

## 1-HETAP Overview Visuals



### Introductions

- Name
- Where are you from
- Who do you work for/represent
- Why HETAP interest
- What do you hope to learn

### Workshop Goals

- Know the development of UTAP (Universal Trail Assessment Process) and HETAP
- Understand the HETAP concepts, measurement techniques, software and equipment

### Workshop Goals

- Understand HETAP benefits to land managers and trail users
- Gain practical experience
- Perform and lead assessments

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### Greatest Barrier to Trail Use

- Lack of knowledge about actual on-trail conditions
- Lack of knowledge about where access is possible

### Need for UTAP

- All users and land managers need accurate trail data
- Objective trail information is generally limited, but allows informed decisions about trail information
- Subjective information is not related to individual abilities and can be misleading



### UTAP Research & Development Project of Beneficial Designs, Inc.

- Funded by the National Center for Medical Rehabilitation Research in the National Institute of Child Health and Human Development at the National Institutes of Health SBIR Grant #R44 HD29992-03

### UTAP Development Partners

- Bureau of Land Management (DOI)
- Bureau of Reclamation (DOI)
- National Park Service (DOI)
- US Army Corps of Engineers
- US Fish & Wildlife Service (DOI)
- US Forest Service (USDA)

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### UTAP Development Partners

- American Trails
- California State Parks
- Minnesota Department of Natural Resources
- National Center on Accessibility
- Wilderness Inquiry

### Key Variables for UTAP

- Measured many trail factors
- Matched objective variables with user expectations and experience
- Matched objective variables with trail experts and their knowledge of trail



### Relation to User Perceptions

- Users of all abilities view trail information before hiking
- Discuss user expectations prior to trail use
- Discuss user experience after trail use



### Research Results

- Identify key variables
- Validity
- Repeatability
- Relation to user perceptions

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### Validity of UTAP/HETAP

- Measure & record in 2 foot intervals
- Calculate trail access information
- Expert review of information accuracy
- Typical grade & cross slopes within 1%



### Repeatability of UTAP/HETAP

- Same UTAP leader, different days
- Same UTAP leader, different years
- Different UTAP leader, same day
- Comparisons were repeatable

### UTAP Tools



### From UTAP to HETAP

- HETAP based on the same principles as UTAP

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### HETAP Advantages

- Automated data recording and report generation
- Simple data sorting and management
- Quicker assessments averaging 1 mile-per-hour
- Only one person necessary
- Improved data accuracy
- Significantly reduces time, labor and cost
- Direct export to Microsoft Excel spreadsheet

### HETAP Generates Objective Information

- Access and Use
- Construction and Maintenance
- Mapping and Interpretation
- Environmental Protection and Management
- Compliance with Design Standards

### Assessment and Compliance

- Inventory existing facilities and infrastructure
- Determine compliance with existing ADAAG and Developed Outdoor Recreation facilities
- Create transition plan with goals and objectives for accomplishing access

### User Benefits from TAI

- Consistent information
- Increased independence, safety, opportunities and enjoyment
- Responsible and informed trail selection
- Knowledge of actual conditions



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## Land Manager Benefits

- Improved project planning and budgeting
- Monitoring of environmental impacts
- Trail condition documentation
- Design standard compliance
- Identify work priorities
- Provides GIS data



What types of information do you display for your trail?

## Key HETAP Information

Length



Grade



Width



Surface



Cross slope



Features & Facilities



People with Disabilities



Users with limited experience

Everyone benefits from TAI!



Children

Adults who are older or less fit



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HETAP is suitable for any trail or path of travel in an outdoor environment.

**What are different types of trails?**



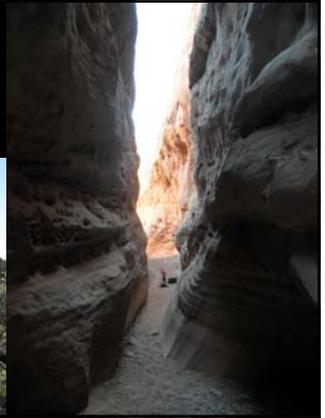
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Recreation Trail (Back Country)



Narrow Trails



Cross Country and Snowshoe Trails



Snowmobile Trails



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### Wheeled Instrumentation Sensor Package - WISP

- Stroller – 3 wheeled jogging stroller with 22 inch wheelbase
- Rollawheel – measures 13 inch width and 18 inch length
- ATV/OHV – collects grades and cross slopes based on vehicle wheelbase



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### WISP Features

- One person operation to record grade and cross slope information
- Distance – forward/reverse
- Standard USB sensor box interface
- Laptop with weather resistant touch screen recommended
- Extra lithium battery recommended

### HETAP-Stroller-GPS & Camera



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### WISP Hardware

- High speed sampling and adjustable digital filtering of grade and cross slope
- Dual reed switches to sense forward and backward movement

### WISP Software Interface

- Designed for ETRACS compatibility
- Component Object Module (COM) interface to request distance, grade and cross slope
- Calibration routine provided
- Compatible with HETAP 2.0 software

### High Efficiency Trail Assessment Process - HETAP Software 2.12

- Software that guides the user to collect objective surface and feature trail data
- Sort data to create grade, cross slope, surface and tread width reports
- SQL data base for compatibility with larger data base systems
- Calculation of Trail Access Information
- Exports to Microsoft Excel

### HETAP 2.12 System Features

- Data center to generate reports with sorting
- Combine, reverse and split trail segments for data processing
- Create TAI summary reports

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### HETAP 2.12 Station Data

- Automatic recording of grade, cross-slope and distance
- Automatic capture of GPS position
- Automatic image capture
- Programmable alarms for grade and cross-slopes
- Automatically saves as you go

### HETAP Records Typical and Extreme Values

Grade

Cross Slope

Width

<u>Trail</u>	<u>Grade (%)</u>		<u>Cross Slope (%)</u>	
	<u>Typ</u>	<u>Max</u>	<u>Typ</u>	<u>Max</u>
Kersey Lake	5	70	11	32
Indiana Falls	8	10	16	19

### Surface

- Firmness Category
- Surface Type



### HETAP 2.12 Feature Data

- Feature type drop down lists
- Provides for recording of rotational penetrometer firmness/stability
- Image capture of features

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## Features and Facilities

- Location
- Type
- Description
- Dimensions
- Quantity



## Feature Examples



Scenic Viewpoint



Petroglyphs



Rocks & Handrails



Rock Scramble



Slide

## Feature Examples

## Feature Examples

<u>Feature</u>	<u>Dist</u>	<u>Zone</u>	<u>Size</u>	<u>Rem.</u>
Rock	50	TB	11x23x7	48
Rock	60	TB	10x23x6	17
Rock	70	VF	11x22x8	n/a
Rock	5020	TB	12x22x7	12

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## UTAP in Use

- Over 1,040 individuals trained
- Federal, state and local trail management agencies
- US, Canada, and other countries

## HETAP in Use

- Florida State Parks
- Cities of Edmonton, Alberta and Toronto, Ontario
- National Park Service-SW Region
- San Antonio Parks and Recreation
- Monterey Peninsula Reg. Parks
- Santa Barbara Front Country
- Beneficial Designs, Inc.-Nevada

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- Funded by the U.S. Department of Agriculture Small Business Innovation Research (SBIR) Grant Program #2005-03226

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### Overview Summary

- Lack of information is the greatest barrier to access
- HETAP is objective, valid, repeatable
- Generates and conveys all types of information for all types of trails
- Benefits all users and land managers
- Focuses on grade, cross slope, surface, width and features

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