

TRANSPORTATION

Building Jobs through
Transportation

FOCUS ^{Fall} 2003

News and Information from the Rahall Transportation Institute



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Partner Schools:



RTI to Create 911 Data Warehouse for

by Errin Jewell

Emergency vehicles may be able to locate rural homes more quickly and easily thanks to an agreement between the Rahall Transportation Institute (RTI) and the West Virginia Statewide Addressing and Mapping Board (WVSAMB).

Recently, research as-

sociates from RTI agreed to develop a detailed implementation plan that addresses the short-, mid- and long-term data requirements of the WVSAMB.

The goal is to provide urban-style addresses for rural areas of West Virginia and to create a data warehouse to store the information to ensure the same level of prompt,

accurate emergency service enjoyed by the urban areas.

"In order for ambulance drivers, firefighters, police officers and other emergency personnel to locate homes in rural areas, they must be mapped and the maps must be stored in a form that is easily accessible from emergency command centers," Bob Plymale, RTI director, said.

Continued on 3: 911 Data Warehouse

Engineering Academy Introduces High School Students to Opportunities, Careers in High-Tech Profes-

by Errin Jewell

Practicing engineers led 31 high school students through constructing and programming intelligent vehicles, mapping GPS points, building robots, assembling CO2 racers and other activities during the "Exploring Engineering Academy of Excellence" camp at Marshall University June 22-27.

Juniors from 23 high schools in West Virginia, Ohio and Indiana attended the third annual camp, which was hosted

Continued on 3: EEAE

by the College of Information Technology and Engineering (CITE) and co-sponsored by RTI and other engineering, transportation and technology organizations.

Dr. Betsy Ennis Dulin, Dean of CITE; Dr. William Pierson, Interim Division Chair; and Dr. Richard Mc-



BSC's 'Vasilius' Wins Intelligent Robot Con-

by Brian Dowler

A team of research and engineering technology students from Bluefield State College, an RTI partner school, were rewarded with top placement at the world championships of Intelligent Ground Robotic Vehicle international competition at Oakland (MI) University.

The team, partially funded by RTI, received championship trophies for "design" and the "most intelligent robot" in the competition that included engineering programs from institutions of higher education including Georgia Tech, Virginia Tech, University of

Continued on 3: Vasilius

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Plymale's Perspective: *The Director's Report*

"Technology Transfer: Bringing Research and Education to the People of Appalachia"

Technology Transfer breaks the barriers between the world of research and academia and brings research results to transportation practitioners and educators who apply research findings to careers, classrooms and the public. RTI's technology transfer goal, as a University Transportation Center, is to make the "availability of research results to potential users in a form that can be directly implemented, utilized or otherwise applied."

Transportation professionals can employ ideas, knowledge and skills they gained through our technology transfer program in their respective fields. With the support and guidance of principal investigators, RTI brings research results to the professional sectors through research papers, technical reports and conferences.

RTI sponsored and participated in the first national Transportation Research Board Conference on Transportation and Economic Development in Portland, Oregon, which was attended by 250 national and international transportation researchers and professionals.

Conferences such as the Intelligent Transportation Systems Fair at Marshall University, brought together transportation professionals, leading ITS companies from throughout the United States and educators to map the road to the future with intelligent transportation systems, and discussed what role RTI will

play in that vast road map.

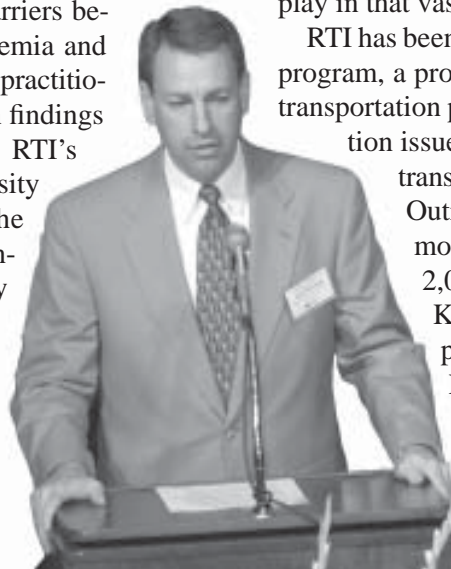
RTI has been very successful with its K-12 Outreach program, a program that nurtures a new generation of transportation professionals by introducing transportation issues and encouraging students to consider transportation related careers. Transportation Outreach on Wheels, TO2W, has traveled to more than 22 schools and instructed over 2,000 students in the Tri-State area. Other K-12 Outreach programs include Transportation Outreach on the Web, Design a Future Vehicle and Intelligent Transportation Systems- LEGO Robotics City.

In addition to these technology transfer efforts, RTI sponsors workshops and seminars to promote the transfer of transportation technology from experts in the field to transportation practitioners. Seminars are conducive for the exchange of ideas and a dialogue between the expert and the practitioner that will have rippling effects down to the people of Appalachia.

By directly influencing the workforce, RTI will help shape the economic development of the Appalachian region; making RTI vital

to a successful future for businesses, education and the transportation world.

Sincerely,
Bob Plymale, RTI Director



"By directly influencing the workforce, RTI will help shape the economic development of the Appalachian region."





From page 1: 911

“We hope this project will allow emergency workers to locate homes that require their assistance and then arrive in a timely fashion.”

A multi-discipline team of information technology specialists, geologists, research associates and graduate research assistants from RTI will implement the system in three phases.

During phase one, the primary data warehouse will be constructed at the Marshall University Drinko Library. In phase two, a secondary

data warehouse will be constructed at an additional site. In the final phase, the two sites will be brought into full production and the E-911 structure will be serviced.

Through this agreement, geospatial and other intelligence and operational information may be provided to emergency personnel in the center from a variety of sources, at different times and rates, and on various media.

All information added to the system will be standardized and integrated to fit within the parameters of the data warehouse.

From page 1: VASILIOUS

University of Michigan and University of Colorado. The competition included nearly 30 robots, some of which came from Japan and Canada.

“Vasilius,” the winning robot, is six-foot tall, 300 pounds and processes its environment using stereoscopic vision, laser movement systems, a differential global positioning system, digital compass, color and proximity sensors.

The team plans to refine the design and operation of “Vasilius” in preparation for next year’s IGRV event.



Above left: EEAE students listen as a representative from Hawk’s Nest State Park explains how engineers manipulate the New River using locks and dams. Above right: Thirty-one high school juniors from West Virginia, Ohio and Indiana comprised the EEAE 2003 camp.

From page 1: EEAE

nated the camp and served as instructors. RTI research associate Asha Puttaiah, an environmental engineer, assisted as a counselor.

The students were broken into groups to provide a more intimate learning environment and use teamwork while completing exercises. A panel of practicing engineers also spoke daily to the students. Field trips to Beech Fork Lake, the Toyota plant at Eleanor, W.Va., locks and dams at Hawk’s Nest State Park and the New River Gorge Bridge allowed them to see examples of environmental, systems, automotive, hydraulic and civil engineering applied to real

settings.

Pierson said, “I believe the students left the Academy with a better understanding of the engineering profession, an appreciation for what engineers do and a greater realization of opportunities that are possible in the engineering profession. Some secondary lessons learned are the importance of planning and teamwork.”

He also said at least three of the original 2001 attendees were enrolled in engineering programs at institutions of higher learning for the 2002-2003 academic year. Two EEAE alumni returned to speak to this year’s participants to give them a better understanding of expectations for engineering

majors. As additional EEAE classes increase in size and graduate from high school, Pierson said he expects more to enroll in post-secondary engineering programs.

Pierson said he would like to expand the concept of the academy to include more students from a larger geographic area. He would also like to develop a year-long activity in association with secondary school systems to encourage more Appalachian youth to pursue careers in engineering, transportation and technology.

Participants were selected based on their performances in college preparatory courses and letters of recommendation from guidance counselors.



Faculty & Student Spotlight: Dr. Robert Walker, Amy Ed-

Name: Robert Walker, M.D., M.S.

Education: University of Florida
College of Medicine, Bowman
Gray School of Medicine

Title: Professor and Chairman of
Family and Com-
munity Health,
Joan C. Edwards
School of Medi-
cine, Marshall
University



Contributions to RTI: Principal In-
vestigator for TTP
00-10: Improving Transportation
Access to Rural Health Care in
Lincoln County: Process Imple-

mentation and TRP 99-14 Drowsy
Driving Problems in WV.

Project Number: TTP 00-11 De-
velopment of a Transportation and
Economic Development Information
System for the State of West Virginia
(TEDIS-WV) Delivered over the In-
ternet

Email: kinney@marshall.edu

Name: Amy J.
Edmonds, B.B.A

Education: B.B.A.
Accounting and
Economics, Mar-
shall University;
M.B.A. candidate,



MUGC; planned to pursue a Ph.D.
in Economics

Title: Graduate Research Assistant
Contributions to RTI: Assisted PIs
in collecting data & writing informa-
tion for TTP 00-12 High Technology
Corridor for Nick J. Rahall, II Trans-
portation Institute

Email: AmyJEdmonds@aol.com

*Faculty and Student Spotlights will
highlight a faculty or staff member
and a student in each issue of Trans-
portation Focus. If you would like to
be considered for the next newsletter
contact Errin Jewell at (304) 696-
7165 or jewell4@marshall.edu.*

Dailey and Yoo, Two New Research Associates, Welcomed to RTI

by Brian Dowler

Peter J. Dailey and Sanghong
Yoo were recently welcomed as
research associates to the RTI staff.

Dailey is a research associate
who works exclusively on
the Integrated Track Stability
Measurement Systems (ITSAMS)
research project. The ITSAMS
project seeks to reduce main-
tenance costs associated with
rail-way infrastructure through
non-invasive technologies that
measure and sense the railway and
associated structure.



He graduated with a B.S. in Mining
Engineering from West Virginia
University, and he recently completed
a M.S. in Technology Management
from Marshall University.

Dailey was born in Peoria, Ill. but
moved to Charleston, W.Va. with his
family in 1967. He previously served
as an advisor for various engineered
products including explosives and
chemical processing equipment.

Yoo is now a research associate
and computer system administrator.
He works on the Transportation and
Economic Development Information
System (TEDIS) project and is
skilled specifically in geographical
information systems and remote
sensing. He also has experience with
various mapping instrumentations.

He has been employed at RTI

since 2001 as a graduate research
assistant. He became a full-time
employee upon completion of a
M.S. in Environmental Engineering
and an M.S. in Physical Science in
Geobiophysical Modeling.

Yoo earned a B.S. in Inorganic
Material Engineering in Gyeosang
National University, Korea in



1999. As a
tutor in the
Marshall
University
H.E.L.P.
program
Yoo taught
science and
engineering
subjects to

students with learning disabilities
and attention deficit disorder.



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Operation Lifesaver Camp Teaches Railroad Safety to



by Brian Dowler

From July 6-11, RTI and West Virginia Operation Lifesaver (WVOL) hosted the WVOL Rail Camp. Thirty-two 12-17 year olds from five states participated in the camp.

The primary focus of the project is to keep civilians, or non-railroad employees, from being injured by railroad apparatus or on railroad property.

“Studies have shown the years prior to adulthood are when safety habits are formed.”

The five-day camp entwined typical camp activities such as swimming and rock climbing with railroad safety and instruction. Each camper had the opportunity to drive a real locomotive and participate in activities such as hand-car races and take a motor car rail trip. For the first time the camp featured the Norfolk Southern mobile locomotive simulator.

Mark Burton, director of the Marshall Center for Business and Economic Research, said that project objectives are to reduce injuries and fatalities at highway-rail grade crossings in West Virginia. He said that trespassers are



Above: Three Operation Lifesaver Rail Camp students operate a hand-car while learning about railroad safety.

sometimes injured on railroad properties. The program also targets ways to eliminate this problem.

“Studies have shown the years prior to adulthood are when safety habits are formed,” he said. “Operation Lifesaver targets this age group in an attempt to form rail-safe lifestyles.”

As a partner in the WVOL program, RTI is helping the program convert a school bus into a mobile presentation center so that the program can reach residents throughout the state. RTI also agreed to help improve and host the web site at www.wvol.org.

“RTI has taken a program that was doing great things and through its partnership has made the program exceptional,” Burton said

For the past three years RTI has partnered with CSX and Norfolk Southern and the West Virginia State Public Service Commission in Operation Lifesaver, which operates on volunteer labor, mostly from transportation professionals throughout the state.

Nick Rahall Receives Operation Lifesaver 2003 Congressional Appreciation Award

by Errin Jewell

On National Lifesaver Day, May 14, West Virginia Congressman Nick J. Rahall, II received the Operation Lifesaver Congressional Appreciation Award for 2003. West Virginia Operation Lifesaver is one of the pre-K-12 outreach activities RTI sponsors as part of its technology transfer initiatives.

West Virginia Operation Lifesaver is a non-profit safety education organization whose goal is to reduce and eliminate the number of injuries and fatalities at the highway-rail grade crossings in our state and the number of injuries and fatalities to those who



Above: Presenting the award are (from left) Otto Sonefeld, Chairman, OLI Board of Directors; Ira Baldwin, Co-Coordinator, WVOL; Roger Lipscomb, Chairman, WVOL Board of Directors; and Gerri Hall, President, Operation Lifesaver, Inc.

trespass on railroad rights-of-way.



Land/Maritime Firefighter Training Facility Design, Construction Guided by RTI Engi-

by Brian Dowler

Engineers from RTI designed and provided construction oversight for the pouring of the concrete pad used to support the superstructure from the motor vessel the "Warren," which will be used for marine firefighter training.

The "Warren," which was donated by Michael D. Marshall, will be used by the Inland Waterways Academy. The inland marine industry and professional and volunteer firefighters will use the facility. The closest maritime firefighting facility to the one being constructed at the Inland Waterways Academy is in Toledo, Ohio. The training facility will promote basic and advanced firefighting techniques.

"In my mind, this is just another step in providing the inland marine industry with the training it requires. RTI and the other partnerships with the MCTC Inland Waterways Academy have been the key to the development of this training facility," Dana Robertson, director of the Inland Waterways Academy said. "Without great partnerships and combined efforts, the facility could not



Above: RTI Research Associate John Ball, PE, designed and provided construction oversight in converting "The Warren" into a facility used to train professional, volunteer and maritime firefighters in Huntington, W.Va.

be a realization."

Madison Coal Company transported the "Warren" from Ashland, Ky., by barge and crane; Heavyquip Corporation provided the trailer service to transport it to the academy; Mountain Enterprises provided heavy equipment; and American Electric Power and Marathon Ashland Oil were all helpful in their

partnership with the project.

The Huntington District Waterways Association contributed \$7,000 toward the construction of the concrete pad, which has been greatly beneficial to the continuing success of the project.

The International Union of Painters and Allied Trades, AFL-CIO, CLC District Council 53, Charleston, W.Va. donated time and material to paint the "Warren."

"This training facility will lead to safer marine operations. By offering training on this level, the marine industry can become a more efficient and more productive industry."

He said the training facility could be complete as soon as September 2003.

Transportation Focus is a quarterly newsletter published by the Nick J. Rahall, II Appalachian Transportation Institute.

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RTI Hosts MU Board of Governors Meeting



by Errin Jewell

RTI hosted the Marshall University (MU) Board of Governor's meeting Wed., July 16, 2003, at RTI headquarters. Three new members, Michael J. Farrell, Gary Adkins and Brent A. Marsteller, were sworn in at the meeting. West Virginia Gov. Bob Wise appointed the new members to serve a four-year term ending June 30, 2007.

After being sworn into their positions, the board members and MU staff, faculty and student representatives toured RTI's facilities. They were also briefed about current and future research projects and economic development activities.

"Governor Wise has selected three excellent individuals to serve on our board," MUPresident Dan Angel said. "During his year on the board [2001-2002], Mike Farrell provided a tremendous service to higher education, and no doubt that will continue. I'm certain Gary Adkins and Brent Marsteller will make significant contributions."

Continuing as board members are Stephen E. Haid, Carol Hartley, Virginia King, Menis E. Ketchum, A. Michael Perry, Robert L. Shell Jr., Gary G. White, Thomas D. Wilkerson and Joseph L. Williams of Huntington.

State Fair of W.Va. Visitors "Teleoperate" LEGOS, Learn about Careers, at RTI Exhibit

by Brandon Totten

RTI participated in the State Fair of West Virginia August 8-16 in Fairlea, W.Va. The annual event draws thousands, and more than 2,100 people visited RTI's exhibit during the nine day period.

"The exhibit allowed RTI to reach out to people with whom we would not normally have been able to make contact," David

Cartwright, research associate for RTI, said. "In an event such as this, we were able to take our goals, outreach programs and research to let people know what we are about."

Research associates, graduate research assistants and undergraduate student assistants were available to explain RTI's technology transfer activities, research projects and research results in transportation that impact economic development.

Students from partner school Bluefield State College (BSC) were available to answer questions about the award winning 'Vasilius,' a 300 pound, six feet tall robot constructed by the BSC Engineering Technology Team, which receives partial funding from RTI.



Above: Rep. Rahall watches as a guest "Teleoperates" a LEGO Robot at the RTI exhibit in Fairlea, W.Va.

Visitors to the exhibit also picked up information about RTI, Marshall University and its partner schools; BSC, Mountain State University, West Virginia University Institute of Technology and Southern West Virginia Community and Technical College.

However, the highlight of RTI's exhibit was the opportunity for fairgoers to "teleoperate" LEGO Robotic Vehicles, part of the Outreach program that RTI operates from its Huntington headquarters. Guests operated three LEGO robots and could also program commands and vehicles in SENSORS City, which is located in Huntington, W.Va.

They were also informed about engineering, mining, education and manufacturing degrees that use robot technologies.

"People came from all over the fair to operate the LEGO Robotics and SENSORS City," Cartwright said.



RTI, National Highway Institute Bring Rock Slope Course to Lexington, Ky.

by Errin Jewell

RTI and the National Highway Institute co-sponsored the Geo-technical and Foundation Engineering: Module 5-Rock Slopes (NHI Course 132035A) Aug. 5-6, 2003, at the University of Kentucky in Lexington.



course, which was instructed by representatives from the National Highway Institute.

The course covered aspects of rock slope stability related to the design and construction of surface transpor-

tation facilities.

Upon completion of the course, each participant earned 1.2 Continuing Education Units.

Twenty-three professionals from government, educational and professional fields attended the transportation professional development

3rd Geo-Hazards Tech. Forum Co-Hosted by RTI

Sixty-five regional and national transportation professionals attended the third "Geological Hazards in Transportation in the Appalachian Region" technical forum Aug. 7, 2003, at the University of Kentucky.

The technical forum was an activity of the Appalachian States Coalition for Geological Hazards in Transportation and was co-sponsored by RTI and the Kentucky Geological Survey.

Twelve presentations took place during the day, which was broken into three sessions: Case Studies and Geotechnical Aspects, Rockfall & Highway Slope Management and Geotechnical Issues.

RR, Highway Traffic Safety, Operations TPD Course Hosted in

by Errin Jewell

RTI hosted the Railroad and Highway Traffic Safety and Operations Seminar September 9-10 in Cincinnati, Ohio, and awarded participants who completed the course 1.4 Continuing Education Units.

The seminar presented railway and highway engineering design, operations, signaling and maintenance information to nearly 30 mid-level and supervisory personnel.

According to a course evaluation, a participant said the seminar was, "very beneficial to many agencies involved with transportation. I like the concept of bringing highway and railroad personnel together to discuss issues that effect both groups."

The seminar was developed in cooperation with the Federal Highway Administration, West Virginia Department of Transportation, CSX Transportation, Norfolk Southern Corporation, Federal Motor Carrier Safety Administration, Marshall University Division of Environmental Science and Safety Technology and West Virginia Operation Lifesaver.

History Channel Consults RTI Associate Director for "Modern Marvels: Coal Mines" Episode

by Brian Dowler

Dr. Richard Begley, RTI associate director, recently served as a consultant to the History Channel for an episode of the one hour documentary series, "Modern Marvels: Coal Mines."

The episode, which premiered early this summer, chronicles the history of coal mining and examines the state of the industry today. The program documented the advances and history in coal extraction methods and how mines have become more safe and efficient.

Begley, who has an extensive history in mining engineering, provided information on the deployment of technology in underground and surface mining methods and the automation of these processes. He also advised the film crew in selecting subject matter and locations to film in West Virginia.

"Being recognized as a resource through my background in engineering, I am honored to have been able to help people understand more about mining history and technology," he said.



Students Apply Technology to Design Future Vehicles at TO²W

by Brian Dowler

During RTI's "Design a Future Vehicle (DAFV) Summer Workshop 2003," students learned about the six technologies needed to design and construct vehicles: propulsion, suspension, guidance, control technology, support and structure.

From June 30 -July 9, research associate David Cartwright and other instructors taught the students how each technology was used in modern vehicles and guided students to plan future vehicles that use these technologies.

Each student was also introduced to computer-aided design and drafting software and used that software to create a future vehicle for pre-



Above: A student uses computer-aided design and drafting software to create a model of a vehicle.

sentation.

"These kids are allowed to use technologies that they previously thought were too difficult. Seeing these kids light up when they reach their capabilities is inspiring to me and empowering to them," Cartwright said.

The workshop instructors guided students through hands-on training



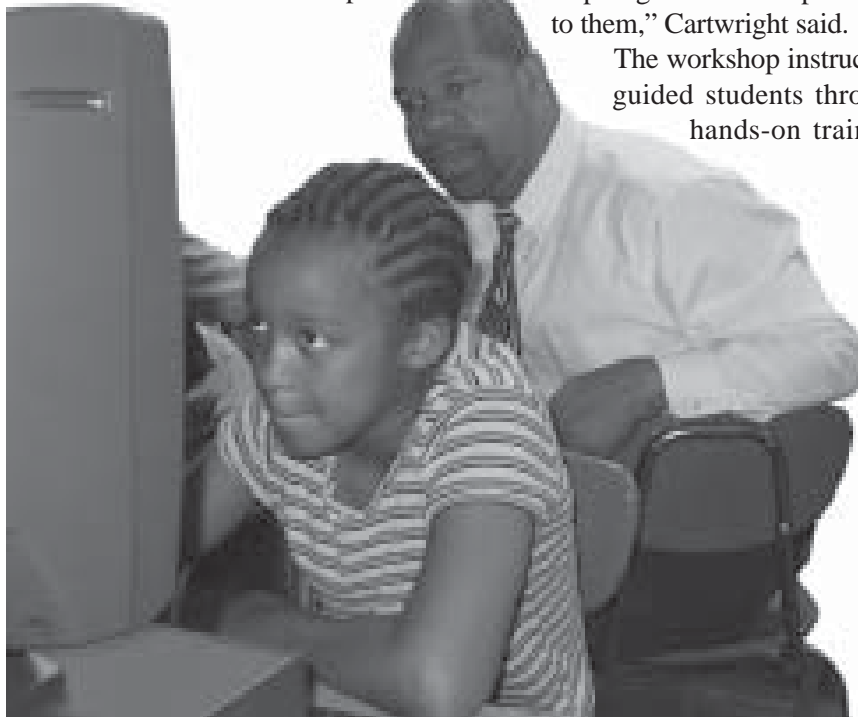
Above: Instructors at the DAFV workshop assist students with creating vehicles.

activities using a studio learning approach and developmentally appropriate materials. Each instructor was assigned a small group of students to promote a supervised, but non-restrictive, creative atmosphere for participants. Participating in small groups encouraged students to work as a team to reach their fullest potential and cooperate with a diverse group of individuals.

This was also the first year for the program partnership with the Student Aspect Preparatory School, a 21st century learning center in Huntington, W.Va..

Workshop participants were also exposed to careers in technology and transportation and told the access to these careers was through higher education. Students completed entrance and exit surveys to ascertain knowledge retention.

Cartwright said "The most important thing about the project this year is that the kids had fun, gained confidence and learned a lot. They always do."





We welcome your questions and input!

RTI wants your input on future research topics and activities including:

- Intermodal Transportation
- Transportation Professional Development Courses
- Transportation and Economic Development
- College Degree Programs or Courses

To submit your feedback, please call us at (304) 696-7098 or click the "Contact Us" link at www.marshall.edu/rti.

Upcoming Events at RTI

Conferences

August 2003

4th Geo-Hazards Technical Forum; Columbus, Ohio.

Transportation Professional Development Courses

November 13, 2003

Image Map Base Integration with Geospatial Information Using GIS and Survey Data; Marshall University, Huntington Campus.

TBA 2003

Endangered Species Training, Brian Yanchik, Instructor; Marshall University, Huntington Campus.

Pre-K-12 Outreach

Oct. 11-12, 2003

Linda Hamilton and Juan Bueno present "Intelligent Transportation Systems Using LEGO Robotics" at the West Virginia Science Teachers Association; Snowshoe, W.Va.

Register online at www.marshall.edu/rti or call Sandra Jones at (304) 696-7098.

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