

Business Requirements

Key Business Requirements

The purpose of this document is to describe the key business requirements (both functional and non-functional) that CHARM is required to support in order to inform both internal and external CHARM stakeholders.

A more extensive list of requirements will be captured in the CHARM requirements catalogue that is currently under development.

Functional Requirements

The section below describes the key functional requirements that CHARM must support the delivery of.

Information Provision

It must be possible to provide information to both internal and external information consumers to enable the road authority to fulfil their role as a network operator. Specifically:

- It must be possible to collect real time information based on historic, current and forecast event data.
- It must be possible to distribute historic, current and predicted information regarding the state of the road network to internal and external information consumers.

Dynamic Traffic Management

It must be possible to manage demand and capacity on the road network through

influencing and directing the behaviour of road users to ensure that the road network is as optimal as possible. Specifically:

- It must be possible to identify when traffic conditions are different to expected and to calculate the future effect on traffic conditions of a specific traffic management response.
- It must be possible to identify and deploy the most appropriate response or group of responses to manage the traffic on the strategic road network.
- It must be possible to increase or reduce the capacity of the strategic road network.
- It must be possible to identify that a current event has potentially occurred that may potentially impact traffic on the strategic road network.
- It must be possible to determine if a current event that has occurred is likely to have a detrimental impact on traffic conditions, cause further current events and infrastructure damage.
- It must be possible to implement diversions away from a current event using the strategic road network or a secondary road network.
- It must be possible to identify any performance improvements when responding to similar events.

Incident Management

When current events occur on the road network, it must be possible to protect

the scene of the current event, restore the capacity of the network by removing any debris or damaged vehicles and repair any damage to the road infrastructure. Specifically:

- It must be possible to plan how to respond to a current event. Including planning which other responder organisations to involve, determining if on road traffic officers need deploying and the required level of escalation of command and control.
- It must be possible to protect an event scene using dynamic traffic management measures.

Event Planning

It must be possible to plan and co-ordinate the activities of the road authority's response to forecast events required to mitigate the impact on the road network. Specifically:

- It must be possible to define a collection of traffic management measures that can be deployed when traffic conditions exceed tolerances.
- It must be possible to define a collection of traffic management measures that can be deployed to reduce the impact on traffic conditions and safety for forecast events.
- It must be possible to provide a forward static view of the expected traffic conditions and events for both internal and

external information consumers.

- It must be possible to plan a forward view of where on-road resources (people, requirement, vehicles) are required to ensure appropriate coverage at all times.

Resource Management

It must be possible to manage resources (people, vehicles and equipment) to ensure sufficient coverage of the priority areas of the road network are in place to fulfil the road authority's responsibilities as a network operator. Specifically:

- It must be possible to inform traffic officers of their initial park up point locations and the expected situations that might affect operations during their upcoming shift.
- It must be possible to select the most appropriate traffic officer with the right skills, equipment and experience to handle a current / forecast event effectively.
- It must be possible to direct a traffic officer to the event scene, brief them on the activities they are to perform and to monitor when the traffic officer arrives at scene.

Contact Management

It must be possible for the road authority to be notified of current and forecast events by external information providers such as the emergency services, road users and event organisers. Specifically:

- It must be possible to record information about a Current Event provided by the emergency services and road users.
- It must be possible to record information about a Forecast Event provided by the event planners and other information providers.

1.2. Non-Functional Requirements

The following section describes the Usability, Availability and Performance, and the Design and Implementation requirements for CHARM needed to deliver the functional requirements described in the previous section.

Usability Requirements

- To provide one standard and consistent user interface (in look and feel), including one user login procedure and geographical representation.
- To provide a user interfaces that is customizable with respect to the current operator's activity.

Availability and Performance requirements

- To be continuously (356 day a year/ 24 hour a day) operational.
- To be able to deliver all system functions at a high level of availability, (for example with a maximum of 5 failures per year that must be restored within 4 hours) .
- To be able to shift the operations real time within and between traffic management centres while remaining to be operational.
- To be able to optimise the workload between operators within traffic management centre.
- To be able to optimise the workload between traffic management centres.
- To be able to deliver real time responses to operator commands .

Design and Implementation Requirements

- To be designed and implemented in such a way as to allow for changes and maintenance to the system whilst being fully functional.
- To be easily configurable at one single point (and reflected across entire system) to satisfy agreed service levels and Key Performance Indicators (KPIs).
- To allow for maintenance and configuration of the system to be done by 'any' third party.

- To support zero point of contact by the traffic operator with IT-support/IT helpdesk in the event of a system failure.
- To allow for the migration and integration with legacy traffic management centre systems and existing external/ roadside systems.
- To be able to tolerate errors and failures at different system levels to minimise the impact on the whole CHARM system, such as:
 - Communication failures both within CHARM and between CHARM and its information providers and consumers, including roadside monitoring equipment.
 - Data inconsistencies provided by several information providers, including roadside monitoring equipment.
- In response to a failure of an entire traffic management centre, another traffic management centre shall be able to take control over the network area controlled by the failed traffic management centre with minimum disruption.
- To be able to be configured to implement selected functionality both within national and/or regional traffic management centres.
- To be able to extend/limit CHARM functionality as business requirements and needs change.

- To support organisations service strategies and architectures, such as managed services, ITIL or SOA.
- To be able to support training on the job (at the desk/during an operator's shift).
- To allow for testing of systems/new functions without impacting the performance of the system.
- To provide a single point of documentation, protocols, etc. incl. support and maintenance
- To be able to support the following external communication requirements:
 - To be able to interact with Roadside systems, Tunnel and Movable Bridge Management systems and External systems that provide or use information and services, e.g. Weather information, Law enforcement, Public transport, and Urban and Secondary road Traffic management systems
- To be able to adhere in external communication standards with respect to data representation