


**UCI ITE Student Chapter Annual Project**

**REACT! and TRACER:  
An Integrated Web-based Travel Survey,  
Data Collection Unit, and Software**

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Supported by:



## ITE Project Objective

- Integrate TRACER, a GPS-based in-vehicle data logger, with REACT!, a web-based Travel & Activity Survey, to increase survey capabilities
- First approach integrates the TRACER data stream into the REACT! user interface
- Second approach compares a real-time web-based survey (ANNE) to TRACER/REACT!

## REACT! Travel/Activity Survey

- Self-administered web-based, household travel/activity survey
- Collection of comprehensive data on household travel & activity scheduling & execution
- Data stored and sent daily to a FTP server, facilitating multi-day surveys

## REACT! Travel/Activity Survey

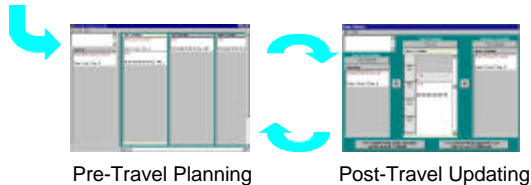
- Household socio-economic data
- Pre-travel and post-travel components
- Geo-coded location data
- Rich data results from a comprehensive survey and commitment from a small household sample

## REACT! - Web-based Travel Surveys



Initial Interview

- Web-based processing of household travel & activity
- Integrated GIS facilitator
- Integration with TRACER



## Initial Interview

- Household Socio-economic Data
- Household Vehicles
- Typical activity frequencies, durations, etc.
- Frequently Visited Locations with GIS Assistance



## Household Information

Initial Interview (Click at the bottom page to get online help)

**Household Information:**  
You have the option of not answering these questions. If you don't feel comfortable answering any of them or that do not apply to you, please select "Don't Know/NA".

Please enter your home address:

Street Address:

City:

State:  Zip:

Don't type in the following: click at the triangle to select your answer

Do you own or rent the house?

What's the type of your house?

How long have you stayed at the current residence?

What's your residential income?

Exit for now and continue later   Back   Next

## Frequent Locations

Initial Interview (Click at the bottom page to get online help)

**Frequently Visited Locations:**

1. Please review the list of locations on the left. If there is one that you visit at least once per week, click at the location that click at the right arrow button to move it to the list on the right.

2. We want to know (about) in your Frequent Locations list:

Locations on this page	Frequently Visited Locations
Location Description Palomares Airfield (Landing 3) and Michael (Public, 3827)	
The Commissary on Base and Duke Target (Military)	
ECU Campus	
Airside Fuel Tank on Duke and Marshall (Public, Chertsey, NC)	
General Team Center (employee and Injured Office in and Out)	
Injured Office Center on 1st and 2nd	

3. If you don't see a location here, click the button

Exit for now and continue later   Back   Next

## Pre-travel Planning

Activity Calendar for one day

Day	Mon 1/20/09	Tue 1/20/09	Wed 1/20/09
Day	Mon 1/20/09	Tue 1/20/09	Wed 1/20/09
Time	08:00 AM - 09:00 PM	08:00 AM - 09:00 PM	08:00 AM - 09:00 PM
Activity	Home	Home	Home

## Post-travel Updating

Activity Calendar for one day

Day	Mon 1/20/09	Tue 1/20/09	Wed 1/20/09
Day	Mon 1/20/09	Tue 1/20/09	Wed 1/20/09
Time	08:00 AM - 09:00 PM	08:00 AM - 09:00 PM	08:00 AM - 09:00 PM
Activity	Home	Home	Home

**Final Schedule:** This column is for you to enter the activities you have actually done on this day.

**Travel Schedule:** This column contains the activities you previously scheduled you would do on this day.

**Any Day:** This column displays the activities you previously said that you don't know or didn't do if they were you will do.

**Final Schedule:** You will also review each activity in the Any Day but to see if it has been done during the day. If it has, you will also move it into the Final Schedule.

**Final Schedule:** This will then be the Final Schedule by adding activities and travel in this column.

**Travel Schedule:** You will first review each activity in the Travel Schedule to see if it actually happened. If it did, move it into the Final Schedule.

## REACT! – Adding Activities

**Activity Information**

1. Click here to enter the name of the activity -> Enter Activity  (I don't know / I don't remember)

2. If you selected [Other...], type in a brief description of that activity here ->

3. Click here to enter the location for the activity -> Enter Location  (I don't know)

4. Select the day of the week for this activity -> Monday

5. Do you know the time of this activity?  
 Yes  
 No  
 Enter the duration of this activity:  Hours, and  Mins  
 If you don't know how long this activity will take, you can leave the question mark in the boxes.

6. Check the persons who will be with you at the activity. (Leave it blank if you don't know yet or you are the only person involved)

May  
 People outside my household

OK   Cancel

## TRACER

- GPS-based in-vehicle wireless communication and tracking system
- Improved data for traffic microsimulation and forecasting
- Variety of applications as vehicle traffic probes and in fleet management
- Currently, collected data includes: ID, date/time, latitude/longitude, speed
- Data can be collected over large time frames with little if any user interaction



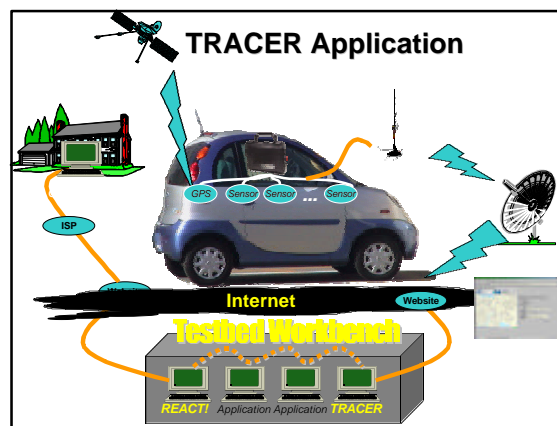
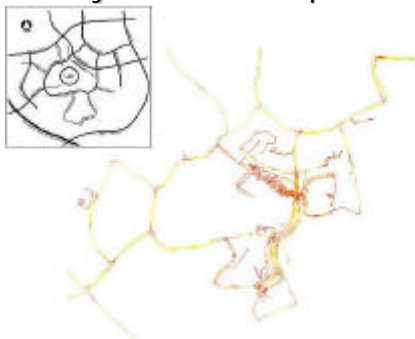
## TRACER System Components

- Portable Extensible Data Collection Units (EDCU) with GPS and other sensor inputs quickly installed
- PC104 Pentium Processor, Linux OS, Flash Ram
- 12-channel GPS Wide Area Augmentation System (WAAS)
- Web-based CDPD (current) and 802.11b (planned) 2-way Wireless Communication and Data Transfer
- OpenMap GIS Display and Analysis
- ANNE Website for Monitoring and Updating

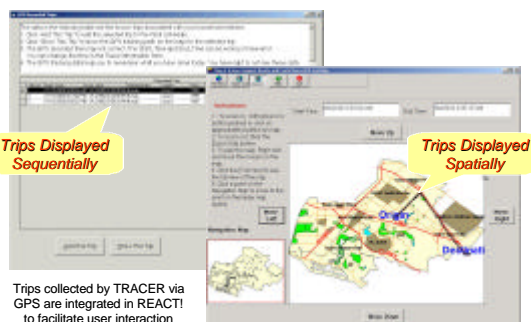
## TRACER's In-vehicle EDCU



## Multi-day TRACER Output



## Integrating REACT! & TRACER



## Research Goals and Results

- To assess the relative burden of each technology prior to field application
- To modify to reflect test results
- Facilitates data entry and intra-household coordination for shared activities
- Tracings serve as "memory joggers"
- Short trips are not fully captured by TRACER
- Being used in current studies of travel behavior

## Current & Planned Applications

REACT! and TRACER technologies were designed for a wide range of research and operational applications:

- Probe Vehicle Studies, including GPS-based speed estimates versus standard loop estimates (PATH)
- Route Choice Studies, with repetitive tracking of routes with varying real time traffic conditions (PATH)
- Residential Location and Travel Behavior, focused on the assessment of the evolution of travel patterns in households following residential re-location (UCTC)
- ZEVNET Shared-use Station Car Program Evaluation, monitoring the usage of a small fleet of EVs (Toyota)

THANK YOU

UCI ITE Student Chapter  
April 2003