm warning the people to just check that sort of thing because half the time it's not right."

Nomination form



ADMIN USE ONLY

OLD BP:

NEW BP:

PROCESSED

REJECTED

If you have received an EastLink Toll Invoice and you were not the driver of the vehicle for trips listed on the invoice you can use this form to either (a) nominate another driver or (b) state you have sold or disposed of the vehicle and nominate the new owner.

This nomination statement must be completed in full. A signature is required at the bottom of the form. If you do not sign this document, your nomination will not be processed.

Return the completed form to EastLink by the due date of the invoice:

1. mail to EastLink, PO BOX 744, Ringwood, Vic 3134,
2. fax to (03) 9955 1401,
3. email to enquiry@breeze.com.au

I, (Individual or Authorised Officer of a Company)

Surname

DUCK

Given name(s)

DONALD

Company name (if applicable)

Telephone

--	--	--	--	--	--	--	--	--	--	--

of

Street address

THE DUCK POND

Suburb

DUCKVILLE

State

DUV

Postcode

3 | 4 | 5 | 6

declare that at the date and time of the travel (please mark box)



I was not the driver for all trips on the invoice.

OR



I was not the driver for the trips I have listed below.

Important

1. You can list further trips on the next page.
2. Should there be different drivers for some trips, you must complete a separate form for each driver.

Nomination Statement

Insert vehicle licence plate number

M	M	O	U	S	E			
---	---	---	---	---	---	--	--	--

Insert your EastLink Toll Invoice Number

1	2	3	4	5	6	7	8	9			
---	---	---	---	---	---	---	---	---	--	--	--

Revenue Leakage – two key areas

Actual revenue loss depends on your tolling system.

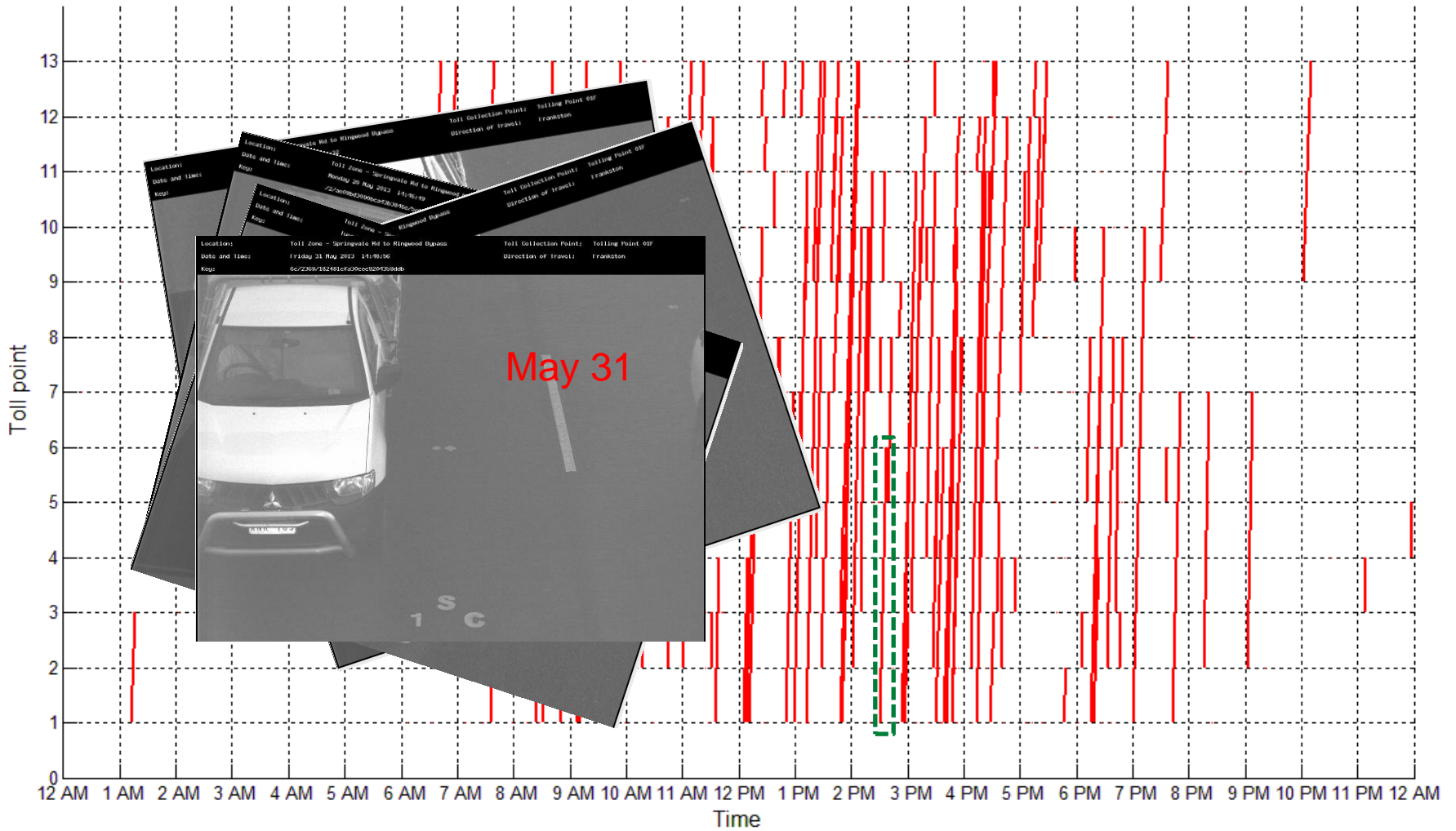
But there are two areas common to all Australian tolling operations:

 Obscured or missing licence plates,

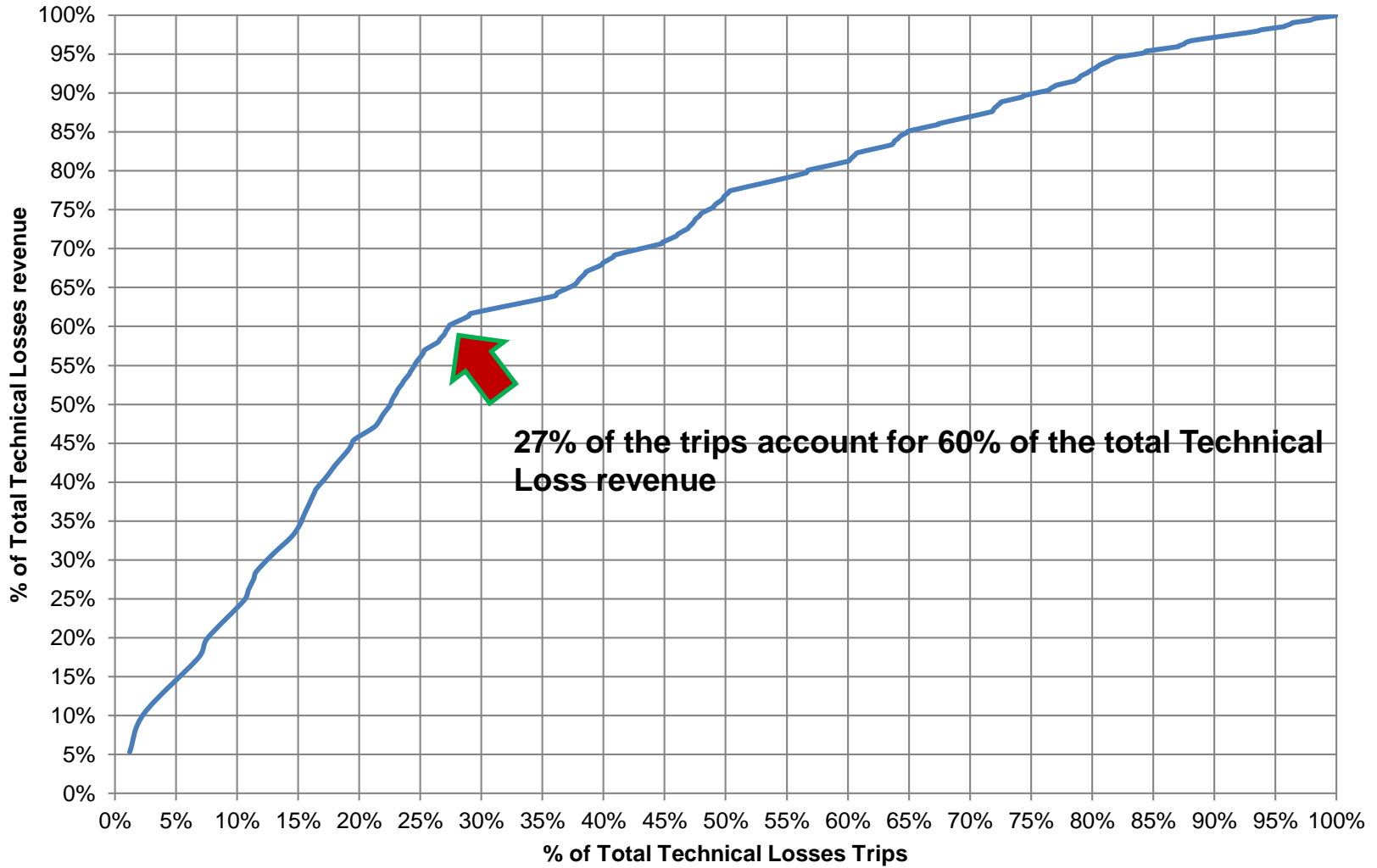
 Problems with interoperable data.

Analysis of Individual Technical Losses

Car Tloss Trips May 10 Southbound



Trips and revenue Analysis



Tackling obscured licence plates

Additional data - a “low level” camera can see under obstructions to get a clear image of a licence plate.

Our analysis tells us where we are best placed to position cameras to get best returns.

Aligning “low level” images with gantry images potentially offers a cost effective way of revenue recovery.

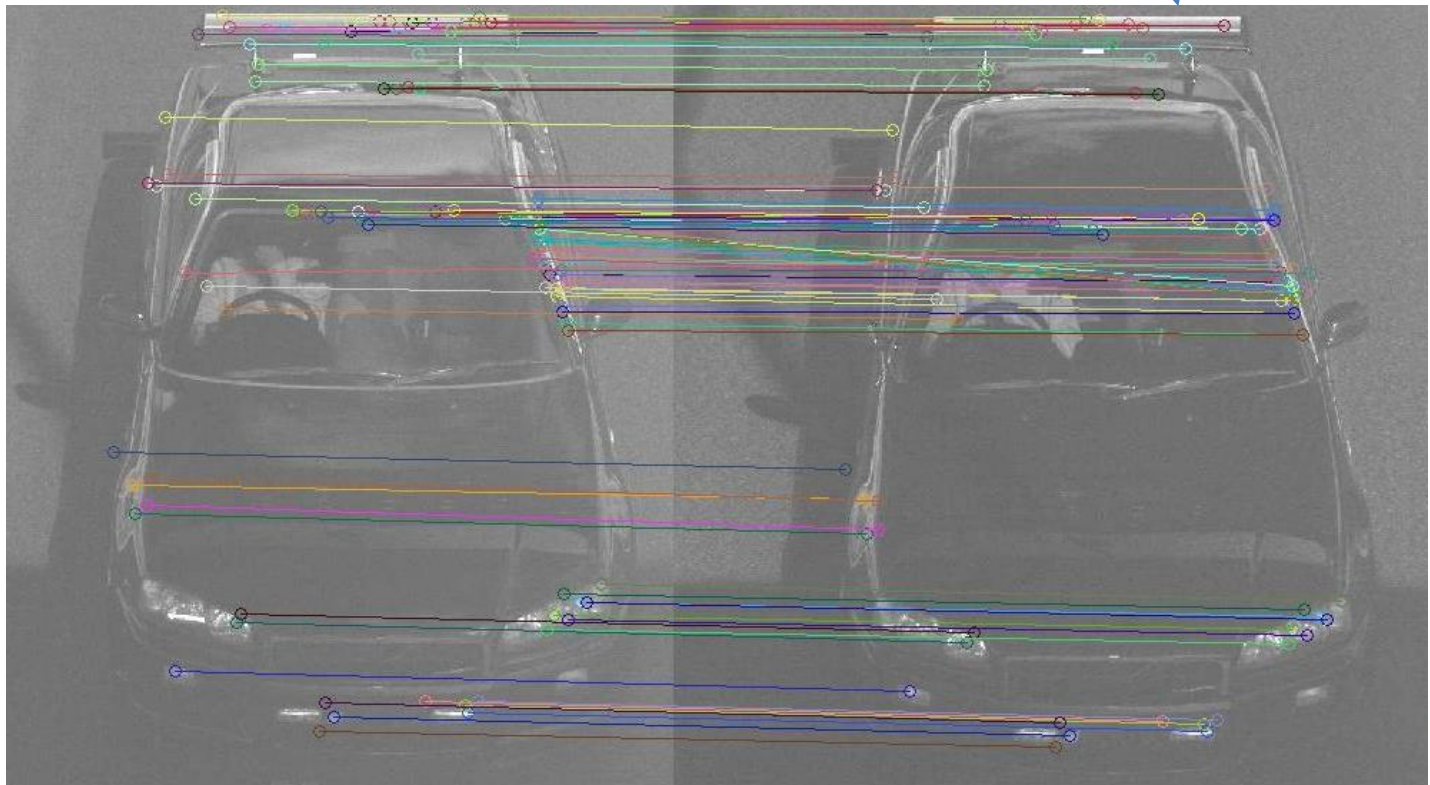
Law of diminishing returns:
Amount recovered has to justify the cost of the operation - WIP.





← This front low level image (simulated) with a clearly visible licence plate is linked in time and place to this image from the gantry.

Signature matching can then match the stored image with a new one and so help to determine the identity of the vehicle.






Tackling obscured licence plates

Technical losses: trips where we cannot identify the LPN and therefore cannot bill a customer,

We can identify and map technical loss transactions,

Using an algorithm we have developed, we can turn those transactions into trips:

-  Get a true measure of revenue loss – toll caps, discounts,
-  Identify most commonly used routes,
-  Identify “regular offenders”.

Interoperability

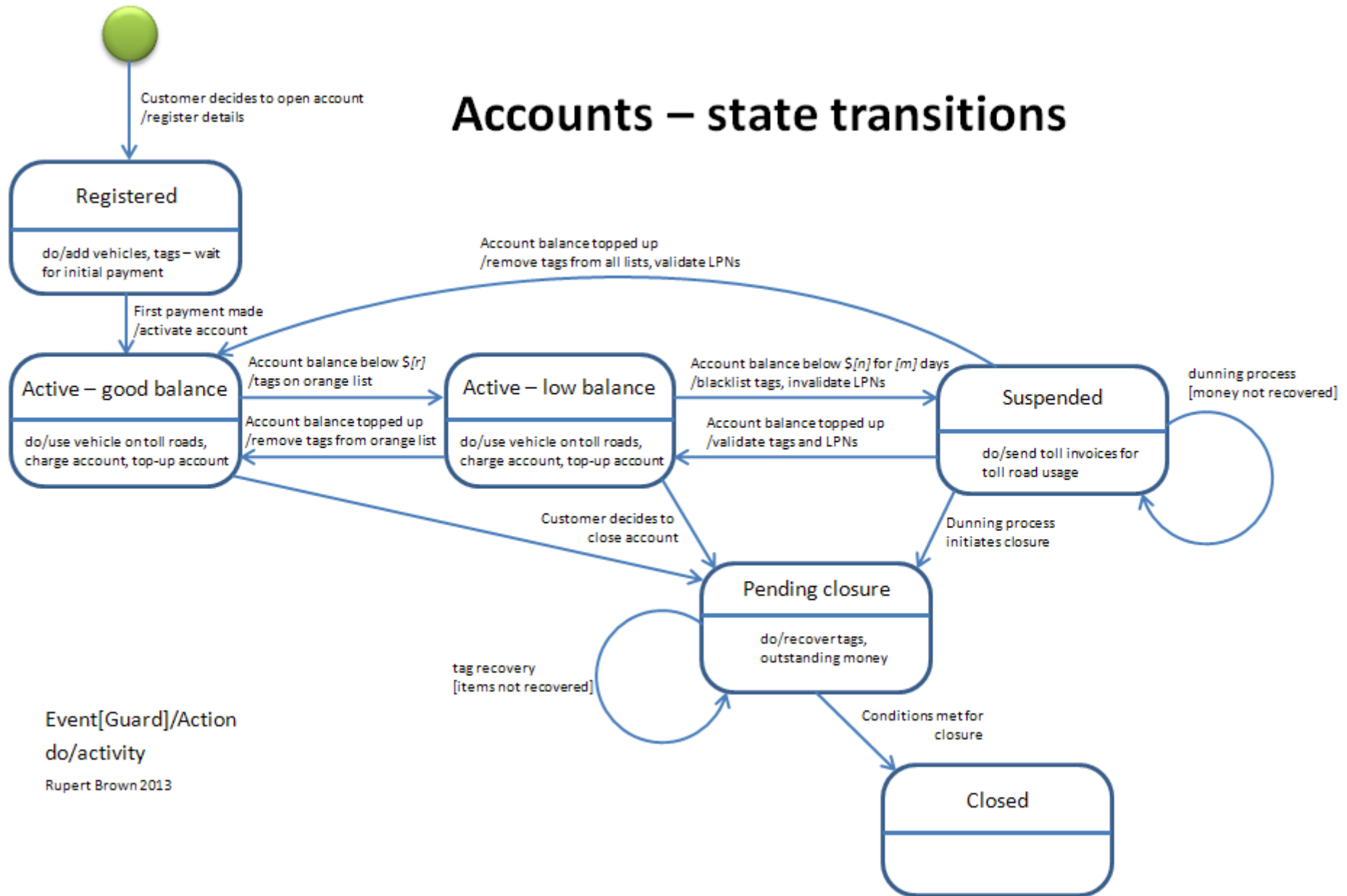
Interoperability is a very good thing, but ...

Interoperability is a constant source of “noise” in tolling systems, especially around who has a valid arrangement to pay.

But this is not the fault of the interoperability mechanism per se ... rather of the very complex environment it has to deal with.

Consider these models:

Accounts – state transitions

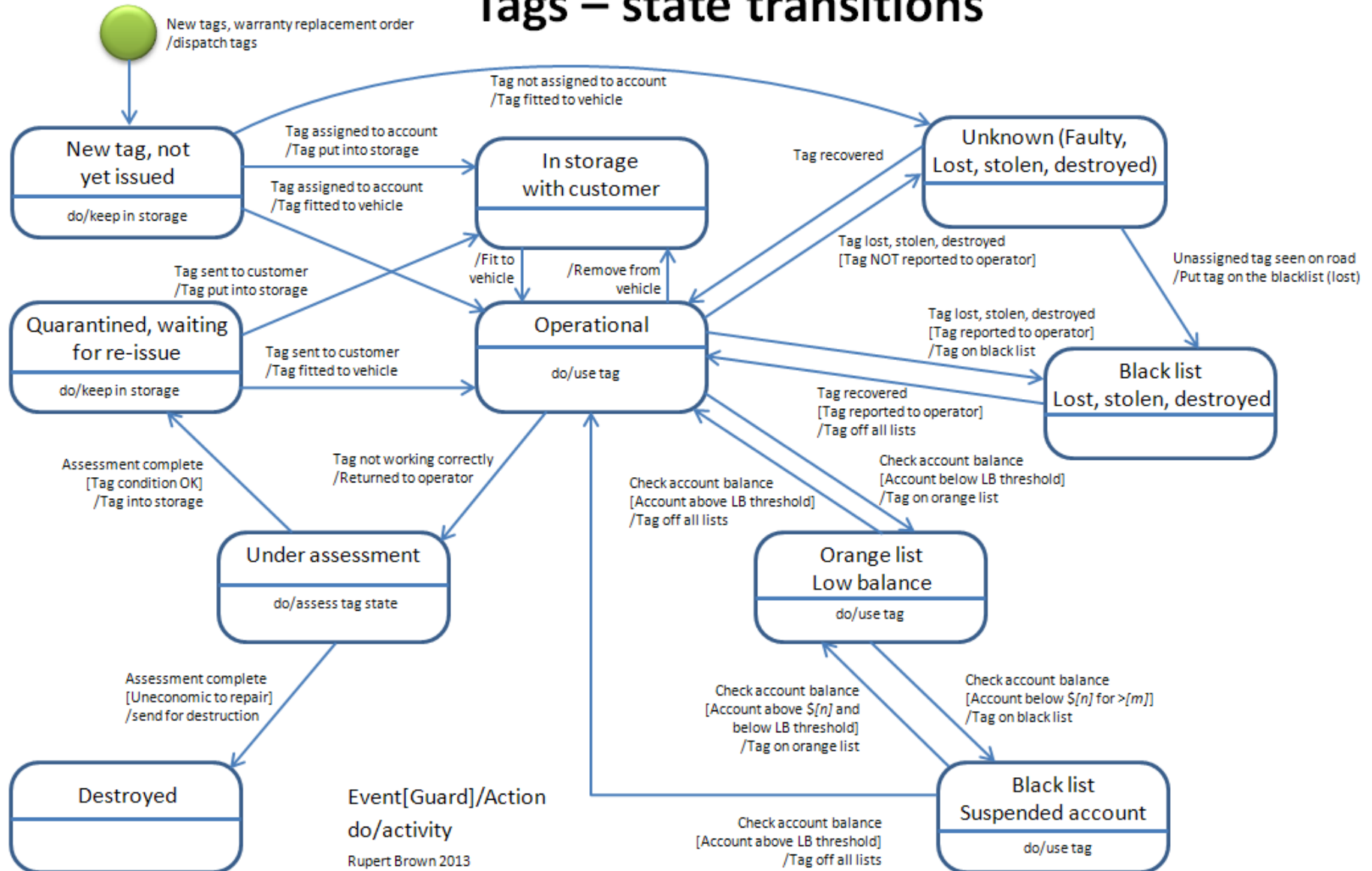


Event[Guard]/Action

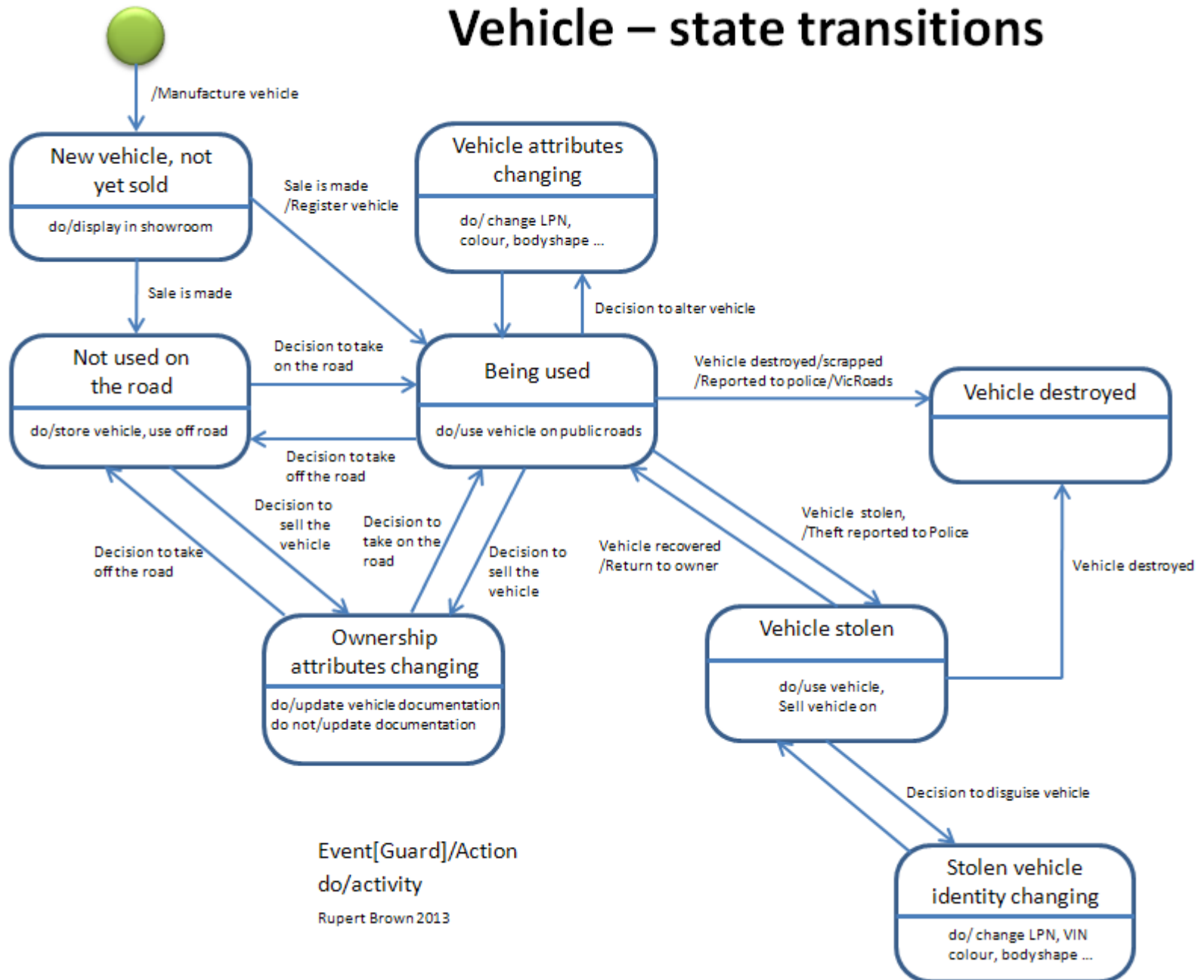
do/activity

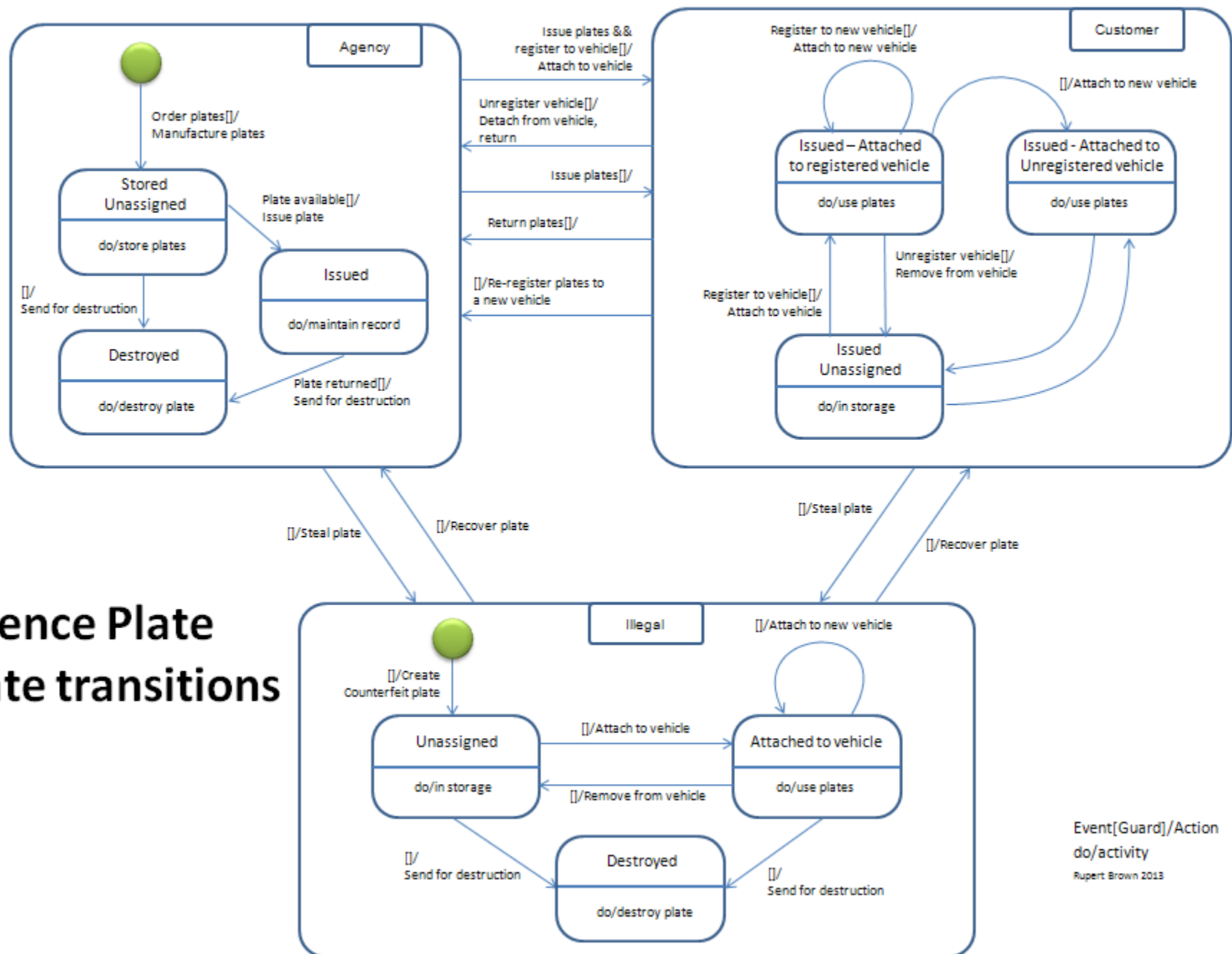
Rupert Brown 2013

Tags – state transitions



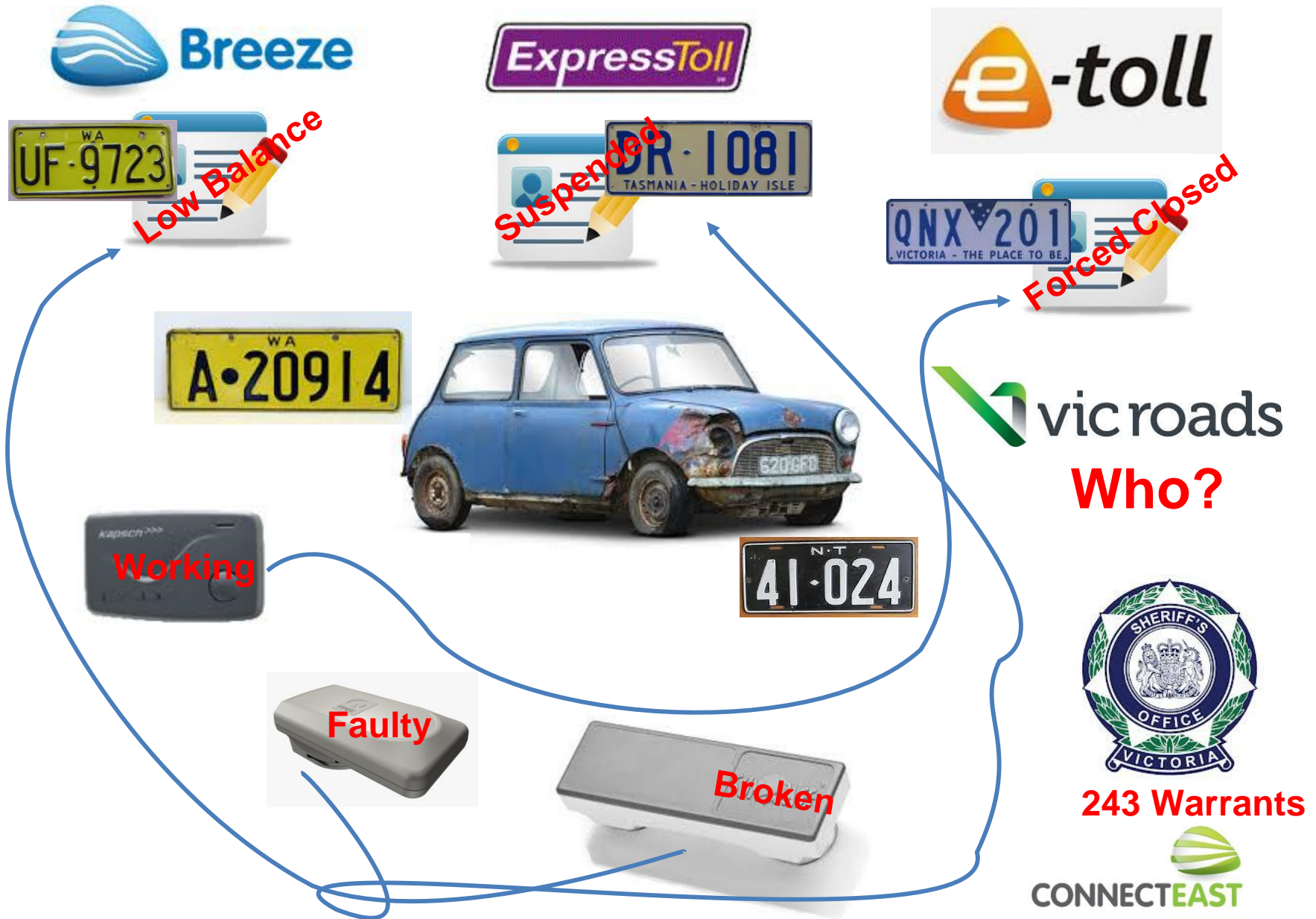
Vehicle – state transitions





Licence Plate state transitions

A fine toll road customer, not ...



Thank you

Any questions?



CONNECTEAST