the Catalyst

First Prechter Fellow Arrives

Thanks to a substantial grant from the World Heritage Foundation-Prechter Fund, the College of Engineering and Computer Science has accepted its first Prechter Fellow for New Manufacturing.

Claus Narr, recipient of the Prechter Fellowship, is a visiting student from Rheinisch-Westfälische Technische Hochschule (RWTH) Aachen in Germany. His research objective is to develop a model and method for simulation-based order management and structuring of production networks. He is completing this project under the supervision of **Charu Chandra**, assistant professor of industrial and manufacturing systems engineering, and Dr. Walter Eversheim, production engineering department head at the Aachen University of Technology (RWTH Aachen) in Germany.

Claus Narr, recipient of the Prechter Fellowship, and assistant professor Charu Chandra

"In response to an increasingly dynamic and competitive business environment, today's companies are forced to concentrate on their core competence and to develop new products with reduced lead times," says Dr. Chandra. "These trends are characterized by mass customization in manufacturing, requiring increasing levels of cooperation among members of the supply chain network. Increasing network extension and complexity of the evolving logistic linkages cause a growing number of control parameters and variables."

Narr began his research in Germany last October and has been at UM-Dearborn since January of 2002. "Our goal is to simulate the manufacturing process to see how and where we can streamline it," explains Narr, who will continue his work in Germany after completing the Prechter Fellowship here in June. "We hope this work will lead to a more efficient structure of the complex manufacturing process."

"I have really enjoyed my time here," continues Narr. "Living and working with students is a totally different experience, especially in this multicultural environment. With its broad program of cultural, social, and sports activities, the university offers an interesting program far beyond its educational mission."

As student research assistant to Dr. Eversheim in Germany, Narr worked on several industry projects related to production-site planning and production processing. His current research, made possible by the fellowship, continues the cooperative knowledge exchange between the teams of Professor Chandra in the United States and Professor Eversheim in Germany. (Professor Chandra's team is working on modeling of reconfigurable supply chains and Professor Eversheim's team is working on modeling of production networks.)

"Dr. Chandra and his team have provided a positive and open-minded working climate," says Narr. "Lab equipment, living accommodations, and other support were extremely well organized. I have had the time and freedom to focus on the subjects that interest me."

"It has been a privilege to work with Dr. Eversheim and his team of students and researchers," says Dr. Chandra. "The Aachen University of Technology is the leading German institution in production engineering and its people bring the highest level of knowledge in this field, particularly in applied research areas."

The World Heritage Foundation established the Prechter Fellowships for New Manufacturing in the College of Engineering and Computer Science at the University of Michigan-Dearborn with a pledge of $250,000. This gift supports fellowships for the next five years for master's degree students from UM-Dearborn, the Center for Creative Studies in Detroit, and the Aachen University of Technology.

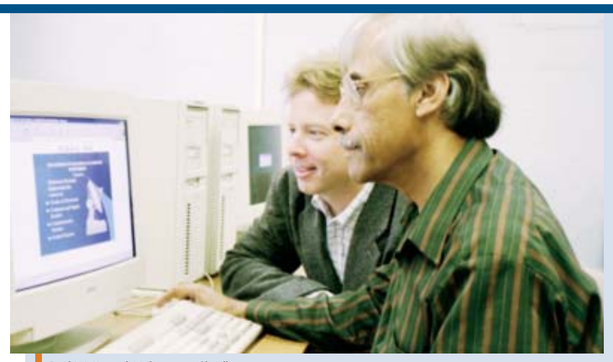
Funding for the fellowships symbolizes Heinz Prechter's extraordinary commitment to UM-Dearborn's College of Engineering and Computer Science. His death last year was a tremendous loss to the college, the university, and the entire community.

"These fellowships enhance education and research in the area of 'new manufacturing,' especially related to future global automotive markets," says Subrata Sengupta, dean of the College of Engineering and Computer Science. "They also will help us produce new leaders in automotive systems engineering and manufacturing."

During the past decade, the World Heritage Foundation and The Prechter Fund have contributed more than $1.25 million to support the projects, programs, and activities of the College of Engineering and Computer Science.

Grants Expand SBC Ameritech Michigan Reach at UM-Dearborn

Through the SBC Ameritech Michigan Learning Initiative, five new grants have been awarded to College of Engineering and Computer Science faculty for 2002–2003. Projects funded by these grants will expand the already broad reach of SBC Ameritech Michigan on the Dearborn campus. Four projects funded in 2001–2002 will be continued and further developed in 2002–2003.



Paul Watta and Malayappan Shridhar

- Refinement and further rollout of Virtual Learning Tool (VLT) software is expected to reach thousands more students in the coming year. VLT is an advanced server-based software package that allows faculty members with little or no web authoring skills to post course materials and communicate with students on-line. In 2003, VLT will support a web-based distance education offering in the College of Engineering and Computer Science. Also in 2003, the software will be offered to other universities in the state of Michigan. **Armen Zakarian** (zakarian@umich.edu), assistant professor, industrial and manufacturing systems engineering, is the principal investigator.
- Professor Zakarian will continue testing and enhancement of Practitioners Network software, a web-based software that allows active, productive knowledge sharing between students, practitioners, and faculty, during fall 2002. It will become part of the learning collaboratory infrastructure by fall 2003.
- A new two-year project starting in 2002 will establish an open-architecture e-computing center for design in engineering and science. Web-based e-computing software developed in this project will combine the fast-growing internet technology and best available core source codes to provide engineering design and information management opportunities to industrial practitioners and graduate, undergraduate, and high school students. New faculty member **Jie Shen** (shen@umich.edu), assistant professor, computer and information science, is the principal investigator for this project.
- Advancement of a web-based thermo-fluids laboratory will continue. **Tariq Shamim** (shamim@umich.edu), assistant professor, mechanical engineering, is the principal investigator for this project, which will develop new working modules to enhance students' concepts in thermo-fluids and thermal sciences. All modules will be equipped with a plotting option and provide a convenient way of conducting parametric studies on the effects of transport and flow conditions on heat transfer mechanisms.
- Progress on the web site for Introduction to Engineering and Computers (E100) will continue. The goal this year is to develop a set of self-contained modules that can be used in a web-based offering of the E100 course. The modules will contain lecture notes, examples, exercises, interactive flash movies, and a list of frequently asked questions. Principal investigators from electrical and computer engineering are **Professor Malayappan Shridhar** (mals@umich.edu), and Assistant Professor **Paul Watta** (watta@umich.edu).

CEEP ADVISORY BOARD PROFILE

Jim Masters: Understanding the Human Perspective

There is no doubt that **Jim Masters**, valued member of the College of Engineering and Computer Science Visiting Committee and the CEEP Advisory Board, is a "car guy." His office walls, covered with large car racing art, some painted by his wife Lynn, tell the story of someone whose interest in cars goes far beyond his work.

"I've always been a race fan," says Masters, president, Lear Electronics and Electrical Division, Lear Corporation. "I'm one of those crazed individuals who used to memorize everything at the Indy 500 beginning at 5 years old."

Born and raised in Lafayette California, Masters attended University of California-Berkley and graduated with a degree in mechanical engineering. His first job, with Rockwell International in Los Angeles, was in a leadership role on the design team that developed operational seating for the space shuttle. He has been involved in seating ever since.

"This was the first integrated restraint seat." he says. "It had to be designed to be used more than once and had to be configured to fit more than one person. So there were many ergonomic and perception issues involved."

Following Rockwell, Masters career took him to Colorado Springs to work for AMI Industries, the company awarded the contract to produce the space shuttle seats; to Milwaukee for work on seats in mass transit; and then to Chicago for work on military, commercial, and mass transit vehicle seating. In 1994, he came to Lear Corporation as Ford Division Manager for all seat structures and analysis. In 1995 he moved within Lear to the technology division, becoming president in 1999. He now heads the entire electronic division.

"Technology has always fascinated me," says Masters. "And from the beginning, I wanted to be involved in engineering that had subjective, human elements. Seating is one of those areas. Everyone has a different perception of comfort. Being able to take human interpretations on issues when applying engineering concepts is a challenge I enjoy."

"Engineers often are labeled non-humanistic, yes-no,on-off, numbers people," he continues. "I don't believe that is true any more, if it ever was. Engineering is changing to a system approach that requires companies like Lear to supply fully integrated systems rather than simple, specific components. That requires us to learn new technical and communication skills. We must be able to explain the technical and subjective side of issues to the customer, which is different than just offering drawings and charts. We also must educate ourselves about the new generation of people. They are much more globally connected than previous generations. To manufacture the kinds of products they want, we must make every effort to understand their lifestyle needs and the changes facing them."

Of his role on the CEEP Advisory Board, Masters says, "Dean Sengupta is a terrific leader. I am proud personally to be part of the group. And I sincerely believe that it is essential for companies like Lear, who are locally supported, to have input into the educational process."

Lear Corporation recently donated a programmable vehicle model (PVM) to the College of Engineering and Computer Science to support projects within the college and, specifically, the automotive systems engineering program. It is a fully configurable vehicle interior design and prototype buck that will support vehicle research and development.

"We couldn't be happier that our PVM has found such a good home at UM-Dearborn," says Masters. "This will help engineering students in the same way that it helped us."

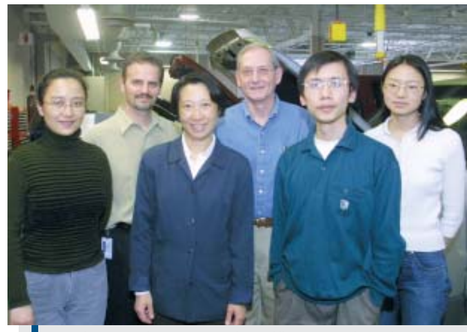
Masters lives in Farmington Hills with his wife, Lynn, a homemaker and painter, and their five children. Stacey, is a sophomore at Michigan State University; Steven, a senior at Harrison High School, has been accepted at the University of Michigan School of Engineering; Jennifer, Sara and Brian currently are students at Harrison.

James Masters, photographed outside of his office at the Lear Corporation in Dearborn

CEEP COLLABORATIVE RESEARCH

Intelligent Vehicle Signal Fault Diagnostics

A research project currently under way in the electrical and computer engineering department aims to develop technology for solving real-world industrial problems in the areas of signal analysis, signal fault detection, and machine intelligence. The project is showing great potential for an innovative technology in vehicle diagnostics and new solutions for many challenging basic research issues in machine learning and agent architecture, according to Yi Lu Murphey, associate professor of electrical and computer engineering. Dr. Murphey and Dr. Zhihang Chen, research associate; and Zi Yan Wen and Yun Qian, research assistants; are conducting the research through a grant from the National Science Foundation and a contract from the Ford Motor Company, which has been extended. Team members from Ford partnering with the college are Dr. John Cardillo, product design engineer; Robert Mills, research and development team leader; and Shane Rachedi, manager.



Research team members Yun Qian, John Cardillo, Yi Lu Murphey, Robert Mills, Zhihang Chen, and Zi Yan Wen at Ford Motor Company's Diagnostic Center 2

"The success of the U.S. automotive industry very much depends on the quality of products and services provided to consumers," says Dr. John Cardillo. "As electronic control systems in vehicles have become more advanced and sophisticated, malfunctions in automobiles have been increasingly more complicated. A typical modern vehicle has a large number of embedded sensors, controllers, and computer modules that collect abundant signals."

"Vehicle fault diagnosis depends on vehicle signal diagnosis," he continues. "Vehicle signals range from simple binary modes to extremely complex spark timing signals. They interact with each other either directly or indirectly and have dynamic ranges in magnitude, oscillation, frequency, slope, derivative, etc. Therefore, it is extremely difficult to develop a complete diagnostic model that can fully answer all of the questions related to automotive engineering faults, especially for non-routine faults."

"Our objective in this project is to develop an innovative and intelligent vehicle diagnostic model capable of making 'smart decisions' as to whether the vehicle tested is normal, based on a given set of signals," says Dr. Murphey. "We are focusing on the signals addressed by the powertrain control module. The intelligent diagnostic model will serve

Continued on page 4

Paul Richardson and Larry Sieh, TARDEC research assistant, demonstrate spectrum analyzer equipment.

Developing Vehicles for Safety, Efficiency, and Economy

Paul Richardson, associate professor in the department of electrical and computer engineering at UM-Dearborn, first met **Larry Sieh** when both worked at the U.S. Army Tank-Automotive Research, Development, and Engineering Center, the research arm of Tank-Automotive Command. At the time, Richardson was a vehicle electronics research team leader and Sieh was a research assistant. Now the two are working together again, investigating ways to produce a safer, more economical vehicle.

The research team Richardson and Sieh lead is identifying, developing, and testing algorithms and mechanisms that will result in greater capabilities in three areas: fault tolerance, network utilization, and scalability. "Scalable in this sense implies that the communications subsystem can be adjusted according to need and reused across different types of vehicles," explains Prof. Richardson. The research project, beginning its second year at the Center for Engineering Education and Practice, represents a continuation of research funded in part by the U.S. Army Vetronics Technology Center.

"A significant trend in the development of embedded computer systems found in a wide range of vehicles is the increasing reliance on network-based computer architectures," says Richardson. "This trend is motivated by the potential of computer networks to reduce the cost of developing and maintaining the system over its life cycle. As the performance demands and complexity of these systems grow, the ability to reduce both development and maintenance costs becomes even more critical."

"The relatively simple networks being fielded in today's vehicles bring immediate relief to development and maintenance costs by providing fewer, standardized interfaces and reducing the amount of cabling required," says Sieh, a Ph.D. candidate at the Naval Postgraduate School. "A number of significant obstacles, however, prevent these networks from realizing their ultimate potential. Upgrading a vehicle network usually incurs extensive redesign, costing time and money. The networks are brittle in terms of their ability to sustain faults and continue operating. And network utilization is normally kept low so time-critical messages will not be unpredictably delayed."

Richardson and Sieh believe that in order to improve vehicle networks, a number of important issues must be identified, investigated, and solved. "Our approach is to develop a protocol that will provide mechanisms for fault tolerance, scalability, and predictable temporal behavior at high network utilization," says Richardson. "To date, we've developed a fault-tolerant real-time communications protocol and verified it using simulation. We are currently looking for new ways to improve the performance of our theoretical developments in a simulation environment and are building a test bed to validate our findings and conduct further testing."

For further information on this project or related research, please contact Paul Richardson at richarpc@umich.edu or 313-593-5560.

IAVS is the Centerpiece of New Building

With an allocation from the State of Michigan, the College of Engineering and Computer Science will soon be breaking ground for a new engineering building. Once completed, the building will be the home of the Institute for Advanced Vehicle Systems (IAVS).

The building is being designed by an architectural firm that is working closely with University of Michigan-Dearborn administrators, Subrata Sengupta, dean of the College of Engineering and Computer Science, Keshav Varde, associate dean, and other university officials. Also included in the planning are members of the newly formed advisory board for the Institute for Advanced Vehicle Systems, which is made up of executives from industry.

"We have greatly benefited from the advice and support of our corporate partners in developing two other buildings during the past twelve years," said Dean Sengupta. Advice from executives and board members was instrumental in the design and construction of Engineering Complex, which opened in 1993, and the Manufacturing Engineering Laboratory Building, which opened in 1988. "The guidance and insight of the IAVS Advisory Board members will be critical to designing a building that includes laboratories and facilities needed to most effectively operate the institute while still helping to provide an improved educational environment for our students, faculty, and industrial partners."

The new building, which is slated to open by mid 2004, will house laboratories, offices, and other facilities for the IAVS. The institute is currently spread throughout three separate engineering buildings on the University of Michigan-Dearborn campus. The building will contain a variety of teaching and research labs as well as open bay space to conduct projects.

Car designs were produced for IAVS by students from the Center for Creative Studies in Detroit, Michigan.

"The addition of new laboratories and open space will give IAVS the facilities it needs to continue with current research projects and to develop new initiatives that have not been possible in our existing buildings," adds Roger Shulze, the new director of the Institute for Advanced Vehicle Systems. He continues, "The new building will expand the capabilities of the institute and provide exciting new opportunities for companies from this region to conduct leading-edge research and projects."

Dr. Shulze, Dean Sengupta, and other college representatives are meeting with executives from automotive, manufacturing, and other companies to develop plans for additional laboratories and facilities. The construction of a new building will offer industry the chance to support innovative labs, teaching facilities, and research areas that will ultimately benefit their companies and many others from the region.

"The companies on our IAVS Advisory Board, as well as other corporations, may find that having a specialized lab in the new building will provide a relatively low-risk and accessible environment to conduct research that could eventually benefit students, faculty, and their own practicing engineers," notes Dean Sengupta. "The opportunity is now available for companies that are interested."

SOME FACILITIES BEING PLANNED FOR THE NEW BUILDING:

- Automotive Electronics and EMC Lab
- Computer Science Labs
- Design Competition Labs
- Design Conference Rooms
- Distance Learning Classrooms
- Electron Microscope Lab
- Ergonomics Lab
- Integrated Learning Rooms
- Intelligent Systems Lab
- Offices for Faculty/Principal Investigators
- Seminar/Workshop Auditorium
- Structural Crash Dynamics Lab
- Transmission and Gearing Lab

Intelligent Vehicle Signal Fault Diagnostics

Continued from page 3

as a test bed for basic research in the areas of machine learning and engineering diagnostics. It also is an application development tool to be used by diagnostic engineers and technicians in non-automotive industry areas."

"The approach we are using is to develop a distributed diagnostics agent system (DDAS) for automotive fault diagnosis," she explains. "The DDAS consists of a vehicle diagnostic agent and multiple signal diagnostic agents. Each is responsible for the fault diagnosis of one particular signal using either single or multiple signals, depending on complexity. Each signal diagnostic agent is developed using a common framework that incorporates technologies for signal segmentation, automatic signal feature extraction and selection, and machine learning."

According to Prof. Murphey, the research has led to the development of algorithms necessary to diagnose signal segmentation, signal feature extraction and selection, fuzzy learning at the segment levels, and fuzzy learning at the signal level. Results from experiments testing these algorithms on vehicle recordings provided by the Ford Motor Company are very positive.

The project has direct impact on at least four existing electrical and computer engineering courses, says Prof. Murphey. She adds that the results from the project will be introduced in a proposed new undergraduate course on machine learning.

For additional information on this project or related research, contact Prof. Yi Lu Murphey at yilu@umich.edu or 313-593-5028.

Watch out Mini Baja— SAE Team is on a Roll

With first place finishes in its last two events, the University of Michigan-Dearborn Mini Baha Team has established itself as a major contender in these nationwide competitions and is heading for a third this summer. Team members Jessie Crozier, Robert Hyden, James Perrin, Jim Szymusiak, and Andy Woodrich have begun a winning trend that positions the team and the university as dominant players in the Mini Baja world.

The first race, sponsored by Michigan Technological University, in Houghton, Michigan, took place during the weekend of March 16. According to team member Robert Hyden, average temperatures were 38 degrees and race conditions included snow, multiple jumps, and hills. The race was divided into two one-hour endurance-driving segments. The car completing the most combined laps was declared the overall winner.

"To improve our chances for success we entered two cars into the competition," says Hyden, who is the president, UM-Dearborn Society of Automotive Engineers (SAE). At the end of the first hour, UM-Dearborn was in second place with car #35, which was racing hard but still lagged one lap behind Michigan Tech's car #1, and in fourth place with car #67, which suffered a broken tie rod and cost the team three laps.

"We worked at a feverish pace during the lunch break to make the necessary changes to both the #35 and #67 car," says Hyden. "Our hard work soon paid off. On the restart of the race, our team jumped out to an early lead, which allowed car #35 to quickly make up its lap and close in on the leader. After another hour of incredible driving by the UM-Dearborn team, the race ended with car #35 bringing home the first place trophy."

Following that victory, the team entered its next competition in Logan, Utah, April 25 to 27.

"After a 32-hour drive, we arrived on the campus of Utah State University on April 24," says team member James Perrin. "The weather was great our first day, and with more than 100 Mini Baja cars on display, the judges had plenty of work ahead of them. At the end of the first day, we were very pleased to have our car #36 chosen to be in the design finals, an elite group of only 14 vehicles."

"The second day's activities were held at the endurance course, where several inches of rain turned a former gravel pit into a mud pit," Perrin continues. "Events included hill climb, maneuverability, and acceleration. Despite the rain, car #36 placed third in maneuverability and fourth in acceleration setting it up for a top ten finish if we could do well during the four-hour endurance race. Our second car, #35, had a few engine and brake problems but was able to place fifth in maneuverability."

Perrin says that because of the unrelenting rain and resulting mud, the course became too difficult for many of the teams. Although 95 Mini Baja cars started the race, only 20 crossed the finish line four hours later, with UM-Dearborn's car leading the pack. This first place finish in the endurance race propelled the team to its first-ever first place overall victory.

The team is excited about the results of both races and members hope to continue their success at the Midwest competition in Milwaukee, Wisconsin, May 31 to June 2.

2002 VEHICLE SPECIFICATIONS

Engine:	10HP Briggs and Stratton
Drivetrain:	Belt Driven CVT
Front Suspension:	Independent 12" Travel
Rear Suspension:	Independent 12" Travel
Weight:	340 lbs.
Top Speed:	38 mph
Max Rear Wheel Torque:	550 ft. lbs.

ABOVE: UM-Dearborn Mini Baja Team at the Houghton, Michigan competition

BELOW: The UM-Dearborn Mini Baja Team placed first overall in the SAE West Mini Baja Competition held in Logan, Utah, April 25-27, 2002. Team members from left to right: James Perrin, Rob Hyden, Andy Woodrich, Eric Smolen, Jessie Crozier, and Jim Szymusiak.

the Catalyst

News from the College of Engineering and Computer Science

CEEP Center for Engineering Education and Practice

IAVS Institute for Advanced Vehicle Systems

CLAMP Center for Lightweight Automotive Materials and Processing

Welcome Friends

I am pleased to present this first edition of the Catalyst, the newest publication from the College of Engineering and Computer Science here at the University of Michigan-Dearborn. This redesigned newsletter replaces the CEEP Update, which many of you have received during the past several years. With the continued growth of the college, it was time to expand this report both in size and scope of coverage.

The Catalyst will now offer reports about the activities and plans in three centers of excellence within the College of Engineering and Computer Science. In addition to providing ongoing news and information about the Center for Engineering Education and Practice (CEEP), the newsletter will offer updates on the Institute for Advanced Vehicle Systems (IAVS) and the Center for Lightweight Automotive Materials and Processing (CLAMP). The three centers independently oversee research projects and provide support for the continued enhancement of educational and degree programs within the college. However, the centers also work together on a wide range of initiatives that help achieve the overarching goals of the college.

I hope that you will enjoy the new format and the additional information being offered in this expanded newsletter. More importantly, I hope that this semi-annual report will provide you with information about activities, projects, and programs that may be of interest to you and your company. If so, I invite you to call or e-mail any of the faculty, staff members, or investigators using the contact information included in many of the articles and stories. Also, please feel free to contact my office or our department chairs; our information is listed on page two of this report. I look forward to hearing from you.

Subrata Sengupta
Dean
College of Engineering and Computer Science
The University of Michigan-Dearborn

IAVS Welcomes New Director

It is unusual to find the word "luck" in an engineer's vocabulary. But "lucky" is how Roger C. Shulze, new director of the Institute for Advanced Vehicle Systems (IAVS), describes the events that led him to his new position at the University of Michigan-Dearborn College of Engineering and Computer Science.

"After 28 very satisfying years with Chrysler, I had been thinking that academia would be a great place to begin a new career," says Shulze. "That's when a lot of lucky pieces fell into place. Bob Hildebrand, the head of the IAVS director search committee (and director of the Center for Engineering Education and Practice), sent a letter to a certain automotive executive and UM-Dearborn graduate announcing the open IAVS director position. This automotive executive happened to be a dear friend of mine who knew that I had been thinking about a second career in academia. He sent the announcement to me. It seemed to offer the perfect transition, combining all of my interests and experience. I thought, 'if this is the kind of thing that is out there, it is worth going after.' So on instinct, I marched into my boss's office and said 'I think I'm about to retire.'"

Roger Shulze brings to his new position a combination of academic achievement and varied work experience. He earned a teaching certificate from Wayne State University in 1972; a bachelor of science degree in engineering from Brown University in 1968; a master of science in aeronautical engineering from Ohio State University in 1971; a Ph.D. in mechanical engineering from Wayne State University in 1982; and a master of business administration from Michigan State University's Advanced Management Program in 1990.

"My first career choice was aerospace engineering," says Shulze, explaining that he was influenced in that choice by his father, an engineer, and his interest as a young boy in space exploration. "Sputnik and the space program made the general field of engineering seem glamorous and very much needed nationally. On the other hand, the love of my life—and my future wife—lived in the Detroit area. She was beginning a career as a teacher. I decided to give up aerospace engineering and move from Glastonbury, Connecticut, where I had been living with my parents, to Detroit, to become a teacher as well.

"At that time, however, teachers were not in demand and there were few jobs available. So, in frustration," he laughs, "I turned to automotive engineering. And although aircraft and space engineering continue to interest me, I find automotive engineering more exciting and gratifying. The product cycle is short. You can see many different generations of automobiles in your career, and you can participate in the evolution of many different products. You also have a variety of customers to satisfy."

"Today, the need for fuel-efficient cars and trucks is creating a revolution in automotive engineering," Shulze continues, adding that this is a key part of his new role at IAVS. "There is a race throughout the world to create a more fuel-efficient vehicle, and IAVS has the opportunity to take a leadership role."

The College of Engineering and Computer Science created IAVS in 1998 to accelerate applied research and enhance curriculum in product development and manufacturing. IAVS was established with a major grant from the World Heritage Foundation–Prechter Fund. Additional grants from General Motors Corporation, Arvin-Meritor Corporation, the American Plastics Council, and the Prechter Fund allowed IAVS to move forward. A recent $22-million allocation from the state of Michigan will make possible the construction of a new IAVS building.

"The goal of IAVS is to create knowledge, develop it, and disseminate it throughout the academic, research, and industrial communities," says Robert Hildebrand. "Roger has the right mix of comprehensive automotive experience that includes major subsystem engineering and manufacturing and experience working on advanced vehicles. He also brings the strength of a Ph.D. and excellent 'people skills' through his broad managerial experience. That is particularly important in an academic environment."

IAVS is currently involved in creating a low-mass vehicle that will be lighter, safer, more fuel-efficient, more affordable, and easier to build than other cars in its class. "It is essential to our economy and the world economy that we combine all the technologies to produce a fuel-efficient vehicle that really works," says Shulze. "The IAVS faculty is working from many different angles, and I hope to be able to help them integrate their efforts at the vehicle level. I would love to see the program expand. One vehicle is great, but I hope the program can be expanded to include larger cars and trucks."

During his career, Shulze gained expertise in many different areas of automotive engineering. Starting as an engineer in 1972, he became the manager of Chrysler Cooling Systems in 1985. His most recent position was senior specialist and leader of the DaimlerChrysler Corporation Aero/Thermal Center of Competence. He is familiar with some significant differences between industry and academia.

Roger C. Shulze

"In the production world, failure is not ever an option," says Shulze, explaining that failure affects profitability and possibly the very existence of the enterprise. "In academia, however, we learn through both our successes and our failures. For example, to meet tighter fuel economy standards, it is necessary to try a number of enabling technologies before deciding on the one that works best. Academia is in a position to help industry through research and experimentation."

"Industry understands how vital it is to the end result that we constantly analyze and improve the way automobiles are designed and manufactured," Shulze continues. "It is refreshing to see an emphasis here on the entire enterprise, not just products, not just process. That total emphasis seems to be a part of the philosophy here at the college. Students are taught to look at the whole spectrum of the enterprise—from design all the way through to manufacturing the end product. One of the best end products is that students take what they learn and integrate it into their future jobs as excellent automotive engineers."

Shulze and his wife Barbara, a kindergarten teacher in the Rochester schools, have been married for 30 years and live in Oakland Township. They have two children. Andrea, a nurse, lives in Reno, Nevada, and Marla, who plans to be an occupational therapist, attends Wayne State University.

Shulze says that after four months of retirement, "I'm ready to end my retirement and am happy to be here at UM-Dearborn. Most importantly, I feel 'lucky' to be involved in what promises to be a stimulating, productive, and satisfying second career."

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CHANGE SERVICE REQUESTED

The Catalyst provides news and information about the innovative projects being developed through the UM-Dearborn College of Engineering and Computer Science Centers of Excellence: Center for Engineering Education and Practice (CEEP), Institute for Advanced Vehicle Systems (IAVS), and Center for Lightweight Automotive Materials and Processing (CLAMP).

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First Prechter Fellow Arrives

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SBC Ameritech Michigan Grants Expand Research

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