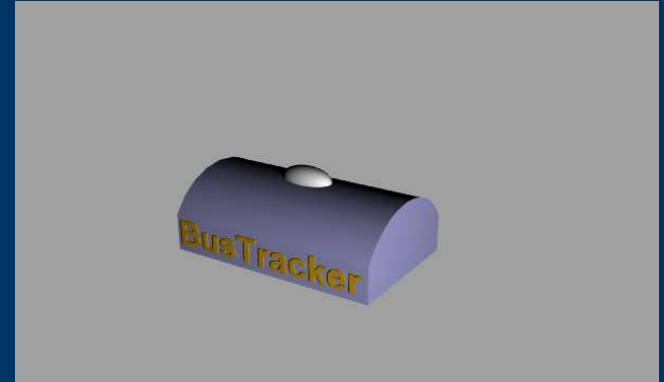


DVR

BusTracker©



Presentation by ES Engineers:

Denis Ryndine (*DVR*)

Michael Atkins (*MJA*)

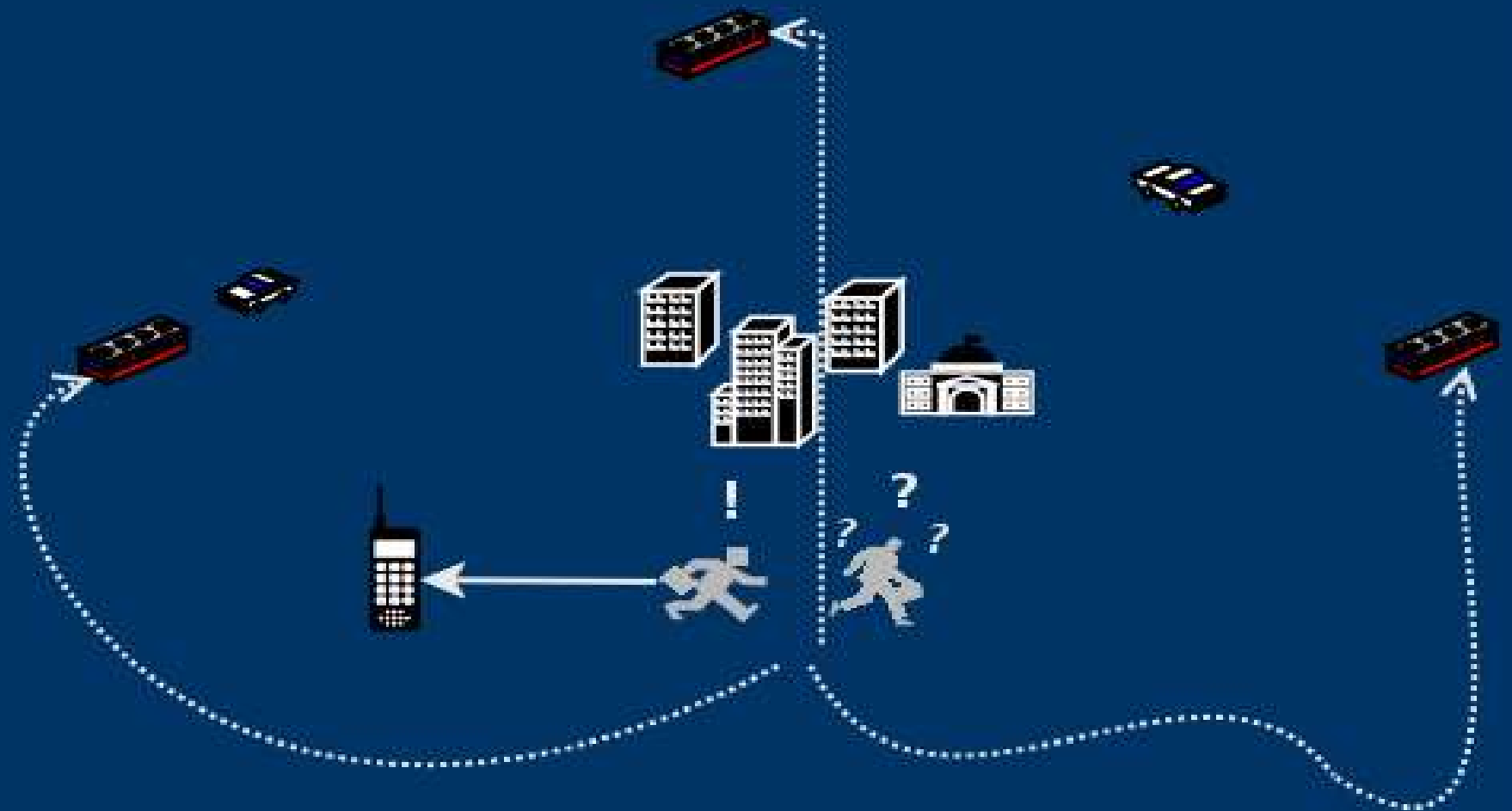
Phumudzo Nelushi (*PMN*)



Application Context

- General consumer marker
- Targeted at city public transport commuters
- Initially aimed at bus travelers
- Typical situation:
 - 6 pm, you've just finished work, but have to go to some shopping mall in the city before returning home;
 - you want to minimize your walking distance, waiting, bus and total traveling time;
 - you take out your BusTracker[®], input destination points, and it presents you with an optimal route plan(s), given your and bus stop positions, and bus departure/arrival time constraints;
 - you quickly make your final decision based on this information and any extraneous factors at that time;
 - it saves you valuable time.

GPS Bus Stop Navigation System



BusTracker^(c) - The tool you need to minimize daily traveling time, plan your route fast, and avoid inconveniences from taking wrong route.

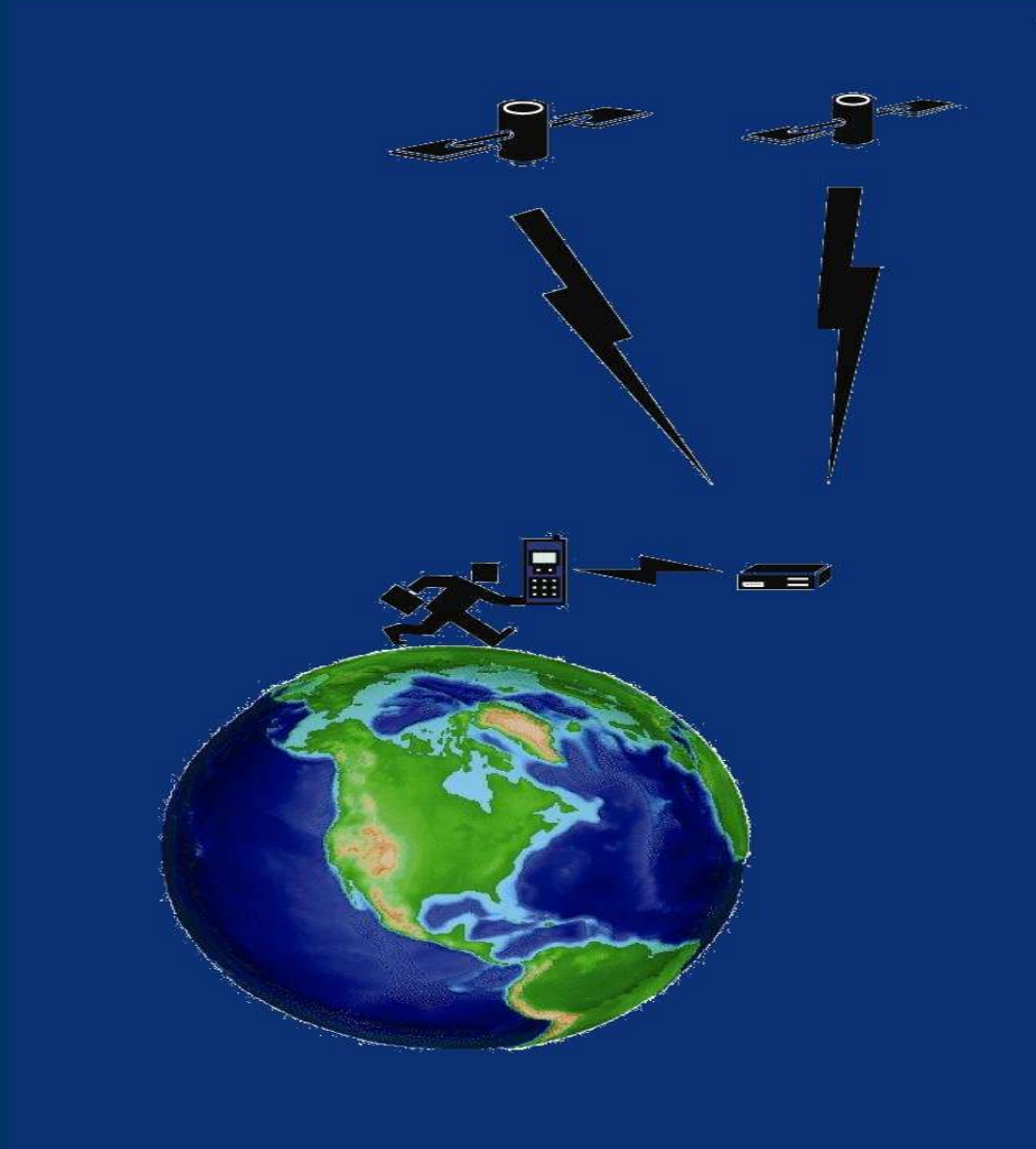
Bus Tracker Concept

- Helps users find the optimal bus-stop from the ones available to him/her.
 - Portable device, interfaces with cellular phone.
 - PC/phone software retrieves bus data (times, routes, locations, etc) from server.
 - Bus data is transferred to Bus Tracker via bluetooth connection.
 - User uses phone (connected to Bus Tracker) to choose destination and view best bus-stop.
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Subsystems

- Communication Subsystem:
 - Hardware: Bluetooth transceiver, GPS module
 - Software: Communication Protocols
 - User Interface Subsystem:
 - Hardware: Cellular phone display
 - Software: UI system
 - Software Logic (Routing) Subsystem
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Communication Topology



Bus Tracker Extensions

- Realtime retrieval of bus data from servers.
 - eg: System will recompute path if a bus is delayed.
 - Wireless protocol for retrieving realtime bus data.
 - eg: 802.11a/b/g in a city with complete coverage (and most will have in the future).
 - GPRS
 - Map with directions to bus-stop displayed on phone.
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