

Application of Multi-Touch Technology in Support of Data Collection at Intersections

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OBJECTIVE

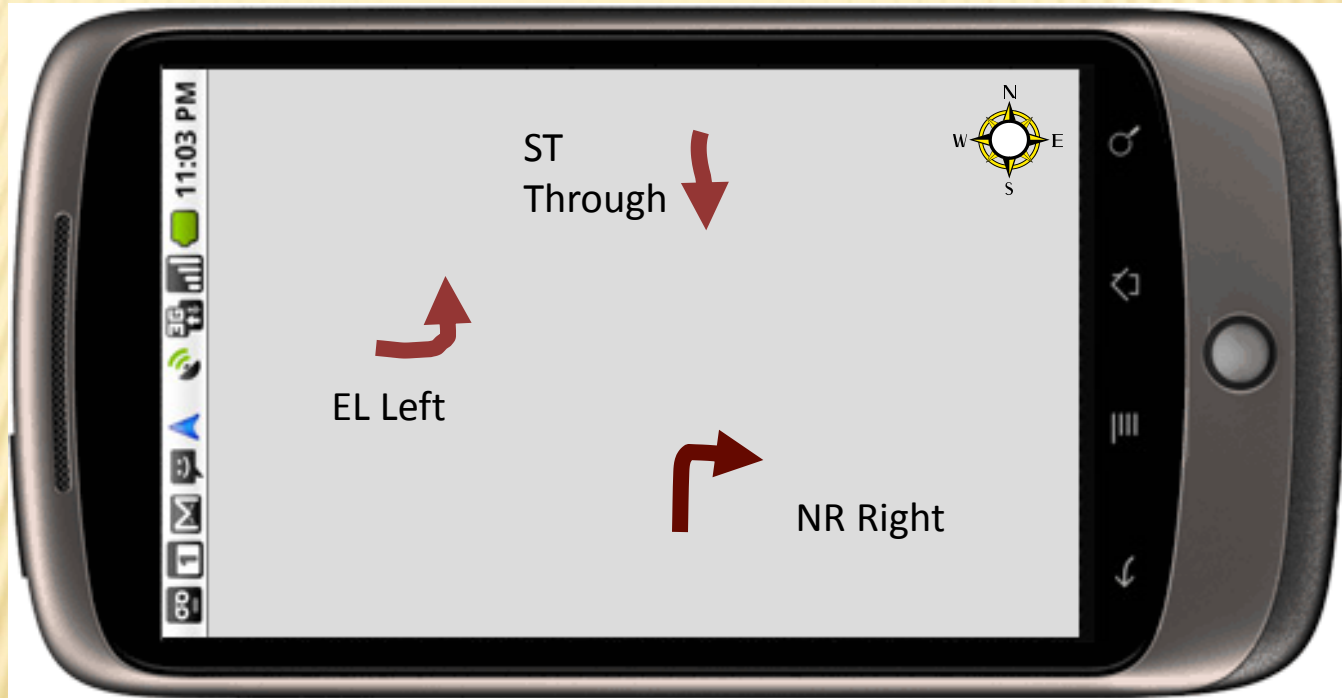
Using Smart Phone for -

- ✘ 1. Turning Movement Data Collection
- ✘ 2. Approach Delay Measurement

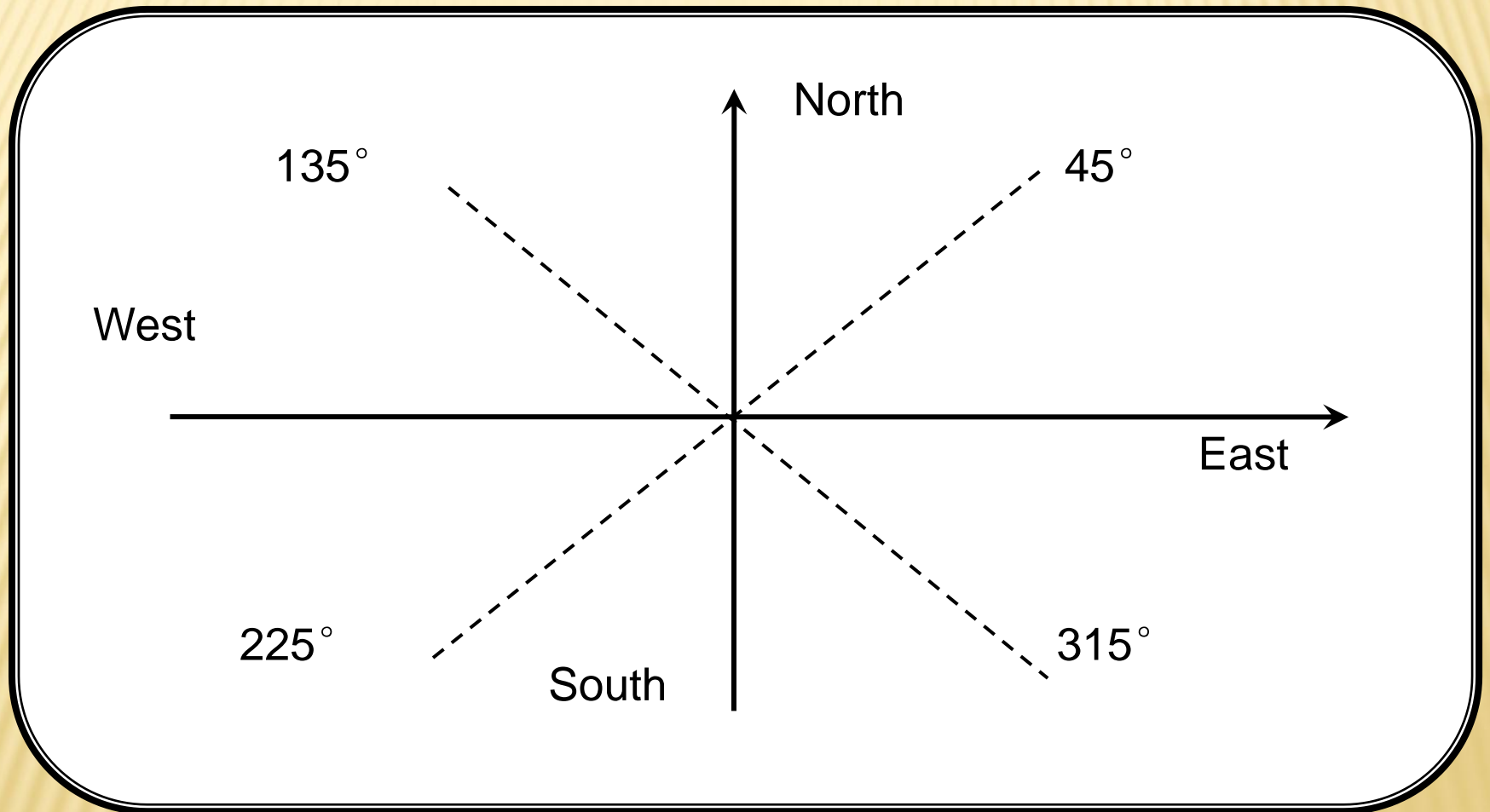
METHODOLOGY

- ✘ 1. Multitouch technology
- ✘ 2. Software built in smart phone
- ✘ 3. Data collection algorithm

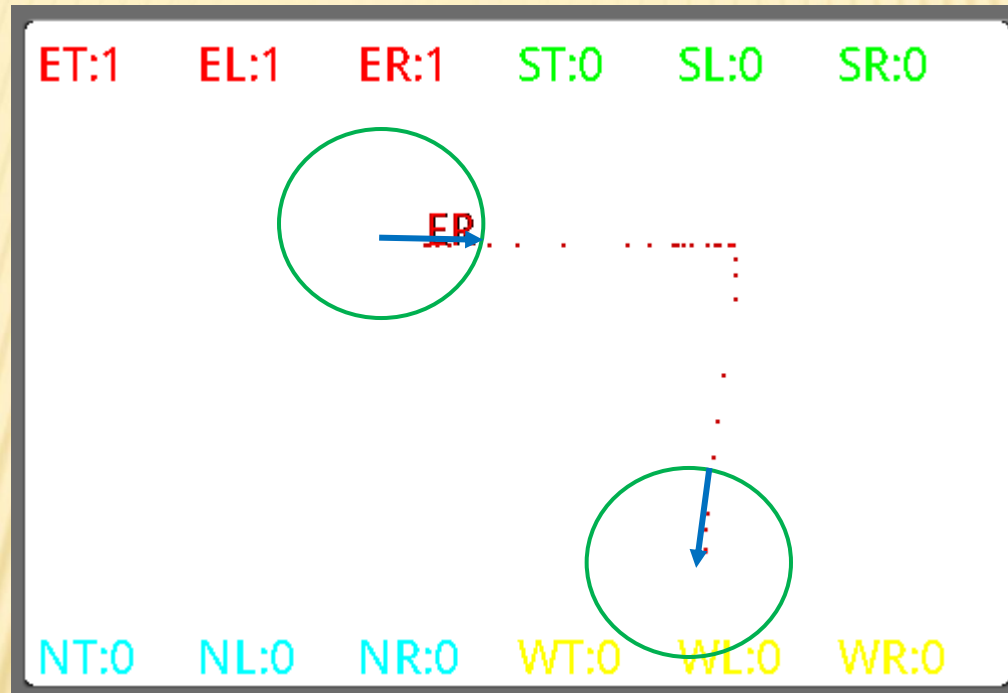
SYSTEM DEVELOPMENT



System Development (Cont'd)



System Development (Cont'd)



APPLICATION



Reference Point

Stop Line

TURNING MOVEMENTS TABLE

| Coming From \ Going to | West Bound | North Bound | East Bound | South Bound |
|------------------------|------------|-------------|------------|-------------|
| East Bound | | EL* | ET | ER |
| South Bound | SR | | SL | ST |
| West Bound | WT | WR | | WL |
| North Bound | NL | NT | NR | |

Preliminary Testing - Turning Movement

Errors in VTM Compared with Ground Truth (%)

| Trial No. | North Bound | | |
|-----------|-------------|----|----|
| | LT | TH | RT |
| 1 | -2 | -3 | 1 |
| 2 | -3 | -4 | -2 |
| 3 | 0 | -2 | -6 |
| 4 | 0 | -2 | -5 |
| 5 | -2 | -2 | -1 |
| 6 | 1 | -3 | -3 |
| 7 | -4 | -2 | 1 |
| 8 | -6 | 1 | -2 |
| 9 | -2 | 0 | 1 |
| 10 | 1 | -3 | -1 |

Preliminary Testing – Approach Delay

Errors in Vehicle Delay Compared with Ground Truth (%)

| Trial No. | South Bound | | |
|-----------|-------------|----|----|
| | LT | TH | RT |
| 1 | 3 | 3 | 2 |
| 2 | 2 | 6 | 1 |
| 3 | 2 | 4 | 2 |
| 4 | 3 | 3 | 2 |
| 5 | -1 | 2 | -1 |
| 6 | -2 | 4 | 4 |
| 7 | 3 | 2 | 5 |
| 8 | 1 | 5 | 3 |
| 9 | -4 | 2 | 3 |
| 10 | 3 | 2 | 2 |