

DSSAD Data Storage Capacity - Scenario Assumption:

- ◆ ALKS with the maximum operational speed of 60km/h
- ◆ Weekdays, Depart at 9:00 morning and Return at 18:00 evening
- ◆ Traffic Jam Definition :
 - ✓ According to the VICS* definition (RED (Traffic Jam) = 40km/h and below on highway, 20km/h and below on urban expressway; ORANGE (Heavy Traffic) = 40 to 60 km/h on highway, 20 to 40 km/h on urban expressway)
 - ✓ However, most of the metropolitan expressways have speed limit of 60km/h and therefore consider as: no color =no traffic jam, the areas in between ORANGE =traffic jam
- ◆ ALKS Operation Conditions
 - ✓ Not activated in the areas requires frequent ON & OFF (e.g. short distance between the junctions)
 - ✓ For the areas below 60km/h speed limit, the system continues the operation until system is cancelled by the override (by the driver's acceleration, etc.)
- ◆ "Driver Not Available" status is detected once a day

*VICS : Vehicle Information & Communication Service

Driving Routes:

- 1-hour driving routes (in normal traffic conditions) in the metropolitan area (Tokyo, Chiba, Saitama, Kanagawa)

| Area | Distance | Route |
|----------------------|----------|--|
| Wako – Aoyama | 25km | Metro Expressway |
| Fuchu - Aoyama | 29km | Chuo Expressway/Metro Expressway |
| Chiba - Suidobachi | 42km | Higashikanto Expressway/Metro Expressway |
| Aoba - Suidobachi | 34km | Tokyo-Nagoya Expressway/Metro Expressway |
| Machida - Yokohama | 25km | Yokohama By-Pass |
| Shinagawa - Yokohama | 28km | Metro Expressway Kanagawa |

Wako – Aoyama

Morning - inbound



Evening - outbound

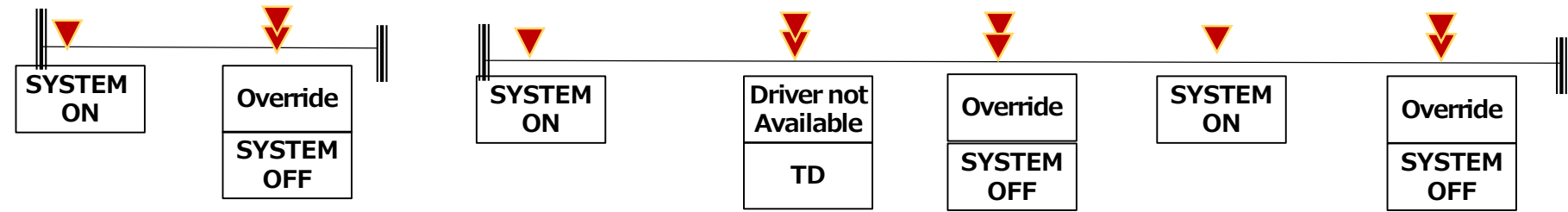


Inbound:

- SYSTEM ON after merge onto Metropolitan Expressway
- After the traffic jam ends SYSTEM OFF by driver override

Outbound:

- SYSTEM ON after passing the Junction
- TD due to the driver condition
- SYSTEM OFF by driver input
- Driver resumes SYSTEM ON
- After the traffic jam ends SYSTEM OFF by driver override



Number of Timestamps

11

Fuchu - Aoyama

Morning - inbound



Inbound:

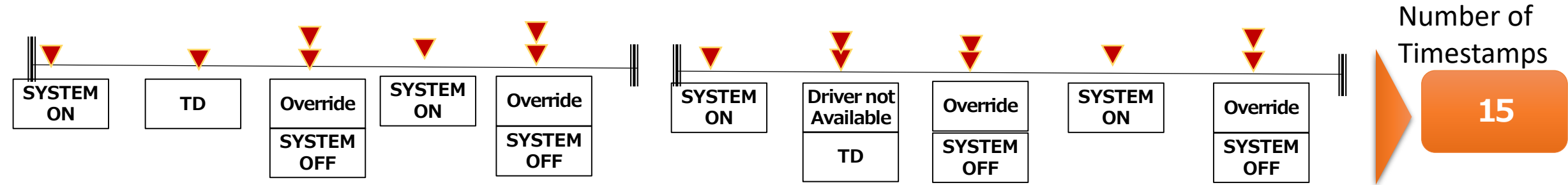
- SYSTEM ON at the congested area
- TD – driver input – SYSTEM OFF at the toll
- Driver turns ON the system again
- After the traffic jam ends SYSTEM OFF by driver override

Evening - outbound



Outbound:

- SYSTEM ON at the congested area
- TD due to the driver not available
- Driver resumes SYSTEM ON
- After the traffic jam ends SYSTEM OFF by driver override



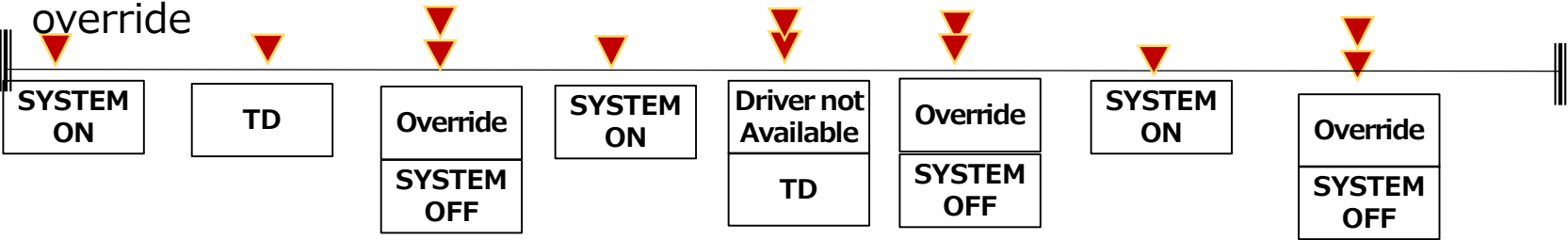
Chiba - Suidobashi

Morning - inbound



Inbound:

- SYSTEM ON at the congested area
- TD – driver input – SYSTEM OFF at the toll
- Driver turns ON the system again
- TD due to the driver not available
- Driver resumes SYSTEM ON
- After the traffic jam ends SYSTEM OFF by driver override



Evening - outbound



Outbound:

- Not so much congestion, so system is not activated

Number of Timestamps

12

Aoba to Suidobashi

Morning - inbound



Evening - outbound

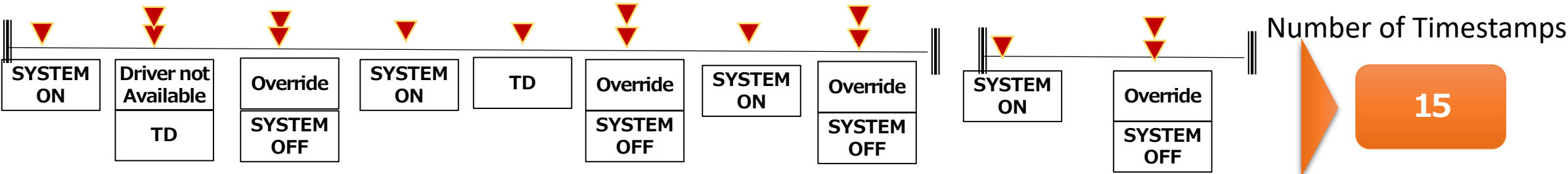


Inbound:

- SYSTEM ON at the congested area
- TD due to the driver not available
- SYSTEM OFF by the driver input
- Driver resumes SYSTEM ON
- TD right before the toll
- Driver input – OFF – Driver resume
- SYSTEM ON
- After the traffic jam ends SYSTEM
- OFF by driver override

Outbound:

- SYSTEM ON at the congested area
- After the traffic jam ends SYSTEM OFF by driver override



Machida - Yokohama

Morning - inbound



Inbound:

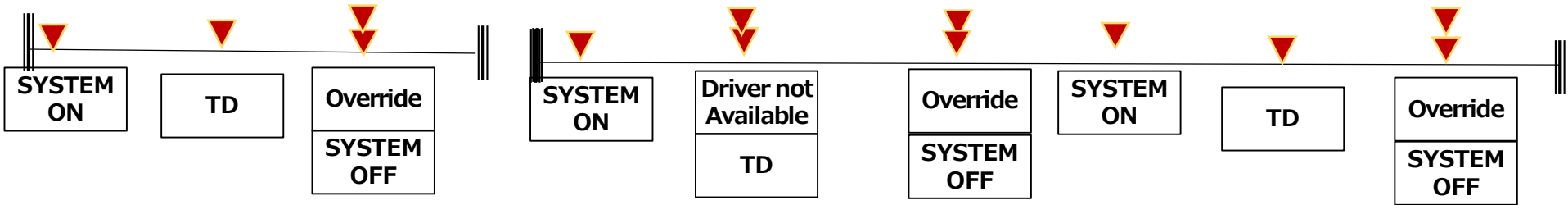
- SYSTEM ON at the Hodogaya Bypass
- After the traffic jam ends TD – Driver override, SYSTEM OFF

Evening - outbound



Outbound:

- SYSTEM ON at the congested area
- TD due to the driver not available
- SYSTEM OFF by the driver input
- Driver resumes SYSTEM ON
- At the exit area TD – driver override, SYSTEM OFF



Number of Timestamps

13

Shinagawa - Yokohama

Morning - inbound



Evening - outbound



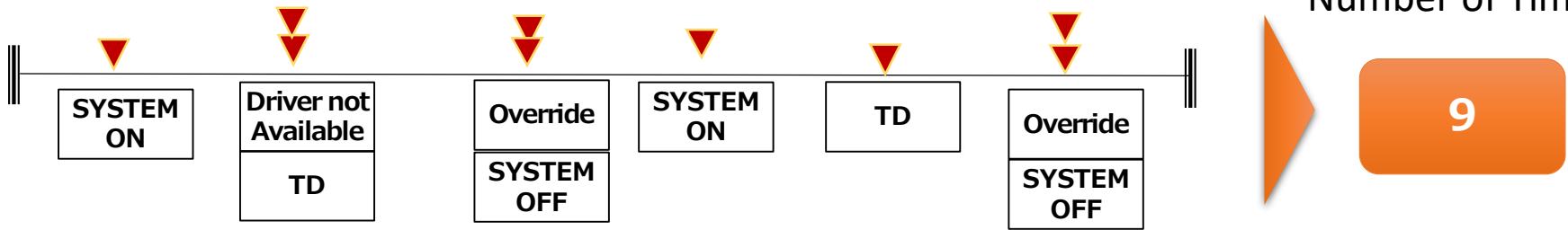
首都高速だが、該当区間は制限速度80k/h区間

Inbound:

- Not so much congestion, so system is not activated

Outbound:

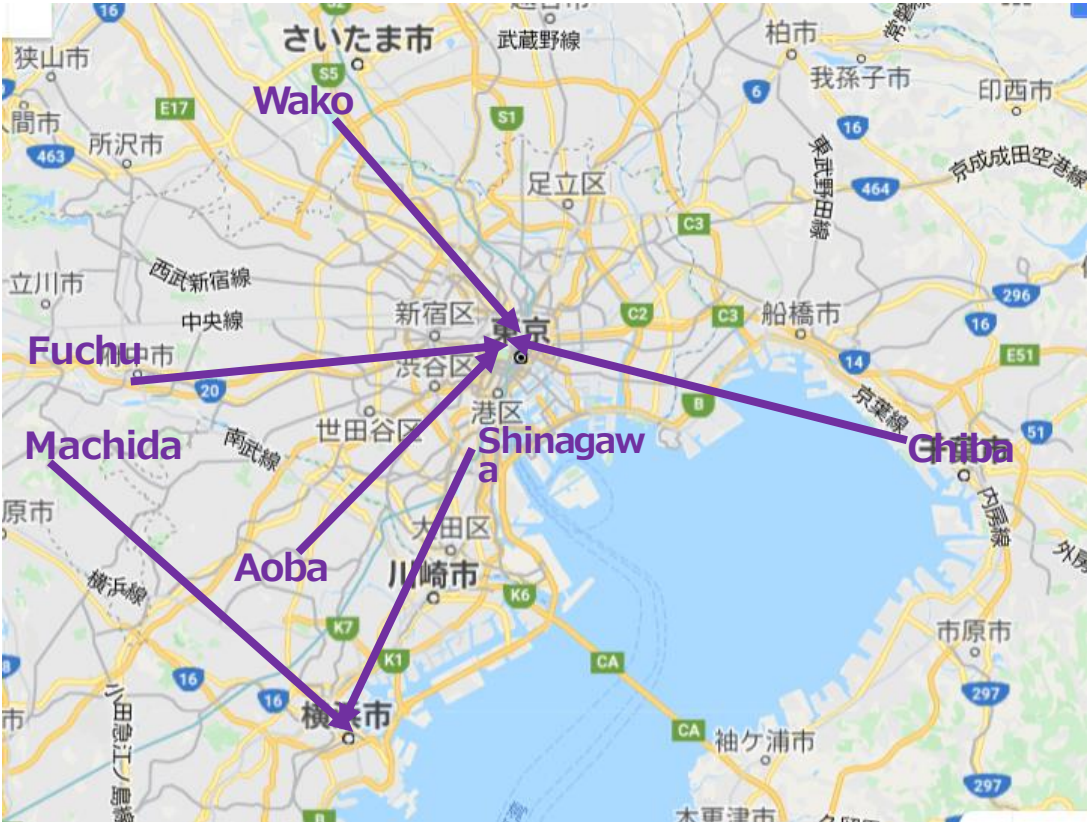
- SYSTEM ON at the congested area
- SYSTEM ON at the congested area
- TD due to the driver not available
- SYSTEM OFF by the driver input
- Driver resumes SYSTEM ON
- After the traffic jam ends TD - Driver override, SYSTEM OFF



Summary: Number of Timestamps

◆ Number of recorded Timestamps: avg. about 13 per day

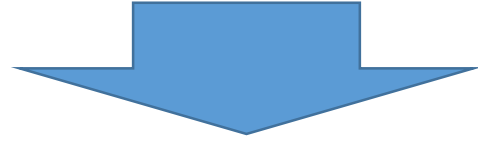
| 区分 | Number of Timestamps (per day) |
|----------------------|--------------------------------|
| Wako - Aoyama | 1 1 |
| Fuchu - Aoyama | 1 5 |
| Chiba - Suidobachi | 1 2 |
| Aoba - Suidobashi | 1 5 |
| Machida - Yokohama | 1 3 |
| Shinagawa - Yokohama | 9 |
| Avg. | 12.5 |



※Above is when 'TD' and 'Driver not Available' recorded separately; if one timestamp is used avg. number will be 11.5.

Consideration of Required Storage Capacity (Number of Timestamps)

- ◆ Recoded number of timestamps: avg. 13 per day
- ◆ Assume everyday use for 6 months: $13 \text{ times} \times 30 \text{ days} \times 6 \text{ months} = 2340 \text{ timestamps}$
- ◆ If assumes more frequent timestamps, 20 times/day, weekday use (5days a week):
 $20 \text{ times} \times 20 \text{ days} \times 6 \text{ months} = 2400 \text{ timestamps}$



- ◆ Required Storage Capacity: for assuring 6 months recording, approximately 2500 timestamps need to be stored.