Riyadh Advanced Traffic Control System

A step towards Saudi Arabia's Vision 2030

Presentation for ITSNY 2023

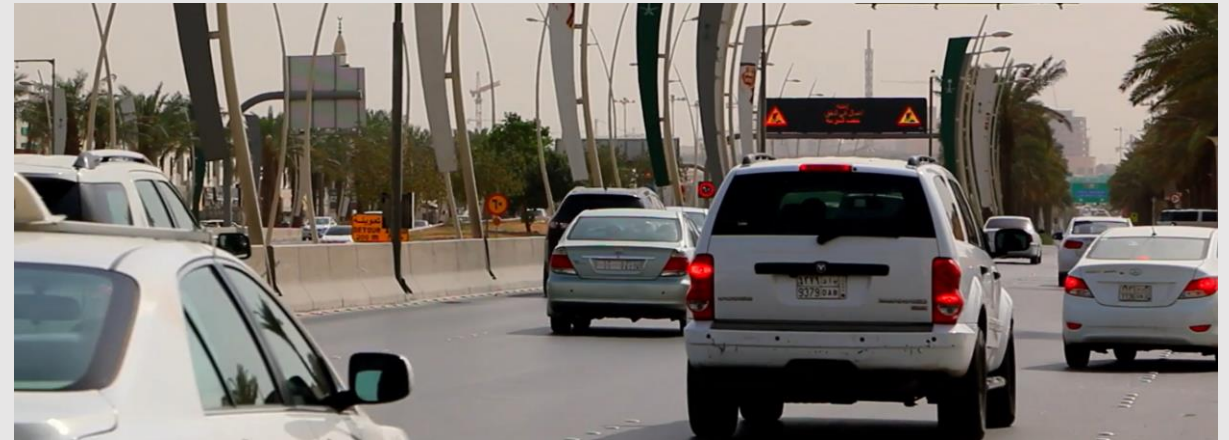**Raymund Royandoyan, Sr. Mgr.**

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Insert Riyadh Smart Traffic Signals video with Audio

Riyadh Advanced Traffic Control System Project

- In February 2014 TransCore was awarded $100M contract

- Design, Build, Operate and Maintain 350 intersections in Riyadh

- Modernized intersections

- Communications infrastructure

- Central Hardware

- TransSuite and ACDSS

- 5-year Operations and Maintenance

- Project completed in September 2022

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Riyadh Advanced Traffic Control System Project

- Modernized intersections
  - Civil works
  - New Traffic Signal Poles, signal heads and Pedestrian pushbuttons
  - New intersection wiring
  - New traffic controllers and cabinets
  - Uninterruptible Power Supplies

- Communications infrastructure
  - Private Microwave Network
  - 3G/4G Telecom Provider
  - Telecom Microwave Network
  - Fiber Optic Network

Riyadh Advanced Traffic Control System Project

- 5-year Operations and Maintenance
  - 24/7/365 Operations Personnel
  - 24/7/365 Maintenance Personnel

- Traffic Management
  - Coordinate incident response
  - Special Plans
  - Facilitate VIP Movement

- One-hour response plans
  - Power Failures
  - Equipment failures
  - Equipment Damage due to Accidents
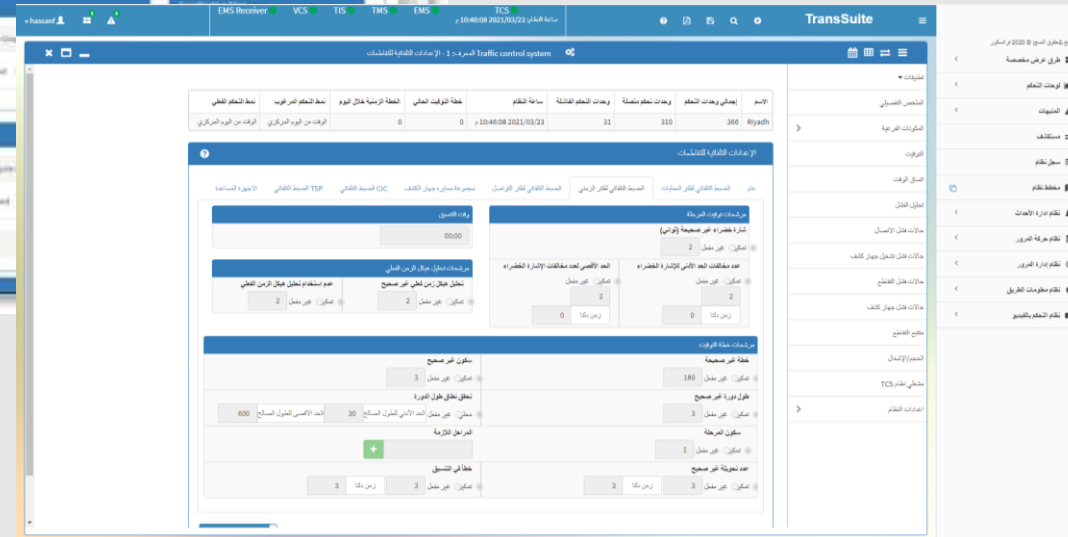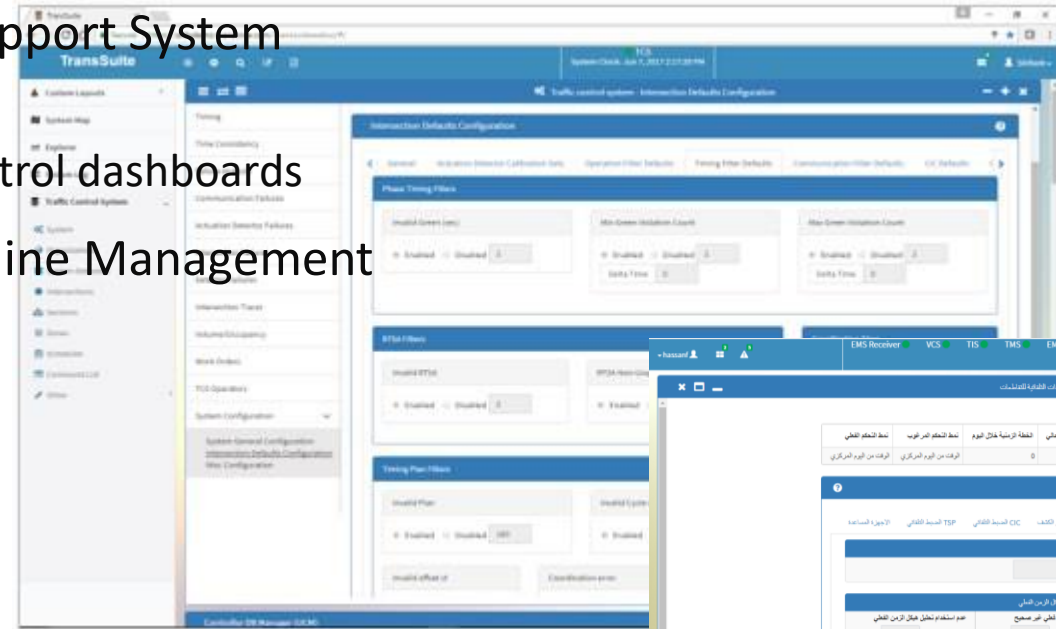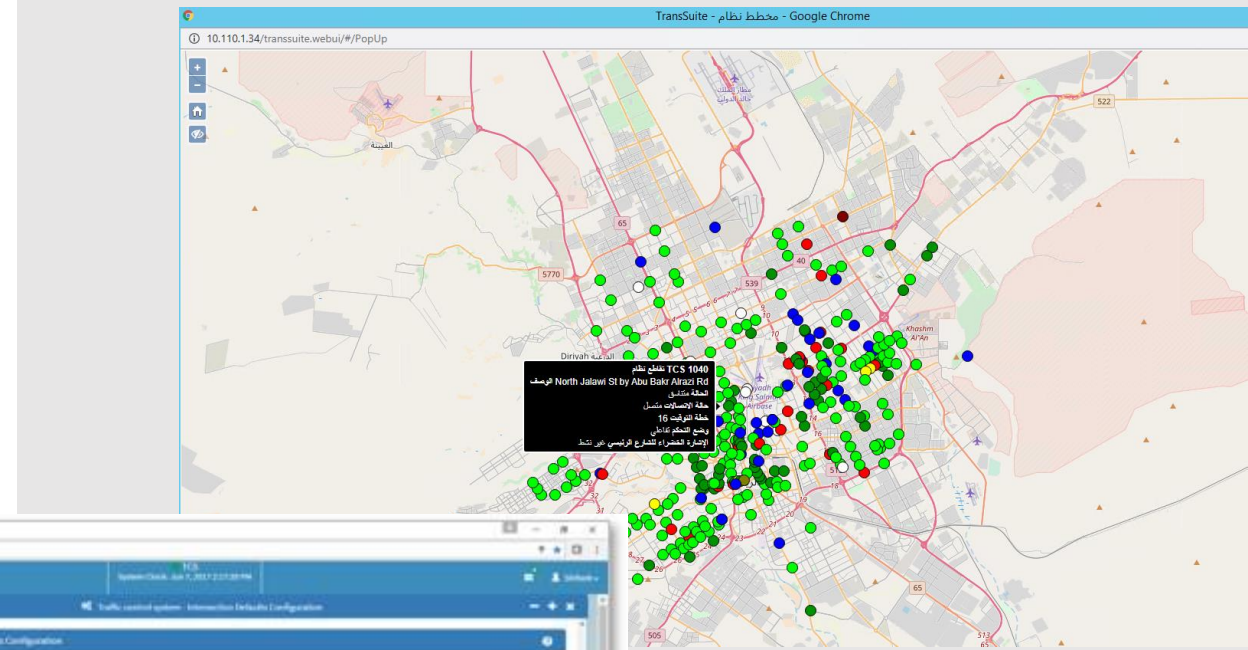
- Preventive Maintenance

Riyadh Advanced Traffic Control System Project

- Traffic Control Center
    - Located in King Abdulaziz Public Transportation Center
    - Co-located with METRO and BRT Operations

Riyadh Advanced Traffic Control System Project

- TransSuite Traffic Management Modules
  - Browser-based
  - English and Arabic
- Adaptive Control Decision Support System (ACDSS)
  - Provides various adaptive control dashboards
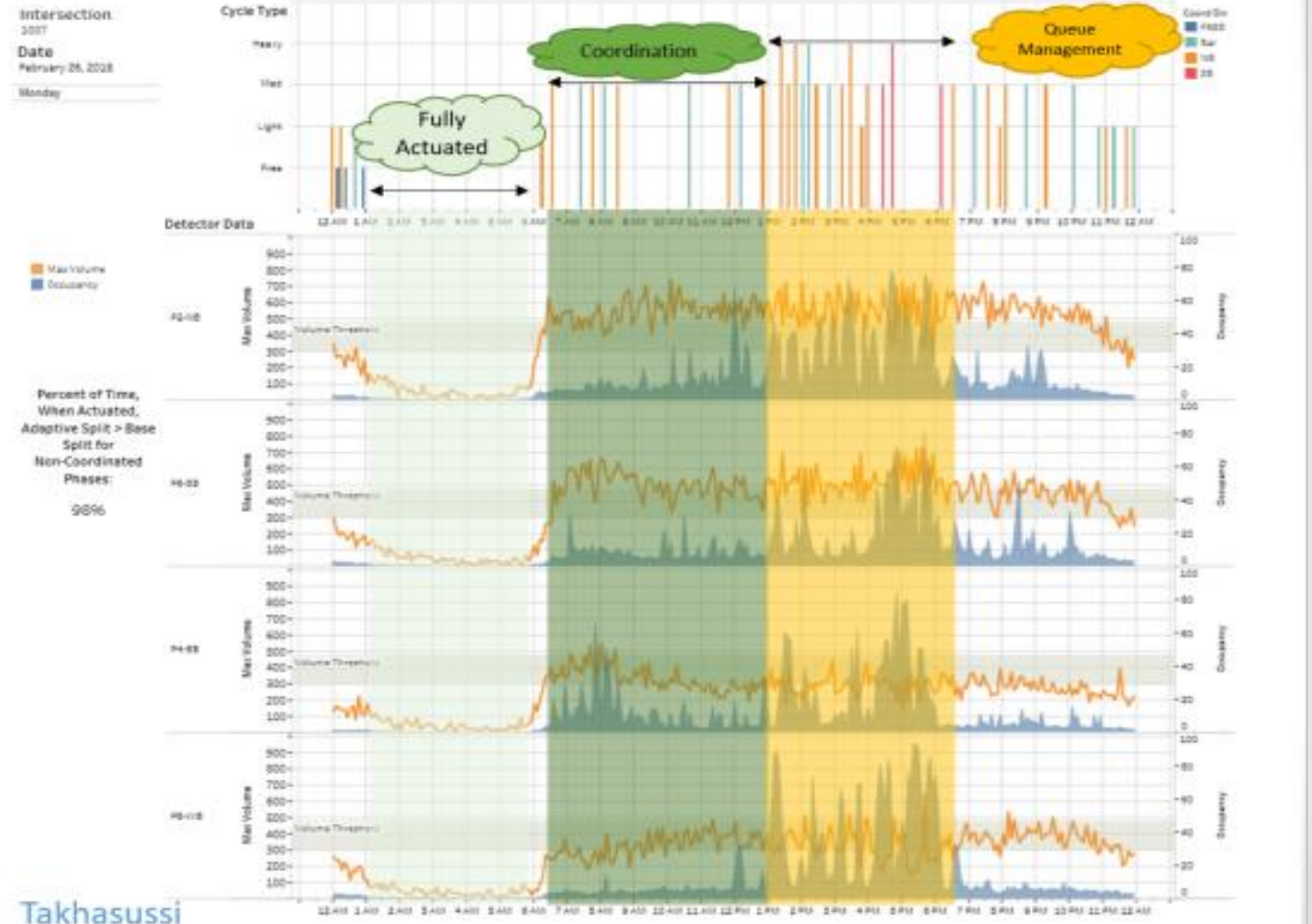- TransCore's Maintenance Online Management System (MOMS)

Adaptive Control - ACDSS

Traffic Adaptive - ACDSS

- Allows adaptive control to support a very dynamic changes in traffic conditions

- Provides various adaptive control modes
  - Adaptive isolated mode
  - Adaptive coordinated
  - Queue Management
  - Corridor Management
  - Area wide Control

Operational Improvements and Benefits

Operational Improvements and Benefits

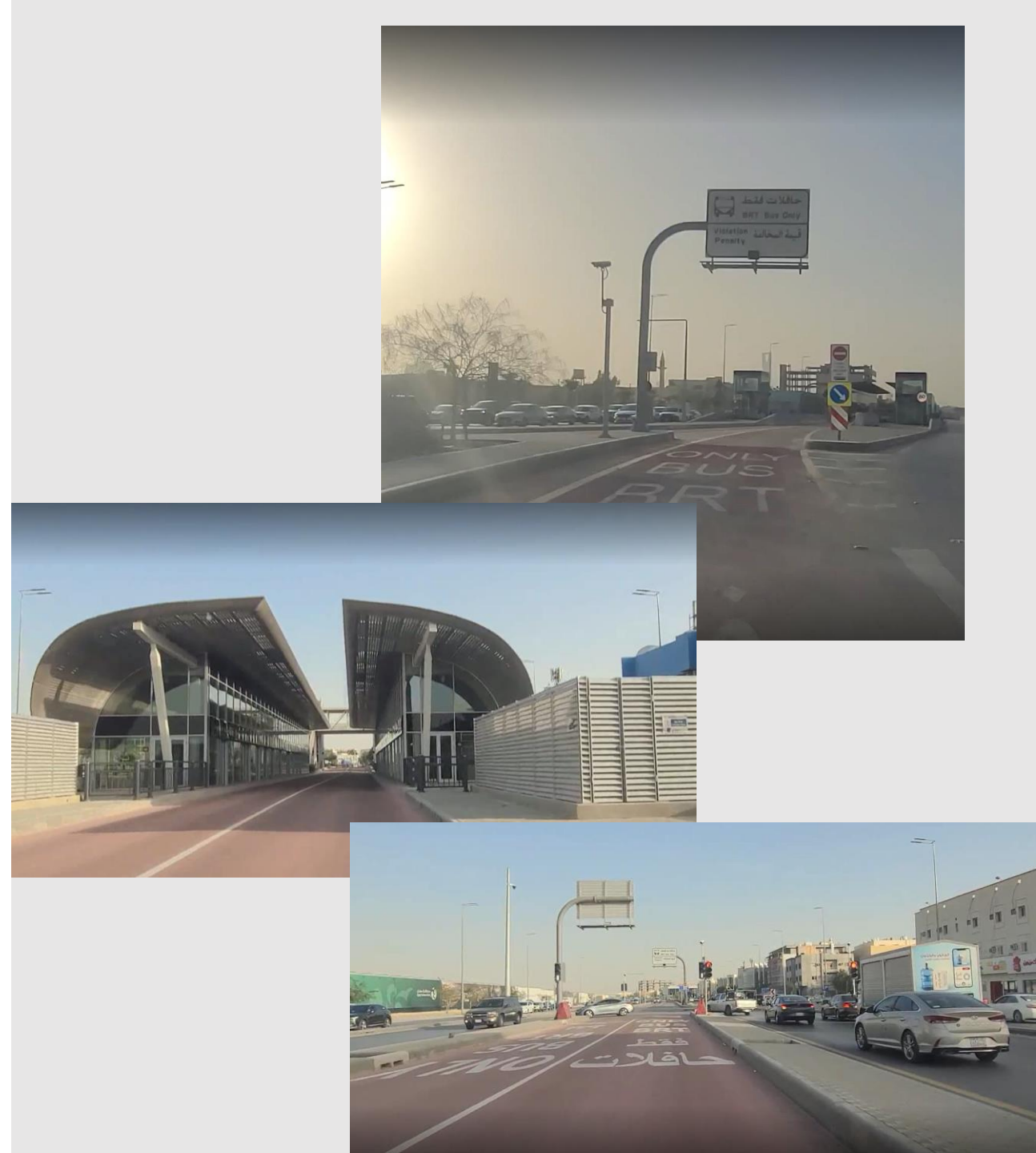| Progressive Timeline	2015	2016	2017	2018-2019		2016 - 2019
Corridor	**Average Travel Time**					**Delay Reduction in (%)**
	Before (Pre ATCS)	With ATCS	With ATCS + Adaptive	With ATCS + Adaptive Early Yield Strategy	Overall (%)	With ATCS + Adaptive
King Khalid	Was 9.5 mins	Down to 8.5 mins 11%	Down to 7.5 mins 21%	Down to 7.0 mins 26%	Up to 26%	Up to 26%

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Project Challenges

Project Challenges

- Implementation of U.S. based standards

- Compatibility of U.S. and European equipment

- Support of operational functionalities not being used in the U.S.

- Driver/Public behavior and expectations

- Surge of new drivers

- Unreliable/unstable electrical power grid

- Desert Environment
  - Heat
  - Dust
  - Rain/flooding

Program Status

Program Status

- Integrated with third party application to provide traffic data from TransSuite

- Centralized Transit Signal Priority (CTSP) recently deployed for Riyadh's Bus Rapid Transit Routes

- Integration into TransSuite of additional 80 intersections

- Upcoming integration into TransSuite of additional 300 intersections

- Initial discussion with Red Crescent for implementation of centralized Emergency Vehicle Preemption (CEVP)

Thank You

Presentation for ITSNY 2023

Raymund Royandoyan, Sr. Mgr.

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