UNIVERSITI TEKNOLOGI MARA
FACULTY OF INFORMATION MANAGEMENT

INDUSTRIAL TRAINING REPORT:
EV DYNAMIC SDN BHD
39, JALAN PUTRA MAHKOTA 7/7B,
PUTRA HEIGHTS, 47650 SUBANG JAYA, SELANGOR

SPECIAL PROJECT:
MANUAL OF TRAFFIC MANAGEMENT CONTROL SYSTEM (TMCS)

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FACULTY OF INFORMATION MANAGEMENT
UNIVERSITI TEKNOLOGI MARA KELANTAN

01 FEBRUARY 2019 – 30 JUNE 2019

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FACULTY SUPERVISOR
MRS. NURULANNISA ABDULLAH

REPORT SUBMITTED IN FULFILLMENT OF THE
REQUIREMENT FOR THE INDUSTRIAL TRAINING
FACULTY OF INFORMATION MANAGEMENT
UNIVERSITI TEKNOLOGI MARA KELANTAN

01 FEBRUARY 2019 – 30 JUNE 2019

DECLARATION

I hereby declare that this is my original work. I have not copied from any other student's work or from other sources. I am also declare that no part of this report has been published or submitted for publication except where due to reference or acknowledgement is made explicitly in text, nor has any part been written for me by another person. I confirm that I have read and understood the UiTM regulations concerning plagiarism and will be penalized by the university if found guilty.

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Masni Aida Binti Majid
2016538003

Date of submission: 3rd July 2019

ABSTRACT

Starting from February 2019 until June 2019, trainee has been placed at Systems department in Recogine Technology Sdn. Bhd and being assigned in involving in West Coast Expressway (WCE) project. TMCS is a platform that integrates different application and services which are integral to the operations of the highway especially West Coast Expressway (WCE). TMCS is the main centre to control all the different components that make up a highway. Among the integral highway components that are integrated into TMCS are Closed-Circuit Television (CCTV) camera, Variable Message Sign (VMS) boards, Vehicle and Incident Detection System (VIDS), Traveller Information System (TRIS), Highway Information System (HIS), Emergency Telephones (ET) and Video Wall (VW). West Coast Expressway (WCE) or Lebuhraya Persisiran Pantai Barat (Taiping-Banting) (WCE) is one of Malaysia's expressways commencing at Selangor State Road B18 junction, which runs from Banting, Selangor and ends at the ramp of Changkat Jering toll plaza of the North-South Expressway at Taiping, Perak. It is planned and designed in such a way so that it is well connected to the existing highways (such as PLUS, SKVE, NKVE, NNKSB, LATAR, KESAS, etc.), in order to maximize its coverage and give the road users more options while travelling. The entire expressway with 21 interchanges will provide convenience to users to plan and travel more efficiently.

Keywords: *Traffic Management Control System (TMCS), West Coast Expressway (WCE), Highway & Information Sytsem*

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Now, it is logical for me to pay complement to the whole staffs EV-Dynamic Sdn. Bhd and Recogine Technology Sdn. Bhd for the cooperation in making my internship experience more meaningful. Not only that, thanks also to my supervisor from the Recogine Technology Sdn. Bhd, Mr. Ramesh A/L Krishnan that always be there for me in giving an advice for my special project. Not to forget all the staffs around me at the office, Mr. Rasyid, Mr. Arivan, Ms. Ushari, Mr. Izhar, Mr. Tamil and many more which always supported me when the task is given.

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Figure 1: Logo of EV Dynamic

OVERVIEW

Established in 2006, EV-Dynamic Sdn. Bhd has grown to become a trusted turnkey solution provider with expertise in Intelligent Transportation System, Integrated Security System, Railway Solutions and Engineering Solutions in Malaysia and regionally. Intelligent Transport Systems (ITS) always been developing and growing for past several years, fueled by the need for better use of the road infrastructure and travelers to make the best possible choice of routes for their journey.

EV-Dynamic provide innovative Intelligent Transport System (ITS) solutions that specialist on delivering total system integration & solutions in Traffic Control and Surveillance System (TCSS), Toll Collection System (TCS), Urban Traffic Management Control (UTMC), Advanced Traffic Management System (ATMS), Transport Management System (TMS) and any other ITS related requirement.

EV-Dynamic combines a broad range of consulting engineering knowledge, multidisciplinary expertise and managed by a group of people who are contributing their past experience in the ITS related field to offer an effective and cost-efficiency solutions to increase the smoothness and efficiency of the transport network. Our Integrated Security System also help to improve the security and safety for the entire residential community with added value and more innovative solutions and services to help customer to achieved better return on investment and revenue.

It solutions include of Gate Access System (GAS), Surveillance & Monitoring System (SMS), Dedicated Telephone System (DTS), Central Management System (CMS), Home Security and Automation System (HSAS) and others. From TOTAL system design until construction to acceptance and operation, EV-Dynamic able to provide state-of-the-art turnkey solutions that address the unique requirement via integration services that include consulting, design engineering (software, hardware and systems), documentation, training, installation, maintenance and project management.

MISSION

- EV-Dynamic is committed to offer innovation and excellent system solution to strive to become the customer's preferred partner.
- EV-Dynamic aims to offer highest quality solution and services to deliver excellent system performance.
- EV-Dynamic aims to provide highest level of support and excellent customer oriented services in order to strive for long-term business relationship with the customer.

VISION

EV-Dynamic aims to become the leader to provide value added Intelligent Transportation System solutions within Malaysia and ASEAN region.

CHAPTER 2

ORGANIZATION INFORMATION

2.1 SYSTEM DEPARTMENT

Figure 2: Logo of Recogine Technology

Globally, 54% of the population lives in urban areas today, and this trend is expected to continue. By 2045, the number of people living in cities will increase by 1.5 times to 6 billion, adding 2 billion more urban residents. Today, nearly 75% of Malaysians live cities, compared to 46% in 1985. The Kuala Lumpur urban area is one of the largest in the region as measured by area. With more than 80% of global GDP generated from cities, urbanization has undoubtedly been a key driver of Malaysia's success. Urbanization occurs when a country switches sectorial composition away from agriculture into an industrial one. This is the transition happening in Malaysia as the nation is on its way to becoming a developed country. To maintain sustainable growth in Malaysia, its cities need to keep flourishing. Basic elements such as transportations, security, and healthcare are required in order to enable these cities to continue to drive further economic growth.

Established in the year 2005, Recogine Technology Sdn. Bhd has become one of the top intelligent system solutions providers in Malaysia. Working hand-in-hand with our partners and the authorities, Recogine Technology Sdn. Bhd is doing its part to help Malaysia in its transformation to become a high-income nation. During the past decade, we have contributed towards the urbanization process through our transport, security and hospital solutions. The advanced Intelligent Transportation Systems (ITS) and railway solutions have enabled a smoother commute for motorists and better logistics management for businesses as several communities throughout the nation with the deployment of the solutions.

Vision

Our vision is to apply innovation in delivering smart and secure living for individuals, businesses, and governments. We believe innovation can accelerate the development and transformation towards a smart and sustainable world. It is our vision to contribute innovative solutions and be the driving force in creating a smart and secure world for everyone. Through our commitment to quality, constant innovation and respect for the planet, we aim to exceed expectations and deliver futuristic solutions for every single project.

Mission

Recogine Technology Sdn. Bhd seeks to create and promote smart and secure living for all. We strive to grow our business through technology innovation to offer state-of-the art city infrastructure design and improve the quality life for everyone. We provide outstanding value for clients with customized solution to meet requirements and challenges of each project. We are committed to technology development through R&D and collaboration with research community and building talents.

Company History Timeline

2005

- Recogine Technology was established in Kuala Lumpur, Malaysia, with the vision to develop technological solutions.

2006

- The company implemented the first Vehicle Enforcement System in the largest city in Malaysi, Selangor's Expressway. This was achieved by installing a Toll Collector Monitoring System.
- Recogine Technology started development on UNIVEMS, very own traffic management and control system specifically designed for control room

2007

- The company was assigned the very first project in Security System for the Gated Community, Amverton Park, in Shah Alam, the state capital of Selangor.
- UNIVEMS deployed in a traffic control and surveillance system and networking solution in the State of Selangor's 44.3 KM Expressway.

2008

- Two more projects wre assigned for Gated Community Security System Services in Kuala Lumpur, the Capital of Malaysia.
- Recogine Technology started development of RecoTraffic VID for Real-time Intelligence Video Analyzer as traffic sensor.

2009

- Passenger Information Systems (PIS) and Networking Solutions were deployed at Electrified Double Track Project which is the longest track (384KM) at northbound, and covered 150 displays.
- ITS solutions successfully implemented at the following two Klang Valley expressway projects that covers 90KM.

- New security project was awarded in Jade Hills (Phase I) for Gated Community Security System Services in residential develoment in Klang Valley, which covers 366-acre of residential houses by phase.

2010

- Recogine Technology enhanced RecoTraffic VID software with 90% accuracy detection.

2011

- Refurbishment of the Emergency Telephone System was carried out for Malaysia's SMART Tunnel, which is the longest storm water tunnel in South East Asia and second longest in Asia.
- Gated Community Security Sytstem Services was deployed for Jade Hills Phase II in Klang Valley.

2012

- RecoTraffic VID and UNIVEMS are widely proliferated to major highway control centres in state of Selangor.
- New collaboration works with UTAR and UteM to cultivate young talents in technology research.
- Two new projects for Gated Community Security System Services successfully carried out in Klang Valley and Johor Bahru, which covers total of 556-acres of residential houses, golf and parks.

2013

- Intelligent Transport System Solutions are prosperously deployed in two expressways in Klang Valley with a total of 32 units of RecoTraffic VID system which covers 47.9KM and UNIVEMS Management system for control room.
- Recogine Technology set up the control room management system for the Federal Authority and deployed traffic surveilelance sensors in Kuala Lumpur.
- Gated community system is proliferated to a new residential in Ambang Botanic 2, Klang District which cover 80-acre of residential houses.

- Recogine Technology won 2 Silver Medal in international Invention, Innovation and Technology Exhibition (ITEX) 2013 for UNIVEMS and Recotraffic- Intelligent Traffic Condition Analyzer
- Received MSC status through Sibsidiary company of Recogine Technology.
- Begin developments of Heavy Vehicle Classification System (HVCS)

2014

- Recogine Technology won 1 Gold Medal n ITEX 2014 for RecoWave as Best Invention
- Recogine Technology deployed IT infrastructure services for the first Government Hospital- Hospital Shah Alam
- Completion work of Passenger Information System (P.I.S) and Networking Solutions at Electrified Double Track Project, the longest track at northbound at 384KM.
- Heavy Vehicle Classification System, a new Intelligent Transport System Solution was successfully deployed in Kuala Lumpur along with RecoTraffic and Licence Plate Recognition.
- Beginning with Klang Valley Mass rapid Transportation Line 1 in Information Technology System Solution joint venture with partners.
- Beginning of new developments of UNIVEMS and RecoTraffic VID.

2015

- Enlargement of our Intelligent Transport System solution successfully deployed at East Coast Highway with total of 20 unit of RecoTraffic VID System that cover 188KM with UNIVEMS Management System for control room
- The latest web UNIVEMS Management System version and RecoTraffic VID has deployed to two of our major expressway in Klang Valley
- Construction Monitoring System was deployed and covered 233KM for West Coast Expressway.
- Recogine Technology certified with Quality Management System certification (ISO 90012008).
- Federal City Council been selected as finalist in IDC's Smart City Asia Pacific Awards (SCAPA) 2016 with our new Intelligent Transport System solution services.

- Federal City Council awarded Recogine Technology for Intelligent Transport Infrastructure maintenance program
- Recogine Technology started development of RecoMedia and RecoSecure Connect.

2016

- Recogine Technology provided an Intelligent Transport System Solution for Klang Valley Mass Rapid Transit Line 2.
- The first overseas project from Thailand's Expressway Authority has been awarded to Recogine Technology for Intelligent Transport System Solution.
- Recogine Technology won two Gold Medals in ITEX 2016 for RecoSecure Connect and RecoMedia.
- Enhancement of Gated Community Security System Services in Horizon Hill, Johor Bahru for control room system.

2017

- Recogine Technology awarded with ITS solution upgrade for Klang Valley main national road network.

2.1.0 Department Chart

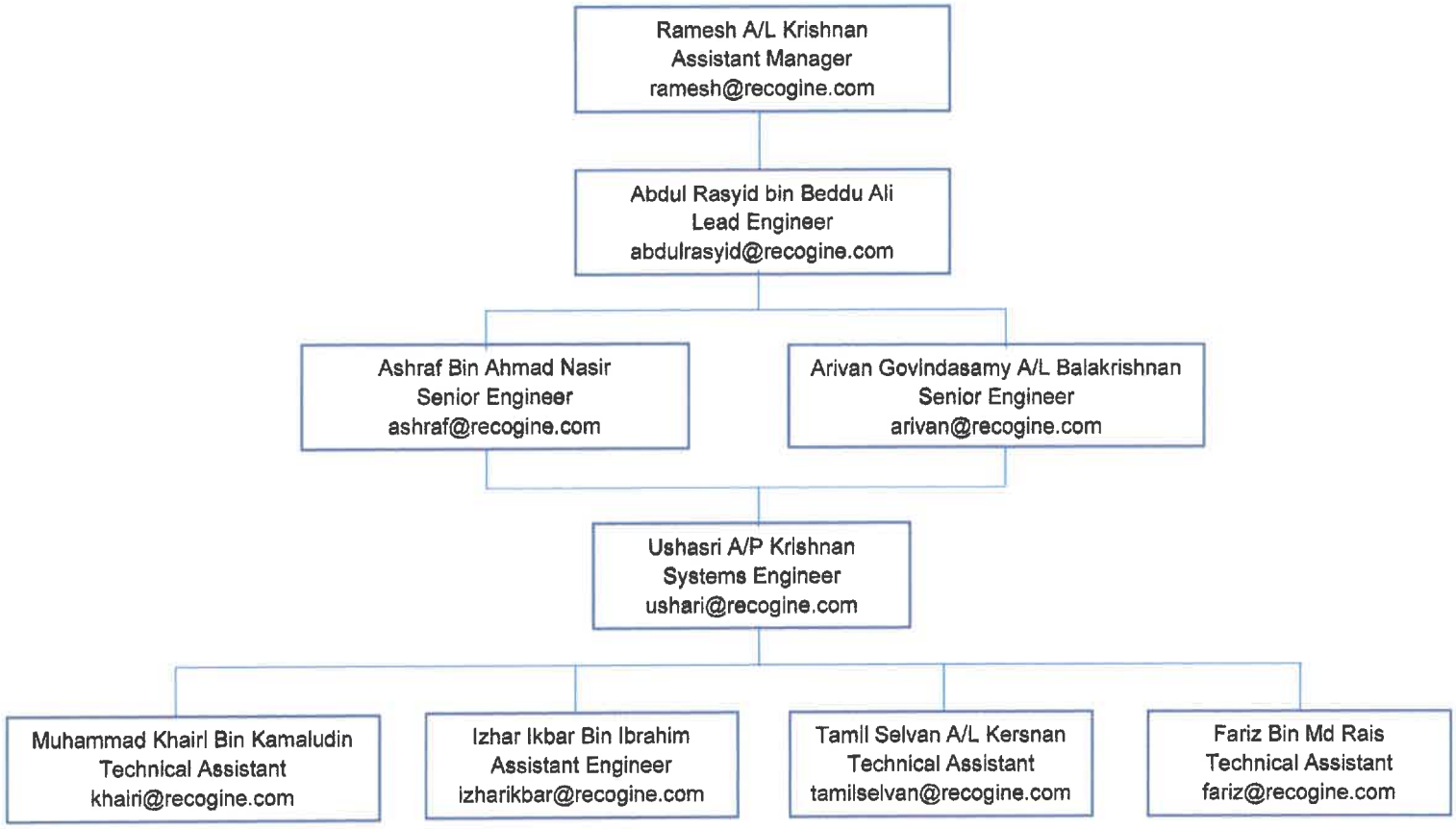

Figure 3: System department chart

2.2 Department Functions

- Design, develop, test, review and enhance software systems to improve business efficiency and service delivery.
- Design, implement, operate and maintain highly available computing platform including server, storage, backup and network integration.
- Develop project documentation and drawing.
- Communicate with project stakeholders and other parties including network team and application team to achieve project requirement.
- Perform testing and commissioning of computing platform.
- Diagnose and resolve computing platform hardware, software and connectivity problems.
- Provide technical support for system or application team.
- Execute routine maintenance tasks according to maintenance plan for computing platform such as backup, patch management and hot fix

CHAPTER 3

INDUSTRIAL TRAINING ACTIVITIES

3.1 Training Activities

February 2019

i. Documentation

For the first month at Recogine Technology Sdn. Bhd, the trainee has been given a task that focuses only on documentation. The task includes reading the document to get a better understanding of the system that assigned for an internship program. 'Traffic Management Control System (TMCS)' is an ongoing system that has been assigned for the trainee to handle with a team. Basically, 'Traffic Management Control System (TMCS)' is an integrated system that focuses on traffic in Malaysia. The module includes Traveller Information System (TRIS), Variable Message Sign (VMS), Vehicle Incident Detection System (VIDS), Highway Information System (HIS), Emergency Telephone (ET), and Video Wall module.

In the first three weeks of the internship, trainee only read all the documents given and do a 'Factory Acceptance Test' (FAT) for the 'Traffic Management Control System' (TMCS). When all the reading is complete, Ms. Ushari has supervised to do an evaluation or test the system. Basically, 'Traffic Management Control System (TMCS)' is not completely done and still under testing and improvement phases. Trainee mostly involves in these phases. The document has been given to evaluate the system and when the evaluation is done, it will be given to the Research and Development Department to make an improvement of the system.

ii. Lab Work – Troubleshoot/ PC Assemble

The last week of February, Mr. Rasyid has given trust to the trainee to involve in lab work. The lab work include do a troubleshoot for 7 mini PC. All of these mini PC is was used for RecoTraffic project and basically when it was sent to the system department by the client, it must be a problem with the PC. One of the PC has a problem related to its Windows where it is to slow to run, and the others have a problem with the software installed. All of these problems have been ably solved by the trainee. Not only that, in the last week for the first month of internship, trainee also has been exposed to designing work which is this task also be given by Mr. Rasyid.

March 2019

i. Design Traveler Information System (TRIS) Kiosk

Basically, in March, trainee involves a lot in designing which is for the Traveller Information System (TRIS) kiosk. The function of this kiosk is actually same with the directory that usually used for a mall in Malaysia. But, Traveller Information System (TRIS) kiosk will be put and used for public in a rest area in West Coast Expressway (WCE). For this expressway, there are about three or more rest area. Traveller Information System (TRIS) kiosk has a 160cm height and ***cm width which is suitable enough for traveller to get the information they want such as the location of the prayer room, toilet and many more.

About more than half of the month was used by the trainee to design the kiosk. 13 design was complete and has been presented by Mr. Rasyid which is a lead engineer in system department to the client. Gladly, one from the thirteen design was choose by the client. Trainee has diversify the chosen design from one to eight design. This was to ensure the client will be able to choose the design that they really look for and like. At the end of the month, client has choose design 2 from 8 design. This design has been submit to the supplier for further action.

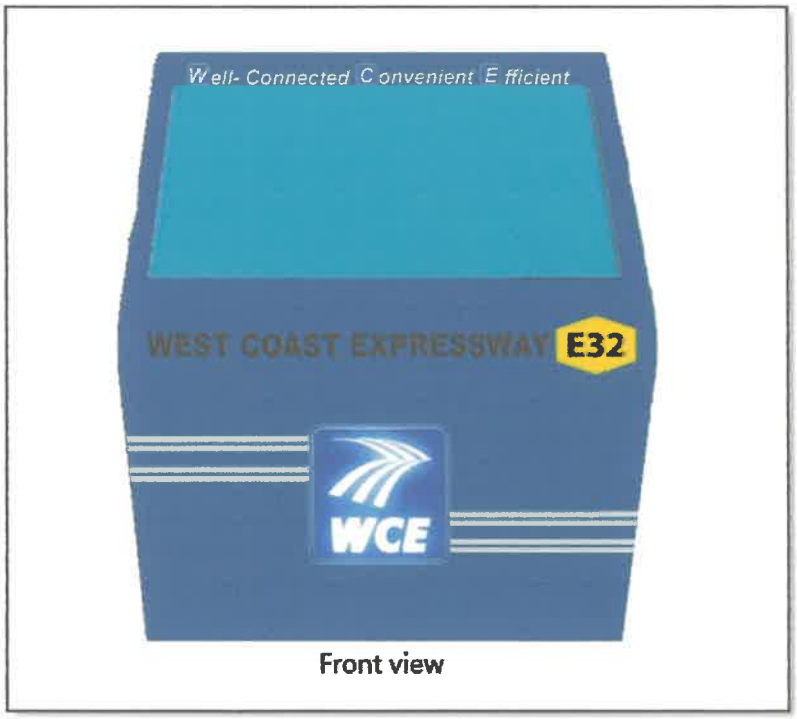

Figure 4: Front view of the TRIS kiosk

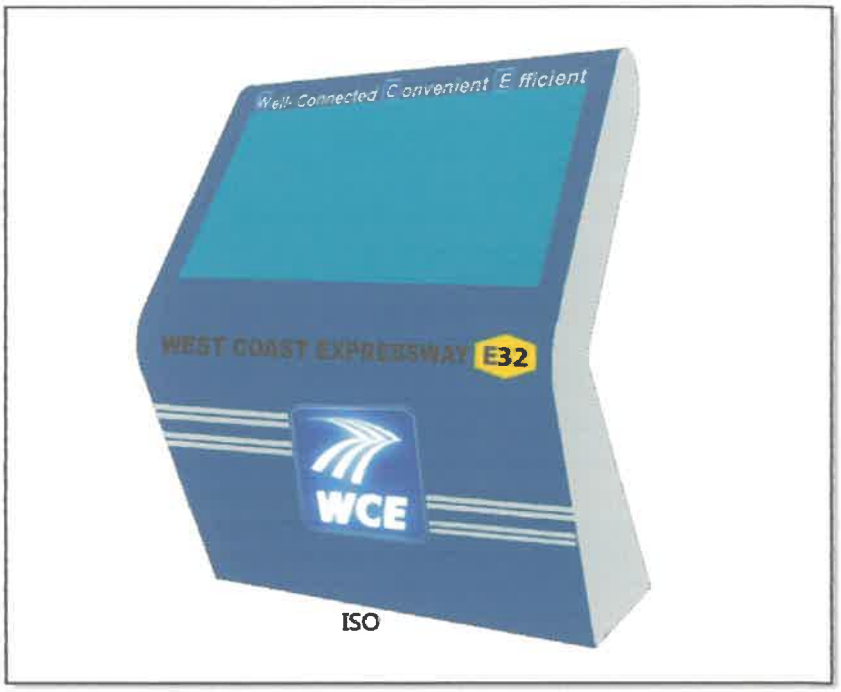

Figure 5: Side view of the TRIS kiosk

ii. Mass Rapid Transport (MRT) System Testing

Not only design, on the second week of a March, trainee and another one of the trainee has been assigned to work at Research and Development department for a week. For this task, both of the trainee has been given a task to do a 'Factory Acceptance Test' (FAT) for Public Information Display System (PIDS). Basically, Public Information Display System (PIDS) is a project for Mass Traffic Transfer (MRT). This system is still under testing phase where 'Factory Acceptance Test' (FAT) was done to test whether there is any bugs or failure when running the system.

When all the test has been done for all the modules, the recorded information was given to the developer team to enhance and fix the issues. When it is done, both trainees will re-check the system to ensure the issues will not happen again. The last thing has been done in Research and Development department was do an Internal Module Testing in a Redmine when the solution is done. For this task, trainees just need to screenshot the solution that has been made and update it in the Redmine. Redmine is functioning as a notification to inform superior and related staffs about the progress of the system.

iii. RecoTraffic System Testing, Observation & Evaluation

At the end of the month, trainee was given a task to observe the accuracy of the RecoTraffic VIDS for vehicle. RecoTraffic VIDS is actually a software that functioning to calculate the amount of the vehicles going in or out on the road. Usually, it was used to show the statistic of the vehicle that used the road. In Malaysia, class of vehicle are classified into 5 class.

iv. Checking Log Report in 'Police Emergency Response & Surveillance Operation Network Mobile' (PERSON) mobile apps.

Other than that, starting from the last week of the March, the routine task that need to be done by the trainee was to check the PERSON system. PERSON System is a mobile apps created for Polis Diraja Malaysia (PDRM). It is very useful for PDRM as it helps in recognizing the criminals through the face recognition from the CCTV and camera picture reports from the public. Trainee need to ensure the data collected will appear smoothly without problem. The data that collected will be need for the report. Basically, the system is still under testing phases and will be implemented and used by the end of this year.

v. Site Visit at Besraya Expressway (Sungai Besi Expressway)

Not only that, it was the first time trainee has been given an opportunity to go to the site which is at Besraya control room. Site visit is done due to the server down. Went there with the senior engineer at the department which is Mr. Arivan to solve the problem. It take about half of the day to solve the issue.

Figure 6: BESRAYA control room

Figure 7: BESRAYA server room

April 2019

i. Design West Coast Expressway (WCE) Mobile Apps User Interface

On april, trainee was involve a lot in designing West Coast Expressway (WCE) mobile apps interface. The task was given by Mr. Ramesh who act as supervisor for the trainee and as assistant manager at System Department. This mobile apps is functioning as a public app to be used by the public to get an updated information by the Lembaga Lebuhraya Malaysia (LLM) about the expressway condition and situation. Four complete design has been submitted and used as a references for the developer to develop the mobile apps. Not only that, icon for loading pages also was designed by the trainee and been used for the apps. Trainee only used Adobe Flash to design and it was approved and accepted by the client to be used.

ii. Closed Circuit Television (CCTV) Camera Testing/ Configuration

In this month too, trainee was exposed to the CCTV testing. CCTV testing involved IP configuration and any other technical skills. Introduced by Ms. Usha, trainee has went to the Phileo building at Damansara to meet with the HIKVISION CCTV supplier. In order to get a better understanding, trainee has also involved in the process of seting up the CCTV starting from wiring knowledge and network knowledge. It only take about one day to complete the CCTV camera testing.

Figure 8: CCTV testing room at Phileo Damansara

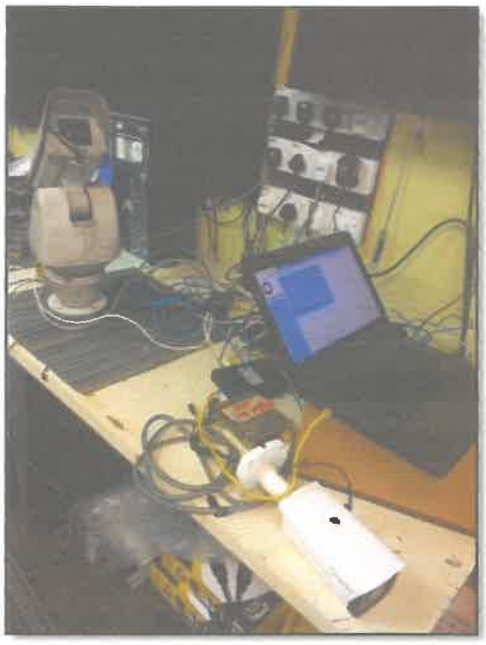

Figure 9: CCTV configuration before testing

iii. Documentation – Preventive Maintenance for Lembaga Lebuhraya Malaysia (LLM)

Other than that, routine task that involved documentation is still done by the trainee such as do a maintenance report of the server for Lembaga Lebuhraya Malaysia (LLM) as they are one of the client of the company. Preventive maintenance is a one way to ensure the hardware used by LLM are in a good condition. Usually preventive maintenace will be done every three months. So basically, in a one year, there are 4 times of preventive maintenance will be done by the Systems team.

iv. Server Training

In the third weeks of April, trainee has been given an opportunity to learn about how to promote domain from primary server to secondary server for Dewan Bandaraya Kuala Lumpur (DBKL) project. Secondary server act as a backup server for the primary server. If primary server is not functioning as usual, secondary server will become active and replace primary server to do their job. It is quite tricky and hard to understand the process of promote the domain, but with the guide gives by the Mr. Tamil and Mr. Izhar, everything just went well.

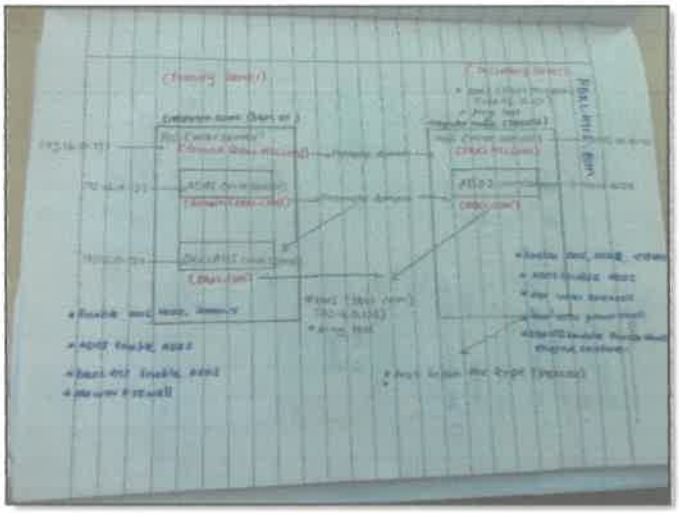

Figure 10: Notes for promote domain from primary server to secondary server

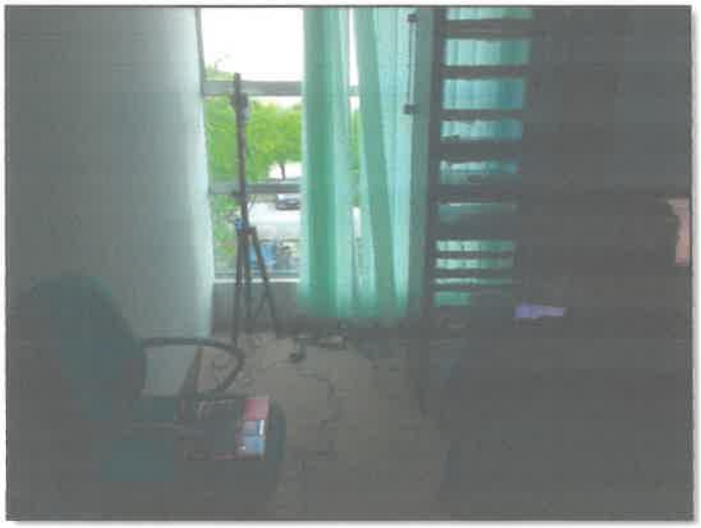

Figure 11: Server training at server testing room

May 2019

i. **KOMOTO IR ANPR Network Camera (CCTV) Testing for West Coast Expressway (WCE)**

On May, it can be conclude that this month is the most challenging month from the other. With a little knowledge gained from the CCTV camera testing, Mr. Arivan has put 100% trust to the trainee to test 64 set of KOMOTO IR ANPR Network Camera before their installation was made at the West Coast Expressway (WCE) section 5. For the test, trainee need to ensure the view of the image capture from the CCTV Camera is clear. There should be no blurry image, and out-focus image. If these thing happen, trainee need to assemble the CCTV and reset the camera focuses by adjust the lenses. It is so complicated as trainee need to be careful and do no mistakes.

During the testing process, trainee was guide by Mr. William, which is one of the engineer at the Research and Development department. It takes only about one hour of explanation for trainee to cope with what need to be done. Roughly, it takes about two weeks for all the process of the testing done including completing the report, re-test the problem CCTV, assemble the CCTV and send it to the site before installation was made.

Figure 13: CCTV setup before testing

Figure 15: CCTV assemble for lenses setup

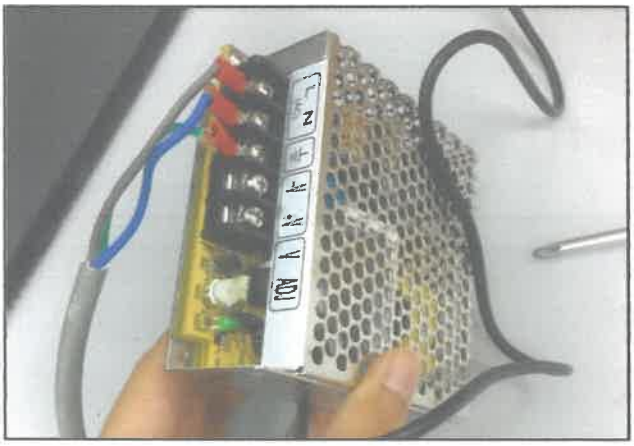

Figure 14: Power supply used for CCTV testing

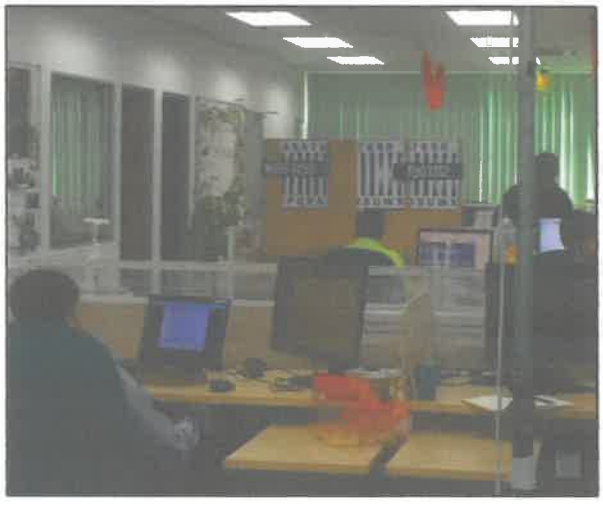

Figure 16: Plat number setup before CCTV testing

ii. Design Video – Introduction Video for a New Software Implementation

Other than that, for the section 5 opening ceremony of the West Coast Expressway (WCE), trainee has been given a task to make an introduction video for the VVIP about the new software used for the highway. Before this, all of the highway in Malaysia including PLUS, SKVE and many more, used one software as a tools to monitor the highway from the satellite. For West Coast Expressway (WCE), they used Magnet Collage Software. The video that made by the trainee include the functions and advantages using the software as well as to enhance staffs work in a future. Trainee took only about 4 days to complete the video by using Adobe Premiere. Process of creating the video was supervise by Mr. Ramesh. This video has been play during the opening ceremony of the expressway.

iii. Re-Design Dewan Bandaraya Kuala Lumpur (DBKL) System Logo

Known as a trainee that able to used designing software very well, Mr. Rasyid once again has given a task for the trainee to re-design the system logo for the Dewan Bandaraya Kuala Lumpur (DBKL). Basically, the previous logo is not suitable anymore as the pixel of the image make the image blur. When the website developer wants to include the logo in a system, the image is really bad. So, trainee is responsible to make the image clear by improving the pixel of the image and make good to view. Trainee also has been given an opportunity to do internship report during the staffs busy with the site work.

Figure 17: ITIS Logo

June 2019

i. **Network Video Recorder (NVR) Configuration**

June 2019, is the last month of the internship. On the first week of June, trainee just take only one day of annual leave for the Eidul Fitri which is on the Friday (day 3 of Eidul Fitri). In this week, trainee has spend to do the internship report on Monday due to the many staffs work at the site. While on the Tuesday, Mr. Arivan has given a task to set an IP for the Network Video Recoder (NVR) that will used for West Coast Expressway (WCE) project.

ii. **Discussion with Mr. Marco and Mr. Ramesh for Position Appointment as System Engineer**

On the second week, trainee has involved in a discussion at the meeting room with Mr. Ramesh and Mr. Marco. Mr. Ramesh as a Assistant Manager of Systems department and Mr. Marco as a Assistant Manager of Human Resources department has offered trainee for Systems Engineer position in Systems department. All the things regarding the position was discussed in detail on that day. After the discussion session, trainee has started a training as a permanent staff before start working on 15th July 2019.

iii. **Network Video Recorder (NVR) and RecoTraffic PC Assemble – Change HDD**

In this week, trainee has learn on how to do a configuration of a Network Video Recorder (NVR) for the KOMOTO IR ANPR Network Camera that will be install in West Coast Expressway (WCE). The other day on this week, trainee has do some technical task, which is change, the broken HDD of the RecoTraffic PC with the good one and also bring out the HDD from the Network Video Recorder (NVR) for data collection purposes.

Figure 18: Network Video Recording (NVR) assemble

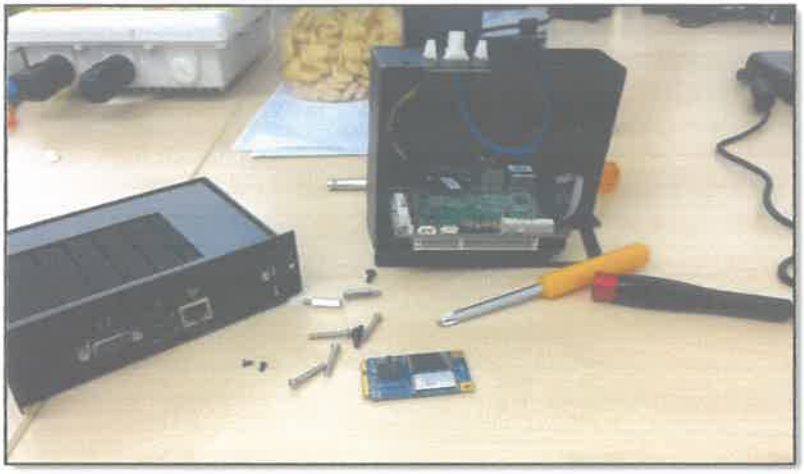

Figure 19: RecoTraffic PC assemble

iv. Training – Router Configuration

Not only that, Mr. Rasyid has assigned Mr. Izhar to teach trainee on how to configure a router. It is only take about one day to fully know how to configure it.

Figure 20: Router configuration

v. **System Testing – Integrated Traffic Information System (ITIS) for Dewan Bandaraya Kuala Lumpur (DBKL)**

On the third week of the June, trainee has been given a task to test the system called as Integrated Traffic Information System (ITIS) for Dewan Bandaraya Kuala Lumpur (DBKL). The function of this system is for users to check on traffic and plan their journey accordingly.

vi. **Training – Hyper-V Installation and Configuration**

Not only that, on the next day, Mr. Rasyid has teach trainee about Hyper-V. Trainee has learn about on how to install Hyper-V on DBKL server for testing purposes. Besides, he also explained on how Hyper-V works on server and how it is operate when it is install.

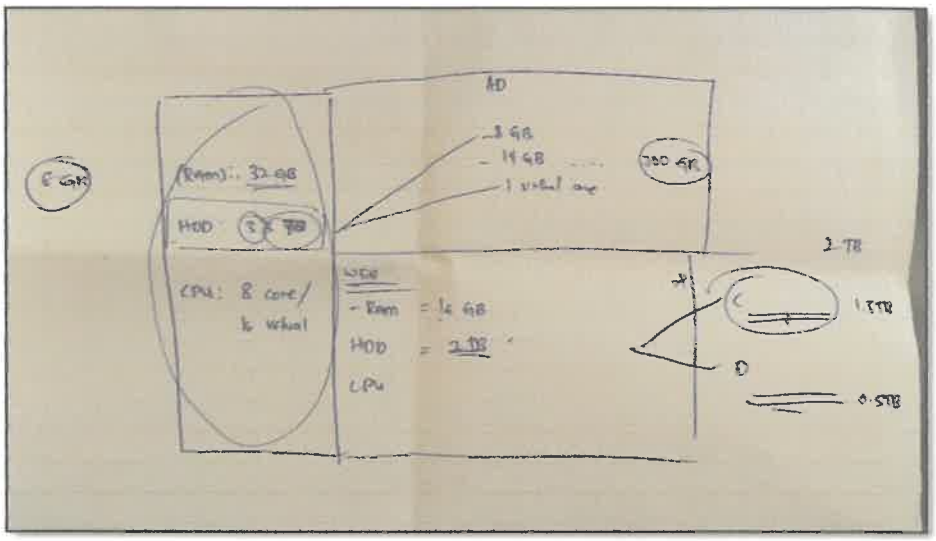

Figure 21: Notes of the RAM, HDD, CPU knowledge Hyper-V installation

vii. System Training for Operator of South Klang Valley Expressway (SKVE)

Due to the position appointment as a Systems Engineer, trainee need to learn on how to give a system training for a client. On this week too, Mr. Izhar has bring trainee to the South Klang Valley Expressway (SKVE) control room to teach operator about Traffic Management Control System (TMCS). Before this, SKVE has separated system to control the video wall got from CCTV, to post announcement on Variable Message Sign (VMS) and many more. That is why they has take an initiative to used Traffic Management Control System (TMCS) too but based on SKVE version. The training has been held only for one day and about 10 operators involved.

Figure 22: SKVE operators involved in system training

Figure 23: View in SKVE Control Room

viii. Preventive Maintenace of Personal Computer and Server at Lembaga Lebuhraya Malaysia (LLM)

Last two days of this week trainee went to the Lembaga Lebuhraya Malaysia (LLM) guided by the Mr. Rasyid and Mr. Khairi to do a preventive maintenance at there. Preventive maintenance will be done every three months to ensure that all the servers and personal computer used to monitor the highway through the CCTV's are well functioning. It was such a great experience for trainee to learn this task but it need a lot of patients because of it cannot be done in a one day. At least a week to complete all of the task. There are about 12 personal computer and 4 server must be done by the trainee and Mr. Khairi.

Figure 25: Lembaga Lebuhraya Malaysia (LLM) control room

Figure 26: Server room in Lembaga Lebuhraya Malaysia (LLM)

3.2 Special Project

Figure 27: Route of the West Coast Expressway (WCE)

i. Project Description

Lebuhraya Persisiran Pantai Barat (Taiping-Banting) (WCE) is one of Malaysia's expressways commencing at Selangor State Road B18 junction, which runs from Banting, Selangor and ends at the ramp of Changkat Jering toll plaza of the North-South Expressway at Taiping, Perak. It is planned and designed in such a way so that it is well connected to the existing highways (such as PLUS, SKVE, NKVE, NNKSB, LATAR, KESAS, etc.), in order to maximize its coverage and give the road users more options while travelling. The entire expressway with 21 interchanges will provide convenience to users to plan and travel more efficiently.

ii. Traffic Management Control System

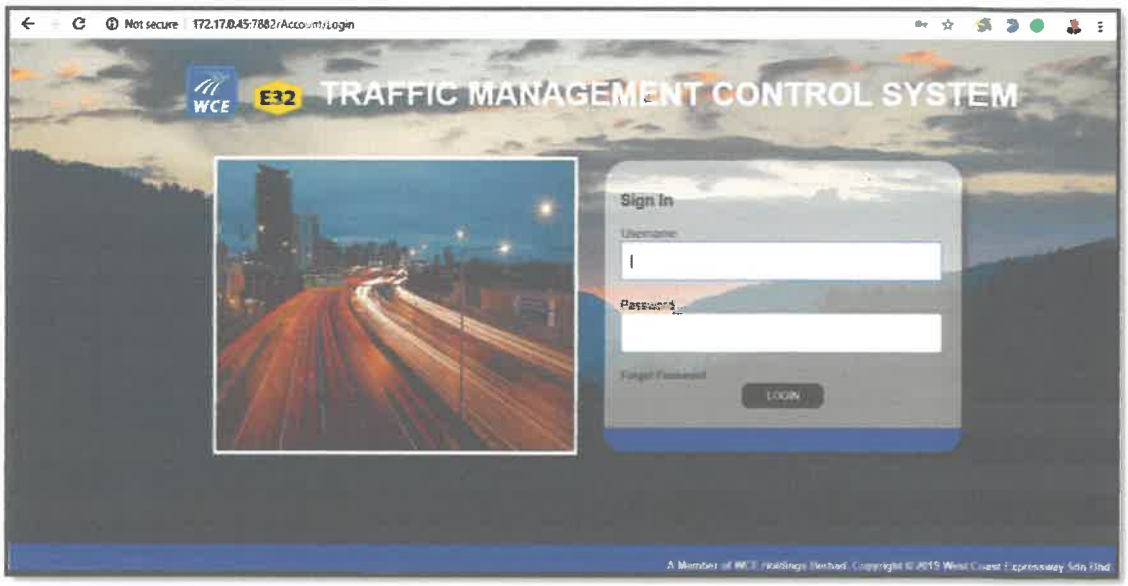

Figure 28: Interface of the TMCS login page

Traffic Management Control System (TMCS) is a platform that integrates different application and services which are integral to the operations of the highway. TMCS is the main centre to control all the different components that make up a highway. Among the integral highway components that are integrated into TMCS are:

Table 1: Components of the TMCS

COMPONENTS	DETAILS
Closed-Circuit Television (CCTV) camera	To be able to view and control the installed CCTV cameras
Variable Message Sign (VMS) boards	To be able to set, send and delete traffic information messages for the installed VMS boards
Vehicle and Incident Detection System (VIDS)	To be able to view traffic data and incidents detected by installed VIDS sensors
Traveller Information System (TRIS)	To be able to disseminate traffic information to road users through installed TRIS kiosks at rest areas
Highway Information System (HIS)	To be able to disseminate traffic information to road users through installed HIS displays at rest areas
Emergency Telephones (ET)	To enable road users to contact highway operators in the course of occurrence of unexpected events using ET devices along the highway
Video Wall (VW)	To enable highway operators to view CCTV live streams on the video wall, as well as customizing layout.
Asset Management	To be able to manage asset registration, monitor asset performance and track asset movement for highway operation and maintenance purposes
Mobile Application	To serve as a centralized platform for managing incident reporting and handling for both highway operator and user

iii. System Architecture Diagram

Figure 29 shows the general system architecture for both the Section 5 and Section 9 WCE TCSS Control Centres. The system architecture consists of equipment located at site as well as those located in the TCSS control centres.

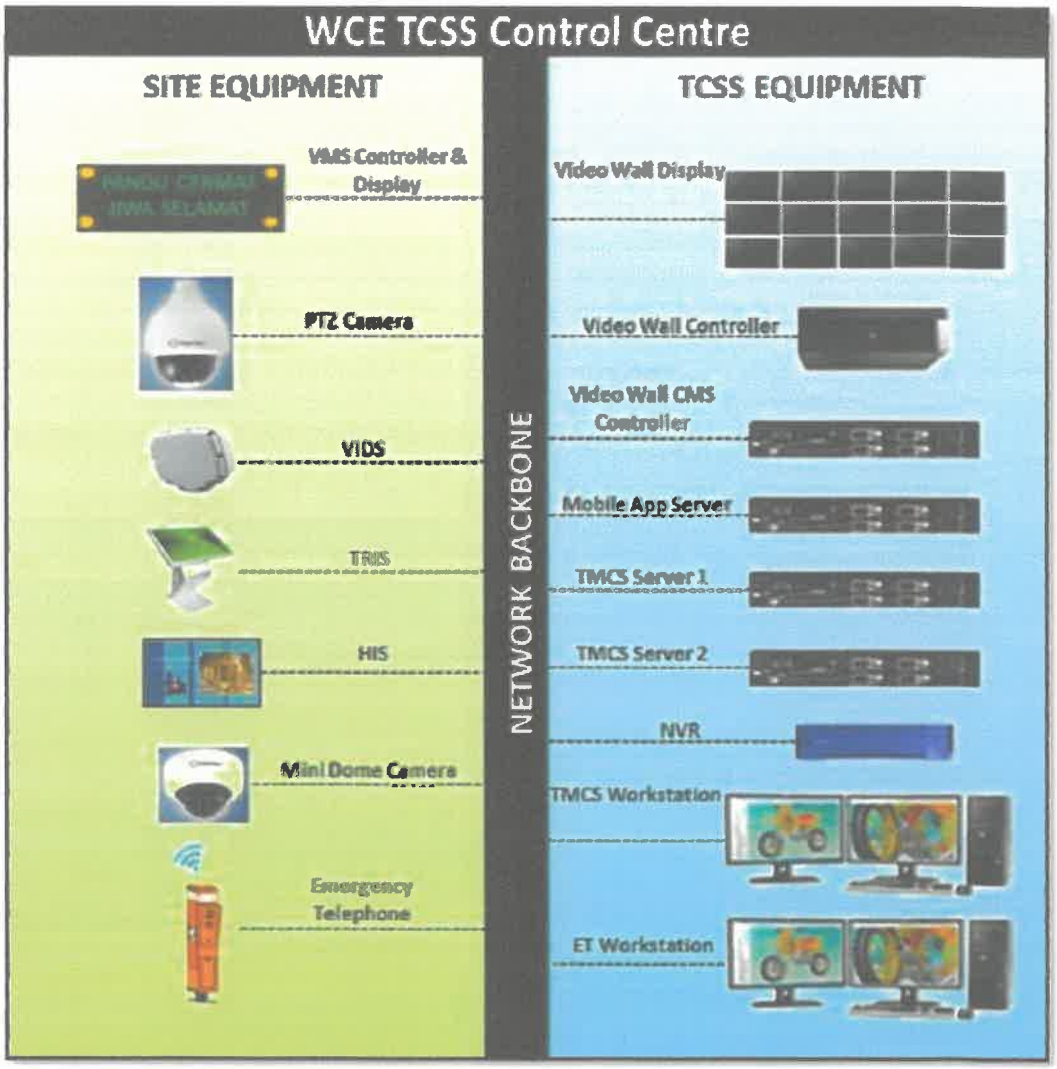

Figure 29: Network backbone of the TMCS

iv. TMCS Interface

The TMCS software is able to interface with 3rd-party software and hardware devices based on several differing communication protocols. The flexibility of the TMCS interfacing systems enables seamless data connectivity between various other hardware and software. Table 2 shows the listing of the interfaces connected to the TMCS software and future integrations.

Table 2: Interface connected to the TMCS softwareand future integration

System Interface	Protocol	Scope
CCTV System	ONVIF	To view CCTV live stream, to grab snapshot and to obtain CCTV connectivity status
VMS System	TCP/IP	To obtain VMS board connectivity status, to send VMS messages to board and to obtain VMS board internal health status
VIDS System	Serial Communication	To obtain data from VIDS devices, and to obtain VIDS connectivity information
Video Wall System	TCP/IP	To control and to synchronize the video wall layout and content between TMCS and video wall controller
Emergency Telephone System	TCP/IP	To obtain the ET devices connectivity status from the ET server
HIS system	WCF	To control and to synchronize the HIS display layout and content between TMCS and HIS controller
TRIS system	WCF	To control and to synchronize the TRIS display layout and content between TMCS and TRIS controller
Mobile Application	API	To control and synchronize content between mobile application, Mobile Application Server and TMCS Server
Toll Collection System	HTTP (*Proposed protocol for integration with TCS software)*	To update toll fare management

Figure 30: Homepage of the TMCS

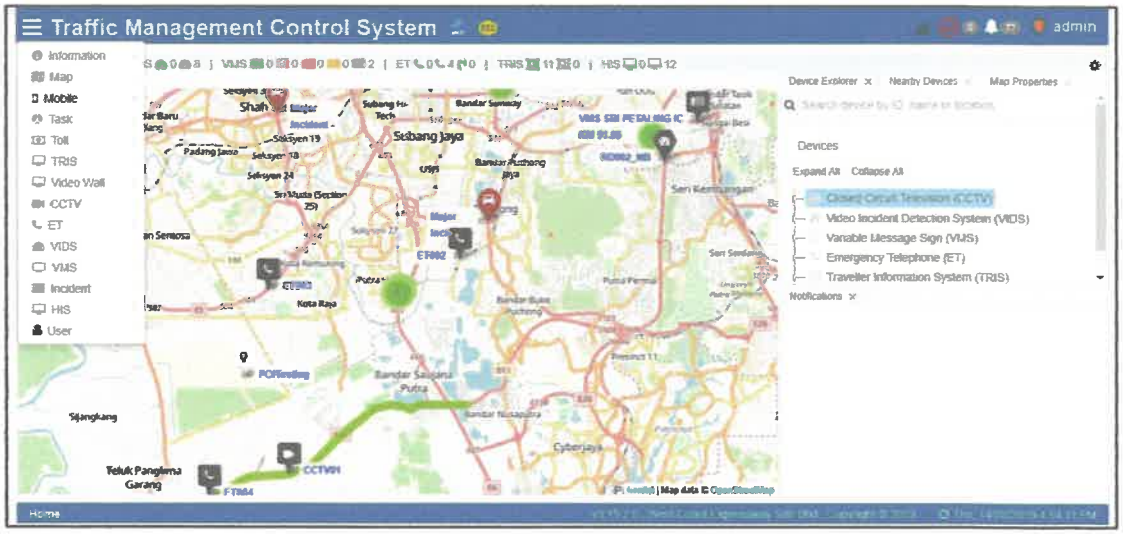

Figure 31: Modules available in TMCS

v. TMCS Redundancy & Failover Setup

The WCE TMCS is designed to have both a redundancy and failover setup. This is to ensure the operations of the TCSS control center is unaffected by unforeseen errors to the servers.

- **TMCS Redundancy Server**

As shown in Figure 32, there are two units of TMCS servers located in each TCSS control center. These two units are in exact replication of each other. The TMCS, by default, will load from the TMCS Server 1, known as the primary server. All changes made to the system on the primary server, is automatically replicated to the secondary server, using background services.

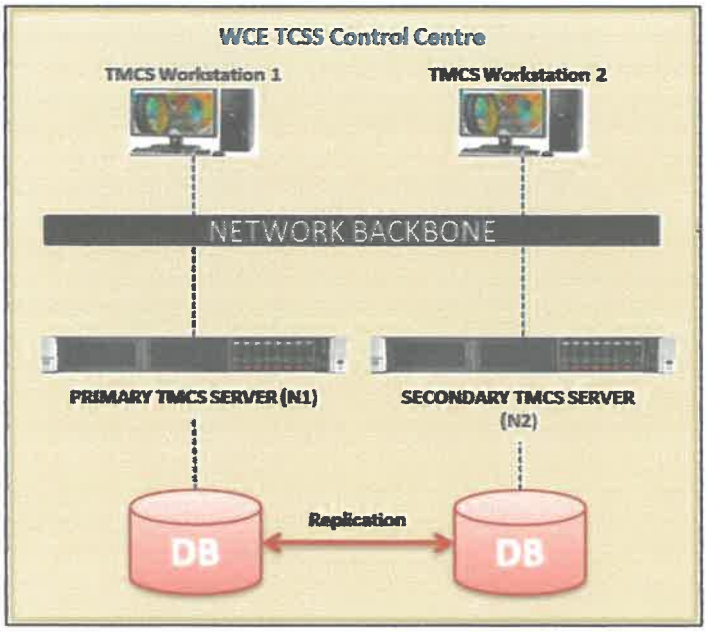

Figure 32: Network backbone for server redundancy

As shown in Figure 29, the primary and secondary TMCS servers are connected through the network backbone of the TCSS Control Centre, and have all the database tables and background services installed on both the servers. The databases on both servers are constantly replicated using a background service. In the event that the primary server is shut down, the system will automatically switch to using the secondary server, thus minimizing the downtime delay to the highway operations. This setup will be implemented in both the WCE TCSS Control Centres in Section 5 and Section 9, where the databases in the Section 5 TMCS servers will be replicated to the Section 9 TMCS servers and vice-ver

- **TMCS Failover Setup**

The TMCS is designed for a failover event. The failover setup for the TMCS is a hot failover setup, where in the event of the main server failing, the backup server will automatically detect and take over the TMCS operation seamlessly. Figure 30 shows the diagram of the inter-TCSS connection systems. The WCE Northern TCSS Control Centre and WCE Southern TCSS Control Centre are connected using a dedicated leased telecommunications line. Both TCSS will use the same TMCS redundancy server setup.

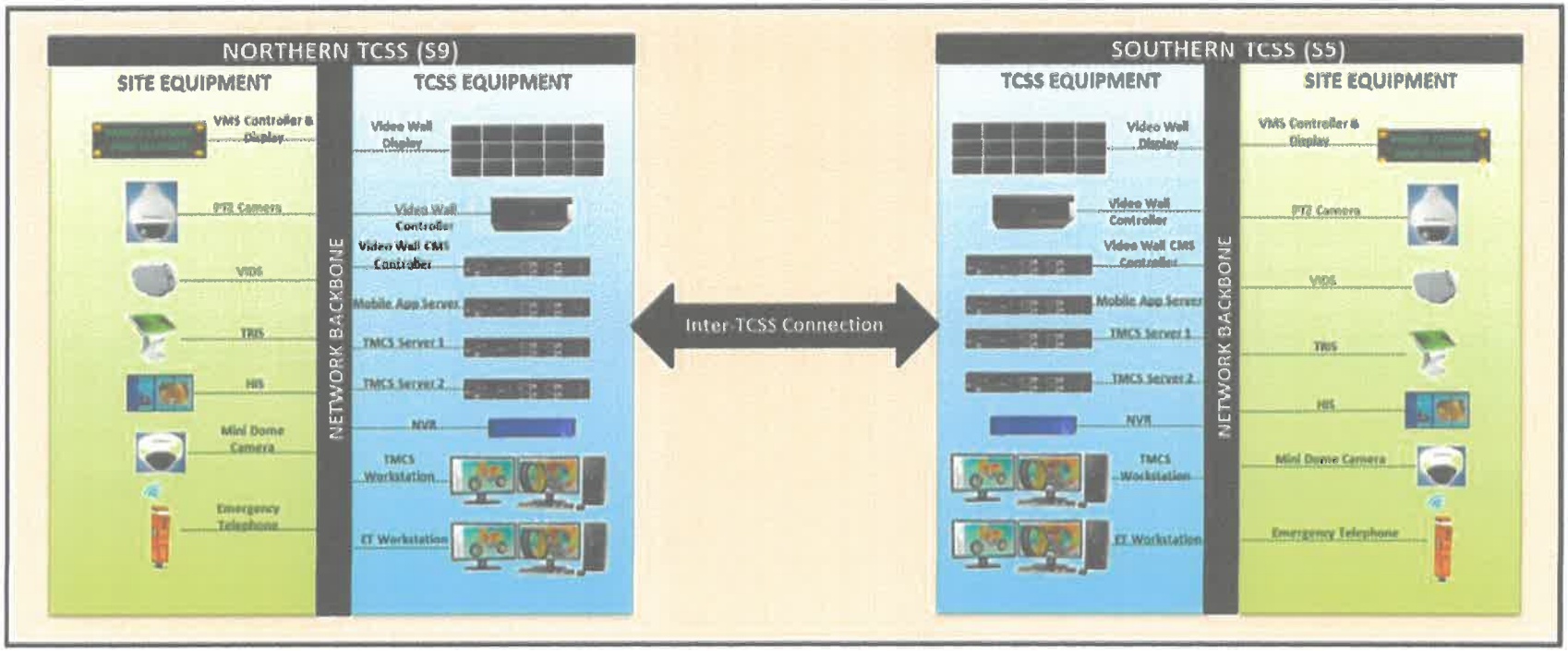

Figure 33: Inter-TCSS connection system

As explained before, the secondary server will automatically take over the TMCS operations in the event that the primary server is down. However, in the event that both the primary and secondary TMCS servers are down, the WCE TMCS failover setup will ensure that the system is forced to use the TMCS servers of the other TCSS Control Centre, as shown in Figure 34.

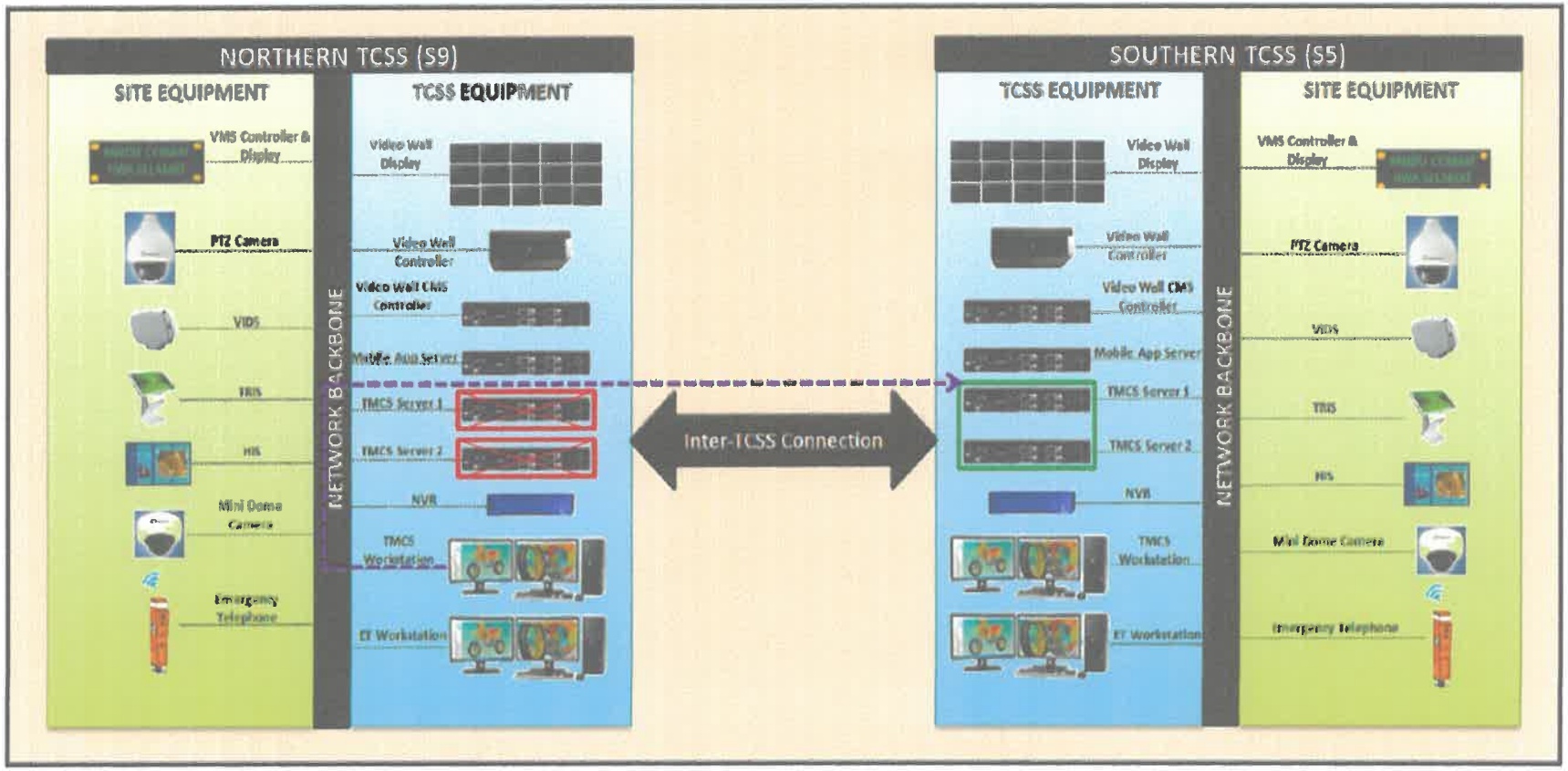

Figure 34: Inter-TCSS connection setup when server failover

3.2.1 Introduction

Traffic Management Control System often abbreviated as **TMCS** is a web-based application that serves as the Traffic Management Control System for the West Coast Expressway often abbrevaited as **WCE** Traffic Control Surveillance System (TCSS) Control Centres.

3.2.2 System Login

TMCS is operated using web browser (Google Chrome is recommended). The login page is accessible using a local host address (hyperlink to be assigned later by WCE network administrator). TMCS is only accessible to the users registered on the system within the local network range. Authorized users shall be assigned a specific username and password; by the system administrator, to log in to the TMCS.

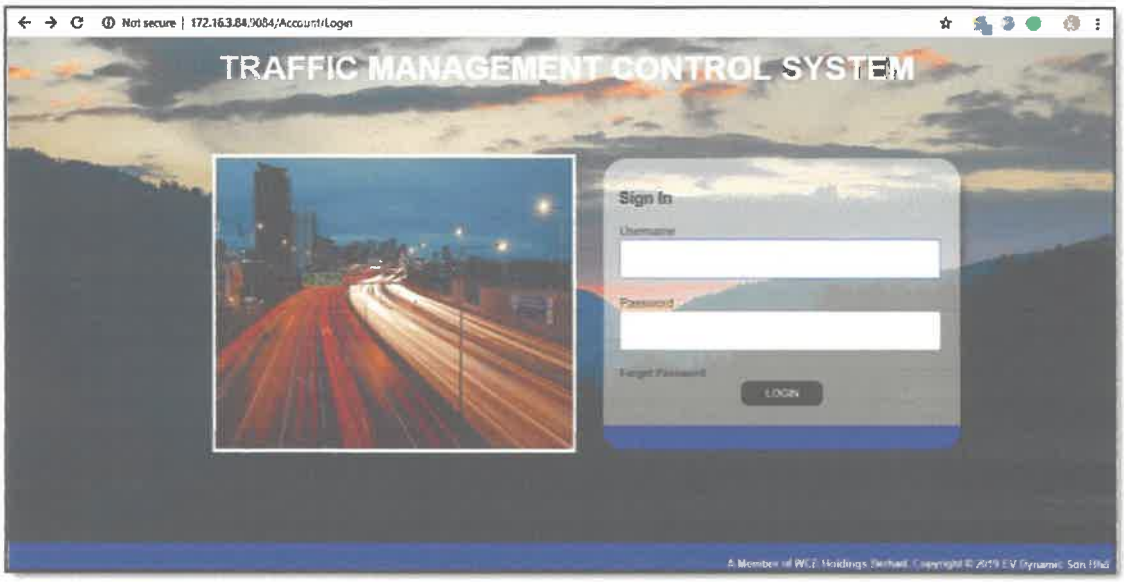

Figure 35: Login page for TMCS

3.2.3 Home Page

Upon successful login, the TMCS Home Page is displayed. On the TMCS Home Page, the user is able to view the map, with the WCE highway alignment highlighted, as well as the highway devices on screen. The source of map display is obtained from Open Street Map, an open-source map provider. As so, any changes to the map are subject to updates from Open Street Map Foundation. From the TMCS Home Page, the user is also able to access the other functionalities of TMCS. The functionalities available in the TMCS are classified by separate modules. These modules are accessible through the drop down menu on the web page. The following TMCS modules are available:

Table 3: Modules available in TMCS

Modules	**Descriptions**
Map	To display of devices, POI and highlighted highway route
CCTV	To provide information (connection status, device details), latest snapshot and live streaming of the CCTV devices which are installed along the highway
ET	To provide information (connection status, device details) of the ET devices which are installed along the highway
VMS	To provide information (connection status, device details) of the VMS devices and message composing for VMS boards which are installed along the highway
Video Wall	To design and control video wall layout to be displayed on the video wall display panel.
VIDS	To provide the information (connection status, device details) and obtain the traffic statistics of the VIDS devices which are installed along the highway
TRIS	To provide the information (connection status, device details) of the TRIS devices and to compose the messages that shall be displayed at the TRIS monitor which are installed along the highway
HIS	To provide the information (connection status, device details) of the HIS devices and to compose the messages that shall be displayed at the HIS monitor which are installed along the highway
User	To create, edit and delete users for WCE TMCS and to keep an audit trail of existing users actions.
Asset Management	To manage the assets information and generating maintenance report

3.2.4 Map Module

The TMCS Map module provides the following functions:

1. Route Management;
2. Point-of-Interest (POI) Management.

The software functionalities of the TMCS Map Module are:

a) To add, edit and delete highway routes
b) To add, edit and delete places-of-interest (POI) along the highway routes.

3.2.5 User Module

The TMCS User Module allows for management of users and user groups. Authorized users are able to view and manage user profile, group access level, and generate user log. The software functionalities of the TMCS Map Module are:

1. To add, edit and delete user;
2. To add, and delete user groups;
3. To manage user group permissions/rights;
4. To view user action logs.

a) User Group

The TMCS User Group page functions to create and manage user groups for the TMCS. User groups are used to control the access/permission level for the TMCS modules. Users are only able to access to modules which have been granted permission based on their user group. These settings are stored in the WCE TMCS database. There are 4 types of user:

1. Admin;
2. Supervisor/Manager;
3. Operator;
4. Engineer/Technician.

b) User Management

The TMCS User Management page is used to manage the registration of users in the TMCS. Administrators can register new users here and assign them to their respective user groups here (provided user group have already been registered in the TMCS User Group page). Further updating of user details, as well as removal of existing users can also be done in this page, and the details will be saved to the WCE TMCS database

c) User Log

The TMCS User Log page is to allow authorized user to view the audit trails of all users action and activities in the TMCS. All activities/ transactions of each user after successfully login to the TMCS are recorded here. This log can be generating and filtered according to date & time, descriptions and username. User can export the log in Excel or PDF format.

3.2.6 Closed Circuit Television (CCTV) Module

TMCS CCTV module provides live view from the installed CCTV along the highway. Users are able to view the real time traffic flow and incidents using the TMCS CCTV module. The CCTV Service uses two gateways:

1. CCTV Service – To check the CCTV devices network connectivity status;
2. Snapshot Service – To periodically take snapshot from the CCTV device.

The software functionalities of the TMCS CCTV module are:

1. To add, edit, and delete registration details of the CCTV devices;
2. To be able to view CCTV devices" live video stream and snapshots;
3. To log actions performed in this module;
4. To generate summary reports.

a) CCTV Status & Live View

On the TMCS Home Page, users are able to view the CCTV camera information by clicking on the CCTV icon. The information that displayed after clicking the icon are:

1. Latest snapshot from CCTV camera;
2. Device Name;
3. Location of the CCTV camera;
4. IP Address for CCTV camera;
5. Device Status.

The operation statuses of CCTVs' are shown the TMCS Home Page using the icons as below:

Table 4: Icon for CCTV operation status

No	Status of CCTV camera	Device Display on WCE TMCS Home Page	Colour Indication
1.	Online		Green
2.	Offline (Network Connection Failure or/and Power Failure)		Black

The user is able to stream live video from the CCTV by clicking on the 'CCTV Live View' linking the CCTV information window. Live video feed is streamed through the CCTV Console Window, which obtains the CCTV streaming details from the TMCS database and then streams directly from CCTV using ONVIF protocol. Using the navigation button, the user is able to navigate the CCTV camera view to any direction. The pre-set column is a button to save, select and delete pre-set locations of the CCTV camera angle.

b) CCTV Management

CCTV Management page provides information of all CCTV devices registered with the TMCS. Authorized users are able to add new CCTV device, edit existing CCTV device details as well as deleting existing CCTV devices. The following information of CCTV devices is displayed:

1. Device ID;
2. Device Name;
3. LLM Name;
4. IP Address of the CCTV camera;
5. CCTV Camera Type (fixed, PTZ camera);
6. CCTV Camera connection type;
7. Camera Tag that is displayed on the WCE TMCS Home Page.

c) CCTV Log

In the TMCS CCTV Log page, the user is able to view the event logs of the device status (i.e. Device Normal, Device Failed) and network status from all the operating CCTV devices installed along the highway. The user is able to generate or export out the log into the Excel or PDF format. The following are the list of information provided in ET log details:

1. Time & Date for CCTV transaction log;
2. Device ID;
3. CCTV name;
4. Location of CCTV;
5. Description details.

The following information is provided in the WCE TMCS CCTV log details:

1. Time & Date for each CCTV status log;
2. Device ID;
3. CCTV name;
4. Location of CCTV;
5. Description details.

d) CCTV Statistics Report

In the TMCS CCTV Statistics Report page, the user is able to view the graphical representation of the network status logs. This will allow users to have a more analytical view of the CCTV camera"s operation uptime and downtime, and take action if necessary.

3.2.7 Variable Message Sign (VMS) Module

The TMCS VMS module serves as a platform between the user in the TCSS and the actual VMS board along the highway. Using the VMS Module, the user can send a message to the VMS board in real time, or pre-set messages at scheduled times. For example, the user can send a message to the VMS board informing travellers of the real time traffic condition along the highway with an appropriate route diversion message. Users may also post general announcement (i.e. seasonal greetings, highway maintenance updates) to the VMS display board.

a) VMS Status

On the TMCS Home Page, users are able to view the VMS information by clicking on the VMS icon. The information displayed is:

1. Display of Current Message;
2. Device Name;
3. IP Address of VMS;
4. Device Status;
5. Navigation buttons.

The operation statuses of VMS boards are shown on the TMCS Home Page through the icons as below:

Table 5: Operation status of VMS icon

No	VMS Board display on RecoTraffic TCMS Home Page	Colour Indication	VMS Board Status
1.		Green	Online (*Including minor hardware failure*)*
2.		Red	Two (2) possible status indication: Network Intermittent Major hardware failure**
3.		Black	Offline (*Network Connection Failure or/and Power Failure*)

* Minor hardware failure is failures that DOES NOT AFFECTS the VMS board display.

Conditions that fall under minor hardware failure:

1. VMS board panel door open.

** Major hardware failures are failures that AFFECT the VMS board display.

Conditions that fall under major hardware Failure:

1. VMS board power failure;
2. VMS board firmware corruption;
3. VMS board CF card corruption;
4. VMS board high temperature ;
5. VMS board internal link disconnection;
6. VMS board pixel failure (>20%).

b) VMS Management

The TMCS VMS Management page is to manage the registration of VMS boards into the system. Using this page, user is able to add new VMS board, view and edit details of existing VMS board, as well as to delete current VMS board. The following information of the VMS boards is displayed:

1. Device ID;
2. Device Name;
3. LLM Name;
4. IP Address of VMS board;
5. VMS Tag that is displayed on the WCE TMCS Home Page.

c) Current Message

This page displays all the messages currently being displayed on VMS boards, and operation status indicator of VMS boards. From this page, user is able to monitor the current messages and operation statuses of all VMS board in a single page. Figure 40 shows the TMCS VMS Current Message page.

d) Message Composer

The TMCS VMS Message Composer page is used to compose a message to VMS board. The message to be displayed is provided either by composing manually (ad hoc message) or by selecting pre-set messages from VMS message library. Amongst the options available for composing VMS messages are:

1. Selection of Beacon type
    i. Off;
    ii. Alternate;
    iii. Concurrent.
2. Number of pages for composing message
3. Selection of page duration (per page)to be displayed on the selected VMS Board (from2 sec/page to 9 sec/page)

4. Selection of Page Mode type
    i. Text;
    ii. Text & Left Pictogram;
    iii. Text & Right Pictogram;
    iv. Bitmap.
5. Text Colour:
    i. Red;
    ii. Green;
    iii. Amber;
    iv. White;
    v. Blue;
    vi. Magenta;
    vii. Cyan.
6. Alignment of text
    i. Left Alignment;
    ii. Centre Alignment;
    iii. Right Alignment.
7. Text Effect: Blinking of text.

For prevention of unwanted messages or words being accidently displayed on the VMS boards, the VMS Message Composer has an function to prevent messages containing certain words being sent to the VMS board. The "banned" words can be added to the filtering list by the system administrators.

e) Graphic Downloader

VMS boards can display graphic images, either in bitmap or pictogram format, provided the image size, type and colours are supported by the VMS board. Figure 47 and Figure 48 show an example of pictogram and bitmap displayed on the VMS board.

Figure 47: Example of VMS Board Pictogram Display

Figure 48: Example of VMS Board Bitmap Display

TMCS VMS Graphic Downloader is a page used to insert the graphic image to the system, as well as to transfer to the VMS board. The following are the conditions for graphic images to be supported by the VMS board display:

Table 6: Conditions for graphic images to be supported by VMS board

Format	.bmp (bitmap
Size	**Pictogram : 40 x 40 pixels;** Bitmap : 224 x 40 pixels
Supported colours	**Red** Green Amber **White** Blue Magenta **Cyan**

f) Current Status

This Current Status page displays the individual health status of all the VMS boards that are registered into the system. From this page, user is able to troubleshoot VMS board error messages. This page will display the following information obtained from the VMS board:

i. Beacon status (off, alternate or concurrent);
ii. Board Type;
iii. Communication types (Wired);
iv. Displayable status;
v. Display power;
vi. VMS Door status;
vii. Environment brightness;
viii. Failed pixel;
ix. Fan mode (auto, manual on or manual on);
x. Internal cable status;
xi. Internal link status;
xii. Network status;
xiii. Temperature status;

g) VMS Brightness Scheduler

With the created profiles of brightness levels from Brightness Scheduler Profile page, the user is able to assign the profiles to the VMS boards. This is to ensure the brightness level of the selected VMS Board is in accordance with the profile that has been created. This allows users to assign the same profile to several VMS boards easily, instead of specifying it manually for each individual VMS board. Figure 53 shows the VMS Brightness Scheduler page.

h) VMS Log

The TMCS VMS Log page displays the status logs of all the VMS Board events. The user is able to generate or export the log in Excel or PDF format.

The following are the list of information provided in VMS log details:

1. Time & date for VMS transaction log;
2. Type of VMS Board display status;
3. VMS name;
4. Description of event log;
5. User (*account from which log was created).*

The following types of events are logged:

1. VMS Status (in terms of network status, physical status of VMS board, alarm status)
2. Download Graphic (*pictogram & bitmap*);
3. Current Message Status;
4. Send Message Status;
5. Blank Board Status;
6. Display of Time Status.

i) VMS Statistics Report

The TMCS VMS Statistics Report page shows a graphical representation of the performance of the VMS boards, in terms of network connectivity status statistic, numbers of messages sent to the board, and the VMS board"s internal link status statistic.

3.2.8 Vehicle Incident Detection System (VIDS) Module

TMCS VIDS Module provides the traffic analytic data compiled from the VIDS devices installed along the highway. The VIDS service will obtain traffic data from the VIDS radar controllers and update the TMCS database, at a fixed time interval. This data is then synchronised between both the TMCS servers, as well as both TCSS Control Centres. The TMCS application will then use this data.

a) VIDS Status

The operation status of VIDS devices are shown on the TMCS Home Page through the icons as below:

Table 7: Operation status icon for VIDS

No	Device Display on WCE TMCS Home Page	VIDS Device Status	Colour Indication
1		Online	Green
2		Offline (*Network Connection Failure or/and Power Failure*)	Black

On the TMCS Home Page, users are able to view the VIDS information by clicking on the VIDS icon. The information is displayed are:

1. VIDS device name;
2. Location of the VIDS device;
3. IP Address for VIDS device;
4. VIDS device status;
5. Latest traffic statistics.

b) VIDS Management

The TMCS VIDS Management page functions to manage the registration of the VIDS devices. The user is able to add new VIDS device, update details of existing VIDS devices and deleting the existing VIDS device. The following information of the VIDS device is displayed:

1. Device ID;
2. Device Name;
3. LLM Name;
4. IP Address;
5. VIDS Tag that displays on the TMCS Home Page.

c) VIDS Dashboard

The TMCS VIDS Dashboard provides the information of traffic data from each individual VIDS devices. The following information is available here:

1. List of VIDS devices
2. Display of information type
    i. General
    ii. Overview;
    iii. Map display;
    iv. Traffic Statistic;
    v. Activity Logs;
    vi. Speed & Volume Chart.
3. Volume Charts
    i. 15 minutes;
    ii. Hourly;
    iii. Daily;
    iv. Weekly;
    v. Monthly;
    vi. Yearly;
    vii. Peak & off Peak.

4. Data Tables
    i. 15 minutes;
    ii. Hourly;
    iii. Daily;
    iv. Weekly;
    v. Monthly;
    vi. Yearly;
    vii. Morning peak;
    viii. Evening peak;
    ix. Off peak.

d) VIDS Log

In the TMCS VIDS Log page, the users are able to view the event logs from all the operating VIDS devices installed along the highway. The user is able to generate or export the log into the Excel or PDF format.

The following are the list of information provided in VIDS log details:

1. Time & Date for VIDS transaction log;
2. Device ID;
3. VIDS Device name;
4. Location of VIDS device;
5. Description of event.

The following types of events are logged:

1. Traffic statistic;
2. VIDS Device network status.

e) VIDS Statistics Report

The TMCS VIDS Statistics Report page shows a graphical representation of the network status statistics about the VIDS devices, in order to analyse the performance of the VIDS devices.

3.2.9 Video Wall (VW) Module

The TMCS Video Wall module enables the user to provide and post a layout on the video wall display panel. The video wall layout is used to display the CCTV camera video feed from several CCTV cameras simultaneously. The layout can be customized to users preferences. The TMCS application retrieves the video wall layout information from TMCS database. When user posts they video wall layout with content selection, the TMCS application will send the commands to the Video Wall Service, which will then instruct the Video Wall Controller to display the content on the Video Wall Display

a) Video Wall Template Editor

The TMCS Video Wall Template Editor page is used to create a template for the video wall display panel. User is able to select the overall size of the video wall to be displayed, as well as to design the size and placement of individual video cube. Video cube is the video screen size to display on the video wall display panel. The following properties are set on this page:

1. Screen Properties tab
    a) Video Wall Template Name;
    b) Resolution of the video wall;
    c) Width of the video wall;
    d) Height of the video wall;
    e) Display size of the template (For navigation purpose).
2. Cube Properties tab
    a) ID of the individual video cube;
    b) Pixel point on the Video Wall in horizontal axis;
    c) Pixel point on the Video Wall in vertical axis;
    d) Width of the video cube;
    e) Height of the video cube;
    f) Numbering of the video cube (if more than one video cube is present).

b) Video Wall Layout Editor

This page enables the user to select the video to be displayed in template that has been created from Video Wall Template Editor. The existing Video Wall Layout can be updated or deleted according to user"s preferences.

3.2.10 Emergency Telephone (ET) Module

The TMCS ET module allows the user to obtain the network connectivity status of the ET devices installed on-site. The ET devices will communicate directly with the dedicated ET serves. The ET Service will then establish a connection with the ET server to obtain the network connectivity status of the ET devices and will update it into the WCE TMCS database, as shown in the dataflow diagram in Figure 74

a) ET Management

The TMCS ET Management page is used to manage the registration of the ET devices. The user is able to add new ET device, update details of existing ET devices and deleting the existing ET device. The following information of the ET devices is displayed:

1. Device ID;
2. Device Name;
3. LLM Name;
4. IP Address of ET;
5. ET Tag.

b) ET Log

In the TMCS ET Log page, the user is able to view the event logs of the device status (i.e. Device Normal, Device Failed) and network status from all the operating ET devices installed along the highway. The user is able to generate or export out the log into the Excel or PDF format. The following are the list of information provided in ET log details:

1. Time & Date for ET transaction log;
2. Device ID;
3. ET name;
4. Location of ET;
5. Description details.

c) ET Statistics Report

The TMCS ET Statistics Report page shows a graphical representation of the network status statistics about the ET devices, in order to analyse the performance of the ET devices.

3.2.11 Toll Module

TMCS Toll module provides the information on the location of the toll plaza with the concessionaire on the toll fare.

a) Toll Management

TMCS Toll Management page is used to manage the registration of the toll plaza located along the WCE Highway route. The user is able to add new toll plaza, update details of existing toll plaza and deleting the existing toll plaza. The following information of the toll plaza is displayed:

1. Toll Plaza Name
2. Toll Plaza Description
3. Kilometre Marker of the Toll Plaza

b) Toll Fare Management

TMCS Toll Fare Management page is used for the concessionaire to provide and update the toll fares. The following information of the toll plaza is displayed:

1. To/From Toll Plaza Location
2. Toll Fare based on the vehicle classification (From Class 1 to Class 5)

3.2.12 Highway Information System (HIS) Module

The HIS system is used for to broadcast latest traffic information along the highway using the installed HIS devices along the R&R highway. The HIS provides a greater platform and a variety of advertising content compared to traditional signage. This system is fully controlled from the TCSS control centre. The TMCS module is used to control the display of messages on the HIS devices. Changes made in the TMCS application are saved to the TMCS database. The HIS service will then send this changes to the HIS controllers configuration file, for the HIS application to read and display. The following information is displayed on the HIS devices:

1. Congestion Map;
2. Traffic Information;
3. Multimedia content;
4. Latest snapshot of preselected CCTV footages;
5. Broadcasting of live news from local TV channel.

Table 8: HIS features description

Features	**Description**
CCTV Snapshot	Display of the latest snapshot attained from the selected CCTV devices
Traffic Updates	Information on the latest traffic events (Traffic Statistics, Incidents)
Advertisements	Information on the latest events
Ticker Message	Displays of horizontal scrolling message bar

a) HIS Dashboard

In the TMCS HIS Dashboard page, the user is able to view an outline of the current data being displayed on the HIS devices and print it out.

b) HIS Management

The TMCS HIS Management page is used to manage the registration of the HIS devices, as well as to set and edit the text and multimedia content to be displayed on the HIS device. The user is able to add new HIS device, update details of existing HIS devices and deleting the existing HIS device. The following information of the HIS devices are displayed:

1. HIS Device ID;
2. HIS Device Name;
3. IP Address of HIS Device;
4. HIS Tag that is displayed on the TMCS Home Page.

c) HIS Log

In the TMCS HIS Log page, the user is able to view the event logs of the device status (i.e. Device Normal, Device Failed) and network status from all the operating HIS devices installed along the highway. The user is able to generate or export out the log into the Excel or PDF format. The following are the list of information provided in HIS log details:

1. Time & Date for HIS transaction log;
2. Device ID;
3. HIS name;
4. Location of HIS;
5. Description details.

d) HIS Statistics Report

The TMCS HIS Statistics Report page shows a graphical representation of the network status statistics about the HIS devices, in order to analyse the performance of the HIS devices.

3.2.13 Traveller Information System (TRIS) Module

TMCS TRIS module provides the information of TRIS devices provides an interactive platform for road users to acquire important and useful information about the highway. Using this module, the user is able to attain information on the connection status of TRIS devices, as well as to set, edit and configure the multimedia content to be displayed on the TRIS device. The TRIS Service handles the communication between the TRIS devices and WCE TMCS server.

All the TRIS devices come with a local database, stored on the device. The local database serves as to store all the data received from the TMCS database and to reload it for the TRIS device operation. This is to ensure the TRIS devices are still operational in the event of a network failure situation. The operation status of TRIS devices are shown on the TMCS Home Page as below:

Table 9: TRIS devices status

No	Status of TRIS	Device on WCE TMCS Home Page	Colour Indication
1	Online		Green
2	Offline (Network Connection Failure or/and Power Failure)		Black

The following information is displayd on the TRIS device accorfing to the navigation tabs:

Table 10: Information displayed on TRIS devices

Features	Description
Overview	Overview of WCE highway
Facilities	List of facilities available at R&R location
Map	Map navigation, CCTV list, CCTV snapshot and traffic information display
Toll Fare	Toll fare calculation
Traffic	Information on the travel estimation time
Event	Information on the latest events
News	Information on the roadwork and accidents location along WCE highway
Gallery	Display of WCE Highway Routes, predefined in the WCE TMCS
Contact us	WCE highway operator contact information
Ticker Message	Display of horizontal scrolling message bar

a) Kiosk Management

Kiosk Management page is used to manage the TRIS kiosk registration, to set and edit the text and multimedia content to be displayed on the TRIS kiosk. The following information of the TRIS devices is displayed:

1. TRIS Device ID;
2. TRIS Device Name;
3. IP Address of TRIS Device;

b) TRIS Dashboard

In the TMCS TRIS Dashboard page, the user is able to view an outline of the current data being displayed on the TRIS kiosks and print it out.

c) TRIS Log

In the TMCS TRIS Log page, the user is able to view the event logs of the device status (i.e. Device Normal, Device Failed) and network status from all the operating TRIS devices installed along the highway. The user is able to generate or export out the log into the Excel or PDF format. The following are the list of information provided in TRIS log details:

1. Time & Date for TRIS transaction log;
2. Device ID;
3. TRIS name;
4. Location of TRIS;
5. Description details.

d) TRIS Statistics Report

The TMCS TRIS Statistics Report page shows a graphical representation of the network status statistics about the TRIS devices, in order to analyse the performance of the TRIS devices.

CHAPTER 4

CONCLUSION

4.1 Application of Knowledge

i. Communnication

Training in Systems Department of course has exposed trainee to a lot of things and experiences. In line with the functions of this department, knowledge that gained by the trainee can be divided into few parts. The first part is 'Communication'. Subject Information Skills for Information Professional (IMD121) and Information System Interaction and Consultation (IMS556) really help a lot for trainee in term of communication. But at first, it was really hard for trainee to cope with the enviroment. Due to the function of this department which need to deal with a lot of people including client, other department and supplier, it has improved trainee's 'dealing-skills' with all of them. At first, it was hard because of the environment of work here used about 90% english in communicate with each other. Trainee felt so hard because trainee does not used english frequenlty before this to communicate with most of the people.

During the internship, Mr. Arivan and Ms. Usha always encourage trainee to meet a lot of people from other department and tried to used english as much as possible. It can be said that, trainee mostly deal a lot with Research and Development department for the testing purposes. Dealing with a lot of people has taught trainee to always think before giving an opinion or statement. Every words come out will be taken seriously when it related to the work. So, there is no such 'misunderstanding', it should be clear and easy to understand.

ii. Technical Skills

Second part is 'Technical Skills'. The trainee had applied the knowledge and skills learnt from Data Center Operational and Services (IMS605) subject and Technical Support Services and Maintenance for Information Agencies (IMD222) in most of the technical task. It really help a lot for the trainee. During in UiTM, thankfully, Technical Support Services and Maintenance for Information Agencies (IMD222) subject exposed trainee on a hands on work though it was not too deep. During internship period trainee need to learn and understand as much as possible.

Usually, Systems department will hire and trained staffs and students from engineering background. They will just focus for electrical and electronic background to become part of the team. This is due to the some of work related to the cabling and electical things. During the training months, trainee has given a chance to do some of the technical task. Assemble system unit, setting up CCTV for testing purposes. It was such a great lesson where trainee know how to do it after being guided. Not only that, knowledge gained from Data Center Operational and Services (IMS605) subject also helped a lot when trainee handling server in server room. Though it was just basic knowledge, it is really help trainee during internship.

It can be said that, in term of technical sides, it was really a new thing to trainee to learn. Trainee learn how to assemble Network Video Recording (NVR), assemble personal computer of the client, assemble RecoTraffic PC and many more. Though at first trainee was not confident, but with the guidance gave by the system team, it become easier and enjoyable to do all the task.

iii. Training

During internship period, there was a time where trainee had to teach operator and staffs from South Klang Valley Expressway (SKVE) on how to used the system. Trainee has used knowledge gained from Information System Interaction and Consultation (IMS556) on how to handle people when giving a speech. It was such a great experience to teach all of them. Preparation before the training is done properly so that during the training there was no mistake made by trainee. Not only that, materials also being provided for the operator such us notes so that they will used it on future when they need it.

iv. Opinion

Subject English for Meeting (EWC663) being implement a lot by trainee when involving in giving opinion in discussion. Usually Mr. Arivan always asked trainee's opinion about the design either application interface is easy to understand or not. Not only that, the opinion given sometimes being used for the improvement of the systems or applications and they always consider all the opinion given by the trainee.

4.2 Personal Thought and Opinion

i. Good guidance

The trainee feels that the company provide a lot of opportunities and supportive environment. One of the factor might be because of the trainee is the only one of female internship students and most of the staffs here are male. They are supportive and really friendly. Sometimes, it was really embarassed for trainee to ask simple thing or basic knowledge that must be know by everyone, but staffs in Systems department does not mind with that and explained really well to trainee for each question asked. Due to the good guidance especially from the Lead Engineer in this department which is Mr. Rasyid, every task given by staffs was successful complete by the trainee.

ii. Give opportunity

In term of opportunity, they have really high expectation from the intership students by giving such a big opportunity for their internship students. For example, trainee has been given opportunity to design directory kiosk for West Coast Expressway (WCE) project. This kiosk will be placed at all rest area (R&R) along the highway. Trainee has design the kiosk and luckily client like and choosed trainee's design to be used. It was such a big honour and achievement for trainee to design such an important part for this kind of a big project. The opportunity given by the staffs has help trainee to enhance designing skills based on client desire.

iii. Open-minded

Other than that, staffs in Systems department does not mind and open if trainee want to learn new things. They are so patient teaching trainee one by one. For example, trainee was assigned to only focus on West Coast Expressway (WCE) project but trainee feel very interested in learning about Mass Rapid Transport (MRT) project, so staffs has take an initiative by sending trainee to a Network department to learn a little bit about the MRT project. So, trainee has got a chance to do a Factory Acceptance Test (FAT) of the system and know a little bit about the system that will be used by the MRT.

iv. Well cooperation

Not only that, staffs from other department also really good in giving cooperation if trainee need a helps from them. Systems department usually involve a lot with Research and Development department and Software department. Though they does not know trainee very well, the guidance they gave to trainee has help trainee to develop a good relationship with them and gained so much knowledge from them. In line with the one of the internship objectives which to exposed students with new knowledge, this company has fulfil this objective with the help of the staffs here.

The trainee also thinks that knowledge and skills provided by faculty is necessary and useful. However, some improvement can be done by the implementation of hands on assignment rather than just doing only report. During internship, it can be said that trainee has basic knowledge about some of the technical thing, which gained during studies but sadly is trainee did not have experienced to do it during studies. When this happen, staffs will have to teach trainee again because of afraid trainee will do mistake even though trainee has knowledge about it. Theory only does not help a lot but giving only a basic knowledge, the most important is the hands on where students will be able to get an experience on it.

4.3 Lesson Learnt

i. Responsibility

Internship period has thought trainee to become responsible when task was given. Being working with a lot of races in one company, everyone has their own style of working but what most excited thing is everyone in this company will do their part without hesitation and will be responsible to each of task that they has done. This environment has taught trainee to become more and more responsible everytime task was given to trainee.

ii. Punctuality

Not only that, in term of punctuality, trainee has developed one of the good attitude which is finish the task before the due date or time. It was really good when Mr. Ramesh always amazed and praised trainee when it come of punctuality of the task. When the task is done early than request by the staffs, trainee will be able to improve any part that need improvement by asking other staffs opinion.

iii. Confidence

Furthermore, trainee also has been able to speak more fluently in english. Before this, trainee does not have confidence to talk in english because of the environment during studies was really different. In company they always used english to talked to each other while during studies, english was rarely used by trainee to talk. Day by day, trainee become more confidence to speak because of trainee realize that now or later trainee need to speak to communicate with other staffs. Working with the supportive staffs really has improve trainee's communication. They always encourage trainee to always give an opinion and improve trainee confidence level.

iv. Patience

Working with most of the male staffs taught trainee to become more patience handling the task. Sometimes the task given for trainee are not suitable for woman to be done, but in order to gain an experience trainee just do it patiencely. Working with a good staffs, even though the tasks sometimes are not suitable, they always help and support when trainee need a helps. The environment there was really good because of surrounded with a helping and supportive teammate.

4.4 Limitations and Recommendations

i. Gender Factor

There are two limitations faced by the trainee during the internship, one of it is gender factor. Most of the staffs in this department are male. This is due to the task related to the technical thing that must be done on the site such as installation, maintenance and many more. During internship, it is become a burden and limitation when tasks such as lifting heavy thing like server, system unit and any other thing cannot be done by trainee. So, when this happen trainee needs the other hand for a help. It become a problem when staffs in this department mostly are not in the office for some reason like meeting or site visit. Gender factor hit really bad for the trainee to complete the task when it comes to used a lot of energy.

To overcome this limitation, there are two opinion which is first, when giving a task, staffs should consider first if trainee will be able to do it or not. If lifting a heavy thing cannot be done by female, they should assigned those task to male trainee or staffs instead of giving to the female trainee. Second is, when giving a task that female trainee are not able to do it alone, they can assigned another person to do it with the trainee. So, the burden will be less than before. Male and female energy are not same, that is why there should be a consideration before giving a tasks.

ii. Site Visit Limitation

Second limitation is permission for the site visit. There are some procedures that must be follow before staffs are allows to do a task on the site or visit the site. This include a required attire such as safety boot and safety helmet. The most important thing is everyone who involves and want to visit the site must have Construction Industry Development Board (CIDB) card. To get this card, they need to attend a class handle by professional. Because of the internship duration only for five months, trainee did not have this card and was restricted to join for the external site visit such as West Coast Expressway (WCE). But trainee only can visit the internal site of the client such as control room, server room or any place that are not exposed to the danger.

To overcome this limitation, company can take initiative by sending trainee to the class. Even though trainee is just internship student, but at least trainee can help staffs if they need more people at the site. Besides, trainee also can learn the other things and not only do a task in a building and sit in a office. Both parties will get a benefit if trainee can have CIDB card.

iii. Allowance

Allowance provided by the company are too little. Compared to the task given to the trainee, it should be more than that. Company should considered the students status hold by the trainee and also the expenses for the transport. During the internship, half of the allowance was used just only for transportation expenses. To overcome this limitation, company should added more allowance based on the current rate for the internship students. As the company is placed at Subang Jaya, the allowance should be more than from the existing allowance. It can less trainee burden.

iv. Hostel

Not all trainee come from near place from the office. Trainee had to travel about more tan one hour and a half to arrive at the office by using public transport. As living at Klang, it will be a burden if trainee drive a car due to the traffic jammed. Trainee might stuck on the road due to traffic jammed factor and will be late to the office. To overcome this limitation, it is good if company can provided hostel near with the office for the trainee. Not only it will overcome the problem, trainee also can improve their work performance and need not to involved in traffic jammed.

REFERENCES

(Marco Ang, personal communication, 12 April 2019)

EV-Dynamic. (2012). About us. Retrieved 28 May 2019, from https://www.evd.com.my/

Recogine Technology. (n.d). About us. Retrieved 28 May 2019, from https://recogine.com/

(Ramesh A/L Krishnan, personal communication, June 11, 2019)

ATTENDANCE FORM FOR INDUSTRIAL TRAINING/RESETTLEMENT STUDENT

Name of Trainee : Masni Aida Binti Majid

Department/Project : Systems

Company : EV-Dynamic Sdn. Bhd

Claim Month : February 2019 Attachment Period:

Date	Day	Time In	Time Out	Total Hours	Tasks Completed	Supervisor's Endorsement
1	Friday	9.00 am	6.00 pm	9	Read TMCS documentation	
2						
3						
4	Monday	8.45 am	6.00 pm	9	Do a 'Factory Acceptance Test' for TMCS	
5	Tuesday				Chinese New Year	
6	Wednesday				Chinese New Year	
7	Thursday	8.28 am	6.00 pm	9	Check 'Test Incident Report'	
8	Friday	8.30 am	6.00 pm	9	Check and test the system	
9						
10						
11	Monday	8.30 am	6.00 pm	9	Check and test the system	
12	Tuesday	8.26 am	6.00 pm	9	Extract out the information into excel format	
13	Wednesday	8.25 am	6.00 pm	9	Collect information for a report	
14	Thursday	8.20 am	6.00 pm	9	Study about TMCS server	
15	Friday	8.20 am	6.05 pm	9	Update 'Operation and Maintenance Manual for TMCS	
16						
17						
18	Monday	9.20 am	6.00 pm	9	Update 'Operation and Maintenance Manual for TMCS	
19	Tuesday	8.18 am	6.00 pm	9	Update 'Operation and Maintenance Manual for TMCS	
20	Wednesday	8.11 am	6.00 pm	9	Check hardware and equipment at store room	
21	Thursday	8.17 am	6.00 pm	9	Do a benchmark for TNB project	
22	Friday	8.15 am	6.00 pm	9	Do a benchmark for TNB project	
23						
24						
25	Monday	8.13 am	6.00 pm	9	Suggest and propose new interface for HIS and TRIS	
26	Tuesday	8.18 am	6.00 pm	9	Add data in Asset Management System	
27	Wednesday	8.08 am	6.00 pm	9	Do a troubleshoot for 7 PC and design TRIS Kiosk	
28	Thursday	8.14 am	6.00 pm	9	Design TRIS Kiosk	

ATTENDANCE FORM FOR INDUSTRIAL TRAINING/RESETTLEMENT STUDENT

Name of Trainee : Masni Aida Binti Majid

Bank Account No :

Department/Project : Systems

Company : EV-Dynamic Sdn. Bhd

Claim Month : March 2019

Attachment Period: 1 Month

Date	Day	Time In	Time Out	Total Hours	Tasks Completed	Supervisor's Endorsement
1	Friday	8.15 am	6.00 pm	9	Design WCE TRIS Kiosk	
2						
3						
4	Monday	8.17 am	6.00 pm	9	Install drivers for RecoTraffic PC	
5	Tuesday	8.15 am	6.00 pm	9	Do a demonstration for 'Emergency Telephone' (ET)	
6	Wednesday	8.20 am	6.00 pm	9	rmat 4 PC & meeting with supplier for TRIS Kic	
7	Thursday	8.20 am	6.00 pm	9	Design WCE TRIS Kiosk	
8	Friday	8.14 am	6.00 pm	9	Update LPR Transaction report (2000 data included)	
9						
10						
11	Monday	8.17 am	6.00 pm	9	Insert data for Routine Maintenance Report of 'Lembaga Lebuharay Malaysia' (LLM)	
12	Tuesday	8.30 am	6.00 pm	9	Do FAT for PIDS	
13	Wednesday	8.15 am	6.00 pm	9	Do FAT for PIDS	
14	Thursday	8.17 am	6.00 pm	9	Do a message priority check for PIDS	
15	Friday	8.17 am	6.00 pm	9	Do 'Internal Module Testing' for PIDS	
16						
17						
18	Monday	8.15 am	6.00 pm	9	Re-design TRIS Kiosk	
19	Tuesday	8.15 am	6.00 pm	9	Re-design TRIS Kiosk	
20	Wednesday	8.15 am	6.00 pm	9	Re-design TRIS Kiosk	
21	Thursday	8.40 am	6.00 pm	9	Do FAT for PIDS	
22	Friday	8.40 am	6.00 pm	9	Do FAT for PIDS	
23						
24						
25	Monday	8.40 am	6.00 pm	9	Observe the accuracy calculation of RecoTraffic VIDS of vehicle	
26	Tuesday	8.40 am	6.00 pm	9	Design diagram for PERSON System	
27	Wednesday	8.15 am	6.00 pm	9	Test PERSON system	
28	Thursday	8.13 am	6.00 pm	9	Went ot the BESRAYA site	
29	Friday	8.15 am	6.00 pm	9	Re-design TRIS Kiosk	
30						

ATTENDANCE FORM FOR INDUSTRIAL TRAINING/RESETTLEMENT STUDENT

Name of Trainee : Masni Aida Binti Majid Bank Account No :

Department/Project : Systems

Company : EV-Dynamic Sdn. Bhd

Claim Month : April 2019 Attachment Period: 1 Month

Date	Day	Time In	Time Out	Total Hours	Tasks Completed	Supervisor's Endorsement
1	Monday	8.20 am	6.00 pm	9	Check WCE stuffs at store room and do an internship report	
2	Tuesday	8.18 am	6.00 pm	9	Do an internship report and LPR Transaction for March 2019	
3	Wednesday	8.25 am	6.00 pm	9	Continue do a LPR Transaction and compile it	
4	Thursday	8.10 am	6.00 pm	9	Went to the Phileo Damansara for CCTV test	
5	Friday	8.10 am	6.00 pm	9	Routine task: Check report log for PERSON system	
6						
7						
8	Monday	8.17 am	6.00 pm	9	Create powerpoint slide for UNIVEMS Operational & Maintenance Manual 2015	
9	Tuesday	8.30 am	6.00 pm	9	Create powerpoint slide for UNIVEMS Operational & Maintenance Manual 2015	
10	Wednesday	8.40 am	6.00 pm	9	Edit front car with various plate number using photoshop	
11	Thursday	8.40 am	6.00 pm	9	Do a maintenance report of server for LLM	
12	Friday				AL	
13						
14						
15	Monday	8.41 am	6.00 pm	9	Do an internship report	
16	Tuesday	8.45 am	6.00 pm	9	Do FAT for Intergrated Transport Information System (ITIS), DBKL	
17	Wednesday	8.45 am	6.00 pm	9	Design and print car picture for LPR testing	
18	Thursday	8.40 am	6.00 pm	9	Design WCE mobile apps interface	
19	Friday	8.40 am	6.00 pm	9	Design WCE mobile apps interface	
20						
21						
22	Monday	8.40 am	6.00 pm	9	Design animation for loading pages of WCE mobile apps	
23	Tuesday	8.45 am	6.00 pm	9	Do FAT for ATIS, DBKL	
24	Wednesday	8.40 am	6.00 pm	9	Learn to promote domain for primary and secondary server for DBKL	
25	Th ursday	8.40 am	6.00 pm	9	Design WCE mobile apps interface	
26	Friday	8.40 am	6.00 pm	9	Design animation for loading pages of WCE mobile apps	
27						
28						
29	Monday	8.37 am	6.00 pm	9	Do a report for LKSA	
30	Tuesday	8.40 am	6.00 pm	9	Create diagram for VIG server	

ATTENDANCE FORM FOR INDUSTRIAL TRAINING/RESETTLEMENT STUDENT

Issue No. 1/Ver 3.0 (01112014)

Name of Trainee : Masni Aida Binti Majid Bank Account No : 162450257549 (Maybank)

Department/Project : Systems

Company : EV-Dynamic Sdn. Bhd

Claim Month : May 2019 Attachment Period:

Date	Day	Time In	Time Out	Total Hours	Tasks Completed	Supervisor's Endorsement
1	Wednesday				Labour Day	
2	Thursday	8.30 am	6.00 pm	9	Check PC at lab	
3	Friday	8.30 am	6.00 pm	9	Do an internship report	
4						
5						
6	Monday	8.40 am	5.30 pm	8 1/2	Study about Inkscape	
7	Tuesday	8.40 am	5.30 pm	8 1/2	Do LPR report for April	
8	Wednesday	8.30 am	5.30 pm	8 1/2	Do a CCTV test	
9	Thursday	8.35 am	5.30 pm	8 1/2	Do a CCTV test	
10	Friday	8.40 am	5.30 pm	8 1/2	Do a report for the previous CCTV test	
11						
12						
13	Monday	8.35 am	5.30 pm	8 1/2	Do a result list for previous 64 CCTV test	
14	Tuesday	8.35 am	5.30 pm	8 1/2	Do a proper report for previous CCTV test by refer to the guide given	
15	Wednesday	8.35 am	5.30 pm	8 1/2	Create 4 propose diagram for Grand Sepadu highway	
16	Thursday	8.40 am	5.30 pm	8 1/2	Test 6 CCTV for WCE	
17	Friday	8.40 am	5.30 pm	8 1/2	Do an internship report	
18						
19						
20	Monday				Wesak Day	
21	Tuesday				AL	
22	Wednesday				Nuzul Al-Quran	
23	Thursday	8.40 am	5.30 pm	8 1/2	Design brochure for Recogine client	
24	Friday	8.40 am	5.30 pm	8 1/2	Create video for Magnet Collage Software	
25						
26						
27	Monday	8.45 am	5.30 pm	8 1/2	Create video for Magnet Collage Software	
28	Tuesday	8.45 am	5.30 pm	8 1/2	Do an internship report	
29	Wednesday	8.40 am	5.30 pm	8 1/2	Re-design DBKL ITIS logo and website banner	
30	Thursday	8.45 am	5.30 pm	8 1/2	Re-design DBKL ITIS logo and website banner	
31	Friday	8.40 am	5.30 pm	8 1/2	Do an internship report	

ATTENDANCE FORM FOR INDUSTRIAL TRAINING/RESETTLEMENT STUDENT

Issue No. 1/Ver 3.0 (01112014)

Name of Trainee : Masni Aida Binti Majid Bank Account No:

Department/Project : Systems

Company : EV-Dynamic Sdn. Bhd

Claim Month : June 2019 Attachment Period:

Date	Day	Time In	Time Out	Total Hours	Tasks Completed	Supervisor's Endorsement
1						
2						
3	Monday	8.30 am	6.00 pm	9	Do an internship report	
4	Tuesday	8.35 am	6.00 pm	9	Do a configuration for NVR and set CCTV IP	
5	Wednesday				Hari Raya Aidilfitri	
6	Thursday				Hari Raya Aidilfitri	
7	Friday				AL	
8						
9						
10	Monday	8.45 am	6.00 pm	9	Do an internship report	
11	Tuesday	8.45 am	6.00 pm	9	Do LPR labeling at R&D department	
12	Wednesday	8.35 am	6.00 pm	9	Change HDD for RecoTraffic PC (broken)	
13	Thursday	8.40 am	6.00 pm	9	Take out HDD from NVR	
14	Friday	8.40 am	6.00 pm	9	Learn to configure router & do LPR labeling	
15						
16						
17	Monday	8.35 am	6.00 pm	9	ITIS testing & LPD training	
18	Tuesday	8.47 am	6.00 pm	9	Learn about Hyper-V instalaltion	
19	Wednesday	8.40 am	6.00 pm	9	Went to SKVE for operator training	
20	Thursday	8.35 am	6.00 pm	9	Went to LLM for preventive maintenance	
21	Friday	8.30 am	6.00 pm	9	Went to LLM for preventive maintenance	
22						
23						
24	Monday	8.50 am	6.00 pm	9	Went to LLM for preventive maintenance	
25	Tuesday	8.45 am	6.00 pm	9	Do preventive Maintenance report	
26	Wednesday	8.45 am	6.00 pm	9	Update road ID for Jade Hills	
27	Thursday				AL	
28	Friday				AL	
29						
30						

SYSTEM MANUAL OF
TRAFFIC MANAGEMENT CONTROL SYSTEM (TMCS)
FOR WEST COAST EXPRESSWAY (WCE)

TABLE OF CONTENT

LIST OF FIGURES

SYSTEM MANUAL

Introduction

This operation manual is to describe the applications of TMCS (Traffic Management Control System). TMCS is a platform, which integrates different application and services. TMCS can be integrated with many kinds of application so that they can be bound together in workflows processes to work in conjunction.

Language

Traffic Management Control System is available in English only.

Server System Requirements

- Processor Based Frequency: 2.60GHz and above
- System Type: 64-bit Operating System
- CPU: Intel(R) Xeon(R) CPU E5-2630 V2 and above
- Internal Memory: 16 GB of RAM
- Hardisk Space: 1TB and above
- Operating System: Windows Server 2012
- SQL: Management Studio (required license)

TMCS START-UP

To start the application, do follow the below steps to run the TMCS application.

Launch and Login

Web browser such as Google Chrome & Mozilla Firefox can launch TMCS by entering IP address: **http://172.16.3.84:9084/Account/Login** (Recommended Google Chrome Version 54.0.2840.99 m)

Figure 1: Login interface of TMCS

Instructions to Launch and Login as below.

1. Open web browser (Recommend Google Chrome) and insert the URL (IP Address for Server)
2. Insert the user name and password and select 'Login' to enter

1.0 OVERVIEW PAGE

This page will display the default map contains of several tabs.

Figure 2: Overview page of TMCS

List of tab & icon description for **Overview Page** as below.

1. Sub-applications menu tab
2. Home tab (back to home page)
3. Health status of devices integrated with TMCS
4. Zoom level
5. Measure distances
6. Home current visit
7. SOS
8. Notification
9. User login name & click to select logout
10. Setting
11. Devices plotting on map
12. Current page visit by user
13. Software current version including time and date stamp

2.0 USER DASHBOARD

User dashboard allows you to view and manage user profile, group access level, and generate user report. User dashboard contains of '**User Management**', '**User Group**' and '**User Report**'.

2.1 User Group Overview

User group allows you to manage and user grouping with same access level.

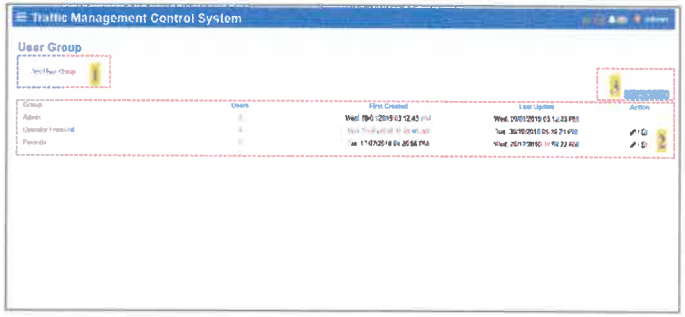

Figure 3: User group interface overview

List of tab description for **User Group** as below,

1. Add user group
2. Table of user group contain of group name, number of user in the group, last updates, edit & delete
3. Total of group registered

a) **How to add new user group**

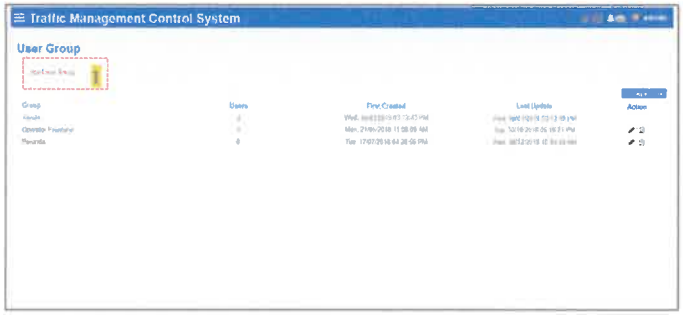

Figure 4: Step to add new user group

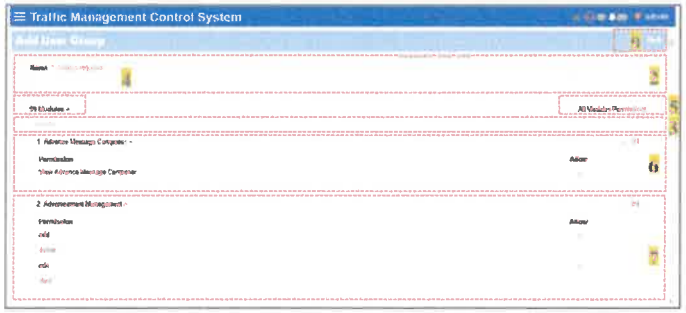

Figure 5: Information needed to add user group

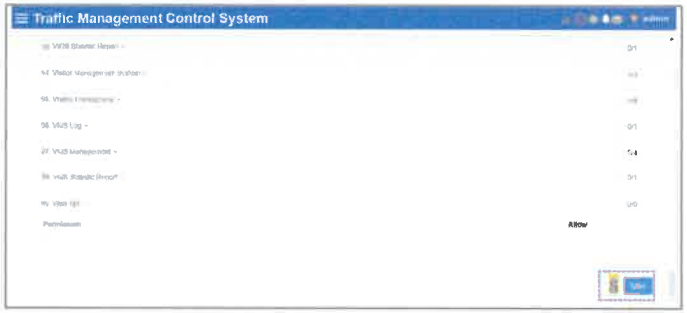

Figure 6: Last step to add new user group

Instructions to create and add new user group profile as below,

1. Turn on the '**User Group**' page and click on '**Add User Group**'
2. Insert new group name
3. Option for you to use search column if you have the keyword or otherwise please refer to step no. 4
4. Click on ☑ to expend all the access level description in details
5. Option for you to tick the box for '**All Modules Permissions**', otherwise please refer to step no. 6
6. Option for you to tick on ☑ at the header of sub-application access level (automatically will tick all permission relate to the sub-application), otherwise please refer to step 7
7. Option for you to select and tick on the access level
8. To confirm the transaction, please click on '**Save**' button
9. To cancel & terminate the transaction, please click on '**Back**' button

b) How to edit & modify user group access level

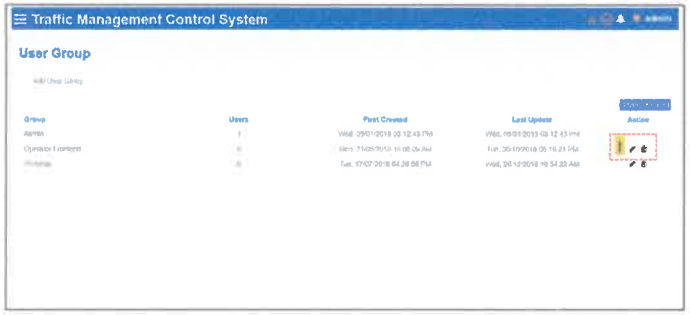

Figure 7: Step to edit and modify level user group access

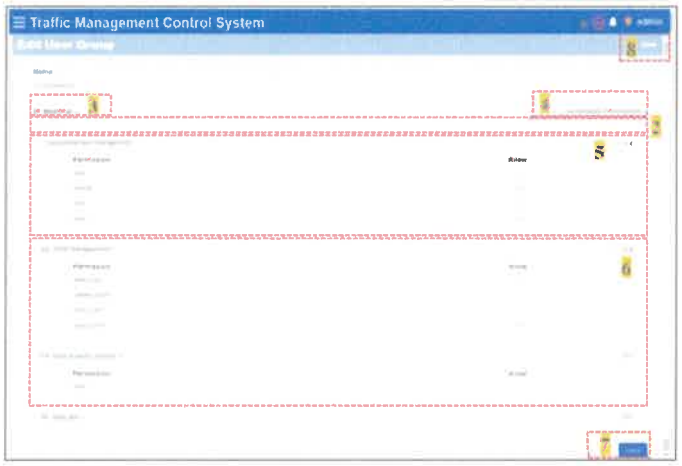

Figure 8: Step to edit and modify level user group access

Instructions modify & edit group access level as below,

1. Turn on the '**User Group**' page, select the group name that you would like modify and edit the access level and click on '**Edit**' icon ✎.
2. '**Edit User Group**' page will be at next page, option for you to use search column if you have the keyword or otherwise please refer to step no. 3.
3. Click on ⊡ to expend all the access level description in details
4. Option for you to tick the box for '**All Modules Permissions**', otherwise please refer to step no. 5.
5. Option for you to tick on ☑ at the header of sub-application access level (automatically will tick all permission relate to the sub-application), otherwise please refer to step 6
6. Select & modify the module's access level that suitable for the new group and tick on allow box.
7. To confirm the transaction, please click on '**Save**' button.
8. To cancel & terminate the transaction, please click on '**Back**' button

c) **How to delete user group profile**

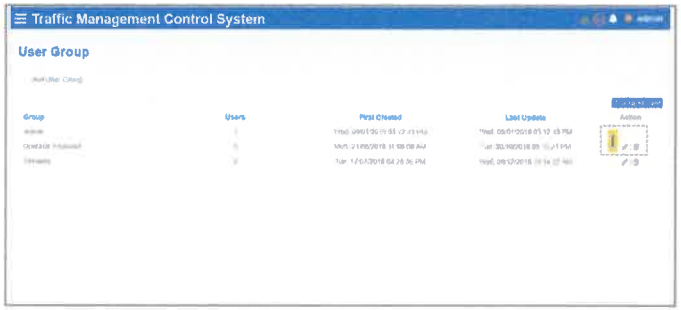

Figure 9: Steps to delete user group profile

Figure 10: Steps to delete user group profile

Figure 11: Steps to delete user group profile

Instructions to Delete User Group Profile as below,

1. Turn on the '**User Group**' page, select the user profile to delete and click on '**Delete**' icon
2. A notification box will display to reconfirm the transaction, select '**Yes**' to confirm, '**No**' to cancel and terminate the transaction
3. Notification message will pop up for any successful or failure transaction made

2.2 User Overview

User management allows you to view and configure the user profile and manage the access level. Below is overview page of '**User Management**'

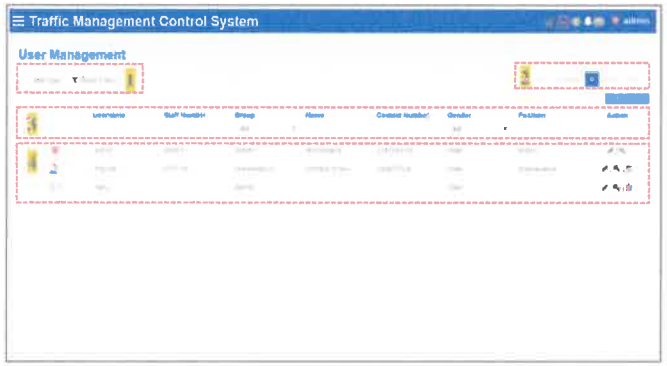

Figure 12: User management overview

List of tab description for **User Management** as below,

1. Function tab consist of 'Filtering selections for user profile header display', '**Reset Filter**', '**Add User**'
2. Page number
3. Table of user profile header display with search box
4. Table of user registered

a) How to add new user

Figure 14: Steps to add new user

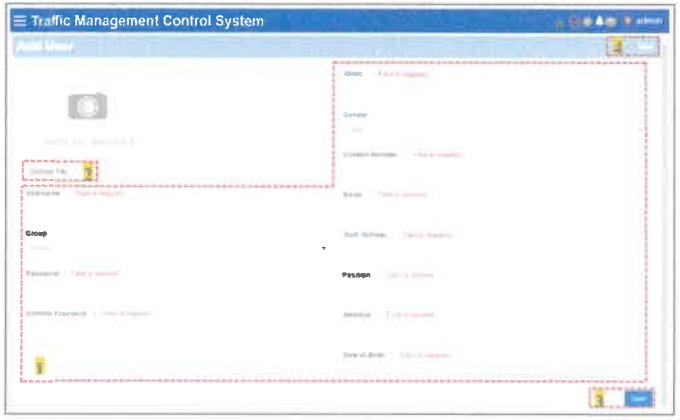

Figure 13: Steps to add new user

Instructions to create and add new user profile as below,

1. Turn on the '**User Management**' page and click on '**Add User**'
   *'**Add User**' page will display at next page & fill in the user profile # Column with *****, it is a compulsory field to fill in the detail, cannot leave it blank*
2. To upload image or picture by clicking '**Choose File**' and select the saved image or picture at your saved library
3. To confirm the transaction, please click on '**Save**' button
4. To cancel & terminate the transaction, please click on '**Back**' button

b) How to edit user profile

Figure 15: Steps to edit user profile

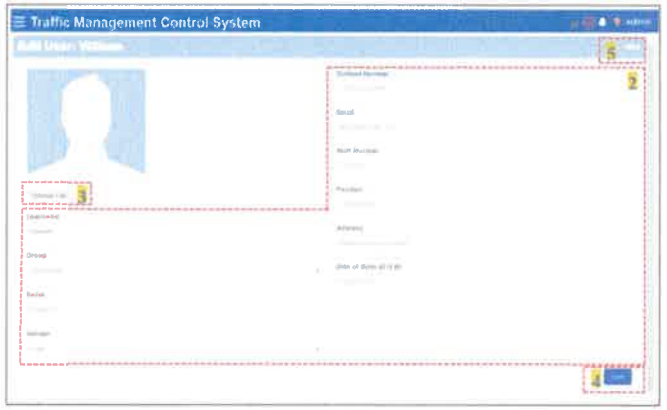

Figure 16: Steps to edit user profile

Instructions to Edit User profile as below,

1. Turn on the '**User Management**' page and click on '**Edit**' ✎ icon.
2. '**Edit User**' page will display at next page, you may be able to modify the user profile.
   *# Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*
3. To change & upload image or picture by clicking '**Choose File**' and select the saved image or picture at your saved library.
4. To confirm the transaction, please click on '**Save**' button.
5. To cancel & terminate the transaction, please click on '**Back**' button

c) How to reset password

Figure 17: Steps to reset new password

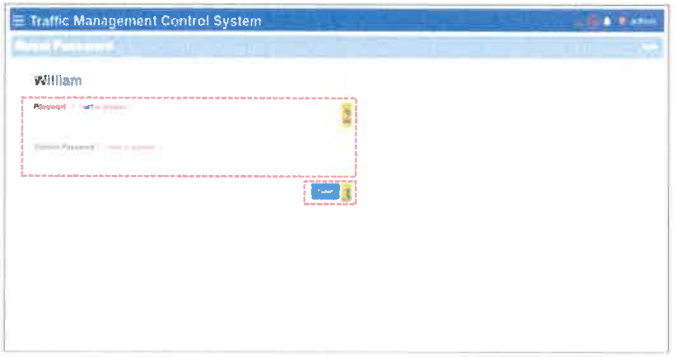

Figure 18: Steps to reset new password

Instructions to Reset Password as below,

1. Turn on the '**User Management**' page and click on '**Reset Password**' icon 🔑
2. '**Reset Password**' page will display at next page, you may be able to reset password
   *# Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*
3. To confirm the transaction, please click on '**Save**' button
4. To cancel & terminate the transaction, please click on '**Back**' button

d) How to delete user profile

Figure 19: Steps to delete user profile

Figure 20: Steps to delete user profile

Instructions to Delete User Profile as below,

1. Turn on the '**User Management**' page, select the user profile and click on '**Delete**' icon 🗑
2. A notification box will display to reconfirm the transaction, select '**Yes**' to confirm, '**No**' to cancel and terminate the transaction

   ** Compulsory to insert the reason for delete the user profile, otherwise the transaction unable to proceed to delete.*

e) How to search user profile

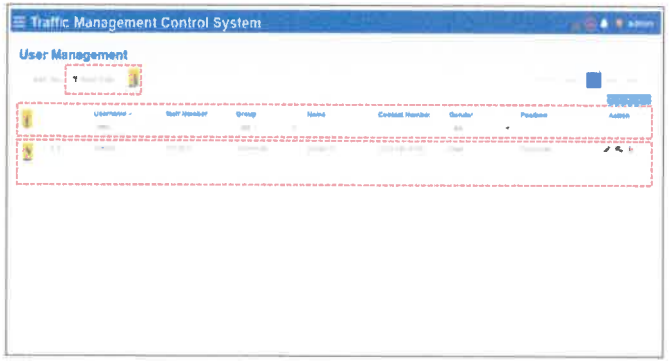

Figure 21: Steps to search user profile

Instructions to Search User Profile as below,

1. Turn on the '**User Management**' page and key in any keyword into box for system auto-search
2. Result will display if found any similar data to match with search's keyword.
3. To clear the keyword, do click on '**Reset Filter**' button.

2.3 User Log Overview

User report allows you to view the audit trails of user activities happened in user dashboard.

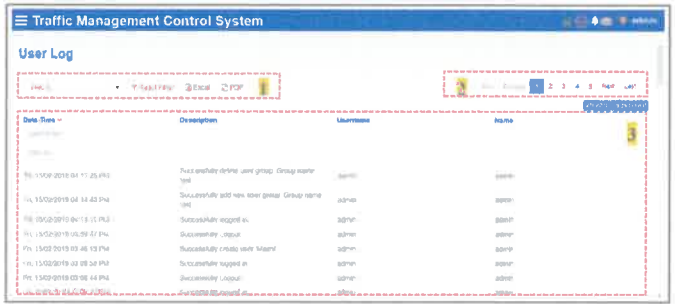

Figure 22: User log overview

List of tab description for **User Report** as below,

1. Function tab consist of Filter for report header display, Filter keyword search box, Reset Filter
2. Page number
3. Table report of user activities happened in user dashboard.

a) How to retrieve & generate user log

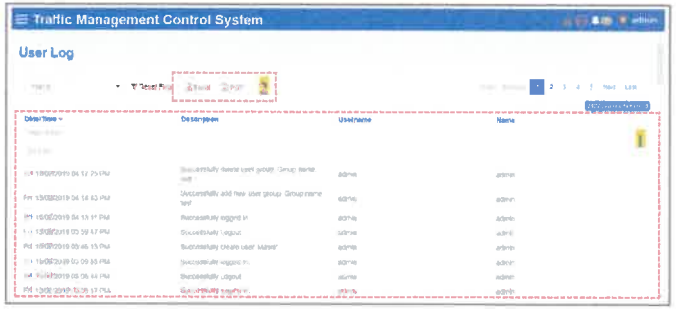

Figure 23: Steps to retrieve and generate user log

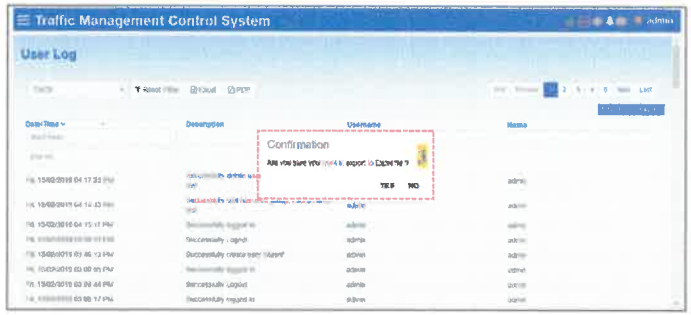

Figure 24: Steps to retrieve and generate user log

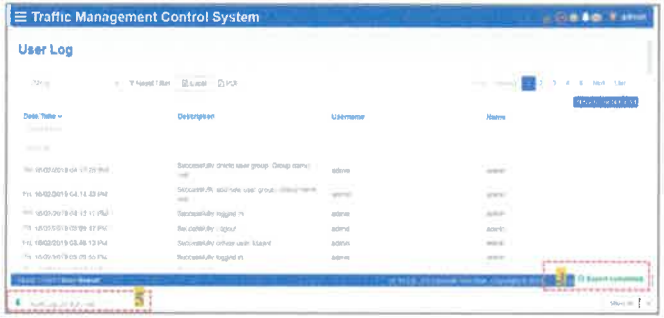

Figure 25: Steps to retrieve and generate user log

Instructions to Retrieve and Generate User Report as below.

1. Turn on the '**User Report**' page and key in any keyword or search date into box for system auto-search
2. Click '**Export To Excel**' to get the excel format report
3. A notification box will display to reconfirm the transaction, select '**Yes**' to confirm, '**No**' to cancel and terminate the transaction
4. Notification message will pop up for any successful or failure transaction made
5. You may find the excel report at download folder or toolbar

3.0 MAP MODULE

This module is allowing you to create, edit and modify the device's icon & route in order to display in map overview page.

3.1 Map Overview Page

This page is displays the Map Dashboard that contains of several tabs and description of each tab are listed down below

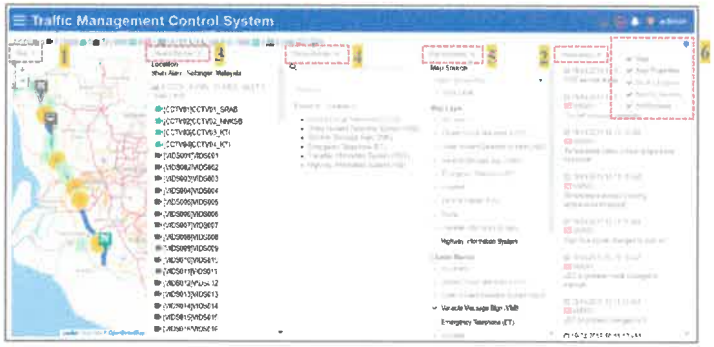

Figure 26: Map overview page

List of tab & icon description for **Overview Page** as below,

1. Map Dashboard (To close , click ×)
2. Notifications – provides the status of the devices along with specified date and time *(To close , click ×)*
3. Nearby Devices – displays a list of devices based on Map panel size on the Dashboard. Able to update in accordance to the zoom in/out level on the Map Dashboard *(To close , click ×)*
4. Device Explore – to find the devices through device ID, device name or location that the device has been installed *(To close , click ×)*
5. Map Properties – to provide option on the display of the Map Dashboard *(To close , click ×)*

6. Settings ⚙ – to customize the display on the Map Dashboard

Enable to display on the Map Dashboard	✔ Map ✔ Map Properties ✔ Device Explorer ✔ Nearby Devices ✔ Notifications	Disable to display on the Map Dashboard	✖ Map ✖ Map Properties ✖ Device Explorer ✖ Nearby Devices ✖ Notifications

a) Zoom Option

Figure 27: Zoom Option

Figure 28: Zoom In

Figure 29: Zoom Out

Below are the descriptions of the Zoom Level option,

1. Zoom In + to adjust the zoom in level on the Map Dashboard shown in figure 30
2. Zoom Out - :to adjust the zoom out level on the Map Dashboard shown in figure 31

b) Distance measurement -line drawing option

This function is to measure distance on the desired route on the Map Dashboard.

Figure 30: Distance Measurement

Below are the steps for Distance Measurement as below,

1. Click on . to begin for distance measurement
2. Drop the first pointer on the map
3. Hold and drag the pointer according to the road that you would like to measure. You also can drop the point at curve road condition to continue your measurement
4. Double click to provide the final destination to provide overall measurement.

3.1.1 Map Setting Properties

This function contains of four properties option to customize the display on the map dashboard.

a) Map Properties Option

This function is to provide the option to the user on the display of the Map Dashboard based on their display preference.

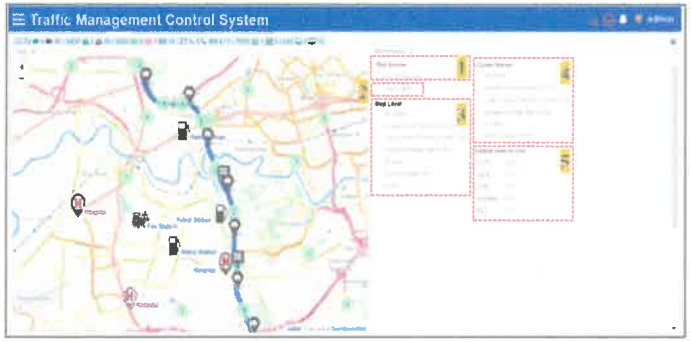

Figure 31: Interface of Map Properties Option

Instructions & description for **Map Properties** as below,

1. In the Map Properties option, below are list of categories with respective descriptions

Categories	Description
Map Source	To provide source of the Map to display. Open Street Map
Show Label	Option to display the label of the devices and POI on the Map Dashboard
Map Layer	To provide an option to the user to either enable or disable the display of the devices / POI on the Map Dashboard.
Cluster Marker	To provide an option to the user to either enable or disable to cluster the devices / POI icon indication and label on the Map Dashboard.
Update Intervals (in ms)	To provide an option to the user to change the interval on the updates of the devices/ POI status.

b) Device Explorer Option

This function enables the user to find the installed devices as per the device ID, device name or the location name where the device has been installed.

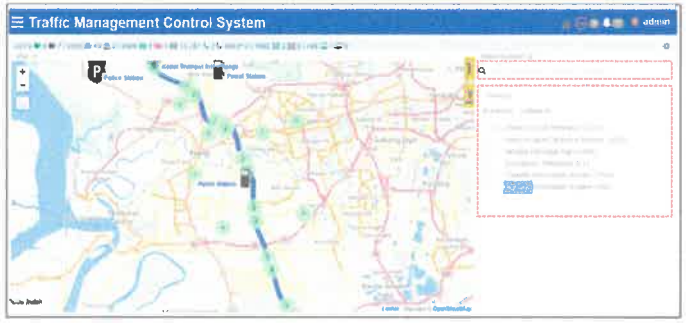

Figure 32: Interface of Device Explorer

Below are the descriptions of **Device Explorer** on the Map Dashboard

1. On the provided search tab is to search the devices through designated device ID, device name or the location name
2. List of devices installed

c) Nearby Devices Option

This feature is to provide the listing of devices based on the display window size of the Map Dashboard. For each device, a respective color indication is shown about the device status.

Figure 33: Interface of Nearby Devices

Below are the descriptions of **Nearby Devices** on the Map Dashboard,

1. Location – displays the name of the location on the Map Dashboard
2. Device Statistics – displays the total number of devices based on the display size on the Map Dashboard
3. Device Listings – displays the list of devices with respect to status color indication accordingly

d) **Notifications Option**

This purpose of this option is to provide the status of the devices.

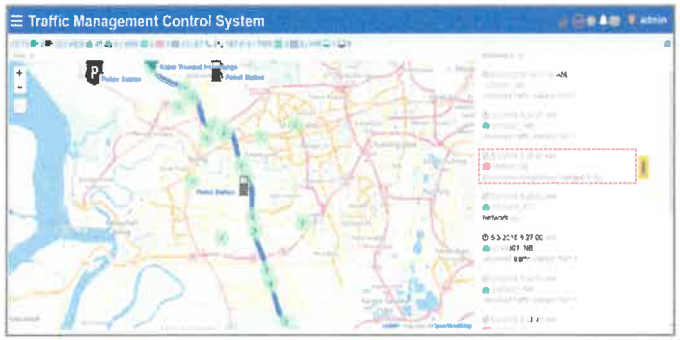

Figure 34: Interface of Notifications Option

Below are the descriptions of **Notifications** option on the Map Dashboard

1. Display of time & date
   Display of the device name
   Display of the device status

3.1.2 Device Identifier

Every icon or device display in map, once click on it will display the information of the properties and shortcut to module for changes.

Figure 35: Interface of Device Identifier

Below are the descriptions of Device Identifier on the Map Dashboard

1. Click on the device icon, which is being displayed on the Map Dashboard, then an information window, is popped out with respect to the selected device icon.

   # The information being provided on this window is as below,

Device Type	Illustration of Information window
CCTV	 1. Display of the CCTV snapshot 2. CCTV Information • Device ID • Device Name • IP Address of the device • Device Status 3. Click '**CCTV Live View**' button to provide live view from the selected CCTV

VIDS		1. Snapshot display from the selected VIDS 2. VIDS Information • Device ID • Device Name • IP Address of the device • Device Status • Display of Traffic Statistic 3. Click '**VIDS Live View**' button to provide live view from the selected VIDS
VMS		1. VMS Information (from VMS Management) 2. Description of attached buttons are as below • Send Message - compose a new message • Message History - displays the previous message that has been displayed on the VMS Board. • Current Message - displays the on-going message • Current Status - provides the status of the VMS Board.

3.2 Route

This function is to allow expressway authority to identify their route to be display in the map.

a) Route Overview

The route overview page contains several configurable tab & information.

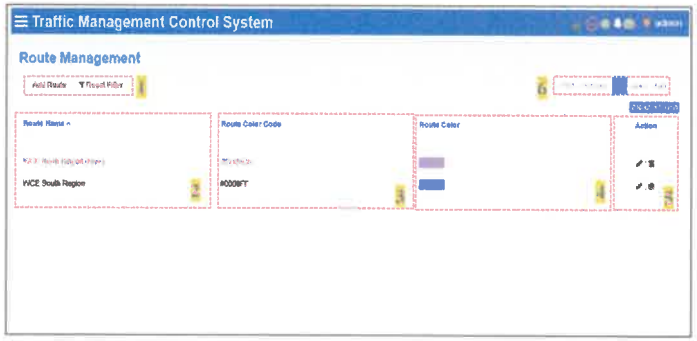

Figure 36: Route overview

List of tab & information for **Route Overview Page** as below.

1 Function tab: add route, table display setting, reset filter
2 List of route name
3 List of route color code
4 Route color
5 Actions: edit or delete
6 Pages

b) **How to add route**

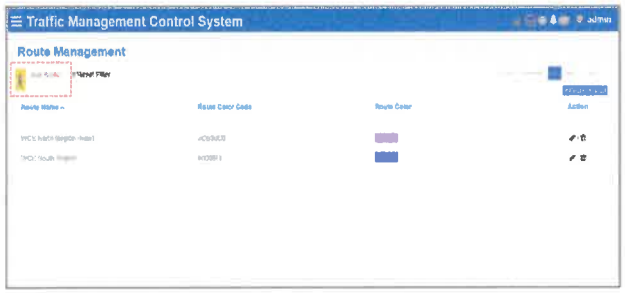

Figure 37: How to add route

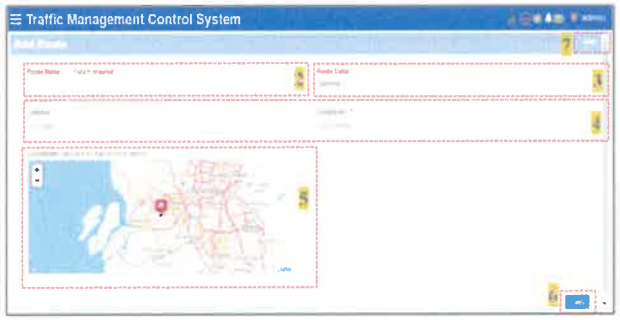

Figure 38: How to add route

Instructions to **Add Route** as below,

1 In the '**Route**' page, click on '**Add Route**'
2 Insert new route name
3 Select the colour for the new route by clicking the box
4 If you have coordinate, do key in at latitude & longitude column
5 You may can move the starting pointer and right click to add the more pointers draw the route
6 To confirm the transaction, please click on '**Save**' button.
7 To cancel & terminate the transaction, please click on '**Back**' button

c) **How to edit route**

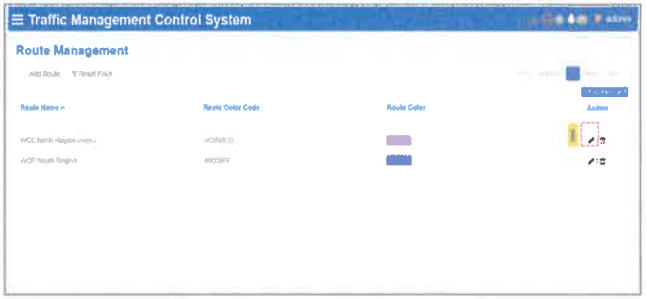

Figure 39: How to edit route

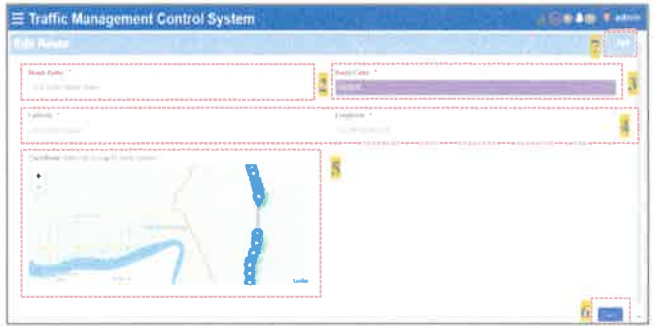

Figure 40: How to edit route

Instructions to **Edit Route** as below,

1 In the '**Route**' page, select the route to edit and click on '**Edit**' icon
2 '**Edit route**' page will be at next page, do ensure the selection that you select is match
3 You may able to choose new colour
4 You may change the coordinate by key in at latitude & longitude column
5 You may able to modify the route's coordinate
6 To confirm the transaction, please click on '**Save**' button
7 To cancel & terminate the transaction, please click on '**Back**' button

d) **How to delete route**

Figure 41: How to delete route

Figure 42: How to delete route

Instructions to **Delete Route** as below.

1 In the '**Route**' page, select the route to delete by click on '**Delete**' icon
2 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

e) **How to search route**

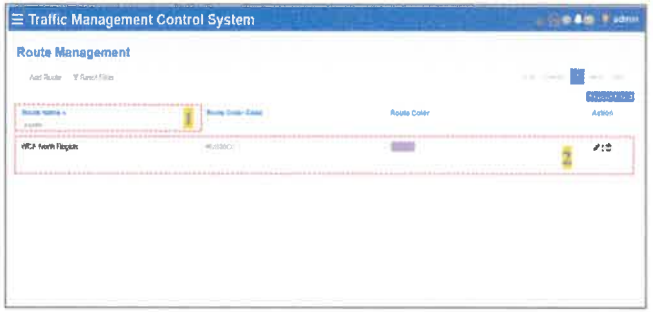

Figure 43: How to search route

Instructions to **search route** as below,

1 In the '**Route**' page and enter the route name to search box
2 List of search result found display

3.3 POI (Point Of Interest)

This specific point location shows landmark in the map.

a) POI Overview

The POI overview page contains several configurable tab & information.

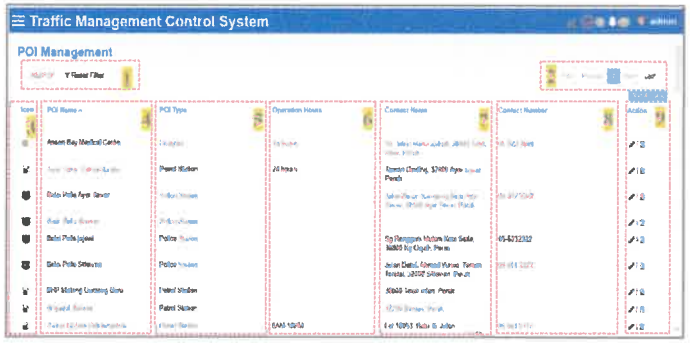

Figure 44: POI Overview

List of tab & information for **POI Overview Page** as below,

1 Function tab: add POI, table display setting, reset filter
2 Pages
3 Marker icon
4 Name of the POI
5 Type of POI
6 Operation Hour
7 Contact person name
8 Contact person number
9 Action to be taken

b) How to add POI

Figure 45: How to add POI

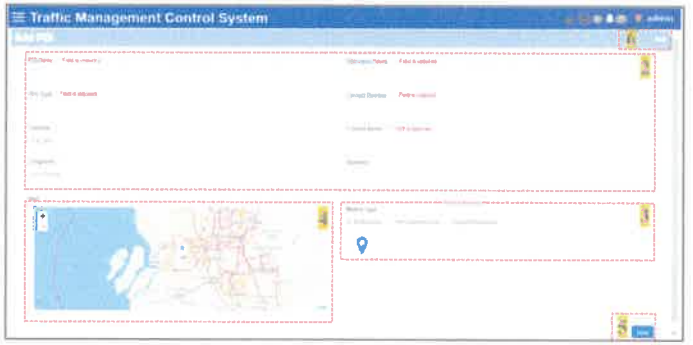

Figure 46: How to add POI

Instructions to **add POI** as below,

1 In the '**POI**' page, click on '**Add POI**'

2 Insert the details for POI such as name, type, operation hours, coordinate of the POI, contact number, contact name and remarks

** Column with *, it is a compulsory field to fill in the detail, cannot leave it blank Select the marker type*

- Default Icon - default location marker
- Font Awesome Icon - selection of icons with designated symbols
- Upload Picture Icon - upload a customize picture icon

3 Move the marker according to the location at map

4 To confirm the transaction, please click on '**Save**' button.

5 To cancel & terminate the transaction, please click on '**Back**'

c) How to edit POI

Figure 47: How to edit POI

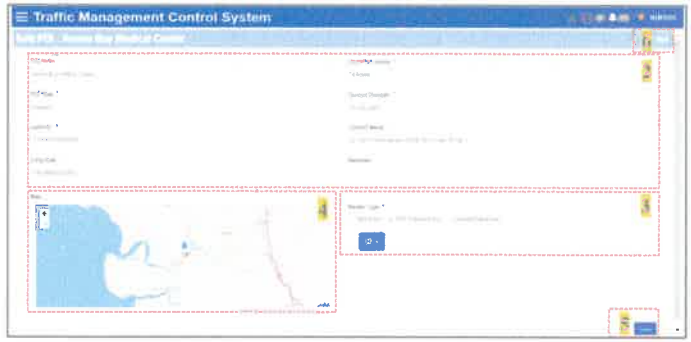

Figure 48: How to edit POI

Instructions to **edit POI** as below,

1 In the '**POI**' page, select the POI to edit and click on '**Edit**' icon
2 '**Edit POI**' page will be at next page, you may able to edit the details
3 You may able to modify the marker
   - Default Icon - default location marker
   - Font Awesome Icon - selection of icons with designated symbols
   - Upload Picture Icon - upload a customize picture icon
4 You may able to adjust the marker of the location at map
5 To confirm the transaction, please click on '**Save**' button
6 To cancel & terminate the transaction, please click on '**Back**' button

d) **How to delete POI**

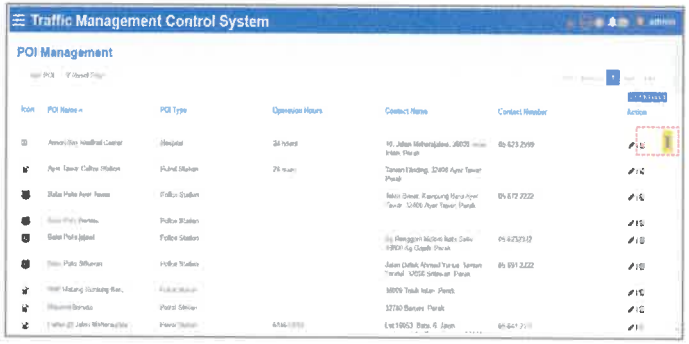

Figure 49: How to delete POI

Figure 50: How to delete POI

Instructions to **delete POI** as below,

1 Turn on the '**POI**' page, select the route to delete and click on '**Delete**' icon.
2 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

e) **How to search POI**

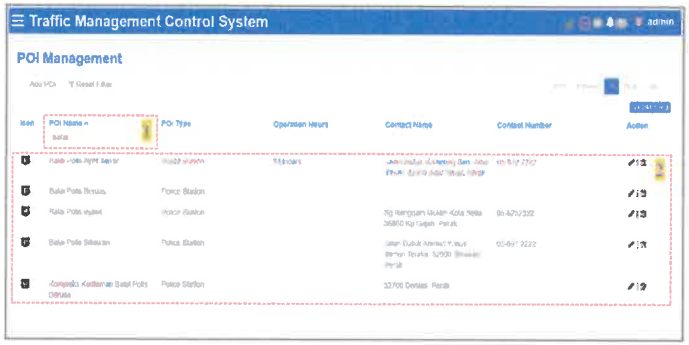

Figure 51: How to search POI

Instructions to search **POI** as below,

1 Turn on the '**POI**' page, enter the POI name to search box
2 List of result appeared as per searched from the search box

4.0 CCTV MODULE

This module is allowing you to create, edit and modify the CCTV information for integration and compatibility with this platform and audit trail for CCTV functionality.

4.1 CCTV Management Overview

This function is contains several configurable tab & information.

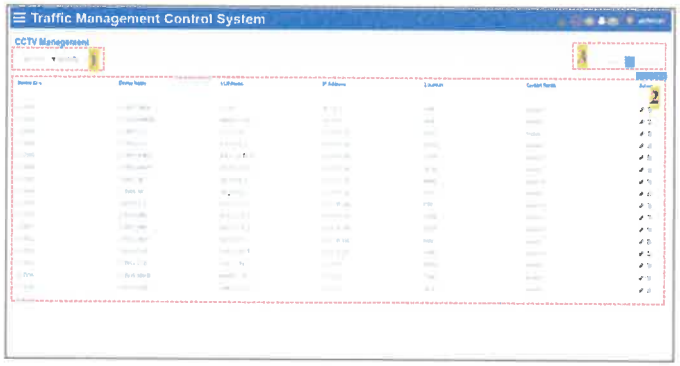

Figure 52: CCTV Management

List of tab & icon description for **CCTV Management** as below:

1 Function tab: add CCTV, table display setting, expend filter box, reset filter
2 CCTV's device information and configuration
3 Pages

a) **How to add CCTV**

Figure 53: How to add CCTV

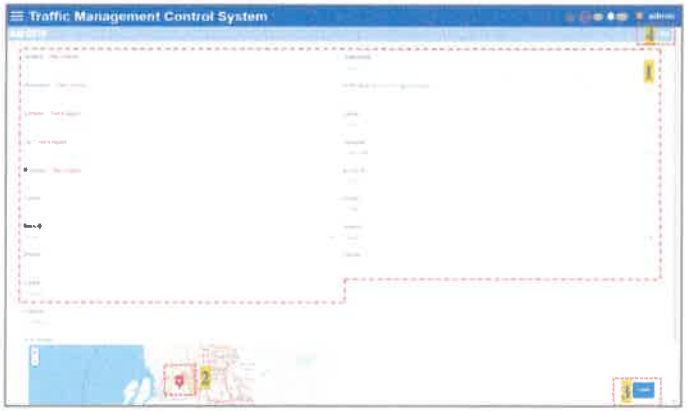

Figure 54: How to add CCTV

Instructions to **add CCTV** as below,

1 Turn on the '**CCTV Management**' page and click on '**Add CCTV**'
'**Add CCTV**' page will display at next page & fill in the CCTV profile
*# Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*
2 You may can move the pointer and locate the pointer on map
3 To confirm the transaction, please click on '**Save**' button
4 To cancel & terminate the transaction, please click on '**Back**' button

b) How to edit CCTV

Figure 55: How to edit CCTV

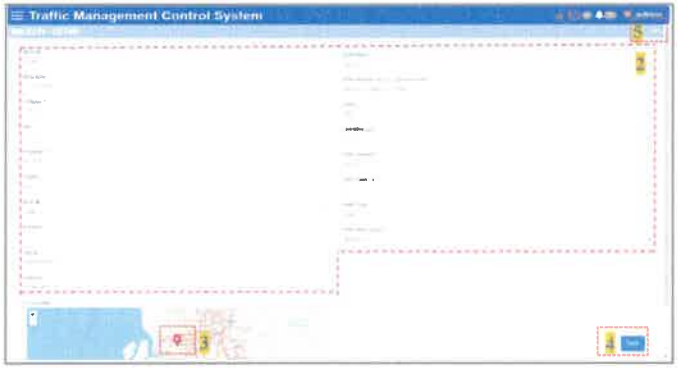

Figure 56: How to edit CCTV

Instructions to **edit CCTV** as below,

1 Turn on the '**CCTV Management**' page, select the CCTV to edit and click on '**Edit**' icon

2 '**Edit CCTV**' page will be at next page, you may able to modify and edit the CCTV details

** Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*

3 You may able to adjust the CCTV pointer location on map

4 To confirm the transaction, please click on '**Save**' button

5 To cancel & terminate the transaction, please click on '**Back**'

c) **How to delete CCTV**

Figure 57: How to delete CCTV

Figure 58: How to delete CCTV

Instructions to **Delete CCTV** as below,

1 Turn on the '**CCTV Management**' page, select the CCTV and click on '**Delete**' 🗑 icon.

2 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

d) **How to search CCTV detail**

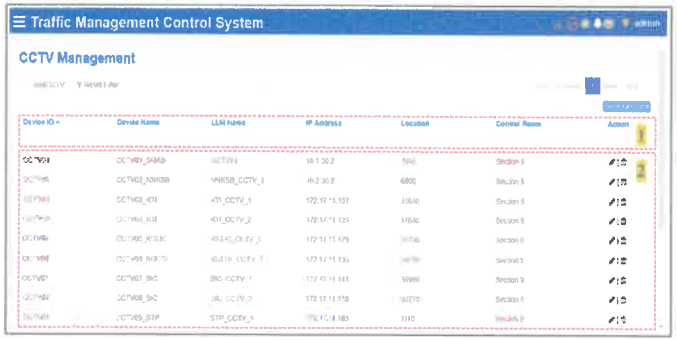

Figure 59: How to search CCTV detail

Instructions to search CCTV as below,

1 Turn on the '**CCTV Management**' page, enter the name to search box

2 List of result appeared as per searched from the search box

4.2 CCTV Report Overview

This function is to display the log report of device condition.

Figure 60: CCTV Report Overview

List of tab & icon description for **CCTV Report** as below:

1 Function tab: table display setting, filter box, reset filter, file export

2 CCTV's device health information

3 Pages

a) How to generate CCTV report

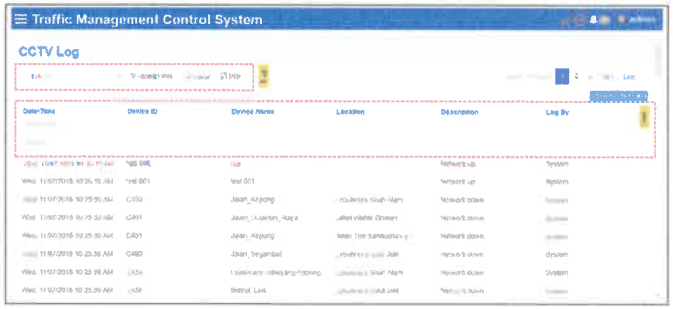

Figure 61: How to generate CCTV Report

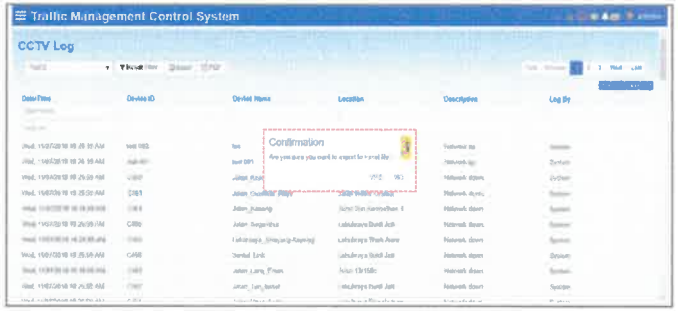

Figure 62: How to generate CCTV Report

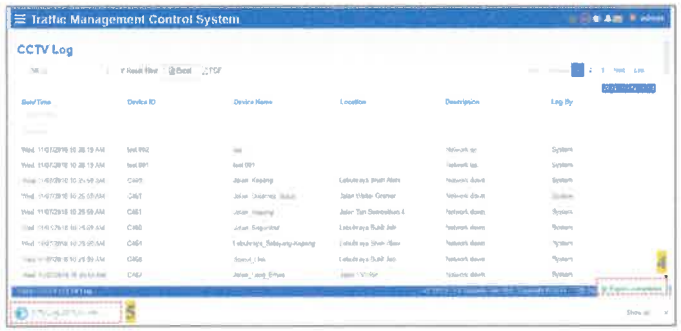

Figure 63: How to generate CCTV Report

Instructions to **Generate CCTV Report** as below:

1 Turn on the '**CCTV Report'** page and key in any keyword or search date into box for system auto-search
2 Click '**Export To Excel**' to get the excel format report
3 A notification box will display to reconfirm the transaction, select '**Yes**' to confirm, '**No**' to cancel and terminate the transaction
4 Notification message will pop up for any successful or failure transaction made
5 You may find the excel report at download folder or toolbar

b) How to search & filter keyword in CCTV report

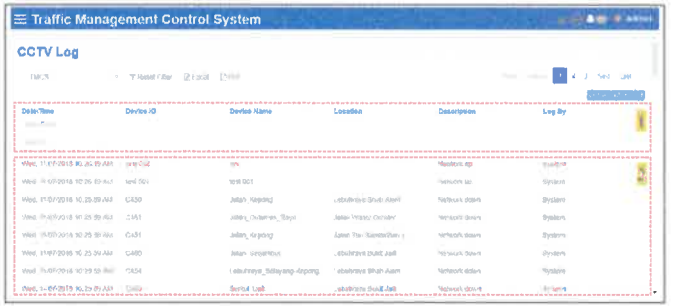

Figure 64: How to search & filter keyword in CCTV Report

Instructions to **search CCTV** report as below,

1 Turn on the '**CCTV Report'** page and enter the keyword at search box
2 List of search result found display

5.0 HIGHWAY INFORMATION SYSTEM (HIS)

HIS stand for Highway Information System, is used to broadcast latest traffic information along the highway using the installed HIS device at R&R along the highway. HIS module is allowing you to manage the entire activities related to HIS.

5.1 Highway Information System (HIS) Management

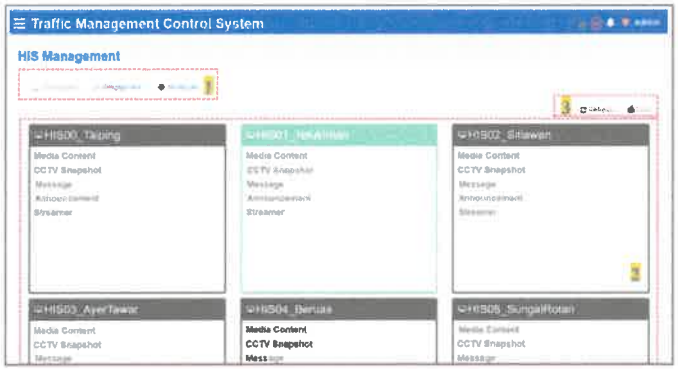

Figure 65: HIS Management Overview

List of tab & icon description for **HIS Management** as below:

1 Function tab: Dashboard, Management, Broadcast
2 HIS device information and current data that being displayed;
Green colour indicated that the particular HIS device is online while black colour indicated that the particular HIS device is offline (may due to network connection failure or and power failure)
3 To '**Refresh**' or '**Print**' current display on HIS Management Dashboard.

5.2 HIS Management Dashboard

The HIS Dashboard allow users to view an outline of current data that being displayed on the HIS devices and can print it out if necessary. Figure 66 shows the overview of HIS Management Dashboard.

Figure 66: HIS Management Dashboard

List of tab & icon description for **HIS Management Dashboard** as below:

1 Function tab: Dashboard, Management, Broadcast
2 HIS device information and current data that being displayed;
Green colour indicated that the particular HIS device is online while black colour indicated that the particular HIS device is offline (may due to network connection failure or and power failure)
3 To '**Refresh**' or '**Print**' current display on HIS Management Dashboard.

5.3 HIS Management – Management Tab

The HIS Management tab is used to manage the registration of the HIS devices, as well as to set and edit the text and multimedia content to be displayed on the HIS device. The user is able to add new HIS device, update details of existing HIS devices and deleting the existing HIS device.

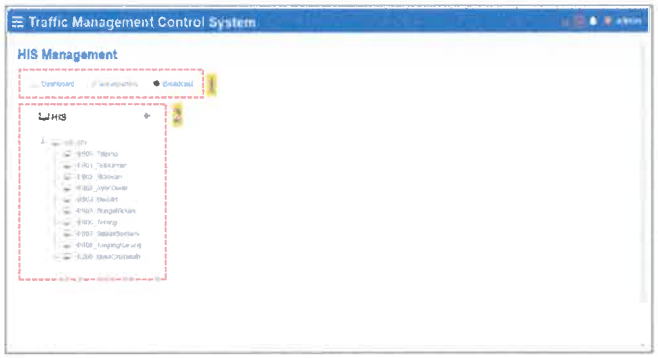

Figure 67: HIS Management Tab

List of tab & icon description for **HIS Management Tab** as below:

1 Function tab: Dashboard, Management, Broadcast
2 List of HIS devices

a) **How to add HIS**

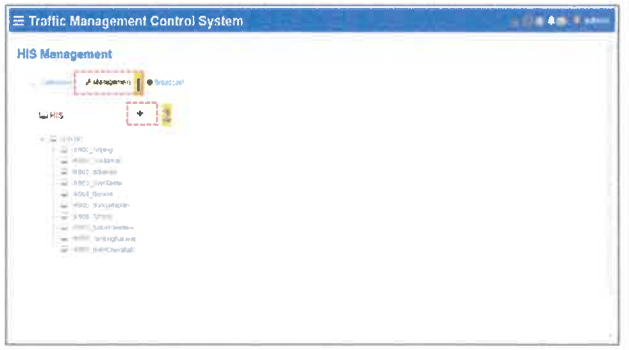

Figure 68: How to add HIS

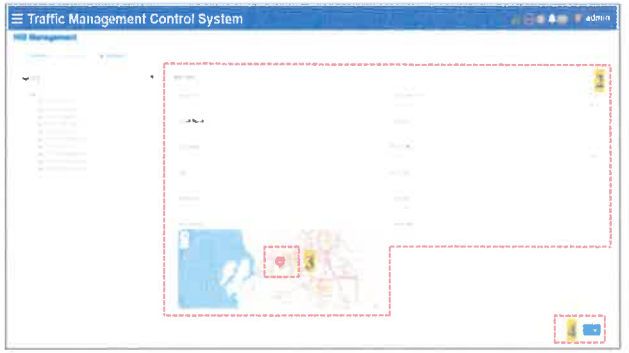

Figure 69: How to add HIS

Instructions to **add HIS** as below,

1 Turn on the '**HIS Management**' page and click on '**Management**' tab
2 Click on add HIS icon + . The '**Add HIS**' page will display on the right hand side & fill in the HIS profile
3 You may can move the pointer and locate the pointer on map
4 To confirm the transaction, please click on '**Save**' button

b) **How to edit HIS**

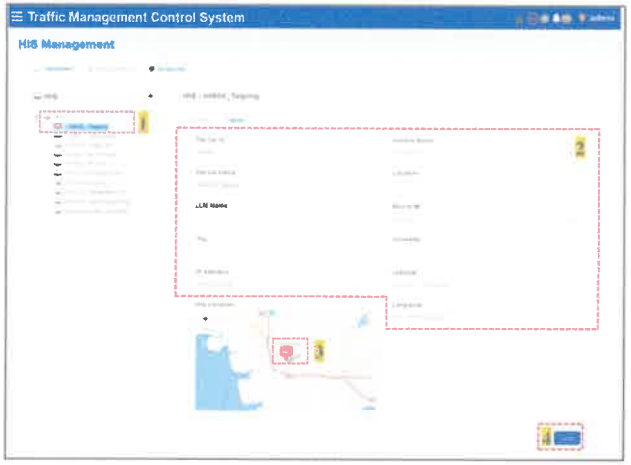

Figure 70 : Edit HIS

Instructions to **edit HIS** as below,

1 Turn on the '**HIS Management**' page then click on the 'Management' tab, select the HIS by click on the HIS name to begin edit

2 '**Edit HIS**' page will be displayed on the right hand side and you may able to modify and edit the HIS details

3 You may able to adjust the HIS pointer location on map

4 To confirm the transaction, please click on '**Save**' button

c) **How to delete HIS**

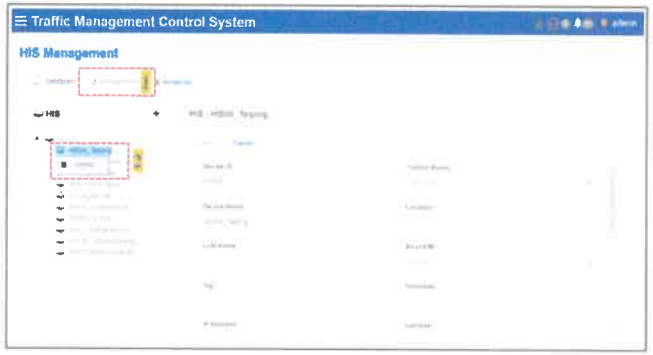

Figure 71: How to delete HIS

Figure 72: How to delete HIS

Instructions to **Delete HIS** as below,

1 Turn on the '**HIS Management**' page then click on the 'Management' tab.

2 Select the HIS and right click, a Delete window with icon will be pop up. Click on that delete window to delete the HIS

3 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

d) How to edit HIS playlist

Figure 73: HIS playlist

Instructions to edit HIS Playlist as below,

1. Turn on the 'HIS Management' page then click on the 'Management' tab.
2. Select the HIS device by click on the HIS name, 'Edit HIS' page will be displayed on the right
3. Click the 'Broadcast' tab to edit HIS Playlist
4. (Detailed instructions on how to edit the 'Template' & 'Composer', please refer to the 'HIS Management – Broadcast' section)

5.4 HIS Management – Broadcast

This function is allowing you to compose information about Media Content, Message, and CCTV Snapshot & Announcement for the display of HIS devices on site.

Figure 74: HIS Management - Broadcast

List of tab & icon description for **HIS Management – Broadcast** as below,

1. List of HIS devices
2. Template selections for HIS device display
3. HIS composer functionalities
4. Composer function tab: Media Content, Message, CCTV Streaming, Announcement
5. HIS composer content function tab: Preview, Reset Edit, Blank HIS, Send Content

a) **How to compose HIS for broadcast**

Figure 75: Compose HIS content for broadcast

Figure 76: Template Selection

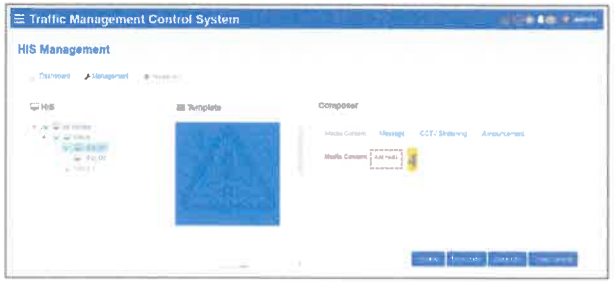

Figure 77: Add media content

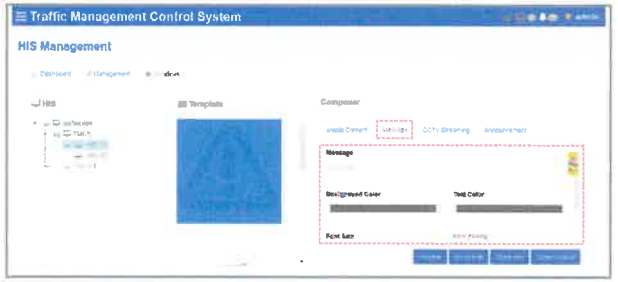

Figure 78: Create message

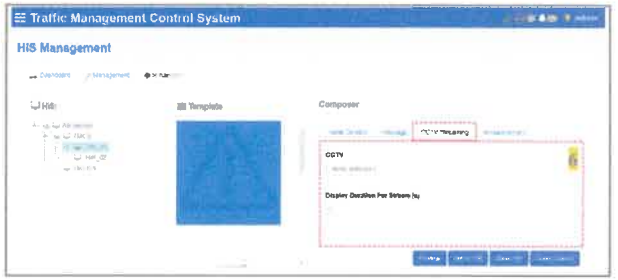

Figure 79: Choose CCTV streaming

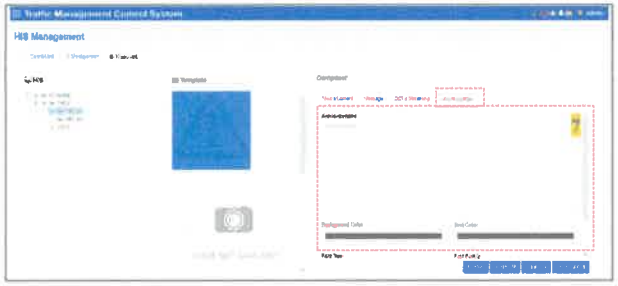

Figure 81: Choose Announcement

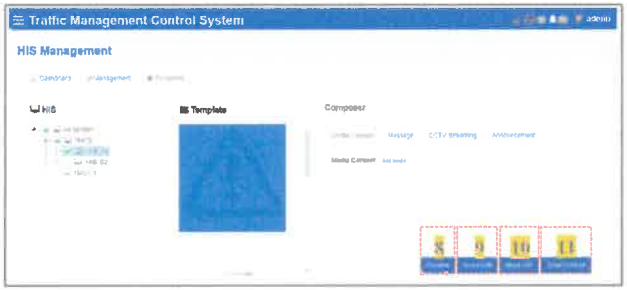

Figure 82: Reset, Edit, Blank HIS and send content

Instructions to compose **HIS** for broadcast as below,

1 Turn on the '**HIS Management'** page then click on the '**Broadcast**' tab.
2 Select HIS from the list of registered HIS by click on the HIS name. The selected HIS will be indicated with the sign.
3 Choose a HIS display template.
4 Click on '**Add media**' to add Media Content.
5 Click on '**Message**' tab to create Message. User can edit the message's **Background & Text colour** as well.
6 Click on '**CCTV Streaming'** tab to choose CCTV streaming from the list of registered CCTV camera under the '**CCTV Streaming**' functionality and set the **display duration** (in seconds) for every single CCTV Snapshot that chosen.
7 Click on '**Announcement**' tab to create Announcement message. User can edit the Announcement **background & text colour, Font Size**, as well as **Font Style**.
8 Click the '**Preview**' to preview the change made.
9 Click the '**Reset Edit**' to compose the HIS display all over again.
10 Click on '**Blank HIS**' to cancel the HIS display on site.
11 Click the '**Send Content**' to broadcast the edited HIS template on the HIS device on site.

5.5 HIS Statistic Report

This function is to display the log report of device condition.

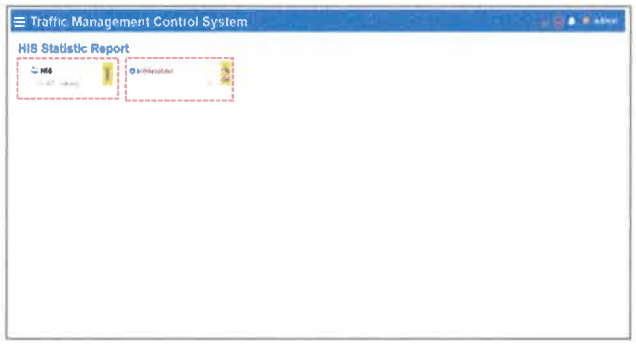

Figure 83: HIS Statistic Report overview

List of tab & icon description for **HIS Statistic Report** as below:

1 List of HIS devices

2 Information in time interval basis

a) **How to generate HIS statistic report**

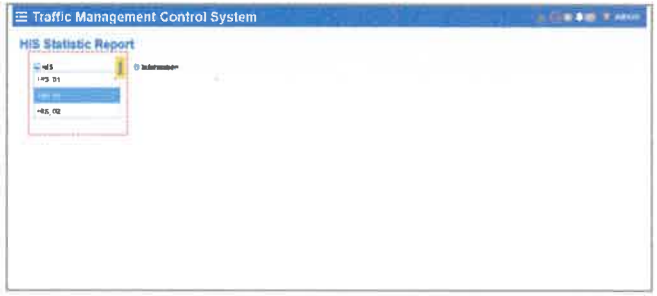

Figure 84: How to generate HIS Statistic Report

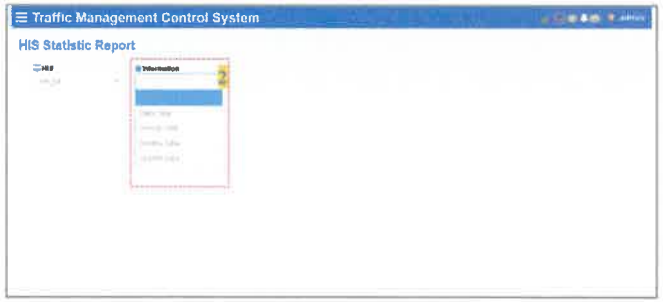

Figure 85: How to generate HIS Statistic Report

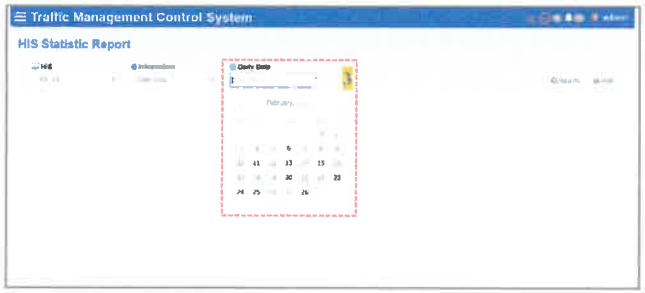

Figure 87: How to generate HIS statistic report

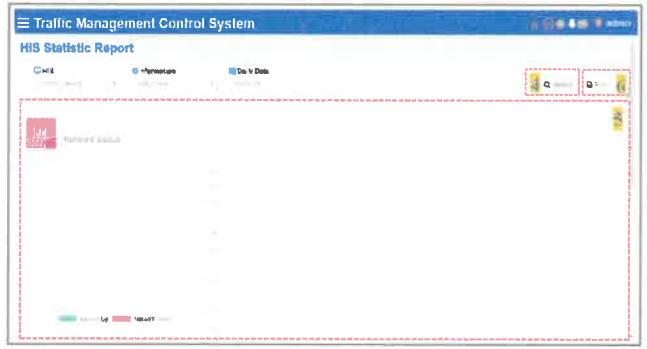

Figure 86: How to generate HIS Statistic Report

Instructions to **Generate HIS Statistic Report** as below:

1 Turn on the '**HIS Statistic Report**' page and choose a HIS from the '**HIS**' list.
2 On the '**Information**', choose the type of time frame of data to be generated.
3 Choose a specific date/month to be generated.
4 Press the '**Search**' to generate the data accordingly.
5 The HIS Statistics will be displayed.
6 Press the '**Print**' to print out the HIS statistic report

b) How to retrieve HIS statistic report for daily data

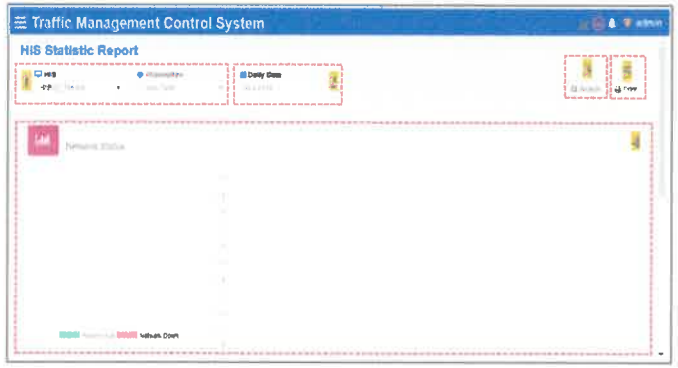

Figure 88: HIS statistic report - Daily data

Instructions to retrieve & view HIS Statistic Report for Daily Data,

1. Turn on the '**HIS Statistic Report**' page, select the specific HIS Device and select the information column to '**Daily Data**'
2. Choose the specific date in the '**Daily Date**' column
3. Press the '**Search**' to retrieve the specified data.
4. The '**Daily HIS Statistic Report**' will display once data retrieved
5. You may able to print out the current display information by clicking '**Print**'

c) How to retrieve HIS Statistic report for weekly data

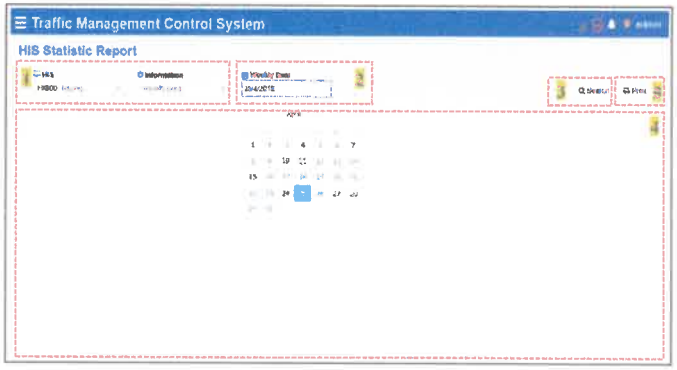

Figure 89: HIS Statistic Report – Weekly Data

Instructions to retrieve & view HIS Statistic Report for Weekly Data,

1. Turn on the '**HIS Statistic Report**' page, select the specific HIS Device and select the information column to '**Weekly Data**'
2. Choose the specific date in the '**Weekly Date**' column
3. Press the '**Search**' to retrieve the specified data.
4. The '**Weekly HIS Statistic Report**' will display once data retrieved
5. You may able to print out the current display information by clicking '**Print**'

d) **How to retrieve HIS statistic report for monthly data**

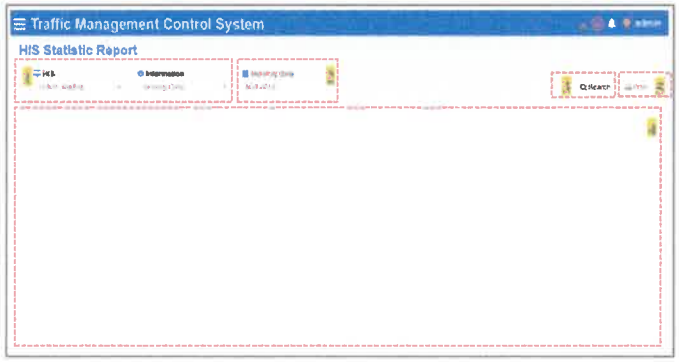

Figure 91: HIS Statistic Report – Monthly Data

Instructions to retrieve & view HIS Statistic Report for Monthly Data,

1 Turn on the '**HIS Statistic Report**' page, select the specific HIS Device and select the information column to '**Monthly Data**'
2 Choose the specific month in the '**Monthly Date**' column
3 Press the '**Search**' to retrieve the specified data.
4 The '**Monthly HIS Statistic Report**' will display once data retrieved
5 You may able to print out the current display information by clicking '**Print**'

e) **How to retrieve HIS statistic report for custom data**

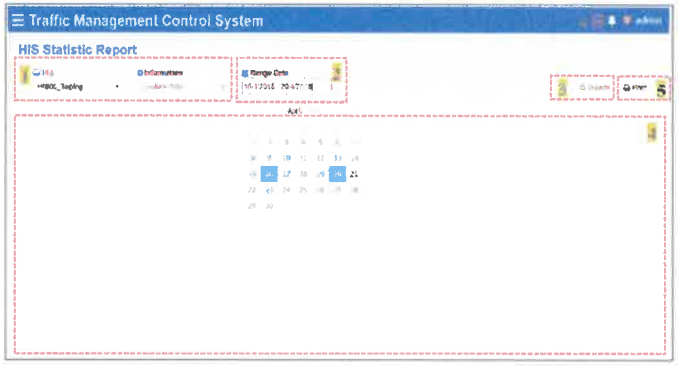

Figure 92: HIS statistic report - Custom Data

Instructions to retrieve & view HIS Statistic Report for Custom Data,

1 Turn on the '**HIS Statistic Report**' page, select the specific HIS Device and select the information column to '**Custom Data**'
2 Choose the specific data range in the '**Range Date**' column
3 Press the '**Search**' to retrieve the specified data.
4 The '**Custom HIS Statistic Report**' will display once data retrieved
5 You may able to print out the current display information by clicking '**Print**'

5.6 HIS Log

HIS Log is allows you to keep tracks and view the audit trails report of HIS device activity.

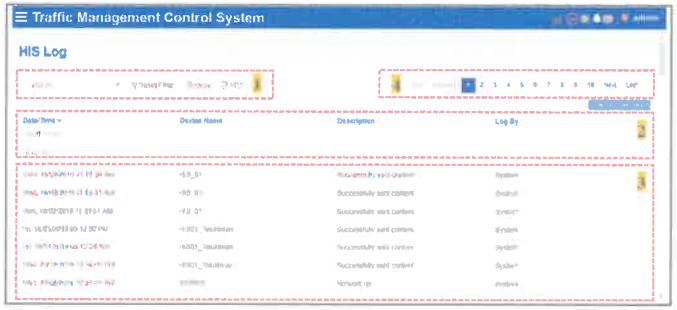

Figure 93: HIS Log view

List of tab description for **HIS Log** as below,

1 Function tab consist of Expressway's Section selection, Reset Filter, Export to Excel file
2 Report header display with keyword search box
3 Table of log of HIS Device activities
4 Page number

a) **How to generate HIS log**

Figure 94: Generate HIS log

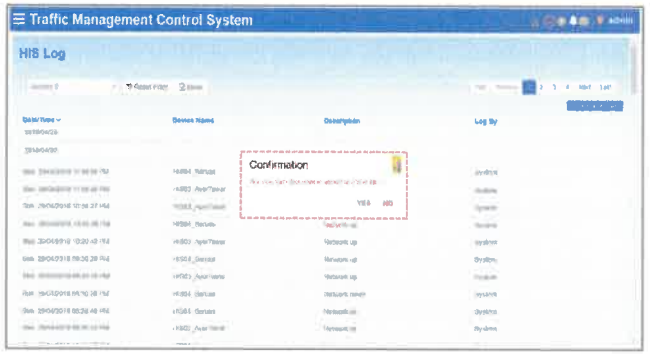

Figure 95: Generate HIS Log

Instructions to **HIS Log** as below,

1 Turn on the '**HIS Log**' page and select date / time
2 Result will display if found any similar data to match with search date, or any keyword in search box
3 Click on '**Excel**' to print out the result in excel format
4 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

6.0 TRIS MODULE

TRIS stand for **T**raveler **I**nformation **S**ystem provides an interactive platform for road users to acquire important and useful information about the highway. The WCE TMCS user is able to attain information on the connection status of TRIS devices, as well as to set, edit and configure the multimedia content to be displayed on the TRIS device.

Figure 96: Navigation TRIS module from WCE TMCS home page

Home page TRIS icon description as below:

1 TRIS icon on the WCE TMCS home page that show the statuses of TRIS device on site

Instructions to navigate from the home page of WCE TMCS to the TRIS module as below:

2 Click the sub-applications menu tab
3 Click on the TRIS application that would like to open

6.1 TRIS Management

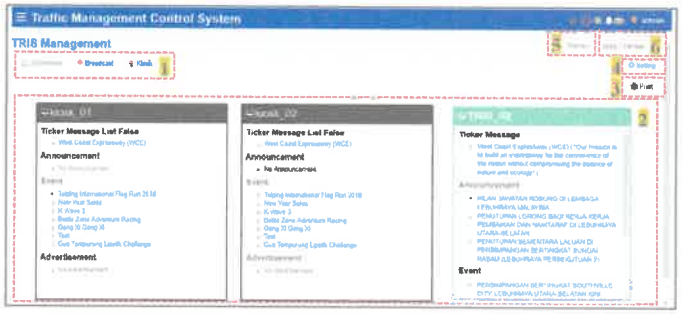

Figure 97: TRIS Management Overview

List of tab & icon description for **TRIS Management** as below:

1 Function tab: Dashboard, Broadcast, Kiosk
2 TRIS device information and current data that being displayed;
Green colour indicated that the particular TRIS device is online. While the black colour indicated that the particular TRIS device is offline (may due to network connection failure or and power failure)
3 To 'Print' current display on TRIS Management Dashboard
4 Configuration tab
5 **'Preview'** before apply changes
6 **'Apply Changes'** to sync all kiosk (TRIS Devices) with updated information

6.2 TRIS Management Dashboard

The TRIS Dashboard allow users to view an outline of current data that being displayed on the TRIS kiosks and can print it out if necessary. Figure 3 shows the overview of TRIS Management Dashboard page.

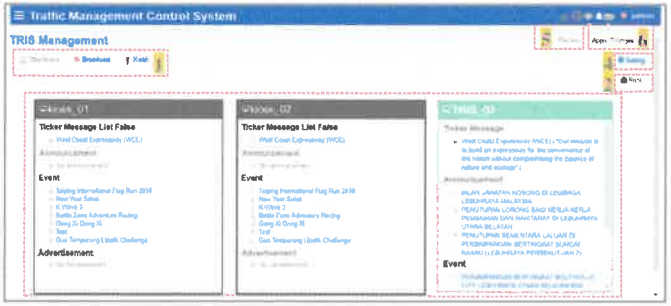

Figure 98: TRIS Management Dashboard

List of tab & icon description for **TRIS Management Dashboard** as below:

1 Function tab: Dashboard, Broadcast, Kiosk

2 TRIS device information and current data that being displayed;
Green colour indicated that the particular TRIS device is online. While the black colour indicated that the particular TRIS device is offline (may due to network connection failure or and power failure)

3 To 'Print' current display on TRIS Management Dashboard

4 Configuration tab

5 Click preview to view the changes before apply changes

6 'Apply Changes' to sync all kiosk (TRIS Devices) with updated information

a) **How to view the details of Ticker Message, Announcement, Event & Advertisement**

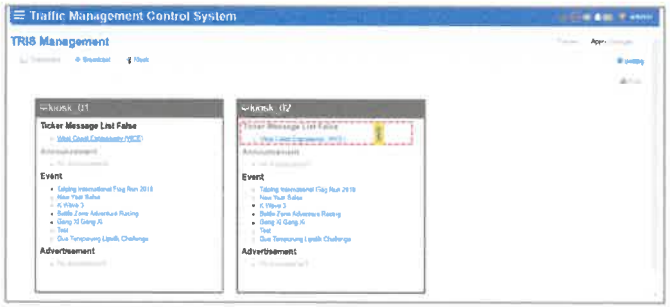

Figure 99: How to view detail of Ticker Message

Figure 100: How to view detail of Ticker Message

b) How to print the TRIS Management Dashboard information

Figure 101: TRIS Management Dashboard

Instructions to **print** the information on the **TRIS Management Dashboard** as below,

1 Turn on the '**TRIS Management**' page

2 Click the '**Print**' to print out the information on the TRIS management dashboard

6.3 TRIS Management - Broadcast

This function is allowing you to update (edit) the display content for the display of TRIS Kiosk on site.

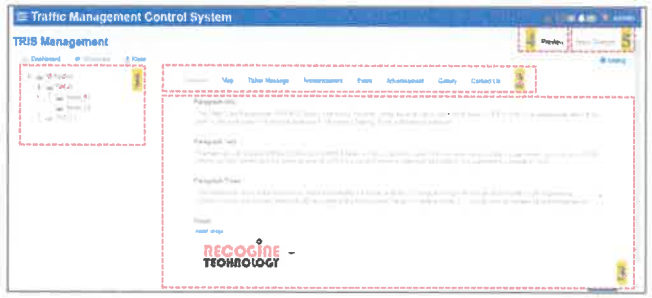

Figure 102: TRIS Management - Broadcast

List of tab & icon description for **TRIS Management – Broadcast** as below,

1 List of TRIS kiosk

2 Function tabs to edit the display content according to information category: Overview, Map, Ticker Message, Announcement, Event, Advertisement, Gallery, Contact Us

3 Information editing corner

4 '**Preview**' to view the changes before apply it

5 '**Apply Changes**' to sync all kiosk (TRIS Devices) with updated information

6.4 TRIS Kiosk Management

The TRIS Kiosk Management tab is used to manage the registration of the TRIS Kiosk devices, as well as to set and edit the text and multimedia content to be displayed on the HIS device. The user is able to add new HIS device, update details of existing HIS devices and deleting the existing HIS device.

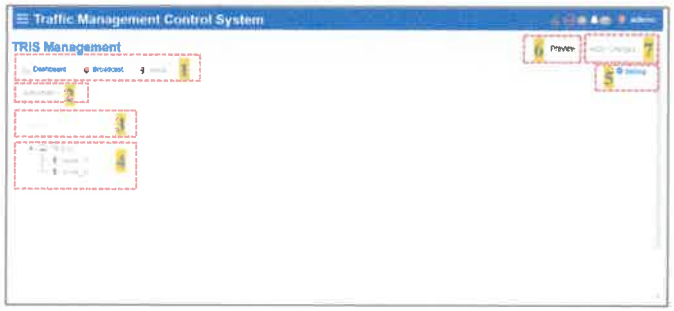

Figure 103 : TRIS Management - Kiosk Tab

List of tab & icon description for **TRIS Management – Kiosk Tab** as below:

1 Function tab: Dashboard, Management, Broadcast
2 'Add Kiosk' button
3 Search box
4 List of TRIS devices
5 Configuration tab
6 Preview button to show the changes made before apply changes
7 'Apply Changes' to sync all kiosk (TRIS Devices) with updated information

c) How to add kiosk

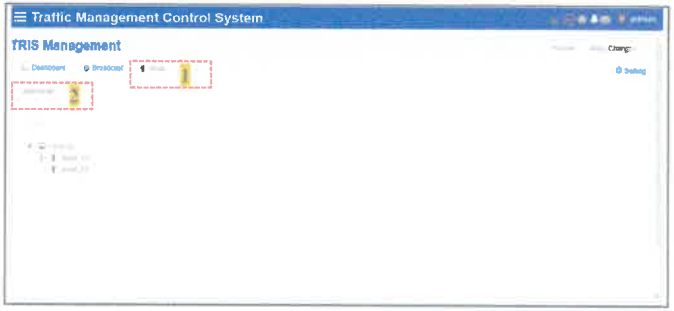

Figure 104: How to add kiosk

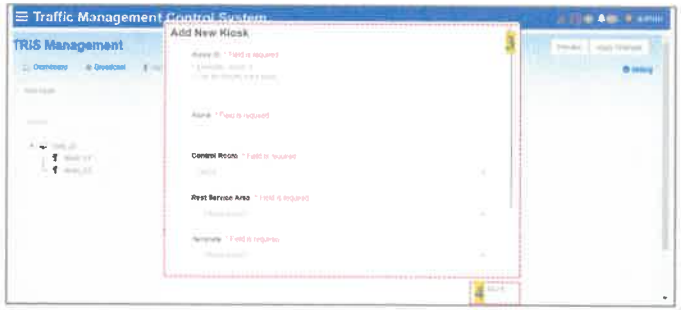

Figure 105: How to add kiosk

Instructions to **add Kiosk** as below,

1 Turn on the '**TRIS Management**' page and click on '**Kiosk**' tab
2 Click on '**Add Kiosk**'. The '**Add New Kiosk**' box will display for fill in the Kiosk information
** Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*
3 To confirm the transaction, please click on '**SAVE**' button

d) **How to delete TRIS kiosk**

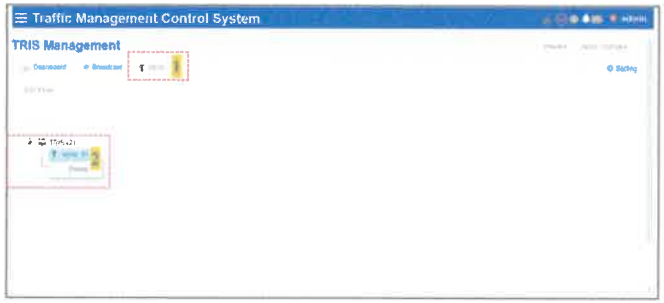

Figure 106: How to delete kiosk

Figure 107: How to delete kiosk

Instructions to **Delete Kiosk** as below,

1 Turn on the '**TRIS Management'** page then click on the 'Kiosk' tab.
2 Select TRIS from the TRIS list and right click the mouse. A '**Delete**' button will appear. Click on that delete button to delete the TRIS Kiosk
3 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

e) **How to search TRIS kiosk**

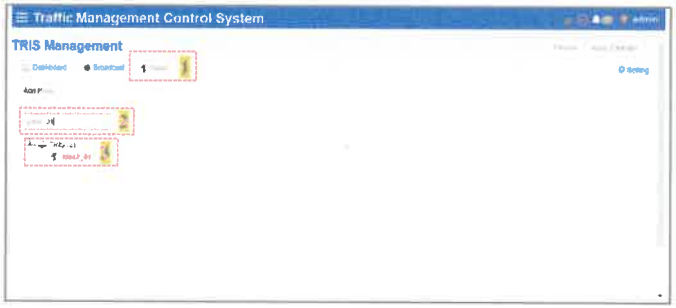

Figure 108: Search TRIS kiosk

Instructions to **Search Kiosk** as below,

1 Turn on the '**TRIS Management'** page and click on '**Kiosk**' tab
2 At the Search Box, key in the TRIS name or keyword to search for Kiosk
3 If the search keyword is matched, the specific TRIS Kiosk will appear in the TRIS list

f) **How to view manage kiosk**

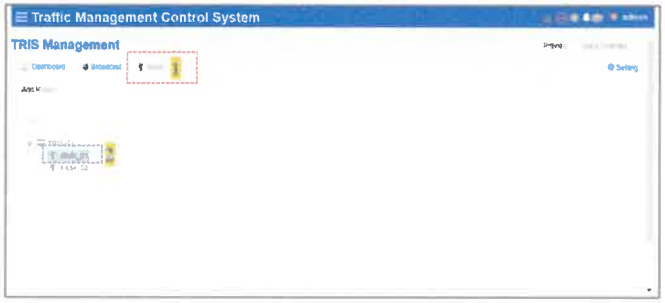

Figure 111: How to view manage kiosk

Instructions to view **Manage Kiosk** as below,

1 Turn on the '**TRIS Management**' page then click on the '**Kiosk**' tab
2 Double click on the TRIS that would like to view the Manage Kiosk box
3 '**Manage Kiosk**' will be displayed as below

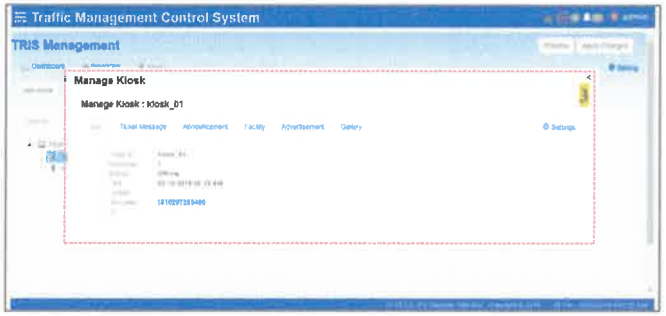

Figure 112: How to view manage kiosk

g) **How to update Kiosk settings**

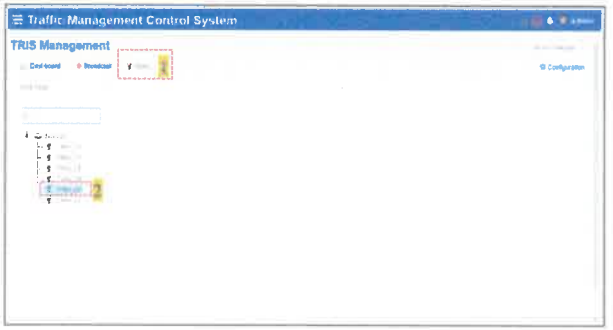

Figure 113: Update kiosk setting

Figure 114: Update Kiosk Settings

Instructions to **update Kiosk settings** as below,

1 Turn on the '**TRIS Management**' page then click on the Kiosk' tab
2 Select the TRIS by double click on the TRIS name
3 '**Manage Kiosk**' box will be displayed and click on '**Settings**' tab
4 Update the Kiosk Settings information accordingly
5 To confirm the transaction, please click on '**Update**' button

h) **How to view Ticker Message in Manage Kiosk**

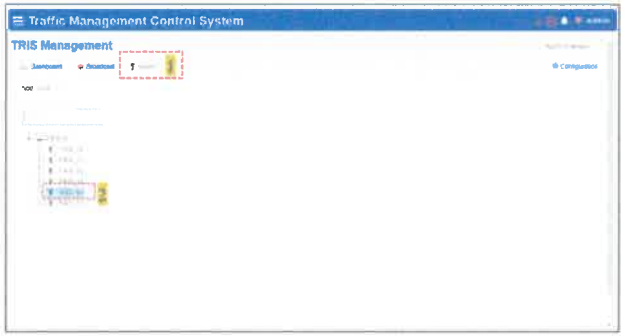

Figure 115: View Ticker Message in Manage Kiosk

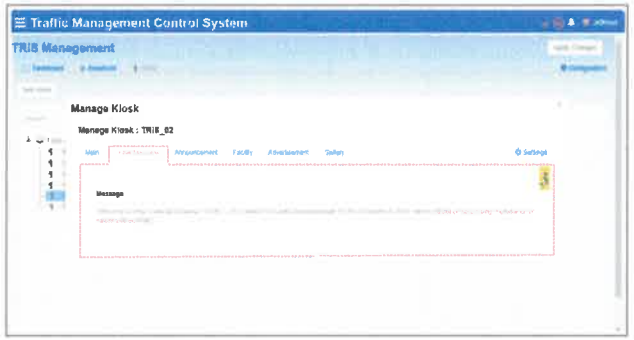

Figure 116: View Ticker Message in Manage Kiosk

Instructions to **view Ticker Message** in Manage Kiosk as below,

1 Turn on the '**TRIS Management'** page then click on the 'Kiosk' tab
2 Select the TRIS and double click on the TRIS name.
3 '**Manage Kiosk**' box will be displayed and click on 'Ticker Message' to view the Ticker Message

i) **How to view Announcement in Manage Kiosk**

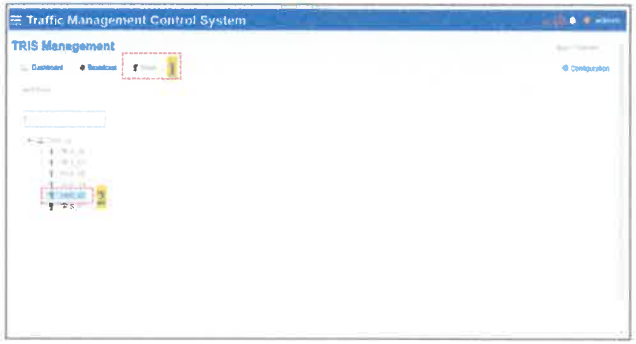

Figure 117: View Announcement in Manage Kiosk

Figure 118: View Announcement in Manage Kiosk

Instructions to **view Announcement** in Manage Kiosk as below,

1 Turn on the '**TRIS Management'** page then click on the 'Kiosk' tab
2 Select the TRIS by double click on the TRIS name
3 '**Manage Kiosk**' box will be displayed and click on '**Announcement**' tab to view the Announcement

j) **How to delete Announcement in Manage Kiosk**

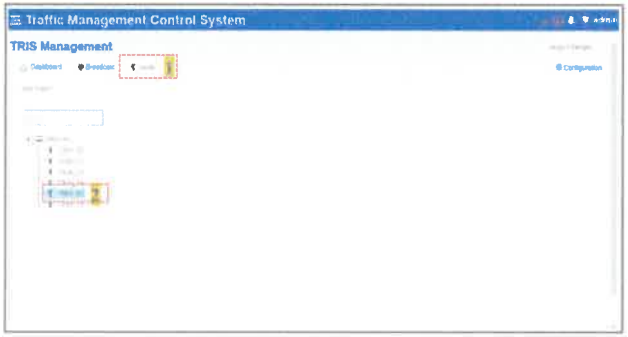

Figure 119: Delete Announcement in Manage Kiosk

Figure 120: Delete Announcement in Manage Kiosk

Figure 121: Delete Announcement in Manage Kiosk

Instructions to **delete Announcement** in Manage Kiosk as below,

1. Turn on the '**TRIS Management**' page then click on the 'Kiosk' tab
2. Select the TRIS by double click on the TRIS name
3. '**Manage Kiosk**' box will be displayed and click on '**Announcement**' tab
4. Click on '**Delete**' icon
5. A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

k) **How to view Facility in Manage Kiosk**

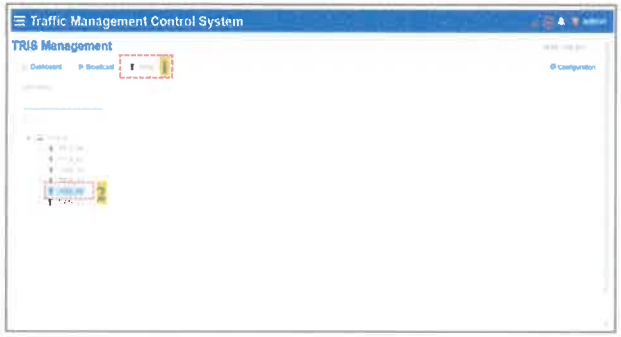

Figure 122: View Facility in Manage Kiosk

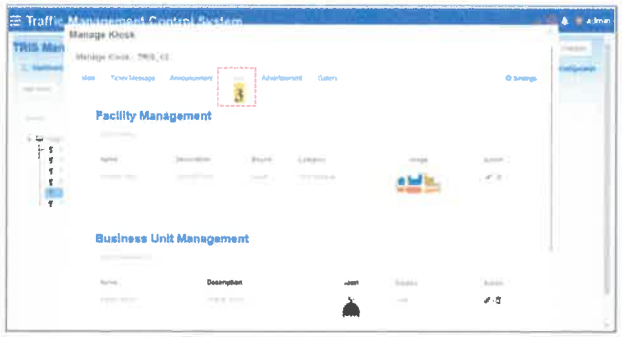

Figure 123: View Facility in Manage Kiosk

Instructions to **view Facility** in Manage Kiosk as below,

1 Turn on the '**TRIS Management**' page then click on the 'Kiosk' tab
2 Double click on the selected TRIS to enable the pop-up of the Manage Kiosk box
3 '**Manage Kiosk**' box will be displayed and click on 'Facility'

l) **How to add Facility in Facility Management of Manage Kiosk**

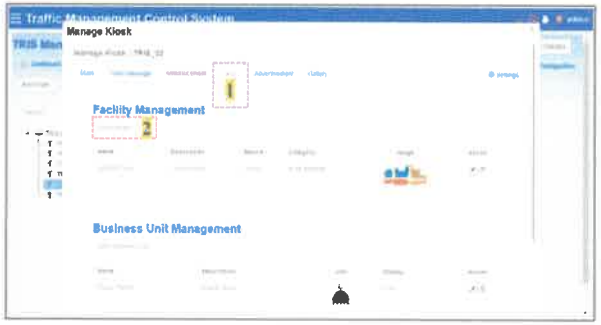

Figure 124: Add Facility in Facility Management of Manage Kiosk

Figure 125: Add Facility in Facility Management of Manage Kiosk

Instructions to **add Facility** in Facility Management of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Facility' tab
2 Click on '**Add Facility**'
3 '**Add Facility**' box will be displayed and fill in information accordingly
*Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*
4 To confirm the transaction, please click on '**SAVE**' button

m) **How to edit Facility in Facility Management of Manage Kiosk**

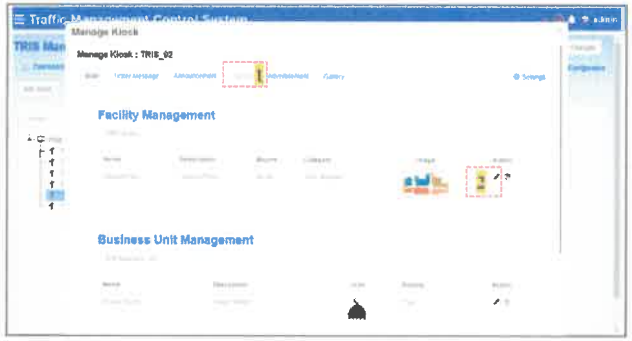

Figure 126: Edit Facility in Facility Management of Manage Kiosk

Figure 127: Edit Facility in Facility Management of Manage Kiosk

Instructions to **edit Facility** in Facility Management of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Facility' tab
2 Click on '**Edit**' icon .
3 '**Edit Facility**' box will be displayed and fill in information accordingly
4 To confirm the transaction, please click on '**SAVE**' button

n) **How to delete Facility in Facility Management of Manage Kiosk**

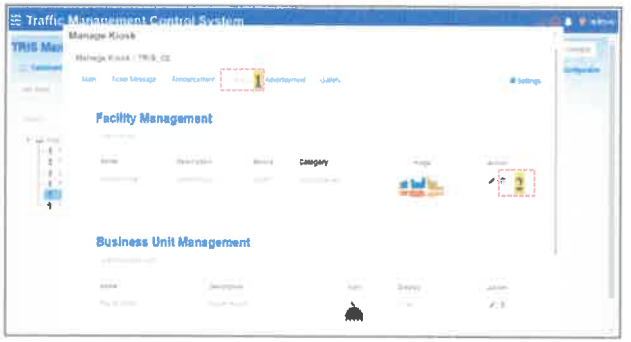

Figure 128: Delete Facility in Facility Management of Manage Kiosk

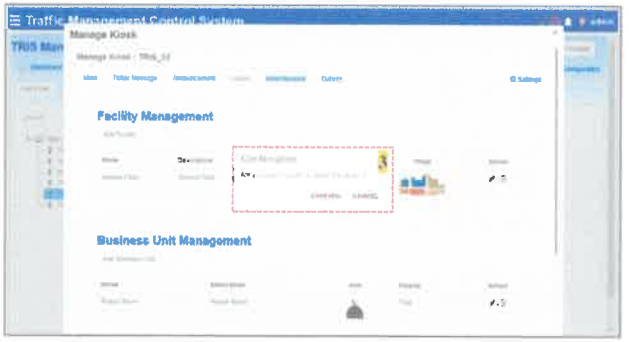

Figure 129: Delete Facility in Facility Management of Manage Kiosk

Instructions to **delete Facility** in Facility Management of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Facility' tab
2 Click on '**Delete**' icon
3 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

o) **How to add Business Unit in Facility Management of Manage Kiosk**

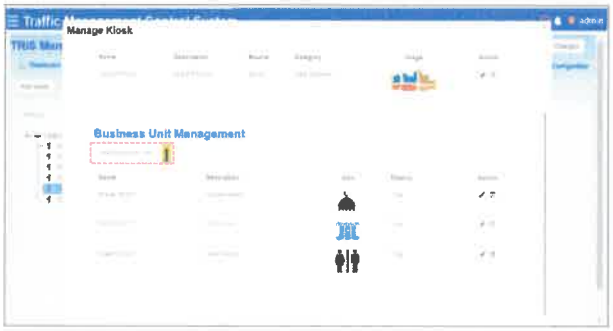

Figure 130: Add Business Unit in Facility Management of Manage Kiosk

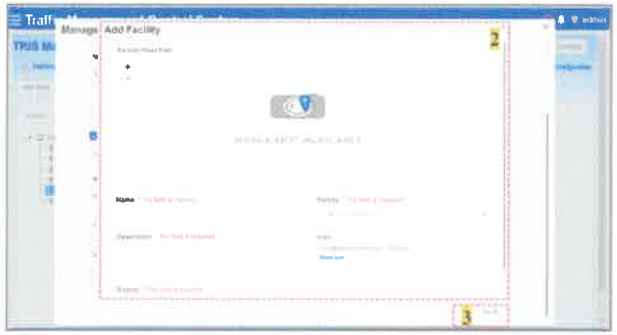

Figure 131: Add Business Unit in Facility Management of Manage Kiosk

Instructions to **add Business Unit** in Facility Management of Manage Kiosk as below,

1 After turn on the '**Manage Kiosk'** box of a particular TRIS device and click on the 'Facility' tab, click on '**Add Business Unit'**

2 '**Add Business Unit**' box will be displayed and fill in information accordingly

** Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*

3 To confirm the transaction, please click on '**SAVE**' button

p) How to edit Business Unit in Facility Management of Manage Kiosk

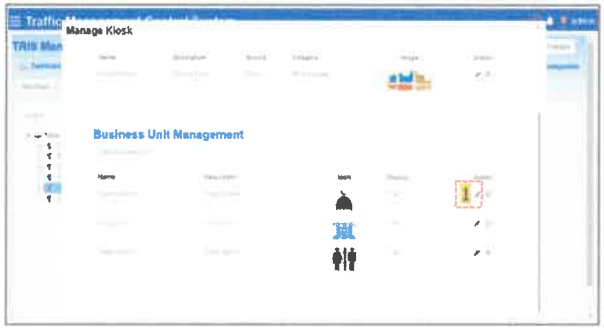

Figure 132: Edit Business Unit in Facility Management of Manage Kiosk

Figure 133: Edit Business Unit in Facility Management of Manage Kiosk

Instructions to **edit Business Unit** in Facility Management of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Facility' tab
2 At 'Business Unit Management' section, click on '**Edit**' icon .
3 '**Edit Business Unit**' box will be displayed and fill in information accordingly
4 To confirm the transaction, please click on '**SAVE**' button

q) How to delete Business Unit in Facility Management of Manage Kiosk

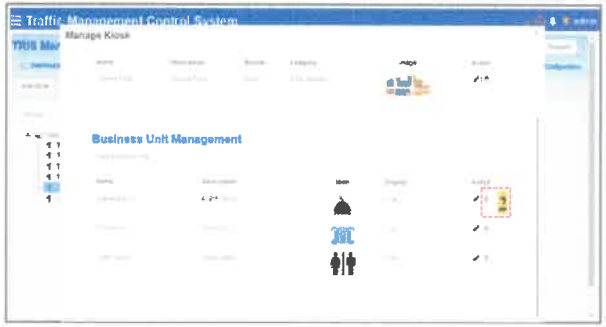

Figure 134: Delete Business Unit in Facility Management of Manage Kiosk

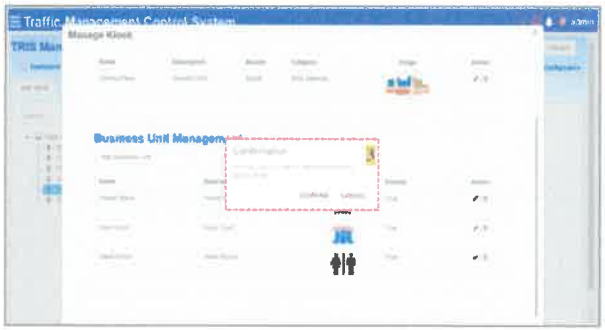

Figure 135: Delete Business Unit in Facility Management of Manage Kiosk

Instructions to **delete Business Unit** in Facility Management of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Facility' tab
2 At 'Business Unit Management' section, click on '**Delete**' icon
3 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

r) **How to view Advertisement in Manage Kiosk**

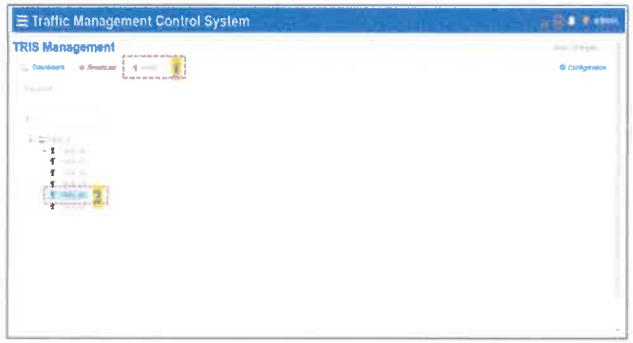

Figure 136: View Advertisement in Manage Kiosk

Figure 137: View Advertisement in Manage Kiosk

Instructions to **view Advertisement** in Manage Kiosk as below,

1 Turn on the '**TRIS Management**' page then click on the 'Kiosk' tab
2 Double click on the selected TRIS to enable the pop-up of the Manage Kiosk box
3 '**Manage Kiosk**' box will be displayed and click on 'Advertisement' tab

s) **How to delete Advertisement in Manage Kiosk**

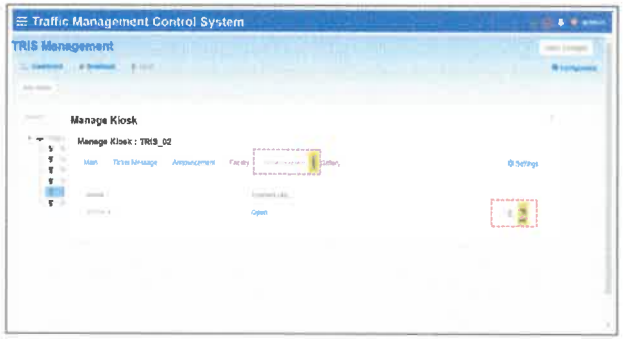

Figure 138: Delete Advertisement of Manage Kiosk

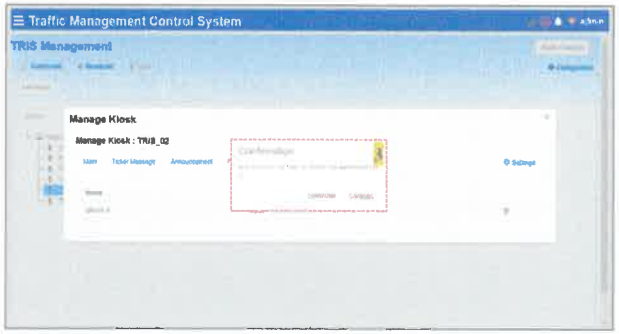

Figure 139: Delete Advertisement of Manage Kiosk

Instructions to **delete Advertisement** of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Advertisement' tab
2 Click on '**Delete**' icon
3 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

t) **How to view Gallery in Manage Kiosk**

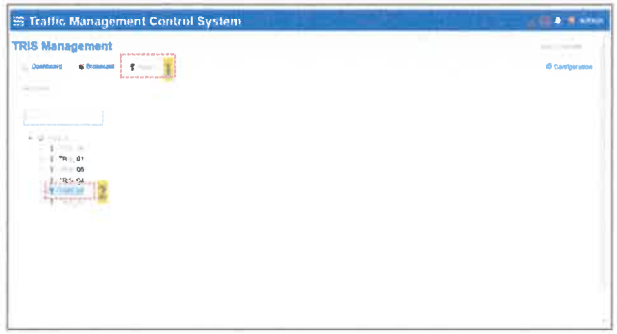

Figure 140: View Gallery in Manage Kiosk

Figure 141: View Gallery in Manage Kiosk

Instructions to **view Gallery** in Manage Kiosk as below.

1 Turn on the '**TRIS Management**' page then click on the '**Kiosk**' tab
2 Double click on the selected TRIS to enable the pop-up of the Manage Kiosk box
3 '**Manage Kiosk**' box will be displayed and click on '**Gallery**' tab

u) **How to delete Gallery in Manage Kiosk**

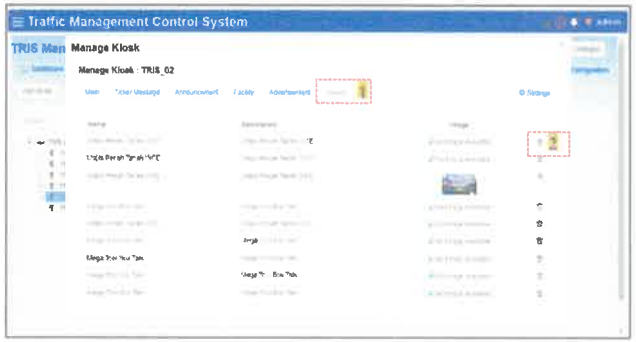

Figure 142: Delete Gallery of Manage Kiosk

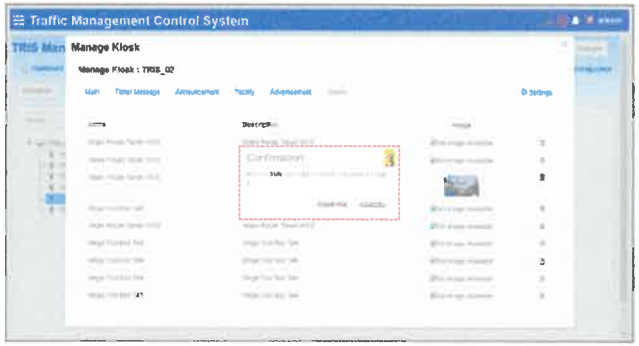

Figure 143: Delete Gallery of Manage Kiosk

Instructions to **delete Gallery** of Manage Kiosk as below,

1 Turn on the '**Manage Kiosk**' box of a particular TRIS device then click on the 'Gallery' tab
2 Click on '**Delete**' icon
3 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

6.5 Configuration Settings

The TRIS Management Configuration tab is used to manage the Category of Announcement, Facility and the Ticker Configuration. The user is able to add, edit and delete the Announcement and Facility Category as well as update the Ticker Configuration.

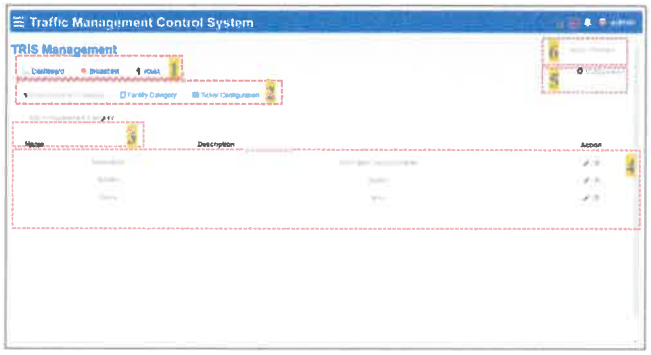

Figure 144: TRIS Management – Configuration Settings Tab

List of tab & icon description for **TRIS Management – Configuration Settings Tab** as below:

1 Function tab: Dashboard, Management, Broadcast
2 Function tab: Announcement Category, Facility Category, Ticker Configuration
3 'Add Announcement/Facility Category' button
4 List of Name & Description
5 Configuration Settings tab
6 'Apply Changes' to sync all kiosk (TRIS Devices) with updated information

a) How to add Announcement Category

Figure 145: Add Announcement Category

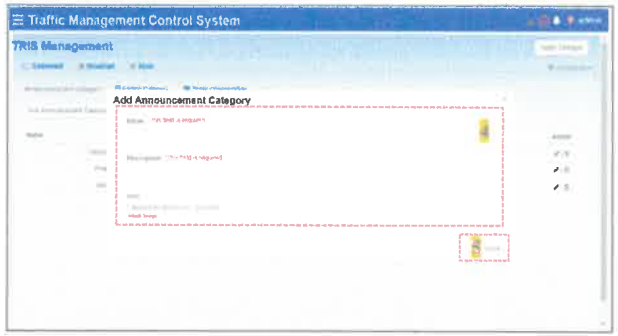

Figure 146: Add Announcement Category

Instructions to add **Announcement Category** as below.

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.

2 Click on '**Announcement Category**'

3 Click on '**Add Announcement Category**'

4 The **Add Announcement Category** box will be display and fill in the content accordingly

*# Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*

5 To confirm the transaction, please click on '**SAVE**' button

6 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

b) How to edit Announcement category

Figure 147: Edit Announcement Category

Figure 148: Compose HIS content for Broadcast

Instructions to edit **Announcement Category** as below,

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.
2 Click on '**Announcement Category**'
3 Click on '**Edit**' icon .
4 The **Edit Announcement Category** box will be display and fill in the content accordingly
5 To confirm the transaction, please click on '**SAVE**' button
6 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

c) How to delete Announcement Category

Figure 149: Delete Announcement Category

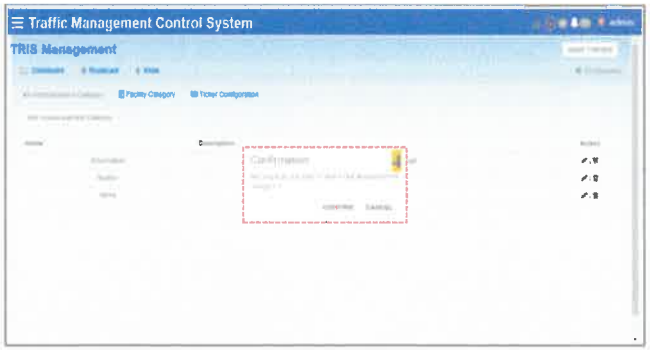

Figure 150: Delete Announcement Category

Instructions to delete **Announcement Category** as below,

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.
2 Click on '**Announcement Category**'
3 Click on '**Delete**' icon
4 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

d) How to add Facility Category

Figure 151: Add Facility Category

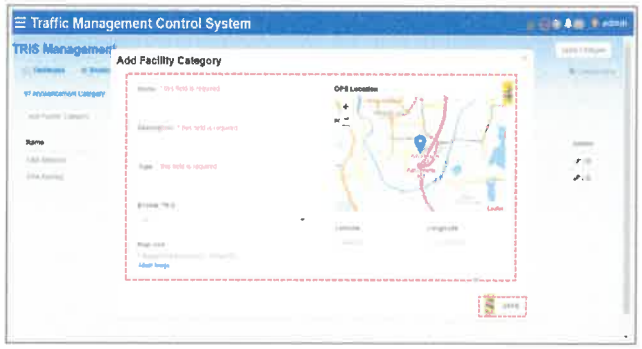

Figure 152: Add Facility Category

Instructions to add **Facility Category** as below.

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.

2 Click on '**Facility Category**'

3 Click on '**Add Facility Category**'

4 The **Add Facility Category** box will be display and fill in the content accordingly

*i Column with *, it is a compulsory field to fill in the detail, cannot leave it blank*

5 To confirm the transaction, please click on '**SAVE**' button

6 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

c) **How to edit Facility Category**

Figure 153: Edit Facility Category

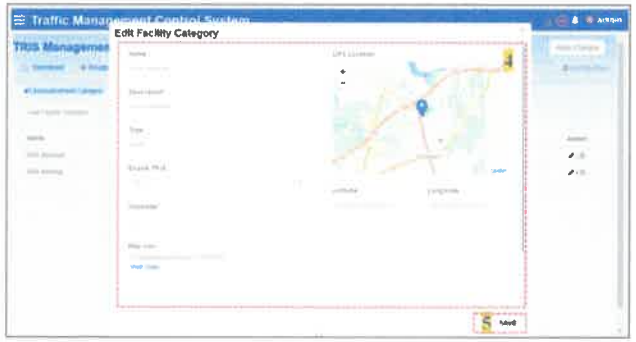

Figure 154: Edit Facility Category

Instructions to edit **Facility Category** as below.

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.
2 Click on '**Facility Category**'
3 Click on '**Edit**' icon
4 The **Edit Facility Category** box will be display and fill in the content accordingly
5 To confirm the transaction, please click on '**SAVE**' button

f) **How to delete Facility Category**

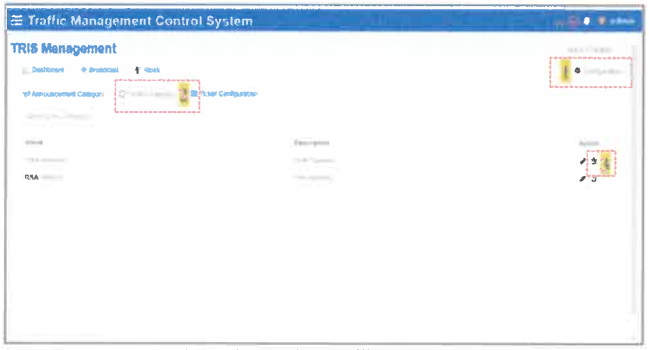

Figure 155: Delete Facility Category

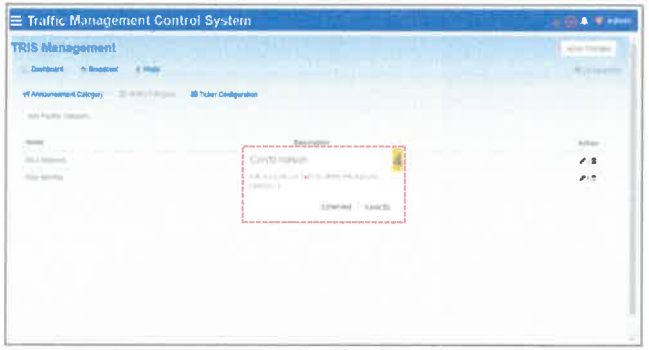

Figure 156: Delete Facility Category

Instructions to delete **Facility Category** as below,

1. Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.
2. Click on '**Facility Category**'
3. Click on '**Delete**' icon 🗑
4. A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

g) **How to Update the Ticker Configuration**

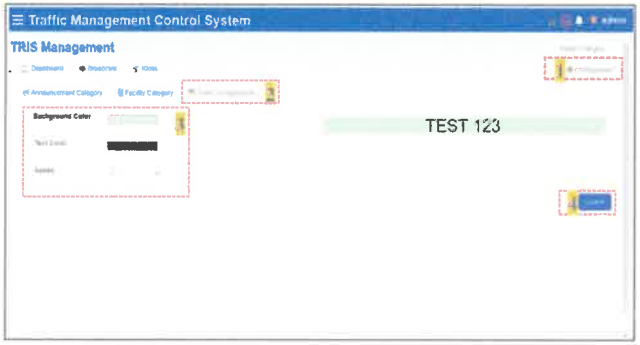

Figure 157: Update the Ticker Configuration

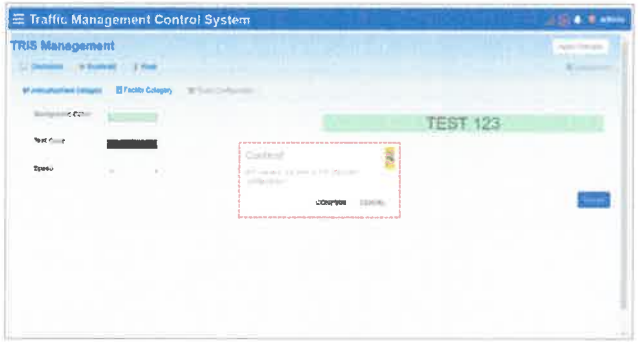

Figure 158: Update the Ticker Configuration

Instructions to update **Ticker Configuration** as below,

1 Turn on the '**TRIS Management**' page then click on the '**Configuration**' tab.

2 Click on '**Ticker Configuration**'

3 Edit the **Background Colour, Text Colour & Speed** of the Ticker Configuration

4 To confirm the transaction, please click on '**Update**' button

5 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

h) **Apply Changes to Sync all TRIS Kiosk**

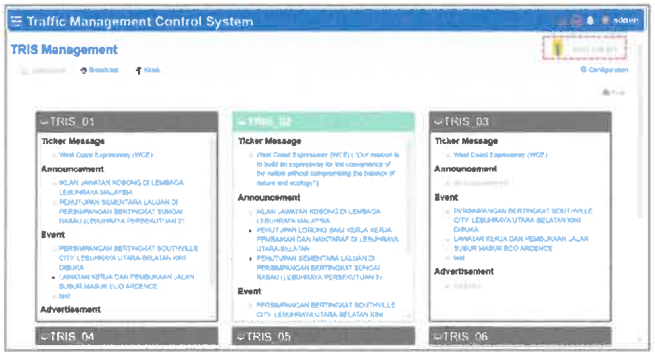

Figure 159: TRIS Management – Apply Changes

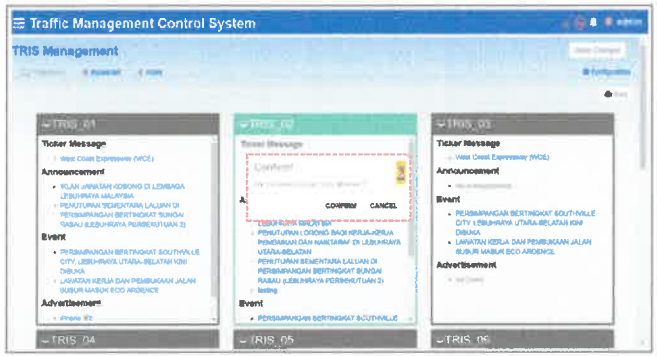

Figure 160: TRIS Management – Apply Changes

Instructions to **Apply Changes** to sync all TRIS Kiosk as below,

1 Turn on the '**TRIS Management**' page then click on the **Apply Changes** button

2 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

6.6 TRIS Log

TRIS Log is allows you to keep tracks and view the audit trails report of TRIS device activity. Mainly the device status (i.e. Device Normal, Device Failed) and network status.

Figure 161: TRIS Log Overview

List of tab description for **TRIS Log** as below,

1. Function tab consist of Expressway's Section selection, Reset Filter, Export to Excel file
2. Log header display with keyword search box
3. Table of log of TRIS Device activities
4. Page number

a) How to generate TRIS Log

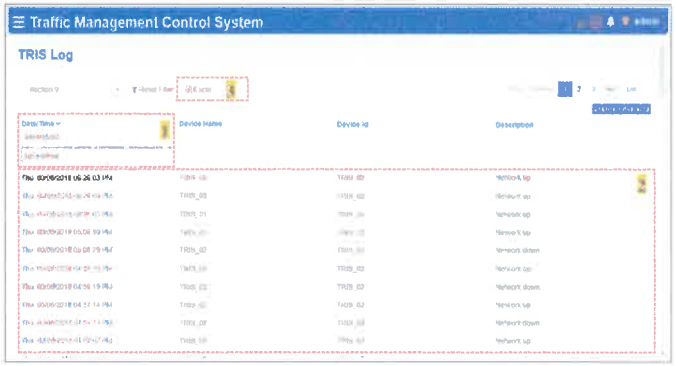

Figure 162: Generate TRIS Log

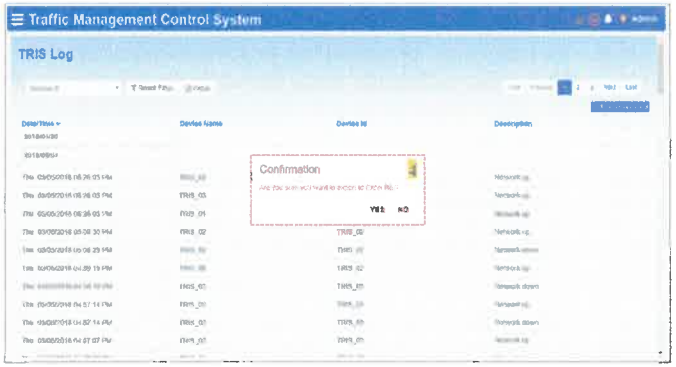

Figure 163: Generate TRIS Log

Instructions to generate **TRIS Log** as below.

1 Turn on the '**TRIS Log**' page and select **Date / Time**
2 Result will display if found any similar data to match with search date, or any keyword in search box
3 Click on '**Excel**' to print out the result in excel format
4 A notification box will display to reconfirm the transaction, select '**YES**' to confirm, '**NO**' to cancel and terminate the transaction

6.7 TRIS Statistic Report

This function is to display the log report of device condition in graphical representation.

a) How to generate TRIS Statistic report

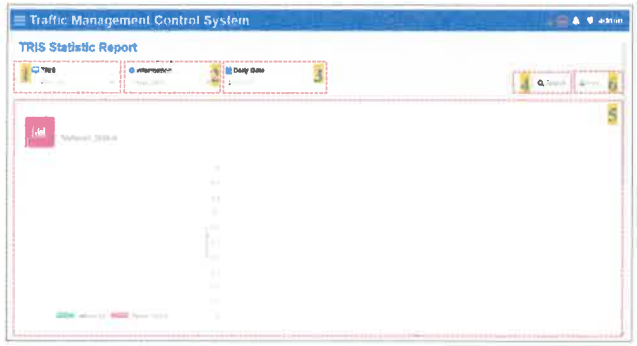

Figure 164: How to generate TRIS Statistic Report

Instructions to Generate **TRIS Statistic Report** as below:

1 List of TRIS devices
2 Information in time interval basis
3 Turn on the '**TRIS Statistic Report**' page and choose a TRIS from the '**TRIS**' list.
4 On the '**Information**' to choose the type of time frame of data to be generated.Choose a specific date/month to be generated.
6 Press the '**Search**' to generate the data accordingly.
7 The TRIS Statistics will be displayed.
8 Press the '**Print**' to print out the TRIS statistic report.

b) How to retrieve TRIS Statistic Report for Daily Data

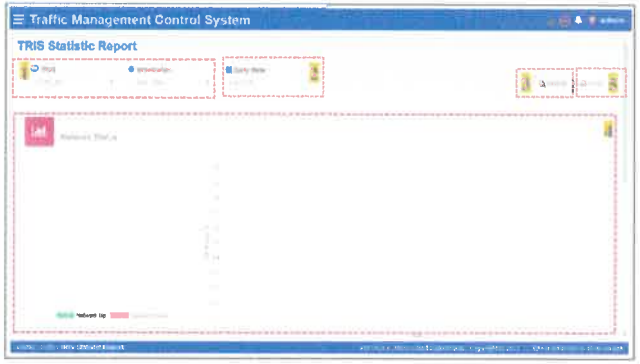

Figure 165: HIS Statistic Report – Daily Data

Instructions to retrieve & view TRIS Statistic Report for Daily Data.

1 Turn on the '**TRIS Statistic Report**' page, select the specific TRIS Device and select the information column to '**Daily Data**'
2 Choose the specific date in the '**Daily Date**' column
3 Press the '**Search**' to retrieve the specified data.
4 The '**Daily TRIS Statistic Report**' will display once data retrieved
5 You may able to print out the current display information by clicking '**Print**'

c) **How to retrieve TRIS Statistic Report for Weekly Data**

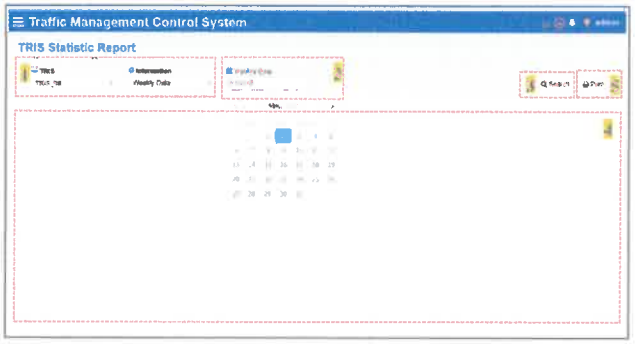

Figure 166: TRIS Statistic Report – Weekly Data

Instructions to retrieve & view TRIS Statistic Report for Weekly Data,

1 Turn on the '**TRIS Statistic Report**' page, select the specific TRIS Device and select the information column to '**Weekly Data**'
2 Choose the specific date in the '**Weekly Date**' column
3 Press the '**Search**' to retrieve the specified data.
4 The '**Weekly TRIS Statistic Report**' will display once data retrieved
5 You may able to print out the current display information by clicking '**Print**'

d) **How to retrieve TRIS Statistic Report for Monthly Data**

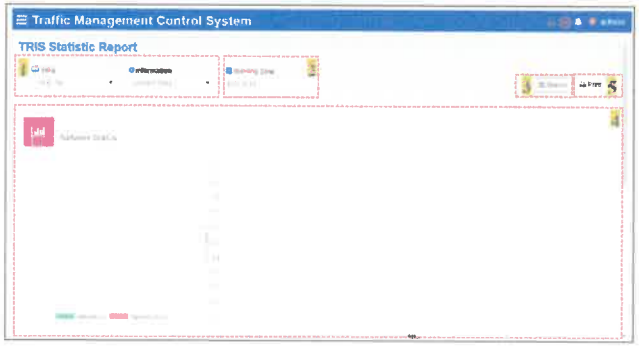

Figure 167: TRIS Statistic Report – Monthly Data

Instructions to retrieve & view TRIS Statistic Report for Monthy Data,

1 Turn on the '**TRIS Statistic Report**' page, select the specific TRIS Device and select the information column to '**Monthly Data**'
2 Choose the specific month in the '**Monthly Date**' column
3 Press the '**Search**' to retrieve the specified data.
4 The '**Monthly TIS Statistic Report**' will display once data retrieved
5 You may able to print out the current display information by clicking '**Print**'

e) How to retrieve TRIS Statistic Report for Custom Data

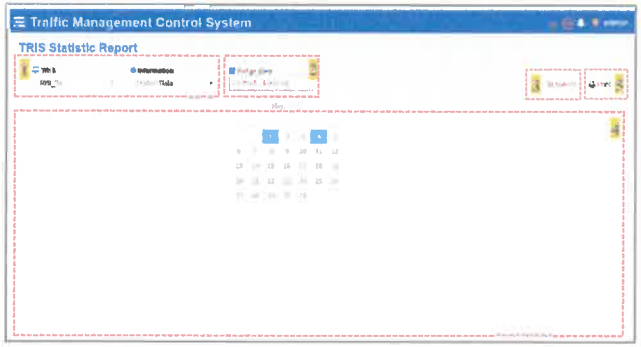

Figure 168: TRIS Statistic Report – Custom Data

Instructions to retrieve & view TRIS Statistic Report for Custom Data,

1. Turn on the '**TRIS Statistic Report**' page, select the specific TRIS Device and select the information column to '**Custom Data**'
2. Choose the specific data range in the '**Range Date**' column
3. Press the '**Search**' to retrieve the specified data.
4. The '**Custom TRIS Statistic Report**' will display once data retrieved
5. You may able to print out the current display information by clicking '**Print**'

Figure 169: Add Ticker Message

Figure 170: Add ticker message

7.0 TOLL

Toll module provides the information on the location of the toll plaza with the concessionaire on the toll fare. This module is allows you to view and manage Toll Plaza profile and toll fare that based on the distance between two Toll Plazas as well as also based on the vehicle classification.

Figure 171: Navigation to the Toll module from WCE TMCS home page

Instructions to navigate from the home page to the Toll module as below:

1 Click the sub-applications menu tab
2 Click on the Toll application that would like to open

7.1 Toll Management Overview

Toll Management allows you to manage the registration of the toll plaza. Below is the overview page of '**Toll Management**'

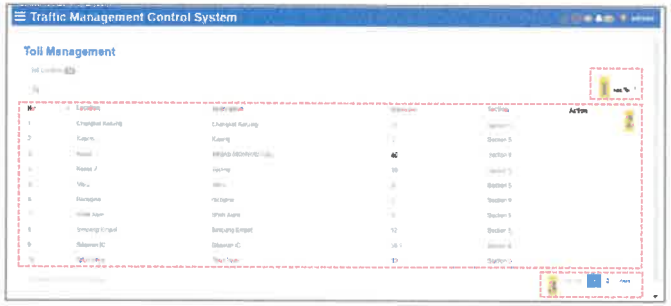

Figure 172: Toll Management Overview

List of tab description for Toll Management as below:

1 Function tab: Add Toll
2 List of registered Toll Plazas & information
3 Page number

a) **How to add new Toll information**

Figure 173: How to add new Toll information

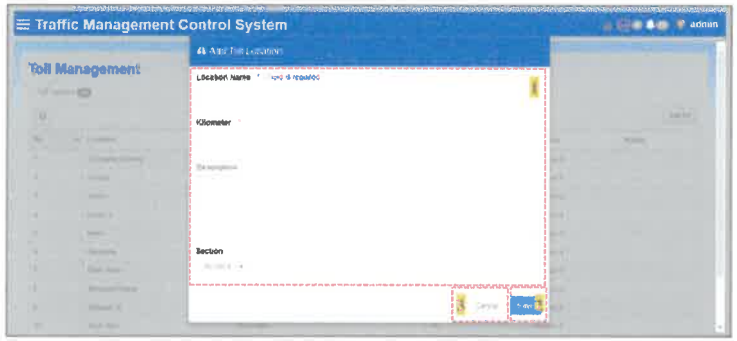

Figure 174: How to add new Toll Plaza information

Instructions to create and add new toll as below,

1 Turn on the '**Toll Management**' page and click on '**Add Toll**'
*'**Add Toll**' page will display at next page & fill in the Toll information*
*Column with *****, it is a compulsory field to fill in the detail, cannot leave it blank*
2 To confirm the transaction, please click on '**Save**' button
3 To cancel & terminate the transaction, please click on '**Back**' button

b) **How to edit & modify Toll information**

Figure 175: How to edit & modify Toll information

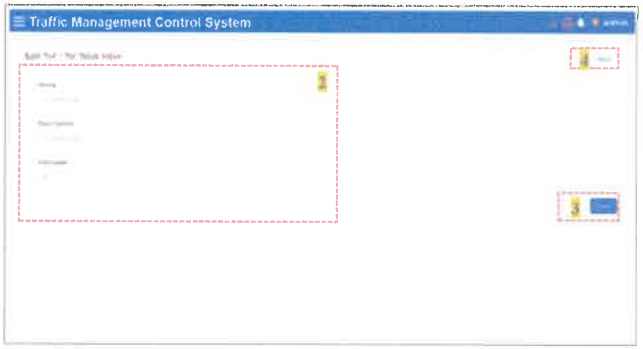

Figure 176: How to edit & modify Toll information

Instructions to **edit & modify Toll information** as below,

1 Turn on the 'Toll Management' page and click on '**Edit Toll**'

2 '**Edit Toll**' page will display at next page, you may able to modify and edit the Toll information

3 To confirm the transaction, please click on '**Save**' button

4 To cancel & terminate the transaction, please click on 'Back' button

c) How to delete Toll information

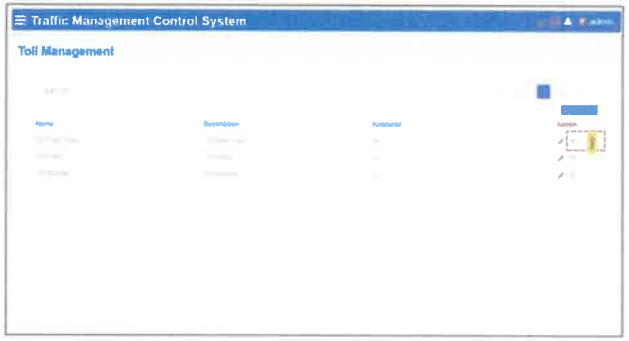

Figure 177: How to delete Toll information

Figure 178: How to delete Toll information

Instructions to delete Toll as below,

1 Turn on the '**Toll Management**' page, select the Toll Plaza and click on '**Delete**' icon

2 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

7.2 Toll Fare Management Overview

Toll Fare Management allows you to view and manage Toll Fare based on the distance between two Toll Plazas and based on the vehicle classification. Below is the overview page of '**Toll Fare Management**'.

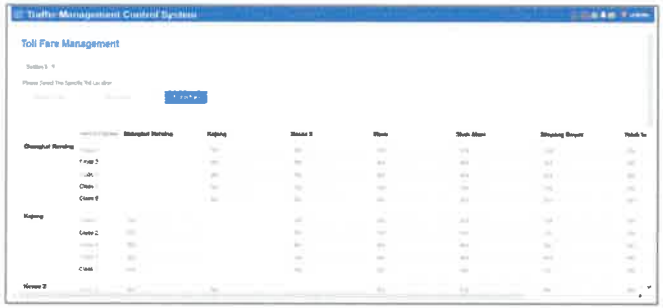

Figure 179: Toll Fare Management Overview

List of tab description for Toll Fare Management as below:

1 Function tab: Add Toll Fare
2 List of Toll Fare based on distance between two Toll Plazas and vehicle classification & information
3 Page number

a) **How to add new Toll Fare information**

Figure 180: How to add new Toll Fare information

Figure 181: How to add new Toll Fare information

Instructions to create and add new toll as below,

1 Turn on the '**Toll Fare Management**' page and click on '**Add Toll Fare**'
*'**Add Toll Fare**' page will display at next page & fill in the Toll Fare information*
*# Column with *****, it is a compulsory field to fill in the detail, cannot leave it blank*
2 To confirm the transaction, please click on '**Save**' button
3 To cancel & terminate the transaction, please click on '**Back**' button

b) How to edit & modify Toll Fare information

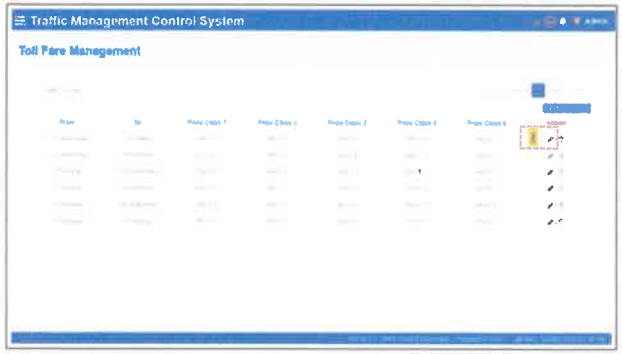

Figure 182: How to edit & modify Toll Fare information

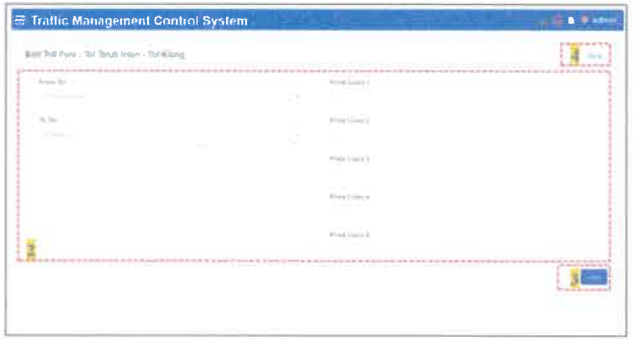

Figure 183: How to edit & modify Toll Fare information

Instructions to **edit & modify Toll Fare information** as below,

1 Turn on the '**Toll Fare Management**' page and click on '**Edit Toll Fare**' ✎

2 '**Edit Toll Fare**' page will display at next page, you may able to modify and edit the Toll information

3 To confirm the transaction, please click on '**Save**' button

4 To cancel & terminate the transaction, please click on 'Back' button

c) How to delete Toll Fare information

Figure 184: How to delete Toll Fare information

Figure 185: How to delete Toll Fare information

Instructions to delete Toll as below,

1 Turn on the '**Toll Fare Management**' page, select the Toll Plaza and click on '**Delete**' icon

2 A notification box will display to reconfirm the transaction, select '**CONFIRM**' to confirm, '**CANCEL**' to cancel and terminate the transaction

This page is allows you to manage the VIDS device's information

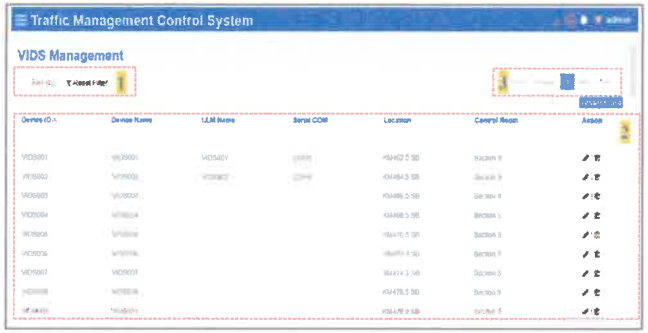

Figure 186: VIDS Management - Overview

8.0 VIDEO WALL

Video Wall Module allows the user on designing the template and layout to be displayed on the Video Wall Display.

Figure 187: Video Wall overview

8.1 Video Wall Template Editor

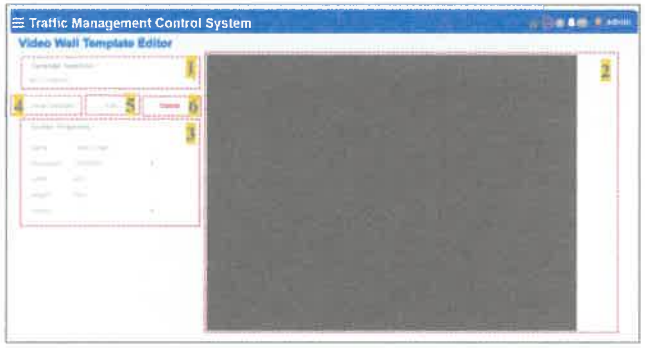

Figure 188: Video Wall Template Editor Overview

Lists of tab & icon description for Video Wall Template Editor as below,

1 Template Selection : To select on the saved Video Wall Template as to edit/delete

2 Video Wall Template Display : Displays the Video Wall in accordance to the select the screen properties

3 Screen Properties: To provide information on the Video Wall Layout. The description are as below.

Screen Properties Tab		Description
Name	:	To provide the naming of the Video Wall Template
Resolution	:	Information on the pixel on each dimension that can be display on the Video Wall.
Width	:	Information on the width of the Video Wall Display
Height	:	Information on the height of the Video Wall Display
Divider	:	To provide option on the display size panel of Video Wall *(only for navigating the video wall template design)*

4 Save Template: To save a new Video Wall Template

5 Edit: To edit/update on the saved Video Wall Template

6 Delete: To delete the selected Video Wall Template

a) **How to add Video Wall Template**

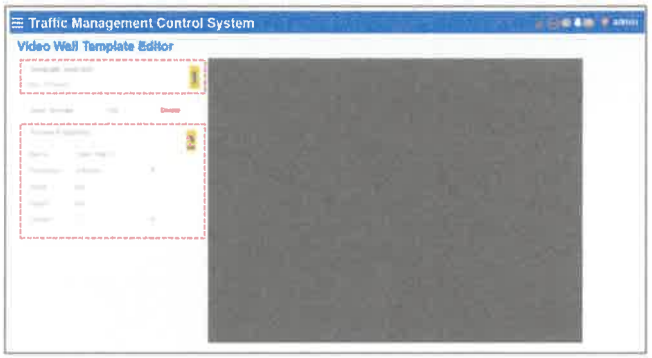

Figure 189: How to add Video Wall Template

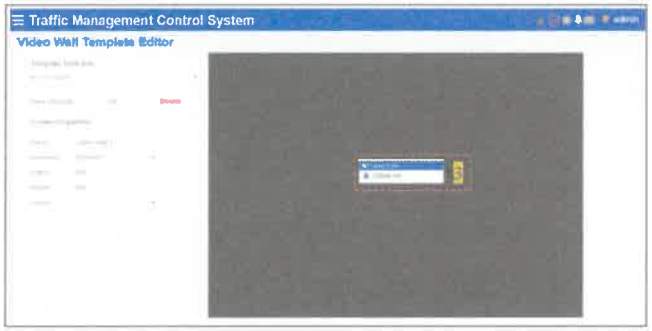

Figure 190: How to add Video Wall Template

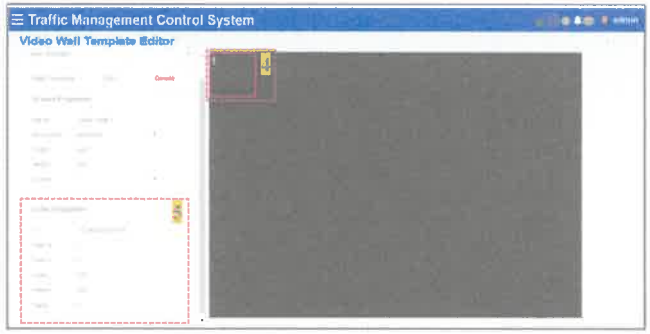

Figure 191: How to add Video Wall Template

Instructions to **add Video Wall Template** as below,

1 In Template Selection, select 'New Template' from the drop down list
2 In Screen Properties, provide the required information
3 To add video cube, right click on the Video Wall display panel and click on 'Add Cube'
4 Click on the selected video cube on Video Wall display panel
5 Adjust the video cube accordingly in the Cube Properties. The description are as below,

Cube Properties Tab		**Description**
ID	:	Information of the video cube ID
Pixel X	:	The pixel point on the Video Wall in the horizontal axis.
Pixel Y	:	The pixel point on the Video Wall in the vertical axis.
Width	:	The sizing of video cube in horizontal axis.
Height	:	The sizing of video cube in vertical axis.
Panel	:	To number the video cube (if more than one video cube on the Video Wall)

b) How to lock Video Cube on Video Wall Template

It is to secure the position of the video cube on the video wall template.

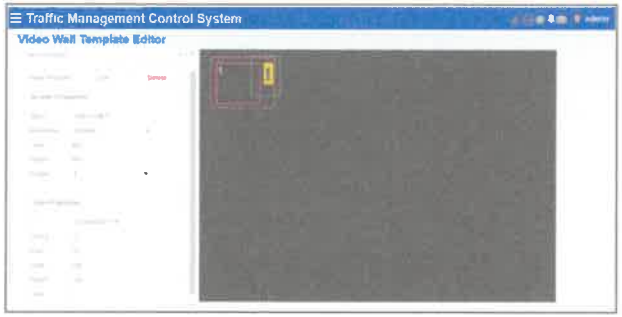

Figure 192: How to lock Video Cube on Video Wall Template

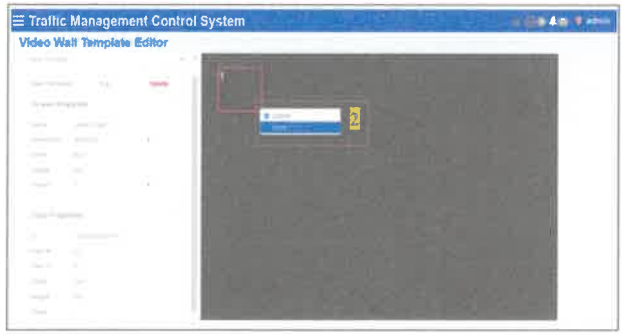

Figure 193: How to lock Video Cube on Video Wall Template

Instructions to **lock Video Cube on Video Wall Template** as below,

1 Click on the selected video cube to secure the position
2 Right Click on the Video Wall display panel. Click on 'Lock' to secure the video cube position

c) How to unlock Video Cube on Video Wall Template

It is to disengage the position of the video cube on the video wall template.

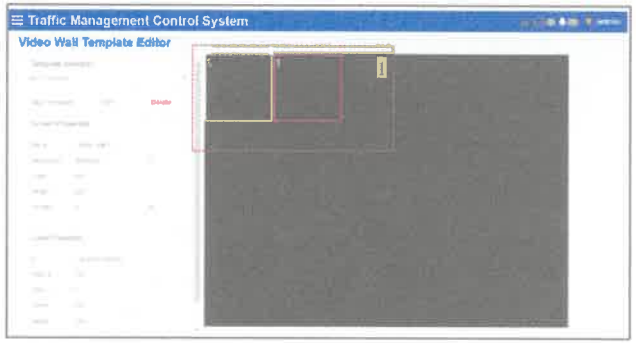

Figure 194: How to Unlock Video Cube on Video Wall Template

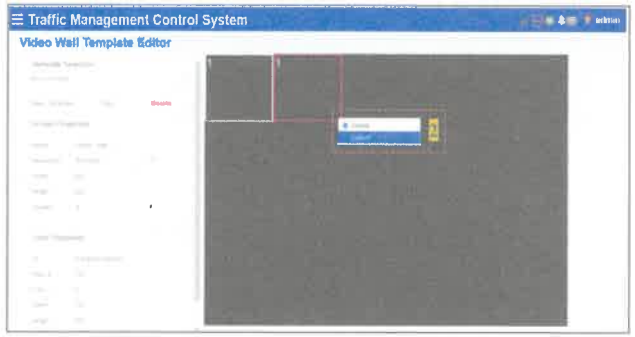

Figure 195: How to Unlock Video Cube on Video Wall Template

Instructions to **unlock Video Cube on Video Wall Template** as below,

1 Click on the selected video cube to disengage the position.
2 Right Click on the Video Wall display panel. Click on 'Unlock' to secure the video cube position.

d) How to delete Video Cube on Video Wall Template

It is to delete the respective video cube on the video wall template.

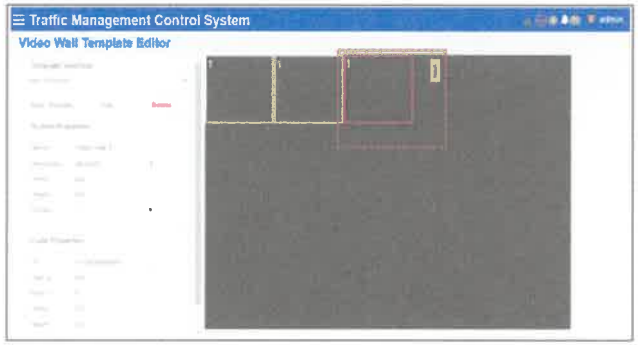

Figure 196: How to delete Video Cube on Video Wall Template

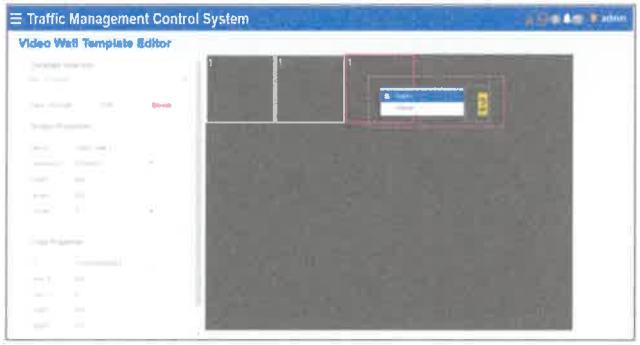

Figure 197: How to delete Video Cube on Video Wall Template

Instructions to **delete Video Cube on Video Wall Template** as below,

1 Click on the selected video cube to delete
2 Right Click on the Video Wall display panel. Click on 'Delete' to delete the selected video cube

e) How to delete all Video Cube on Video Wall Template

This is to facilitate the user to remove the entire video cube at once.

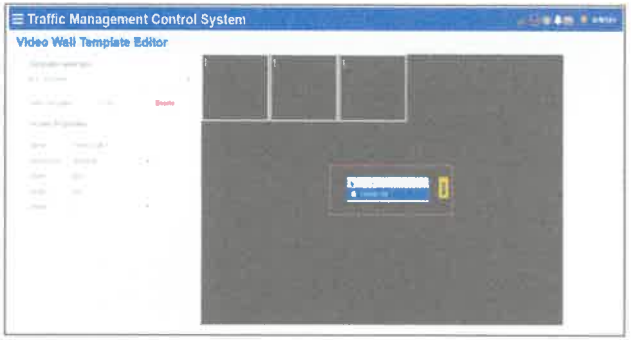

Figure 198: How to delete all Video Cube on Video Wall Template

Instructions to **delete all Video Cube on Video Wall Template** as below,

1 Right Click on the Video Wall display panel. Click on '**Delete All**' to delete the entire video cube

f) How to edit Saved Video Wall Template

It is to edit/update the saved Video Wall Template.

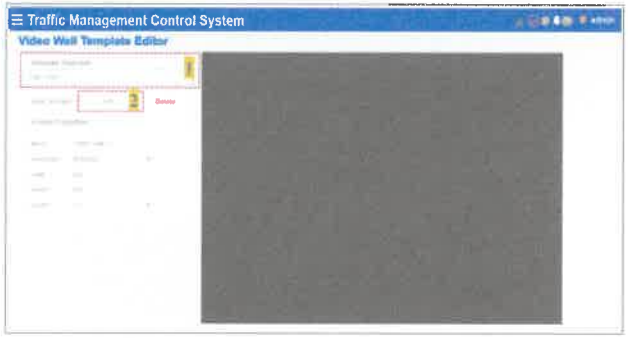

Figure 199: How to Edit Saved Video Wall Template

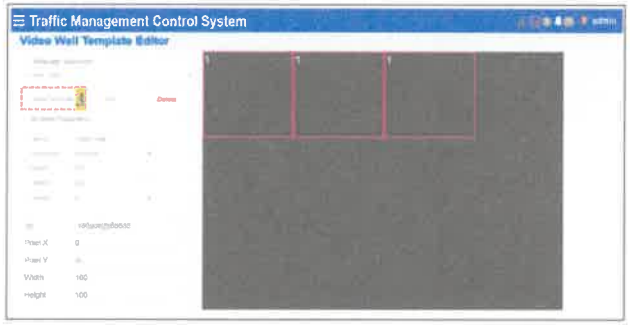

Figure 200: How to Edit Saved Video Wall Template

Instructions to **edit saved Video Wall Template** as below,

1 Select on the desired Saved Video Wall Template from the Template Selection drop down list
2 Click 'Edit' to edit/update
3 Once changes have been made, click 'Save Template' to save the Video Wall Template

g) How to delete Saved Video Wall Template

This enables the user to remove the saved Video Wall Template.

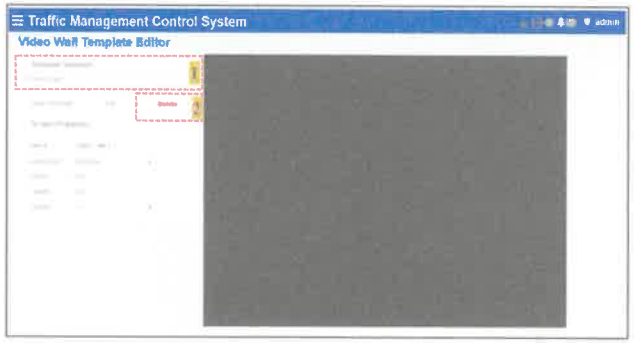

Figure 201: How to Delete Saved Video Wall Template

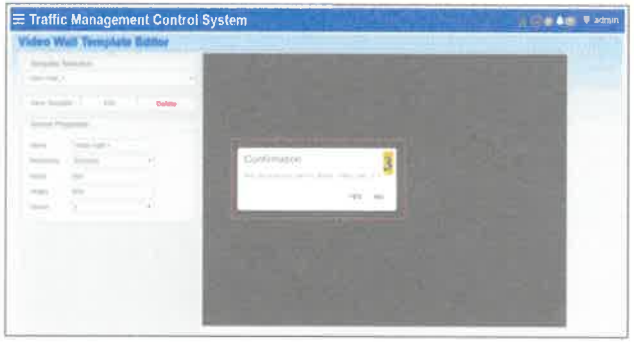

Figure 202: How to Delete Saved Video Wall Template

Instructions to **delete saved Video Wall Template** as below,

1 Select on the desired Saved Video Wall Template from the Template Selection drop down list
2 Click 'Delete' to remove the saved Video Wall Template
3 Click 'Yes' in the confirmation window

8.2 Video Wall Layout Editor

This module is to enable the user to provide the layout of video wall, which shall be displayed on Video Wall.

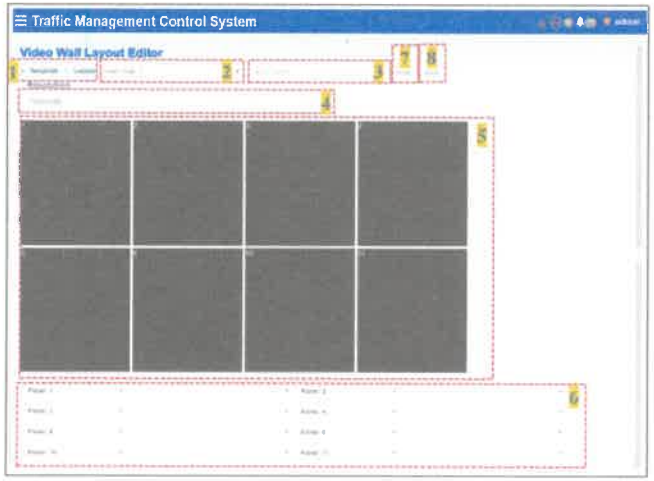

Figure 203: Video Wall Layout Overview

List of tab & icon description for **Video Wall Layout Editor** as below,

1 Bullet Option : Option to select,

a) Template	:	To create video wall layout by assigning the videos to be displayed on selected video panel (Video Cube)
b) Layout	:	With an existing assigned videos to display on respective video panel (Video Cube)

2 Drop down List Tab: Provides the listing for all saved Templates & Layouts

3 Layout Name Tab: To create new Video Wall Layout of a selected Video Wall Template with assigned videos.

4 Video Wall Resolution: Provides the information of the video wall resolution in regard to selected Video Wall Template.

5 Display of Video Wall: Displays the Video Wall Template Video Panel Information: Provides drop down list on selecting the videos to be displayed in respective video panel (Video Cube)

6 Post: To post the Video Wall Layout on the Video Wall

7 Save: To save the layout that has been created on the selected Video Wall Template

a) How to Add Video Wall Layout

This is to enable the user to add the video wall layout.

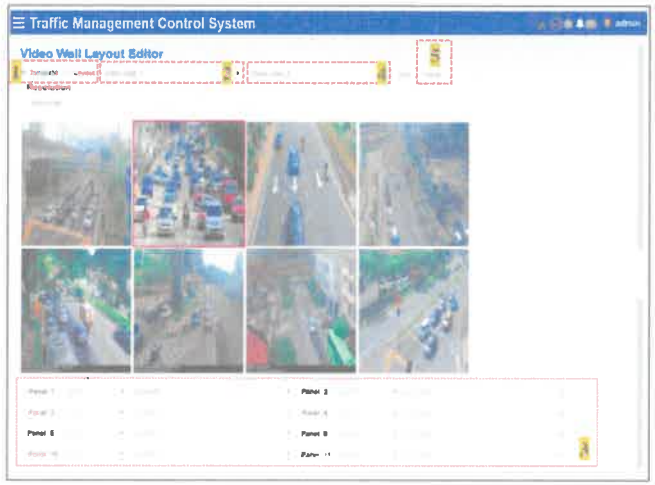

Figure 204: How to Add Video Wall Layout
(The displayed images are for illustration purpose)

Instructions to **add Video Wall Layout** as below,

1 Select on Template Bullet Option
2 Click on the saved Video Wall Template from the drop down list
3 Assign the videos to be displayed on the selected video panel (Video Cube)
4 Name the Video Wall Layout
5 Click '**Save**' to save the Video Wall Layout

b) How to Post Saved Video Wall Layout

It is used to for posting a saved video wall layout attained from the layout drop down list.

Figure 205: How to Post saved Video Wall Layout
(The displayed images are for illustration purpose)

Instructions to **post saved Video Wall Layout** as below,

1 Select on Layout Bullet Option
2 Select on the saved Video Wall Layout from the drop down list
3 Click 'Post' to post the Video Wall Layout

c) **How to Post New Video Wall Layout**

This is to enable the user to post a new video wall layout with assigned videos in the video panel (Video Cube).

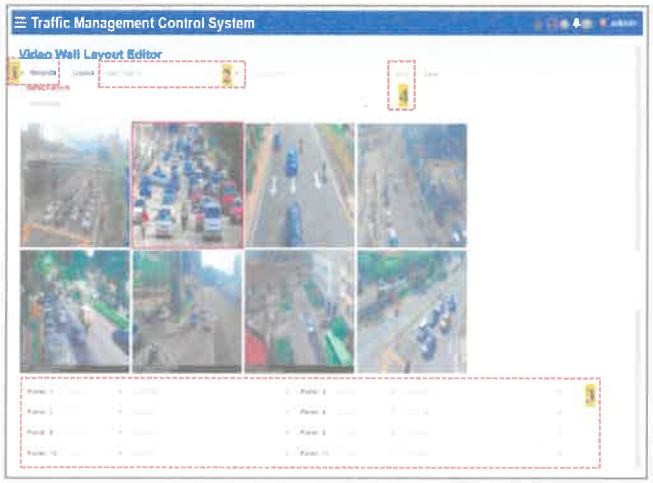

Figure 206: How to Post new Video Wall Layout

(The displayed images are for illustration purpose)

Instructions to **post new Video Wall Layout** as below,

1 Select on Template Bullet Option
2 Click on the saved Video Wall Template from the drop down list
3 Assign the videos to be displayed on the selected video panel (Video Cube)
4 Click 'Post' to post the Video Wall Layout

d) **How to Edit Video Wall Layout**

This is to enable the user to edit/update selected video wall layout.

Figure 207: How to Edit Video Wall Layout

(The displayed images are for illustration purpose)

Instructions to **edit Video Wall Layout** as below.

1 Select on Layout Bullet Option
2 Click on the saved Video Wall Template from the drop down list
3 Edit/Update the display on videos on the selected video panel (Video Cube)
4 Click 'Save' to save the Video Wall Layout

e) How to Delete Video Wall Layout

This is to enable the user to delete the video wall layout.

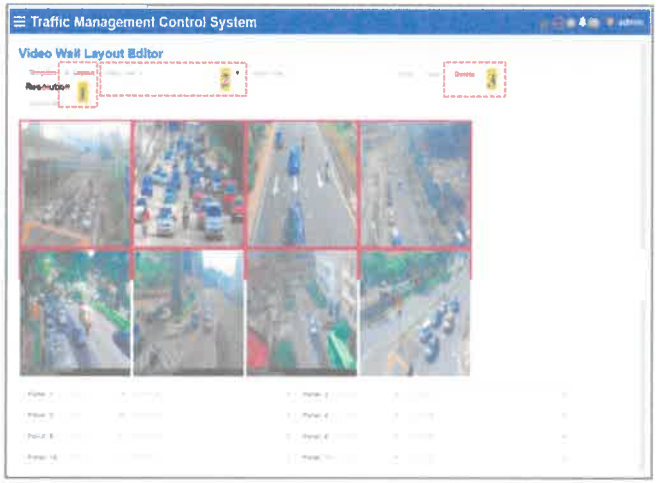

Figure 208: How to Delete Video Wall Layout

(The displayed images are for illustration purpose)

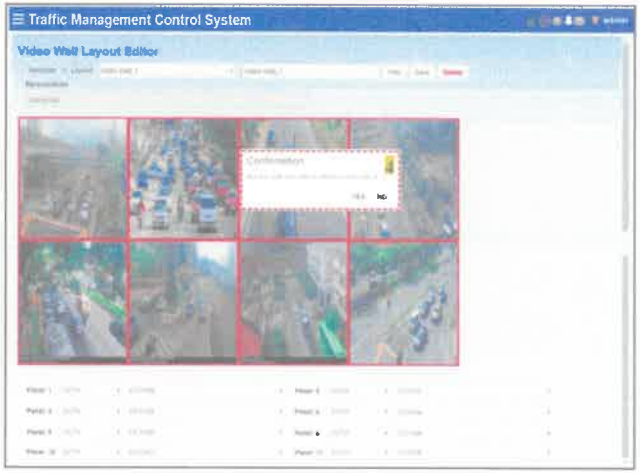

Figure 209: How to Delete Video Wall Layout

(The displayed images are for illustration purpose)

Instructions to **delete Video Wall Layout** as below,

1 Select on Layout Bullet Option
2 Click on the saved Video Wall Template from the drop down list
3 Click 'Delete' to delete the Video Wall Layout
4 Click 'Yes' in the confirmation window