Replacing a legacy tolling system EastLink's BOSS Project Requirements

ITS Summit/NeTC 2015
EastLink
12 May 2015

The EastLink tolling rich picture

Types of Infrastructure

Tunnels

Roads

Bridges

Each infrastructure type has its own best way of being funded and generating revenue.

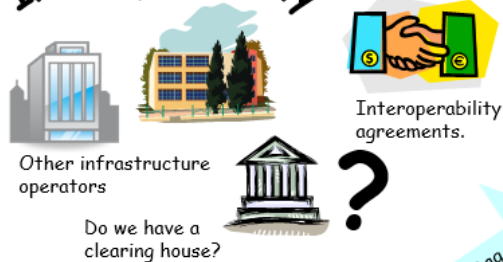## Technical Elements

Video

Infrared

DSRC Tags

Gantries

Technology has to be appropriate for the application and cost.

Types of Application

Car parks

Tolling
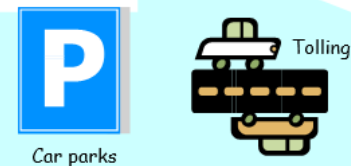
The nature of the asset, technology and the business case drives the form of the solution.

Usage event information,
Information to identify the user,
Evidence of use,

Enforcement

Picture

Process and confirm pictures

Get the people who use the asset but don't pay – no arrangement.

Interoperability

Other infrastructure operators

Interoperability agreements.

Do we have a clearing house?

We exchange customer information,
Information on our customer's usage,
The money that we owe each other.

Who is this?
Do they have an arrangement with us, or somebody else?

Calculate how much users have to pay.

Charge that to our customer's account.

Recover money owed to us.
Use the courts if necessary.

Recover money from bad customers

Customers

We send you – a device, tag maybe,
A statement/invoice, on a regular basis,
Information we think you'll want.
You send us money.

Our customers accessing all our channels

Money to/from the bank.

Payday for shareholders.

Manage all our money.

Money for the Government

Our bank

Shareholders want their cut of money

Government Authorities who control the concessions and have audit powers.

Rich Picture of a Multi-Lane Free-Flow tolling system

To show, in an unstructured way, most of the significant elements that come into play when thinking about multi-lane free-flow tolling.

ConnectEast Enterprise Architecture - Business Capability Model – v15.0

CONNECTEAST

Rupert Brown
Holman Benitez
Gillian Dirckze
ConnectEast 2013

Tolling Business Functions

CSR. Customer service capabilities

A. Accounts Creation and Maintenance
- 01. Customer identification and validation
- 02. Create a new customer account
- 03. Maintain customer account details
- 04. Maintain customer vehicle details
- 05. Maintain customer tag details
- 06. Close a customer account

B. Transfers and payments
- 01. Sell trip passes
- 02. Complete an account top up
- 03. Take payment for an invoice
- 04. Take payment for a toll invoice
- 05. Cash handling
- 06. Transferring toll invoices
- 07. Managing nominations
- 08. Refund/ Receive balance on closure of account
- 09. Payment Plans

C. Complaints and Disputes Handling
- 01. Record complaint
- 02. Resolve complaint
- 03. Escalate complaint
- 04. Manage abusive customers

D. Fulfilment
- 01. Dispatch brochures
- 02. Dispatch tags
- 03. Dispatch Brackets (tag holders)

E. Responding to customer queries
- 01. EastLink - CityLink
- 02. Mounting of tags
- 03. Enforcements
- 04. Account types
- 05. Fees and charges
- 06. Top up amounts
- 07. Low balance
- 08. Suspension
- 09. Tags beeping
- 10. Trip Pass

F. Manage Exceptions
- 01. Customer accounting anomalies
- 02. Trip and fee disputes
- 03. Transfers between accounts
- 04. Missing payments
- 05. Anomalies involving multiple accounts
- 06. Wrong or disputed vehicles
- 07. Traffic Camera Office complaints
- 08. Manage ombudsman
- 09. Non-tolling issues

G. Marketing and Information
- 01. Maintain road user demographic
- 02. Identify usage patterns
- 03. Design incentives for road use
- 04. Advertise events that encourage road use
- 05. Create copy
- 06. Manage and use channels
- 07. Manage agency/ creatives
- 08. Maintain the safety message
- 09. Toll Product design

BEL. Billing, enforcement and logistics capabilities

A. Dunning and Credit Management
- 01. Update account status
- 02. Identify low balance
- 03. Progress toll invoices/ enforcements
- 04. Manage debt collection
- 05. Manage bankrupt customers
- 06. Issue toll invoices
- 07. Issue new account information

B. Reconciliation
- 01. Interoperable toll road reconciliation and settlement
- 02. Channel data management
- 03. SAP, channel, bank account reconciliation

C. Managing Customer Communications
- 01. Manage comms channels – paper, electronic
- 02. Account debtor consolidation
- 03. Issue statements and invoices
- 04. Issue top-up requests
- 05. Issue suspension letters
- 08. Issue payment cards
- 09. Case based communications

D. Tag Logistics
- 01. Manage tag supplier
- 02. Manage tag inventory
- 03. Receive returned tags
- 04. Tag actions – test, clean, destroy

E. Prosecution Support
- 01. Produce court certificates
- 02. Attend court as expert witness
- 03. Provide witness statements
- 04. Fulfil Police evidence requests

Roadside operation capabilities

Environment
- Maintenance – cutting, weeding, spraying
- Area regeneration
- Watering
- Pollution (air, water quality) monitoring
- Noise Monitoring
- Statutory Reporting (EPA)
- Wetland and Bioswale monitoring

VIC Roads Engagement
- Regional operations planning
- Manage electronic sign messages
- Share CCTV streams
- Share traffic loop data
- Event planning

Incident Response/Customer Support
- Respond to incidents/emergency calls
- Tow for incidents
- Clear debris, animals
- Facilitate vehicle removal
- Coordinate with Emergency Services
- Open/close road and tunnels
- Assist with breakdowns
- Emergency traffic management
- Administer first aid
- Manage evacuations
- Operate tunnel deluge and evacuation systems
- Monitor road

Asset Management
- Maintain asset inventory
- Maintain asset condition
- Management asset lifecycle
- Run asset rehabilitation programme

Roadside Equipment Maintenance
- Manage maintenance schedule
- Produce work orders
- Complete inspections
- Make systems operational
- Clean equipment
- Manage Authority to work process
- Repair equipment
- Maintain equipment inventory
- Manage suppliers (repairs)

Civil Works
- Manage warranty
- Inspect assets
- Manage contractors
- Plan works
- Traffic Management

TC. Tolling capabilities

A. Roadside and Lists management
- Create black and orange lists
- Upload lists to the roadside equipment
- Synchronise time
- Manage roadside parameter settings
- Open and close tolling points

B. New tolling technology
- Maintain relationships with suppliers
- Scan external environment for innovation
- Plan trials

C. Road Usage Detection
- Detect and classify vehicles
- Capture vehicle license plate
- Detect and communicate with tags
- Package vehicle detection data
- Send detection data for central processing

D. Toll Rates, Fees and Charges
- Determine new charges and toll rates
- Maintain charges and toll rates in systems

E. Image Processing Management
- Manage image processing queues
- Workload forecasting
- Reporting
- Do manual image processing (LPN, State, class)
- Do manual image supervision
- Manage images into the Golden Vehicle Database GVD
- Maintain the contents of the GVD
- Debtor trip image review

F. Trip Construction and Rating
- Acquire transaction and images from the roadside
- Process image information
- Transaction check and classification
- Transaction rating
- Trip reconstruction
- Trip rating
- Undertake necessary actions
- Recalculate trips
- Send rated trips for Billing

G. Trip fixing and alterations
- Identify/eliminate duplicate trips and transactions
- Identify/eliminate isolated tag and vehicle passages
- Identify/eliminate service station split trips
- Wash out debtor trips with FTO validations
- Wash out exempt vehicle trips
- Wash out vehicles with a recent roll VicRoads return
- Wash out trips with no LPN

H. Validations and vehicles management
- Synchronise vehicles details
- Synchronise tag details
- Synchronise validation details
- Remove duplicate overlapping validations
- Synchronise metallic windscreen details
- Identify exempt vehicles
- Identify taxis

INT. Interoperability capabilities

A. Hub Transfers
- 01. Download Validation files from Hub F19, F21, F39
- 02. Download Toll files from Hub F37, F22, F33
- 03. Download Rejection files from Hub F26, F23, F34
- 04. Upload Validation files to Hub F15, F21, F39
- 05. Upload Toll files to Hub F37, F22, F33
- 06. Upload Rejection files to Hub F26, F23, F34

B. Reconciliations
- 01. Create Daily Toll Notice - Outbound
- 02. Create Daily Toll Notice M/D - Outbound
- 03. Create Daily Toll Notice Credits - Outbound
- 04. Receive & Reconcile Payment Remittance - Inbound
- 05. Receive & Reconcile Daily Toll Notice - Inbound
- 06. Create & Send Payment Advice - Outbound
- 07. Resolve errors and disputes

C. Processing FTO Files
- 01. Process Validation Files Inbound - F15, F21, F39
- 02. Process Toll files Inbound - F37, F22, F33
- 03. Process Rejections Inbound - F26, F23, F34
- 04. Create Validation Files Outbound - F19, F21, F39
- 05. Create Toll files Outbound - F37, F22, F33
- 06. Create Rejection Files Outbound - F26, F23, F34

D. Manage MoU
- Identify improvements
- Review & agree improvements
- Plan improvement implementation
- Manage MoU membership
- Support RTA Hub

E. New Toll Roads
- 01. Negotiate roaming agreements
- 02. Get and upload roadside keys
- 03. Create new tolling concession

PMB. Capabilities for planning and managing the business

A. Strategic Planning
- Develop visions, goals, objectives
- Develop Business, Finance and IT strategy
- Develop channel management strategy
- Develop business improvement and innovation strategy
- Develop business plans
- Develop business architecture
- Develop business model
- Manage Intellectual Property

B. Manage Corporate Governance
- Develop and maintain Governance F/W
- Develop & maintain policies & procedures
- Monitor compliance with policy & procedures
- Develop risk strategy
- Manage risk & fraud control
- Manage delegations & authorisations
- Manage Concession Deed
- Manage Business Continuity

C. Monitor, Measure & Report Performance
- 01. Develop Performance Framework
- 02. Collect internal & external feedback
- 03. Conduct business analysis & research
- 04. Evaluate performance
- 05. Report performance
- 06. Identify performance gaps and improvement targets
- 07. KPI measuring and reporting

D. Project Management
- Manage Project Management Office (PMO)
- Develop, maintain Project Management methodology & approach
- Define scope and assess feasibility of projects
- Prioritise projects
- Plan projects
- Implement projects
- Track projects

F. Manage Corporate Communications
- Develop & manage comms strategy
- Develop and deliver communication material

E. CSO Workload Management
- Develop and maintain WM strategy
- Capacity planning
- Workforce scheduling
- Define work classification and routing rules
- Implement WM strategy

G. Business Support
- 01. Property and Equipment Management
- 02. Facilities Management
- 03. Security Management
- 04. Manage Administration Services
- 05. Manage Legal Services
- 06. Manage mail processing
- 07. Facilitate internal communications
- 08. Records Management
- 09. PCI Compliance

H. Procurement
- Develop Procurement & Contract strategy
- Vendor evaluation and approval
- Purchase order processing
- Receipt of materials / services
- Material & services purchase
- Vendor Management
- Contract management
- Manage needs & Service Level Agreements
- Vendor performance management

Business Support functions

ICT management capabilities

Evolve IT Architecture
- Develop & manage Guidelines & Standards
- Manage IT Systems Project Mgt Methodology
- Manage Information Architecture
- Manage Application Architecture
- Manage Data Architecture
- Manage Technology/ Infrastructure Architecture
- Manage Security Architecture
- Manage technical obsolescence

Manage IT Pjct's & Service Deployment
- Determine Requirements
- Define Agreed Solutions
- Build / deploy & test
- Develop & deliver operational procedures
- Manage post - implementation
- Manage incidents and Change Requests
- Release & Configuration Management

Manage IT Operations
- Manage & operate IT environments
- Manage capacity
- Manage IT Continuity and DR Plan
- Manage Systems Resources & Assets
- Manage system problems & faults
- Manage software licenses
- Manage channels and interfaces
- Manage patches and upgrades
- Manage information security
- Manage data quality
- Manage systems certification
- Availability management
- Service level management
- Manage web domain names
- Manage IVR recording

Support Internal Users
- Manage Service / Help Desk
- Manage user IT Problems
- Manage user Support tools

External Supplier Management
- Manage support agreements
- Verify service levels

FIN. Financial management capabilities

A. Financial Management
- Manage General Ledger
- Manage Asset Accounting
- Manage Chart of Accounts
- Manage Departmental Fin. Reporting
- Manage Administered Fin. Reporting
- Manage payables
- Manage Receivables
- Manage closing and period end
- 01. Tolling Financials
- 02. General Ledger interface into Technology One

Management Accounting
- Manage budget
- Manage project accounting
- Manage cash / liquidity
- Cost and activity management
- Manage tax obligations

Financial Reporting
- Manage reports portfolio
- Audit data quality
- Publish reports

Employee matters
- Post Payroll to General Ledger
- Manage expense claims

Human resource management & development capabilities

HR Planning
- Develop & manage HR Strategic Plan
- Manage Organisation Design
- Manage unplanned leave
- Workforce planning

Manage Recruitment and Induction
- Identify job position & requirements
- Manage recruitment & selection
- "Onboarding"& Induction
- Probation management

Leave Management
- Develop Leave Management Strategy
- Manage & administer leave

Develop Workforce Capabilities
- Develop Learning & Development Strategy
- Create & manage organisation L&D plan
- Manage delivery platform
- Produce and deliver L&D programs
- Develop individual development plans
- Manage individual progress
- Manage succession planning processes
- Customer contact quality assurance
- Image processing quality assurance

Manage Payroll
- Process time & attendance data
- Produce pay
- Manage payroll incidents / errors
- Manage year end processing
- Manage month end processing
- Travel reimbursement
- Generate payroll data

Health & Safety Management
- Develop and communicate OH&S strategy
- OH&S external stakeholder management
- Identify and manage OH&S hazards / issues
- Manage OH&S staff forums
- Management and prevention of OH&S incidents
- Manage "Return to work" programs

HR Reporting
- Manage HR reporting

Support Workforce
- Develop & communicate HR policy & procedures
- Provide HR advice
- Manage HR Help Desk

Manage Employee Separations
- Manage separation process

Manage Employee Data & Salary Admin
- Maintain employee information & payroll details
- Manage salary ranges
- Manage AWAs & Certified Agreements

Individual Performance Management
- Develop and manage Performance F/W
- Collect feedback
- Manage performance appraisals process
- Poor performance management

Legend:
- Capabilities directly related to TOS
- Capabilities directly related to IPS
- Capabilities directly related to SAP
- Manual task
- Out of Scope

Accounts Creation & Maintenance

Code: CSR-A
Tolling Business Functions
→ Customer Service
  → Accounts Creation & Maintenance

Author: Gillian Dirckze
Created Date: 9th Aug 2013
Last Modified Date: 21st Aug 2013

Status: In Scope
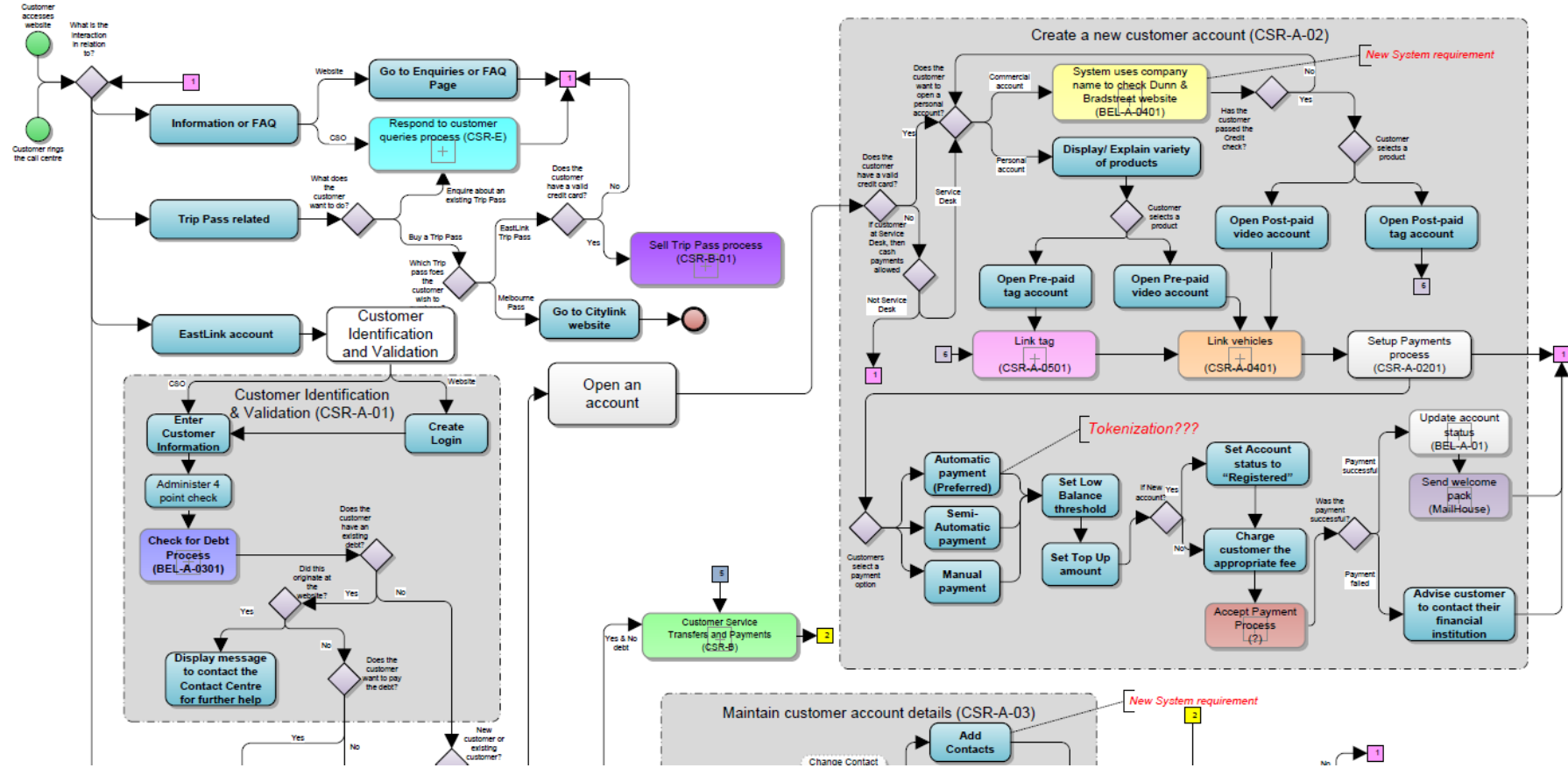
BOCS-SYS-089	The system shall be capable of receiving toll user information (from commercial system) including In a complete form once per day In an incremental form (equivalent to once per day)
CSS-BW-002	The system shall enable the BW Administrator to create new InfoProviders from scratch to store BW data from the source systems
CSS-CHA-106	The system shall support Contact Centre entities mapping and management (i.e. entry, routing and final points for the different routing algorithms for incoming and outbound requests) within global routing strategies monitoring and control.
CSS-EXT-016	The system shall rise an alarm when detect a corrupt file when applies.

1,729

High Level requirements

ConnectEast (EastLink) Tolling System Overview
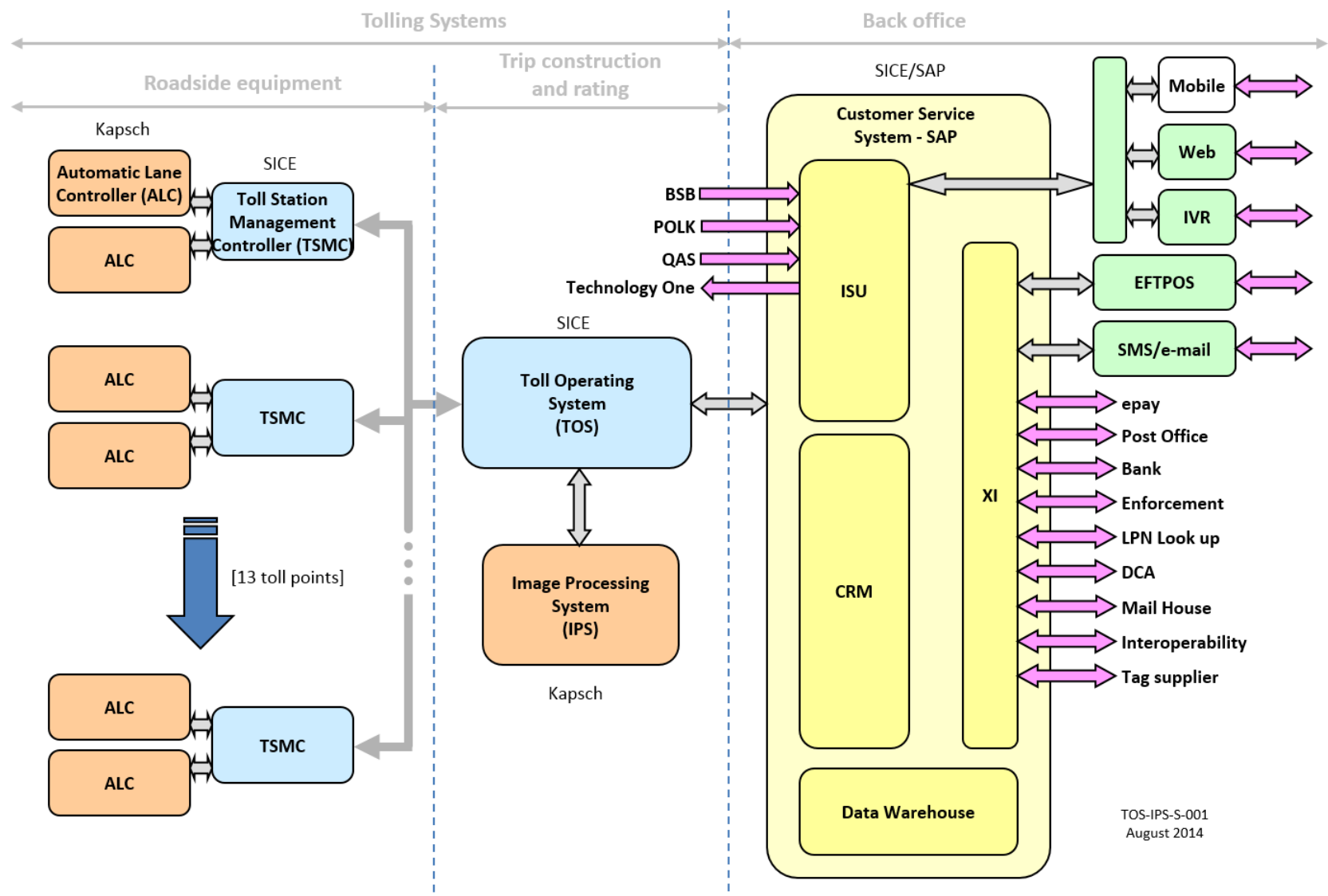
Contract documentation

≣ Agreement – the main contract

≣ Schedule 1 - definitions

≣ Schedule 2 – The Functional and Performance Specification (FPS)
Our requirements for BOSS

≣ Schedule 2 – TOS migration requirements and Statement of Work (SOW)
Our requirements for migrating TOS

≣ Schedule 3 – The BOSS Statement of Work (SOW)
What we want SICE to do, and how we want them to do it

≣ Appendix B – the CDRL – what the documentation should look like

≣ Appendix E – Entry and Exit Criteria for Formal Reviews
How we control stage payments

≣ Appendix F – the Milestone and Deliverable Control Matrix
What we want and when
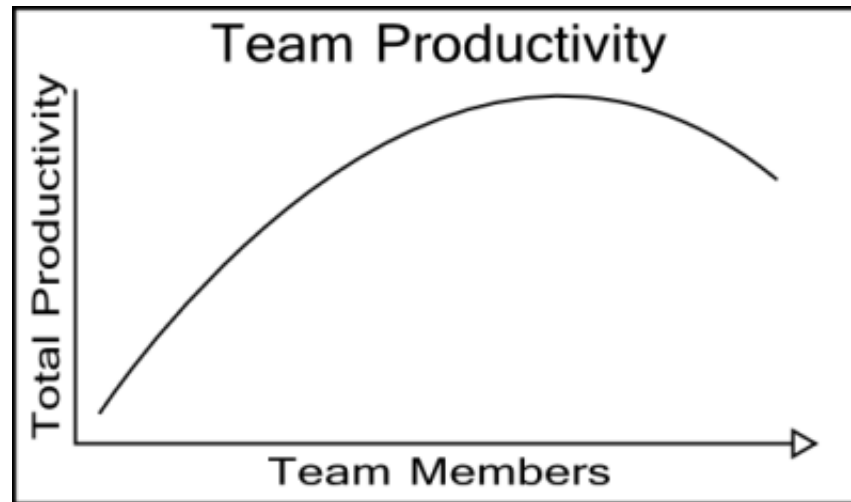
How did we Manage Requirements?

High Level Requirements

Each analyst had responsibility for a number of categories

Categorised

5 EastLink Analysts in Melbourne

SICE Team in Melbourne

SICE Team in Spain

HP Quality Center
Application Lifecycle Management

- Multiple levels of Requirements
- Link Requirements to Test Cases
- Version control
- Everyone could work on it at the same time
- Maintain visibility & transparency
- Both CE and SICE have used HP QC before

High Level Requirements

Category	Value
Applying trips & fees	21
Vouchers	46
Accounts operation	47
Customer interactions	215
Logistics	224
Cash Handling	10
Accounts set-up	21
System characteristics	40
Security and profiles	40
Toll products	45
System - General	77
Environments	89
Case Management	160
Tokenisation	22
Financials	155
Interoperability	168
QAS, B3B and POLK	31
External Interfaces	60
Enforcement	36
Debt Collection	47
Toll Invoices	49
Nominations	58
Billing & invoicing	68

Analyst 1   Analyst 2   Analyst 3   Analyst 4   Analyst 5

Managing Requirements in HP Quality Centre

Making our way to an "Approved" Status

Approved

Existing SAP System

Detailed Requirement

= Contracted High Level Requirement

Process Improvements

Discussions with business stakeholders

Concession Deed

Detailed Requirement

≠ Contracted High Level Requirement

BIS

3rd Party Suppliers *(Interfaces)*

Manual Processes
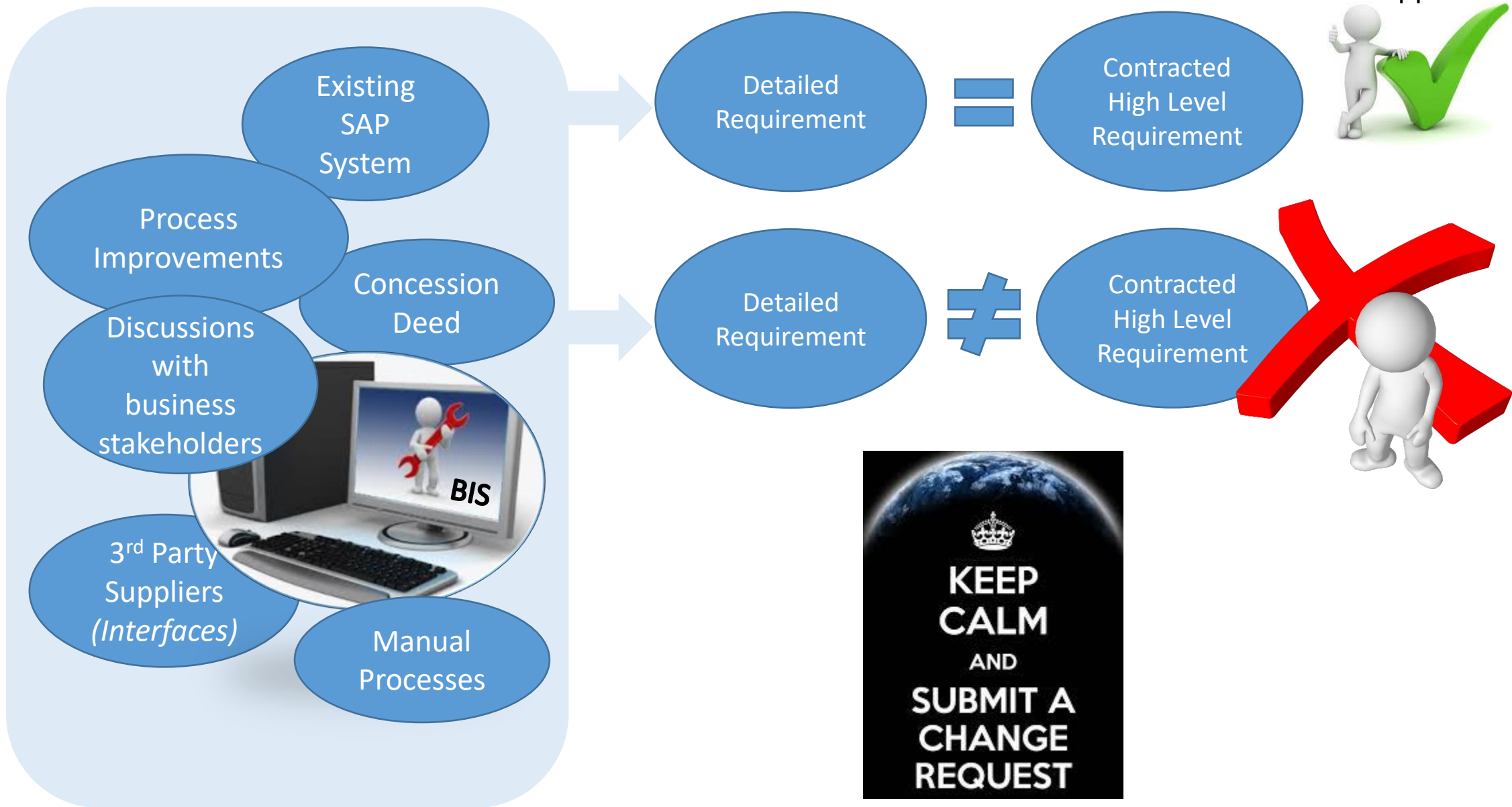
KEEP CALM AND SUBMIT A CHANGE REQUEST

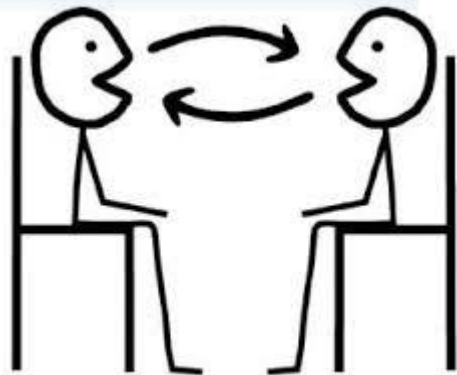Formal schedules for workshops

Take the business on the journey

communicate

Ensured process worked across all departments in the organisation

Project team show the business how it all fits together

Formal Sign off on High & Low Level Requirements

Communicate.

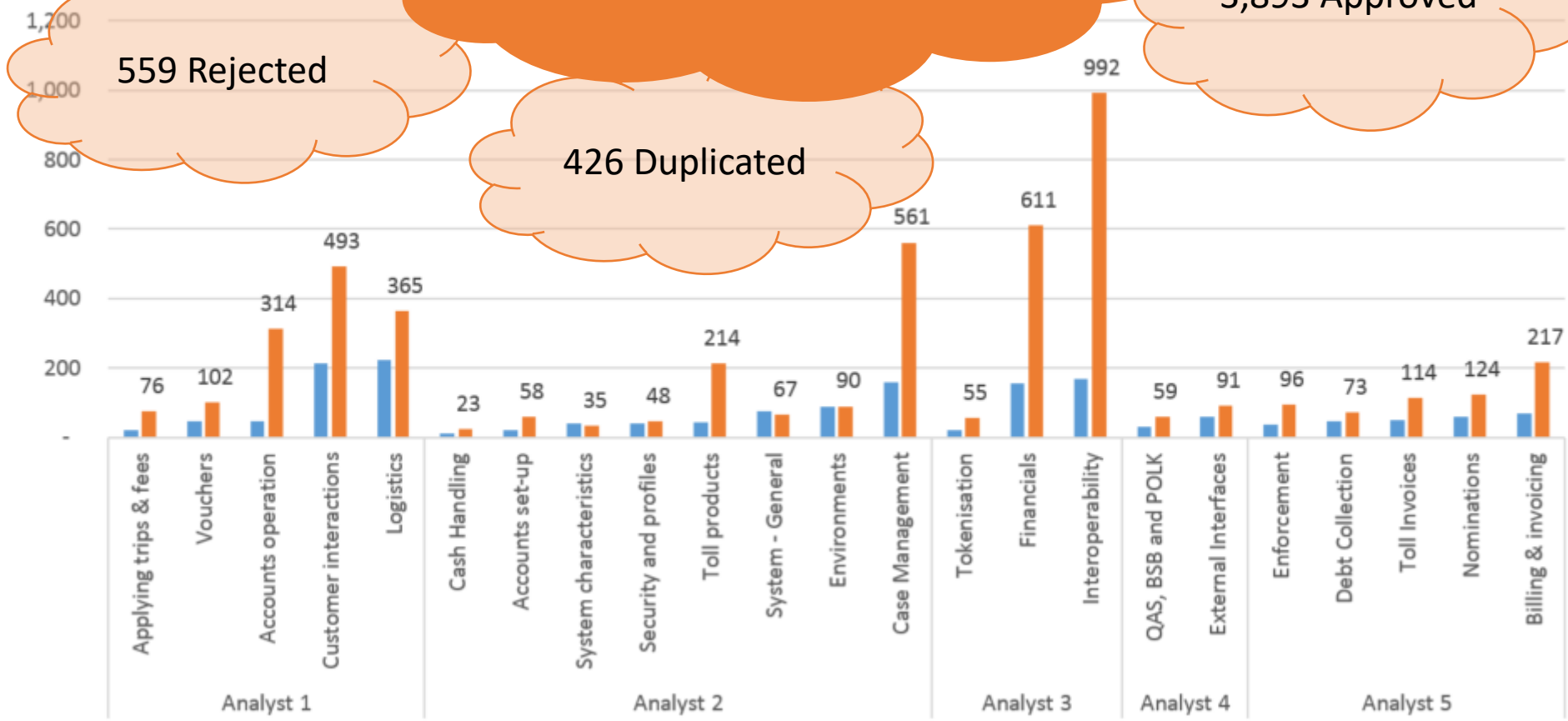**So at the end, how many requirements did we land up with?**

Total High Level
Requirements= 1,729

We wrote a total of 4,878
Low Level Requirements

3,893 Approved

559 Rejected

426 Duplicated

4,878
Low level requirements

Thank you

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