

Traffic Data Collection Program in the Middle East

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Presentation Overview

- ▶ Traffic Monitoring in Riyadh, Saudi Arabia
 - ▶ Location and Culture 
 - ▶ Site-Specific Challenges
 - ▶ Equipment Selection
 - ▶ GIS Database

Location and Culture

- ▶ Overview of Saudi Arabia
 - ▶ Area: 829,995 sq. mi.
 - ▶ Population: 27 million
 - ▶ Capital: Riyadh
 - ▶ Gulf Co-operation Council (GCC) Member;
Ranked top of the GCC by World Economy

Location and Culture



Location and Culture



Location and Culture

- Islamic Country
 - Traditions
 - Holidays
- Conservative Culture
 - Clothing style
 - No alcohol



Location and Culture

- Business in Saudi Arabia
 - Patience is a virtue
 - Relationships are critical
 - Informal agreements
 - Hospitality
 - Entertainment



- International Relations
 - Shipping equipment
 - Coordination



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Site-Specific Challenges

- Overview of Riyadh
 - Area: 600 sq. mi.
 - Population: 5.5 million
 - Client: Arriyadh Development Authority (ADA)



Site-Specific Challenges

➤ Congestion



Site-Specific Challenges

➤ Congestion

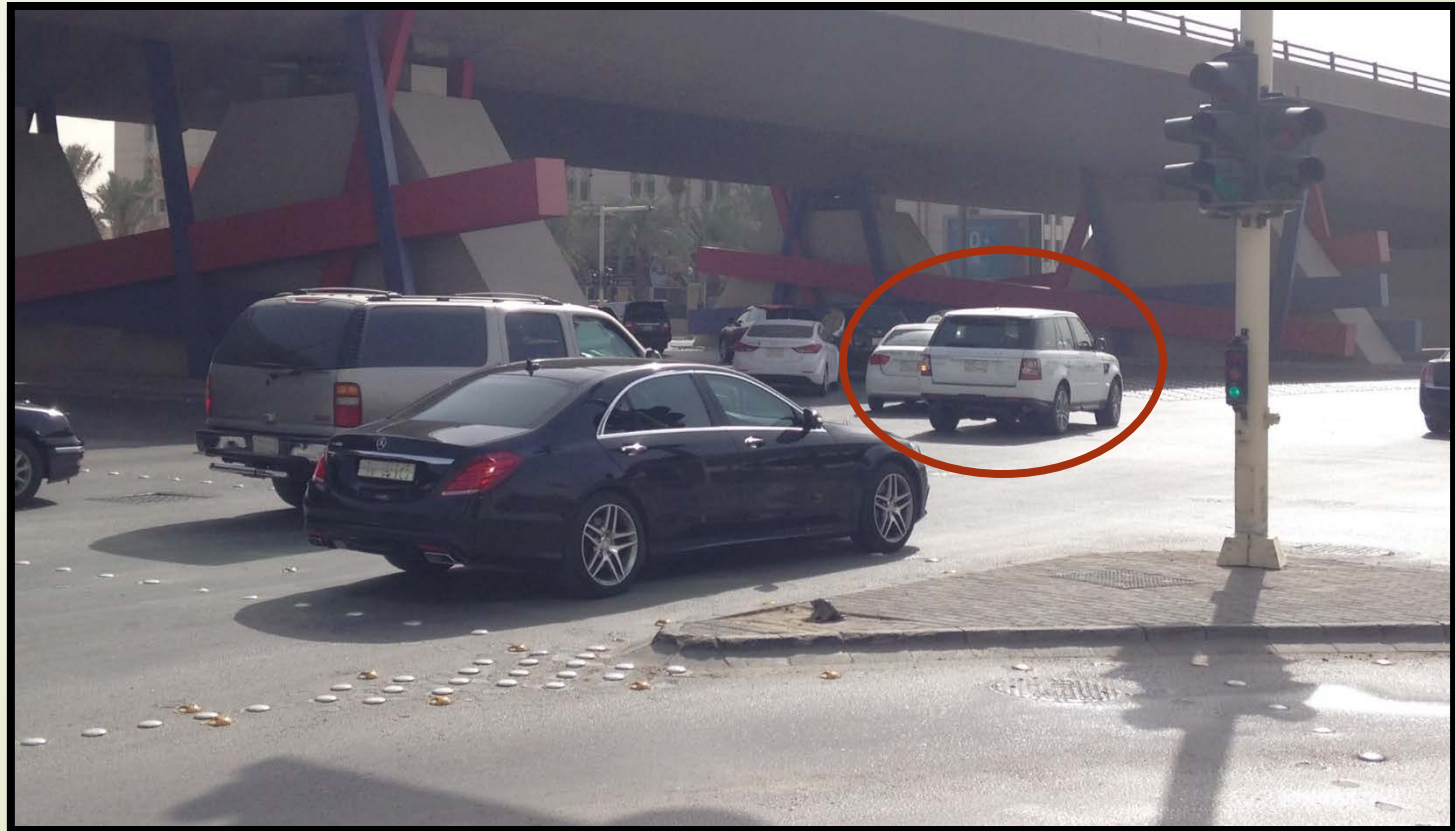


➤ Local Driving Habits



Site-Specific Challenges

➤ Local Driving Habits



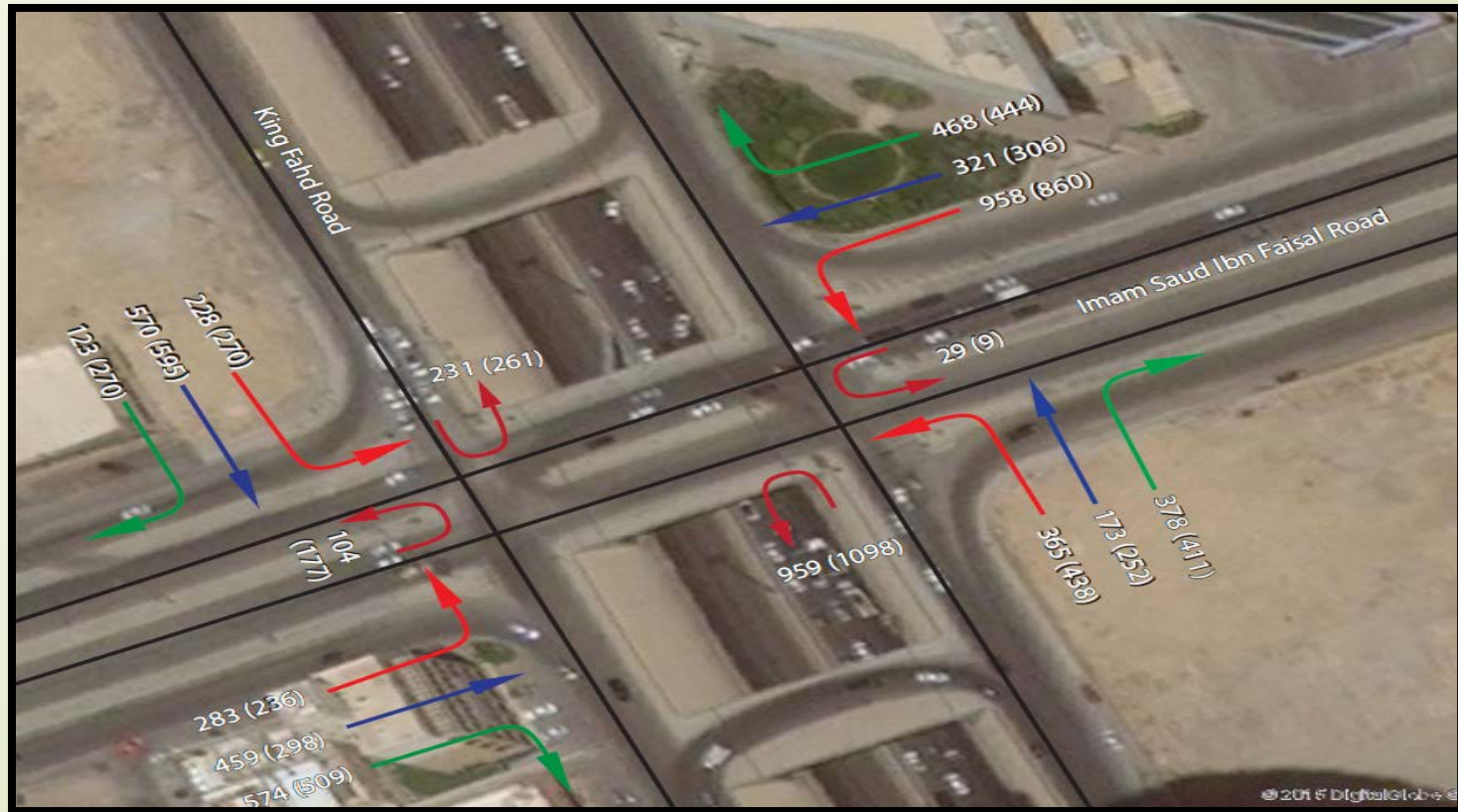
Site-Specific Challenges

➤ Local Driving Habits



Site-Specific Challenges

➤ Road Configuration



Site-Specific Challenges

➤ Road Configuration



Site-Specific Challenges

➤ Road Configuration



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Equipment Selection

- Considerations for Equipment Selection
 - Climate conditions
 - Congestion
 - Local driving habits
 - Road configurations
 - Installation methods
 - Information desired



Equipment Selection

- ▶ Temporary Equipment
 - ▶ Road Tubes
 - ▶ Automated Video Traffic Data Collection Systems
 - ▶ Radar Traffic Microwave Sensors (RTMS)

- ▶ Permanent Equipment
 - ▶ Wireless Magnetic Sensors

- ▶ Automated Video Traffic Data Collection Systems
 - ▶ Advantages
 - ▶ Non-intrusive
 - ▶ Detects vehicles outside of lanes
 - ▶ Accurate in heavy traffic
 - ▶ Temporary



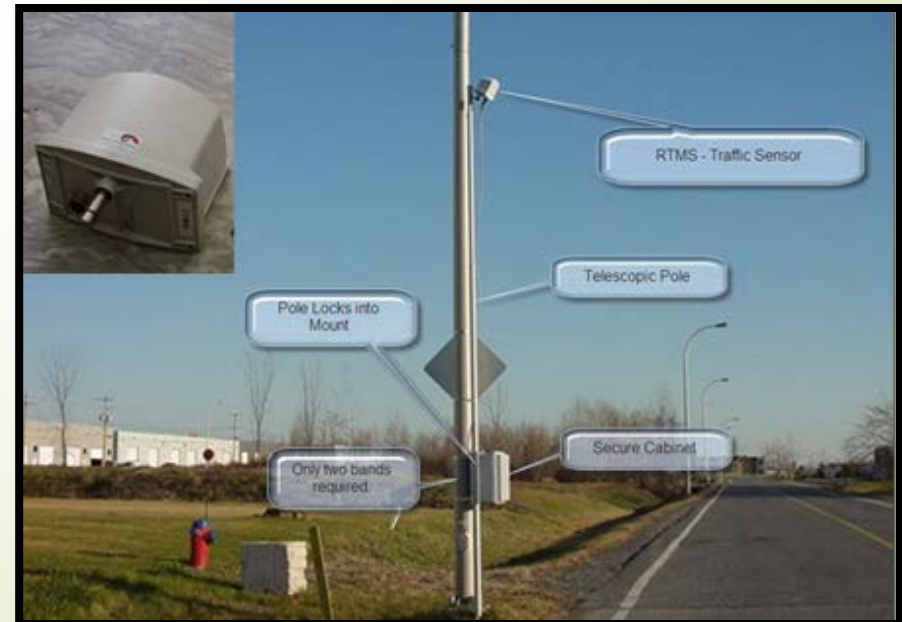
- ▶ Automated Video Traffic Data Collection Systems
 - ▶ Challenges
 - ▶ Wide intersections
 - ▶ Unexpected maneuvers
 - ▶ Separated movements



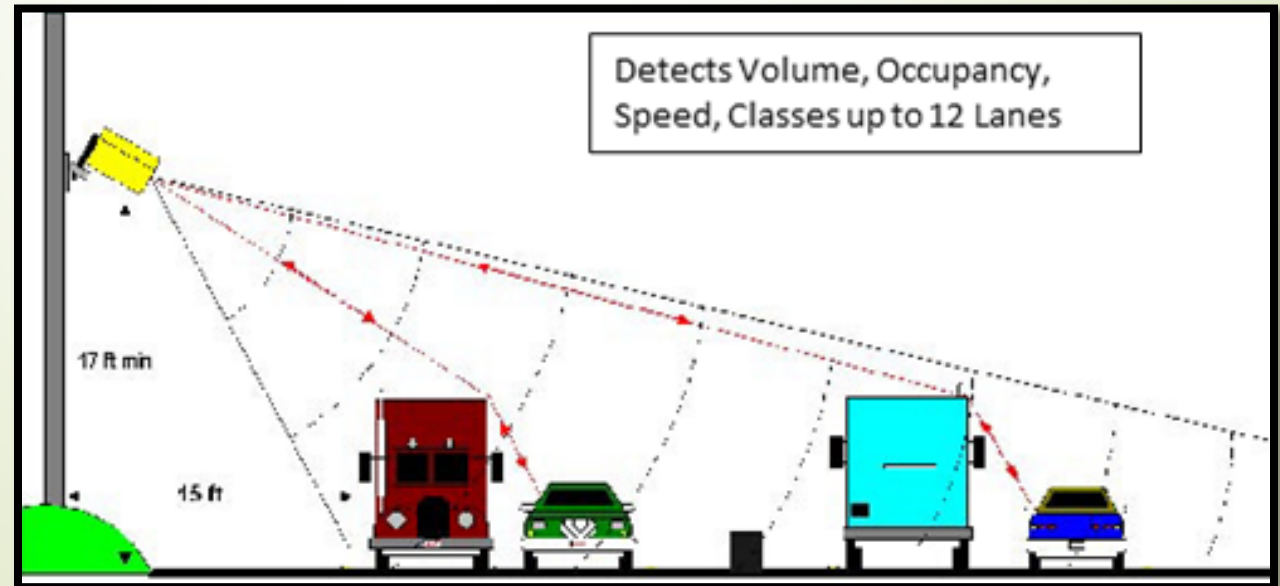
➤ Radar Traffic Microwave Sensors (RTMS)

➤ Advantages

- Non-intrusive
- Stalled vehicle detection
- Low cost installation
- Multiple lanes
- Temporary



- Radar Traffic Microwave Sensors (RTMS)
 - Challenges
 - Power source
 - Mounting location
 - Zone configuration



➤ Wireless Magnetic Sensors

➤ Advantages

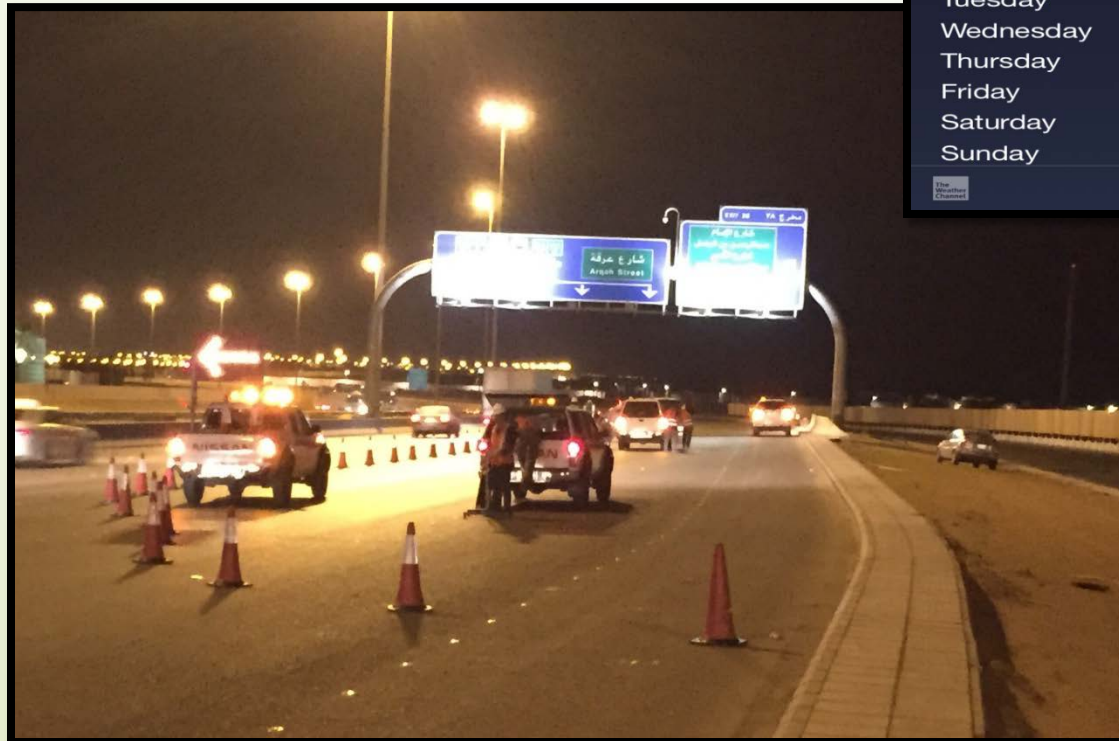
- Transmits data to office
- Incident detection
- No lane limitations



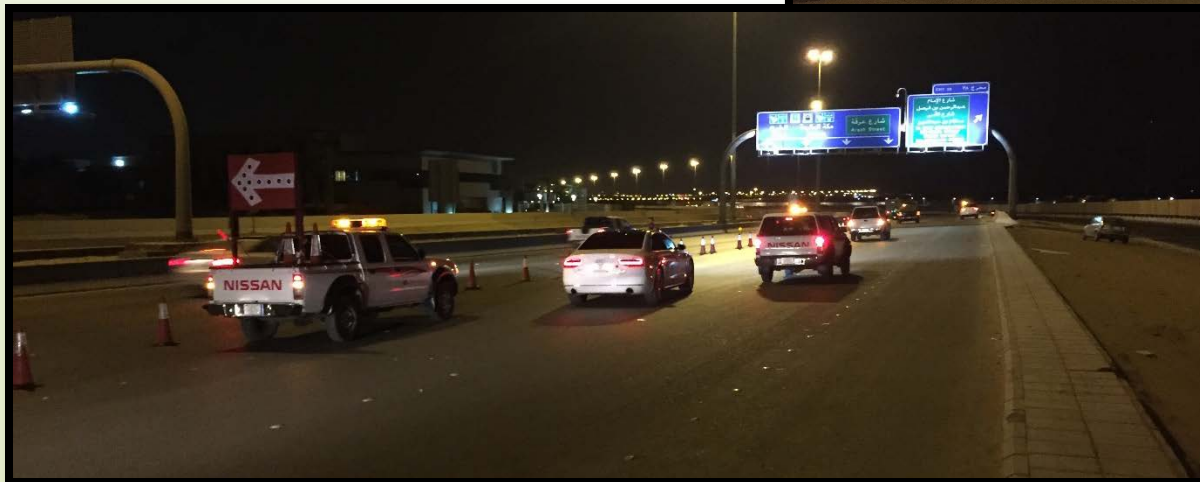
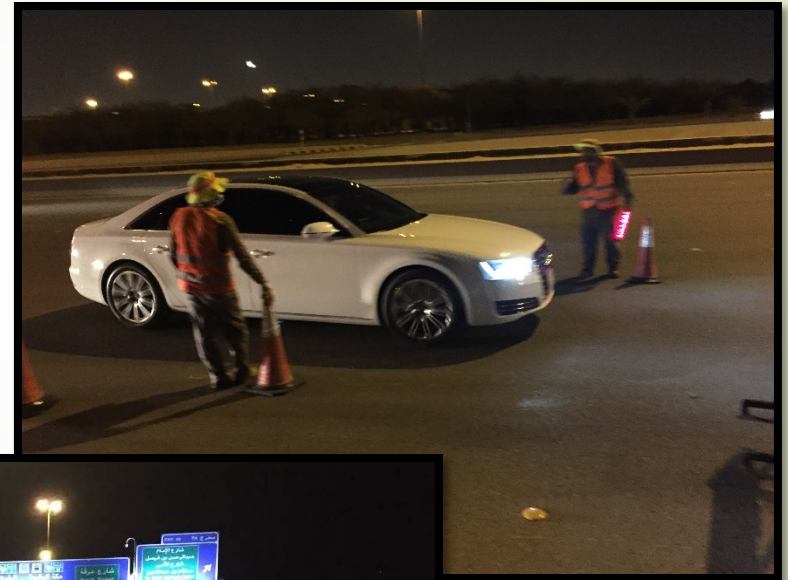
- Wireless Magnetic Sensors
 - Challenges
 - Power source
 - Installation
 - Communication Infrastructure



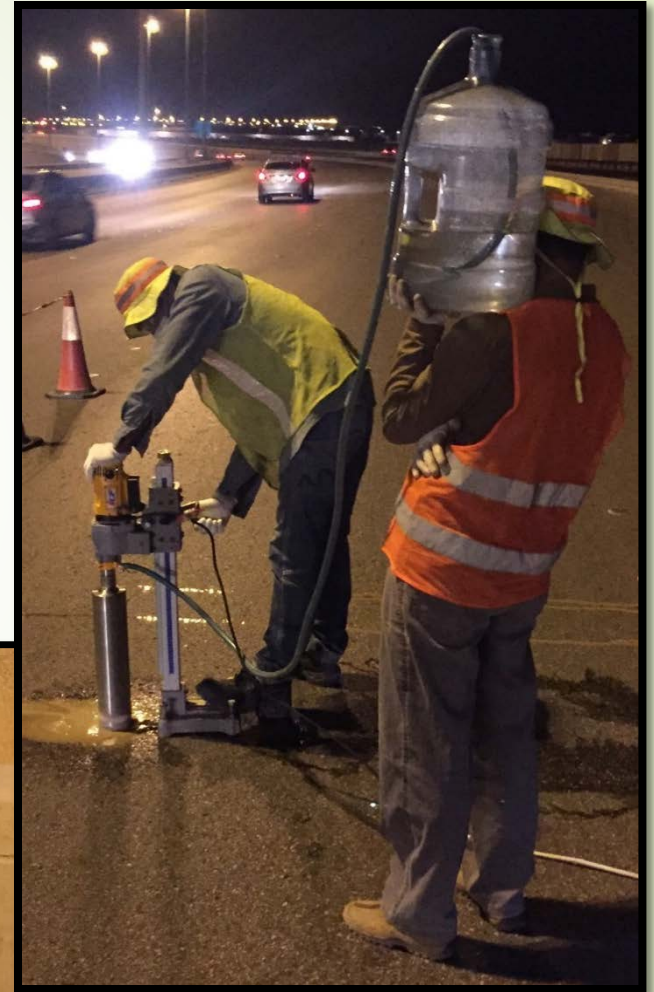
- Wireless Magnetic Sensors
- Equipment Installation



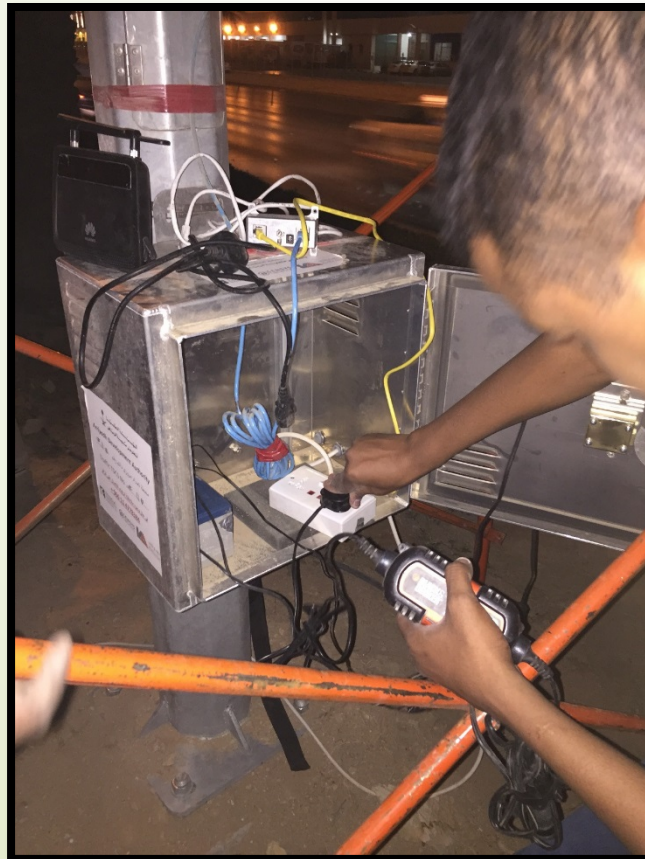
- Wireless Magnetic Sensors
 - Equipment Installation

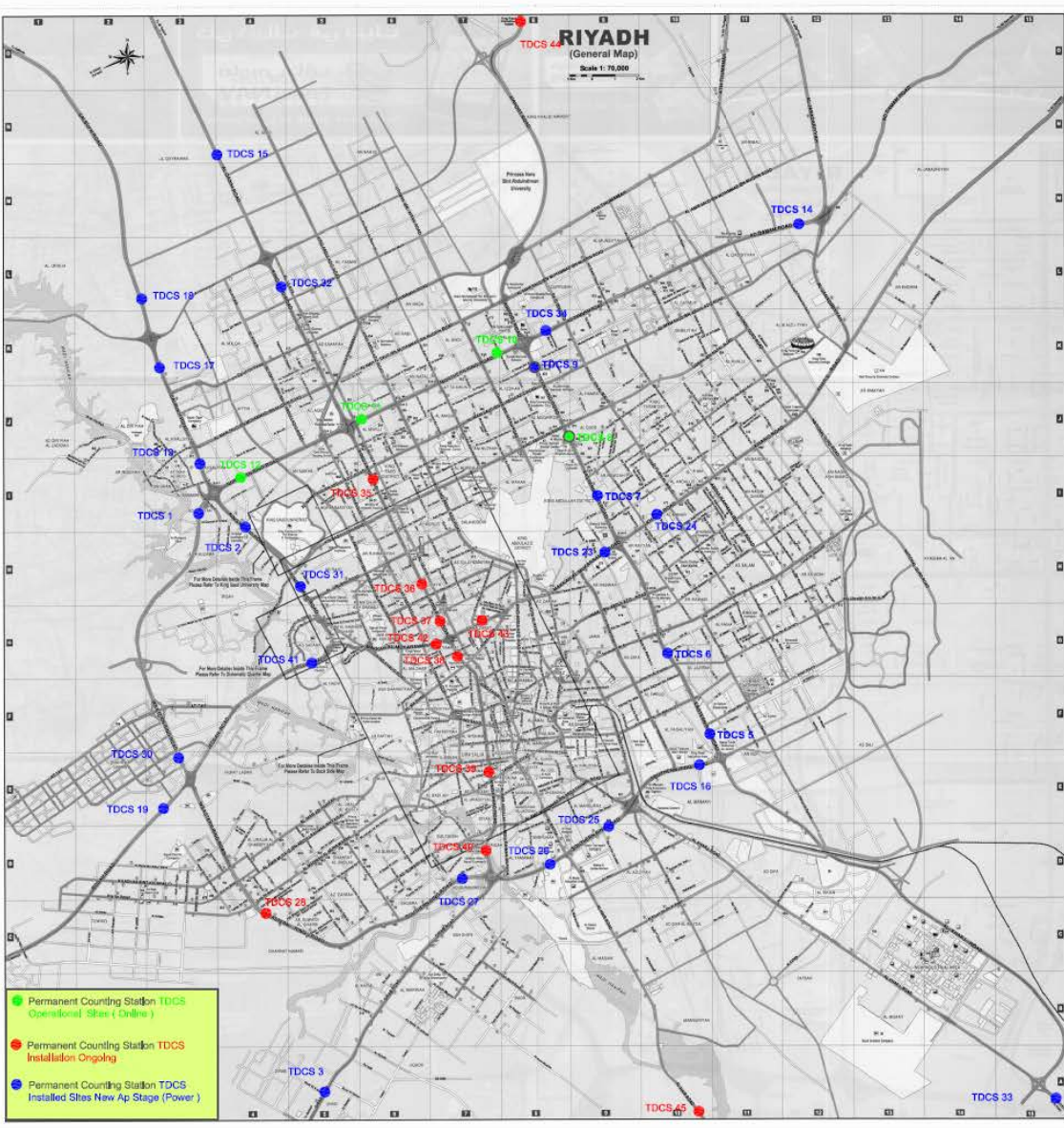


- Wireless Magnetic Sensors
- Equipment Installation



- Wireless Magnetic Sensors
 - Equipment Installation






Riyadh Traffic Monitoring & Analysis Program

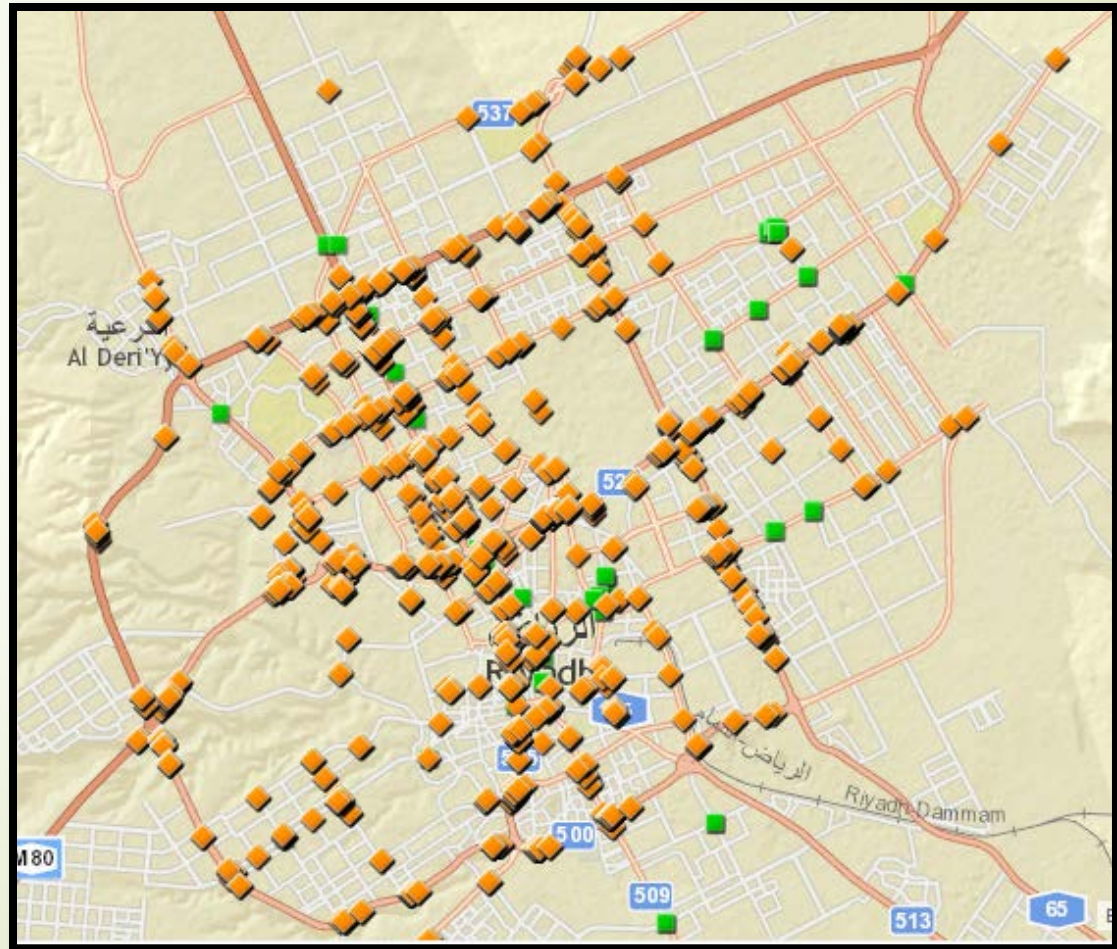
Permanent Counting Stations TDCS

No	Site Code	Location	Note
1	ADA TDCS 01	Northern Ring RD West of King Khalid RD	Installed
2	ADA TDCS 02	King Khalid RD South Of Northern Ring RD	Installed
3	ADA TDCS 03	Dirab Road West of NGH	Installed
4	ADA TDCS 05	Eastern RR BTWN AlMadina Rd & Southern RRd	Installed
5	ADA TDCS 06	Eastern Ring Rd BTW omer Rd & Salah Aldeen Rd	Installed
6	ADA TDCS 07	Eastern Ring Road Between Makkah Road Urobah Rd	Installed
7	ADA TDCS 08	Eastern Ring Rd Between Road & King Abdulah Rd	Operational
8	ADA TDCS 09	Easter Ring rd betwn imam sand rd & Northern Ring rd	Installed
9	ADA TDCS 10	Northern RR BTWN Eastern RR & Usman Bin Afan Rd	Operational
10	ADA TDCS 11	Northern Ring Road West Of King Fahad Street	Operational
11	ADA TDCS 12	Northern Ring Road East King Khalid	Operational
12	ADA TDCS 13	King Khalid North of Northern Ring Road	Installed
13	ADA TDCS 14	Dammam Road West of Al Thumamah Road	Installed
14	ADA TDCS 15	Al Gassim Road	Installed
15	ADA TDCS 16	Southern Ring Road West of Eastern Ring Road	Installed
16	ADA TDCS 17	King Khalid South Of King Salman RD	Installed
17	ADA TDCS 18	Sabokh Road	Installed
18	ADA TDCS 19	Jeddah Road	Installed
19	ADA TDCS 20	Makkah RD East Of Umalhamam RD	Installed
20	ADA TDCS 23	Makkah RD Between Eastern Ring Road & Nahda RD	Installed
21	ADA TDCS 24	Makkah RD Between Khalid Bin Walred RD & Eastern Ring RD	Installed
22	ADA TDCS 25	Southern Ring RD Between Alshahab RD & Alkharj RD	Installed
23	ADA TDCS 26	Southern Ring RD Between King Fahad RD and Alfariyan RD	Installed
24	ADA TDCS 27	Southern Ring RD West of King Fahad RD	Installed
25	ADA TDCS 30	Westren Ring RD North of jeddah RD	Installed
26	ADA TDCS 31	King Khalid Rd South Alroabah Road	Installed
27	ADA TDCS 32	King Fahad RD South of king salman	Installed
28	ADA TDCS 33	Kharij Road	Installed
29	ADA TDCS 34	Dammam Road Northern Ring Road East of eastern ring road	Installed
30	ADA TDCS 35	South of Northern Ring-road (in front of Panda Hypermarket)	Installation Ongoing
31	ADA TDCS 36	King Fahad RD Between Al Urubah Road / Amir Mohammad Ibn Abdulaziz Road	Installation Ongoing
32	ADA TDCS 37	Between Amir Sultan Ibn Abdulaziz Street / Makkah Road	Installation Ongoing
33	ADA TDCS 38	King Fahad RD Between Makkah Kharis Road / Maather Road	Installation Ongoing
34	ADA TDCS 39	King Fahad RD Between King Saud Street / Al Matlah Al Manawara Road	Installation Ongoing
35	ADA TDCS 40	King Fahad RD Between Al Madinah Al Manawara Road / Southern Ring road	Installation Ongoing
36	ADA TDCS 41	East ofDQ South Entrance Gate (In front of Ritz Carlton Hotel)	Installation Ongoing
37	ADA TDCS 42	Makkah RD Between At Takhassemi Street / King Fahd Road	Installation Ongoing
38	ADA TDCS 43	Makkah RD Between East Of Amir Abdulaziz Ibn Munsaid Ibn Jalawi Street	Installation Ongoing
39	ADA TDCS 44	Airport Road	Installation Ongoing
40	ADA TDCS 45	Al-hair Road	Installation Ongoing

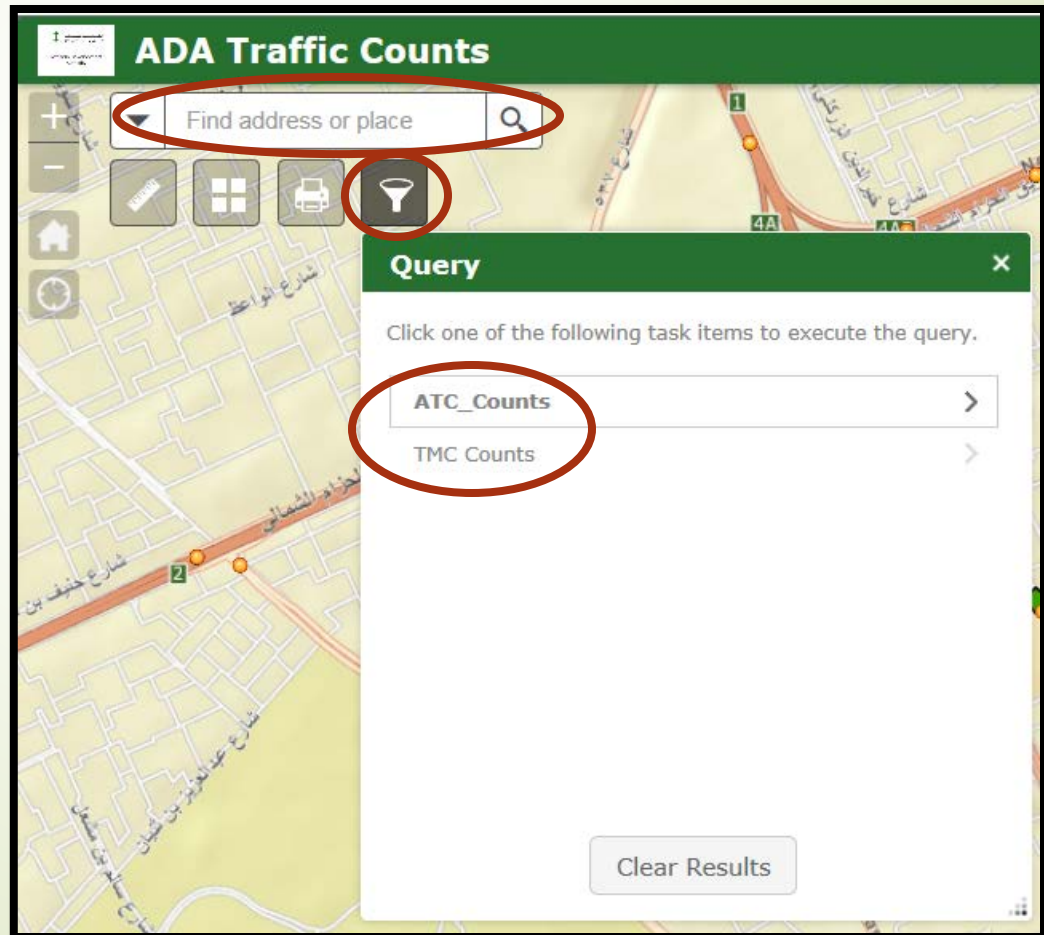
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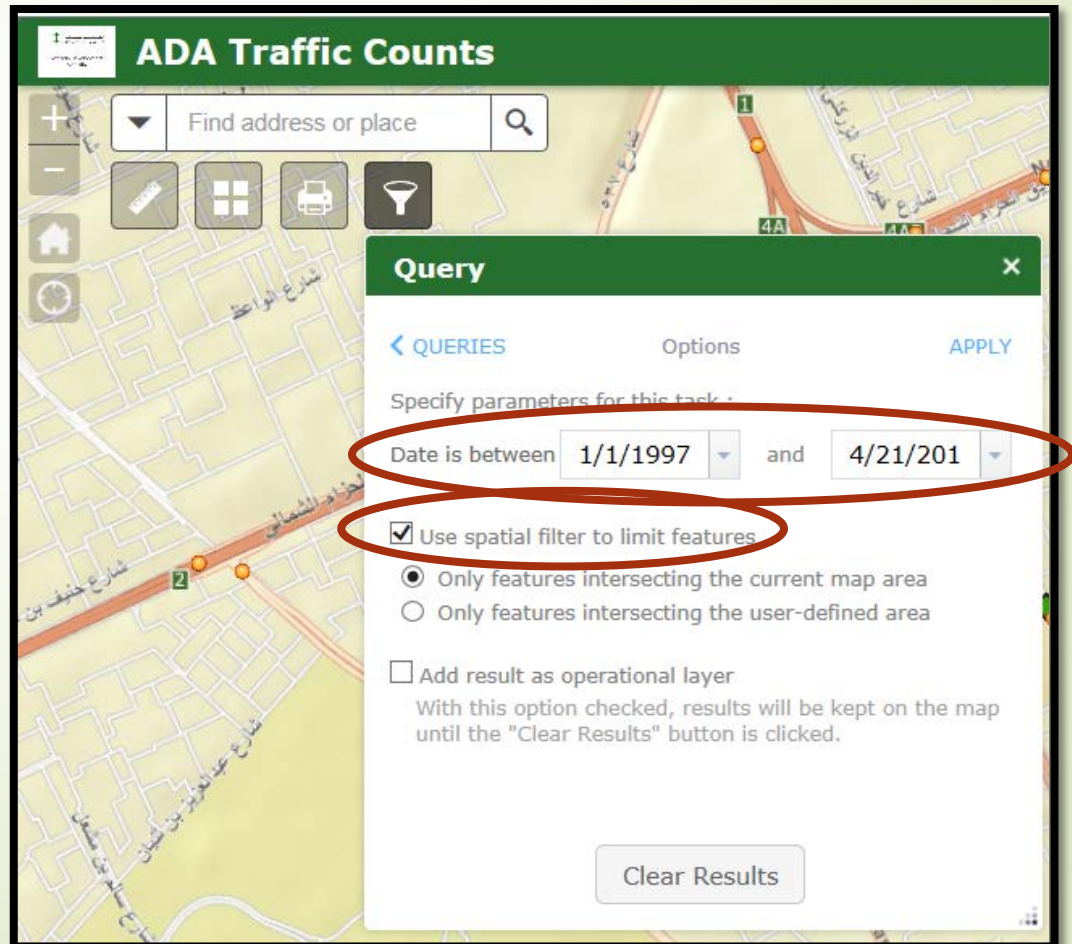
➤ ArcGIS Online



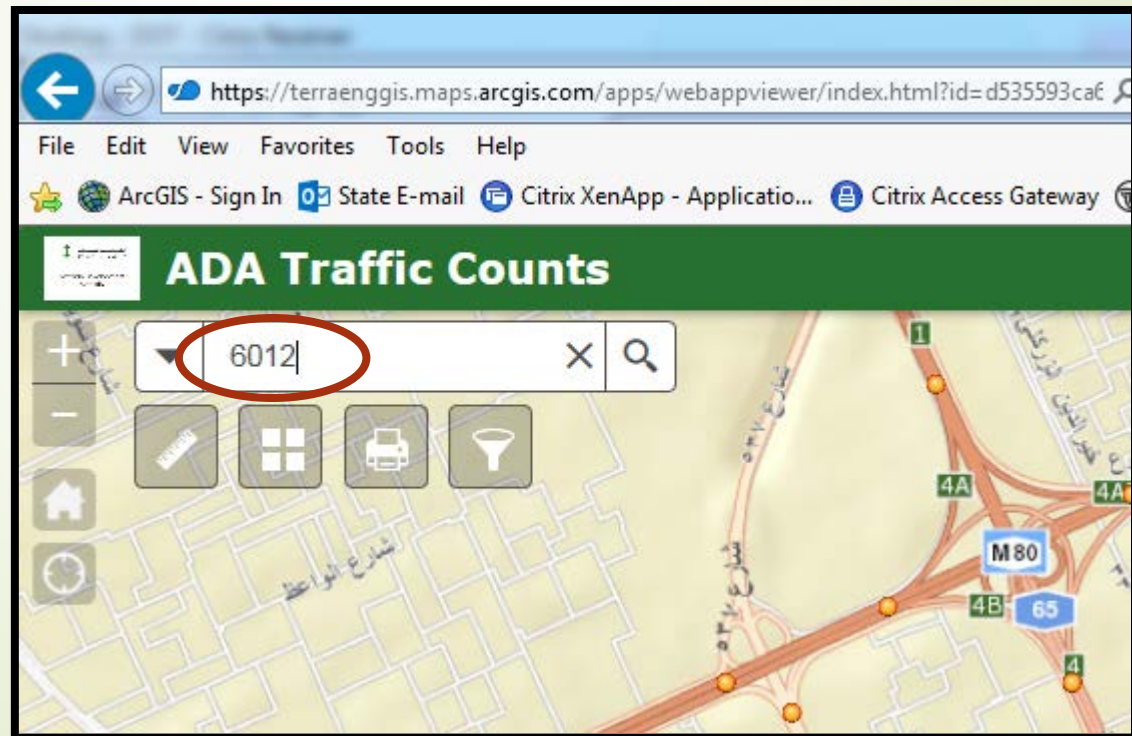
- ArcGIS Online
 - Search options



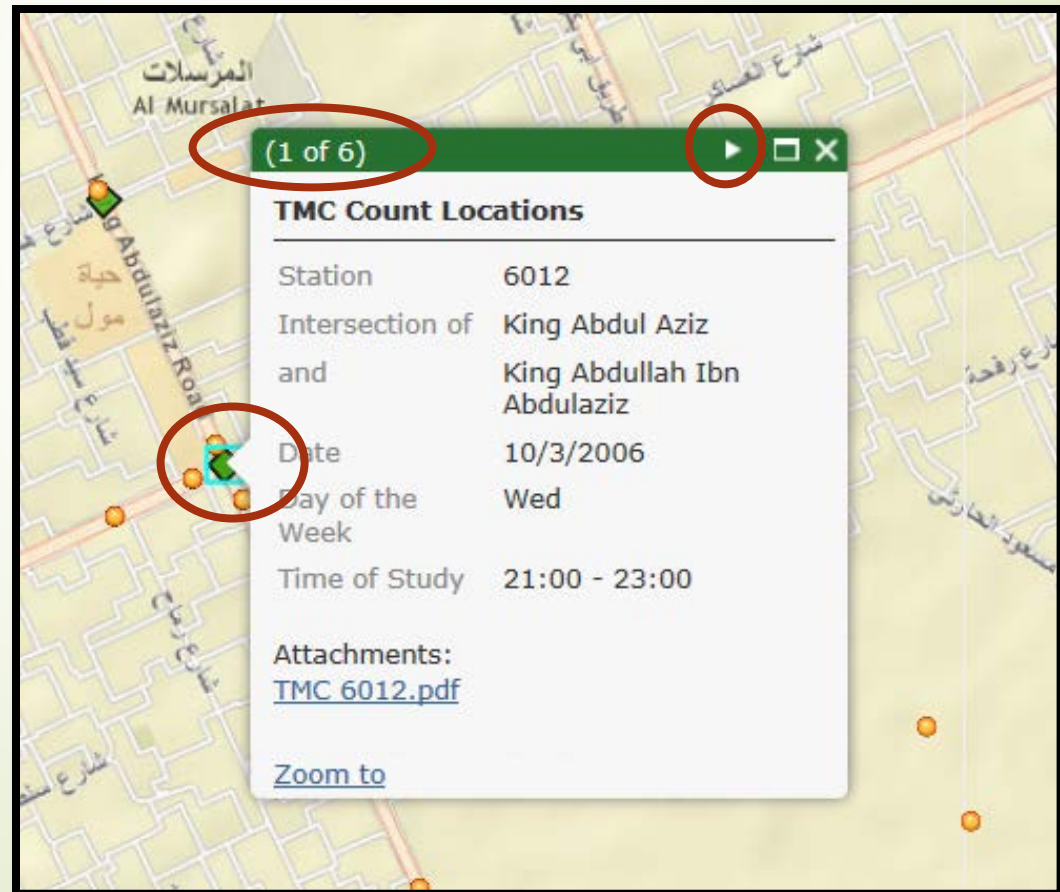
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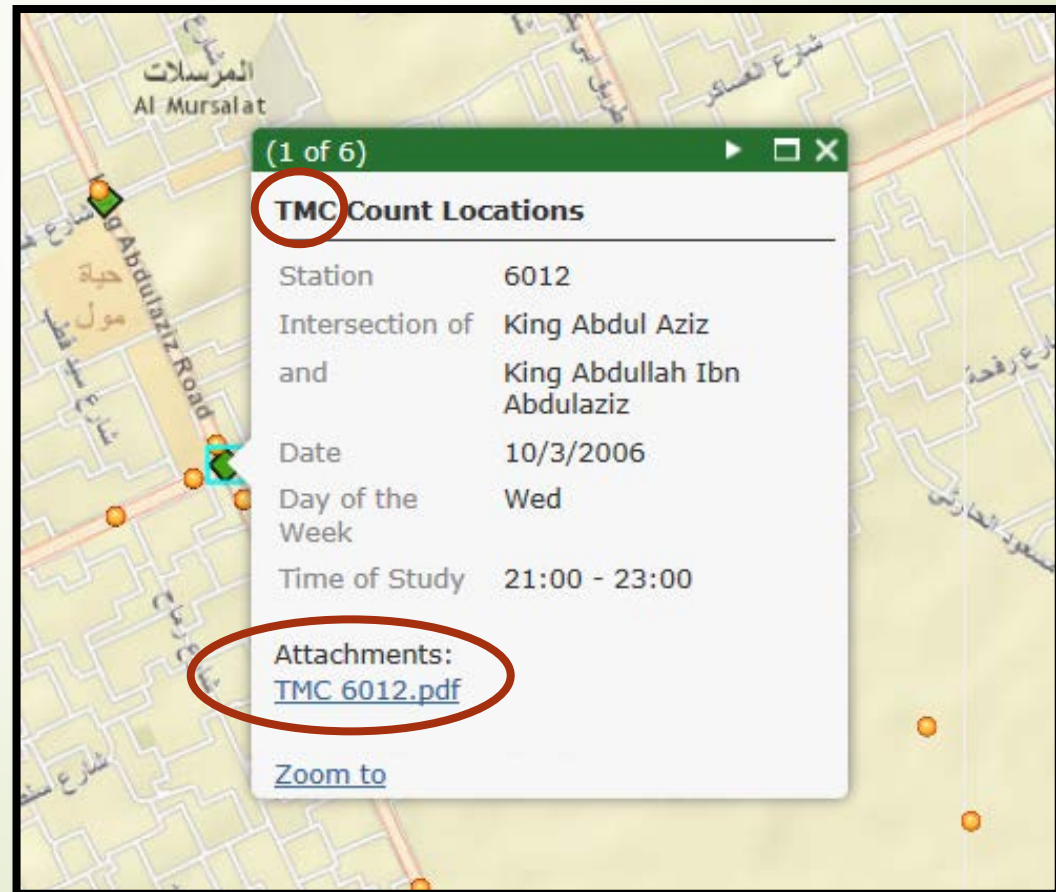
- ArcGIS Online
 - Example data point



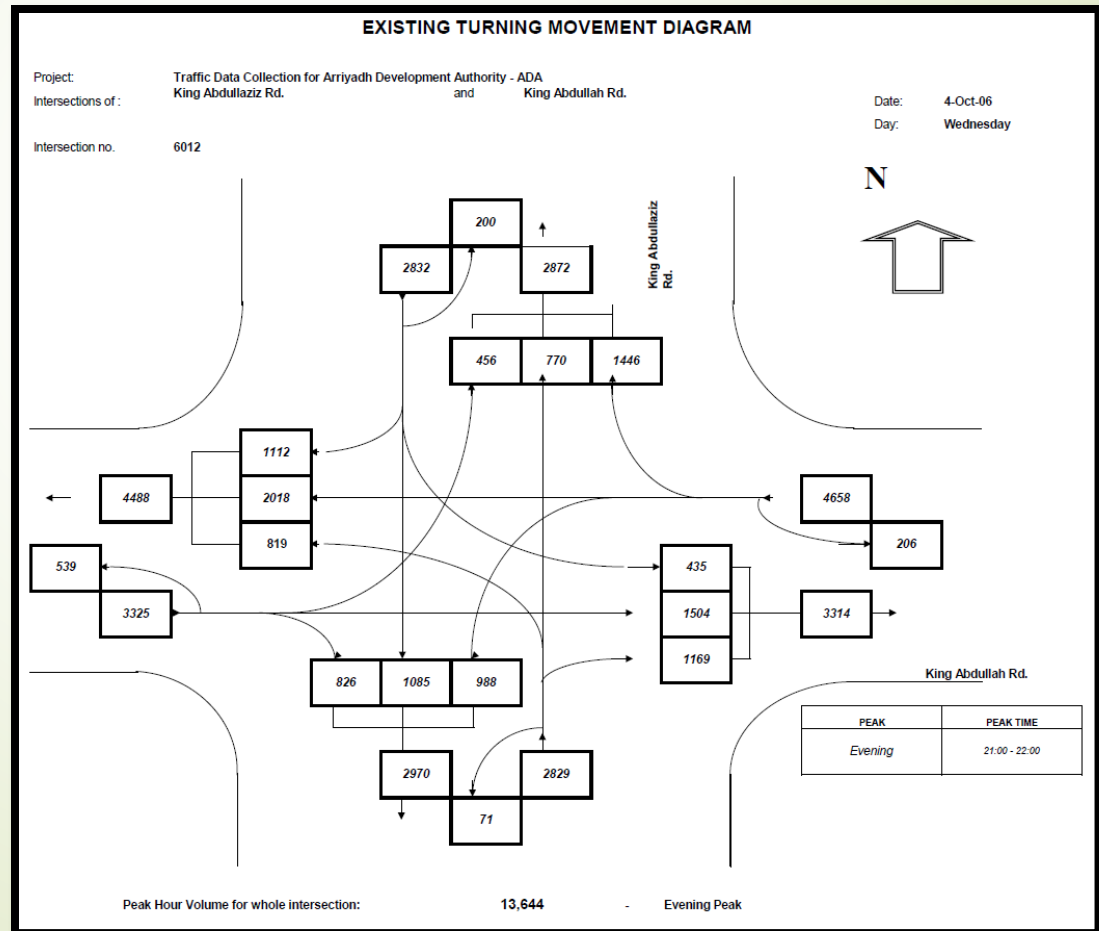
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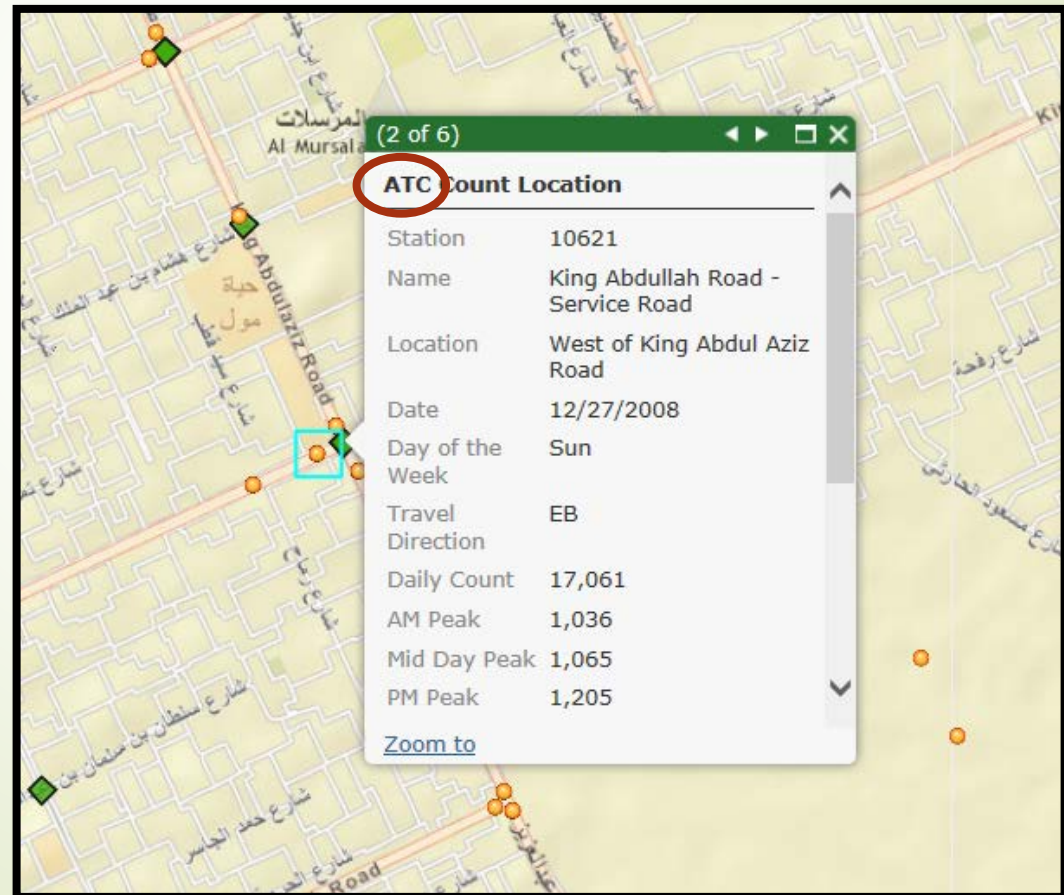
- ArcGIS Online
 - Example data point



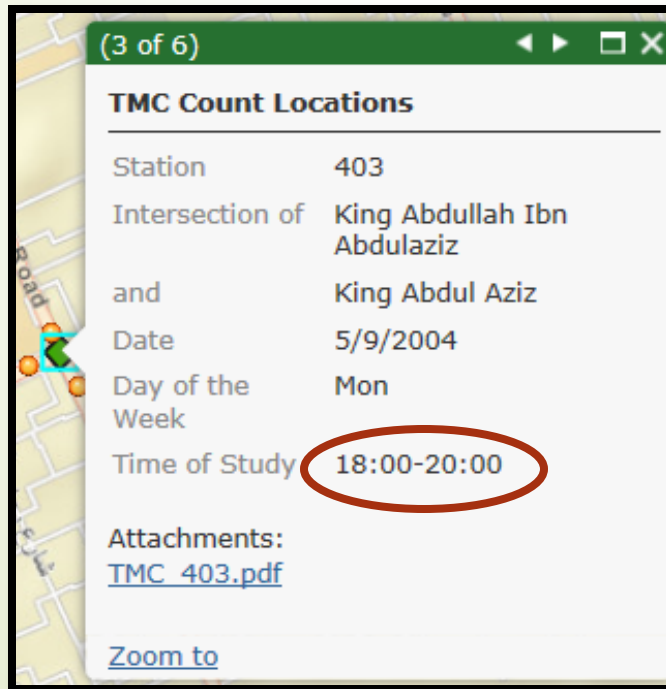
- ArcGIS Online
- Example data point



- ArcGIS Online
 - Example data point



- ArcGIS Online
 - Example data point



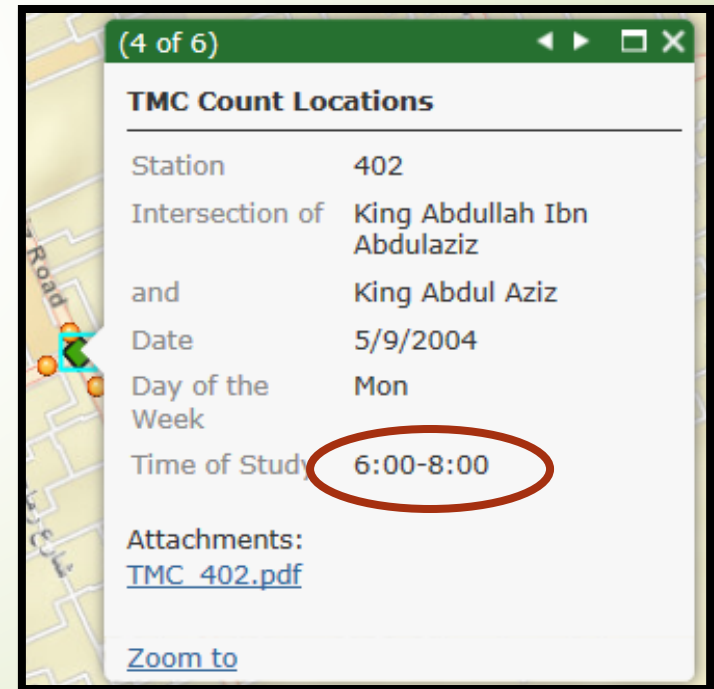
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TMC Count Locations

Station	403
Intersection of	King Abdullah Ibn Abdulaziz
and	King Abdul Aziz
Date	5/9/2004
Day of the Week	Mon
Time of Study	18:00-20:00

Attachments:
[TMC_403.pdf](#)

[Zoom to](#)



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TMC Count Locations

Station	402
Intersection of	King Abdullah Ibn Abdulaziz
and	King Abdul Aziz
Date	5/9/2004
Day of the Week	Mon
Time of Study	6:00-8:00

Attachments:
[TMC_402.pdf](#)

[Zoom to](#)

- ArcGIS Online
 - Example data point

(5 of 6)

TMC Count Locations

Station	804
Intersection of	King Abdul Aziz and King Abdullah Ibn Abdulaziz
Date	12/4/2007
Day of the Week	Wed
Time of Study	00:00 - 00:00

Attachments:
[TMC 804.pdf](#)

[Zoom to](#)

(6 of 6)

TMC Count Locations

Station	6011
Intersection of	King Abdul Aziz and King Abdullah Ibn Abdulaziz
Date	10/3/2006
Day of the Week	Wed
Time of Study	9:30 - 11:30

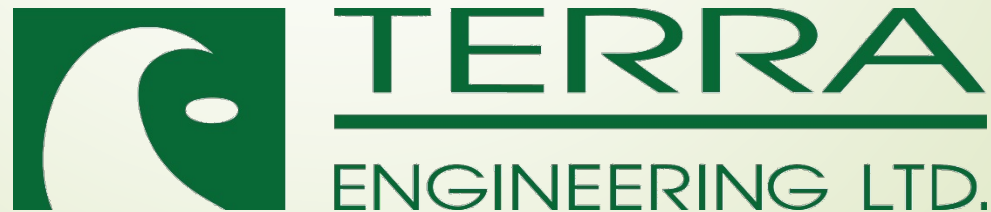
Attachments:
[TMC 6011.pdf](#)

[Zoom to](#)

Questions?

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➤ Business Do's

- Do - Select local partners carefully
- Do - Be relational; business and personal relationships are one in the same
- Do - Learn the language (at least some words)
- Do - Network locally
- Do - Meet face-to-face
- Do - Know your host

➤ Business Don'ts

- Don't - Convey impatience – verbal or through body language
- Don't - Get discouraged from vague language or discussion of generalities
- Don't - Overload them with information
- Don't - Start too big
- Don't - Misinterpret hospitality of the host