

# NUTECH SOLUTIONS NEWSLETTER

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## AUTOMAKERS TURN CHALLENGE INTO PROFIT

### AN INDUSTRY UNDER PRESSURE

On February 15 the American International Automobile Dealers Association (AIADA), a national lobbying organization representing the economic and political interests of America's 11,000 international nameplate dealerships, hosted a Power Talk featuring former Merrill Lynch auto industry analyst John Casesa. Casesa outlined the auto industry's current business environment, competitive landscape, and potential outcomes to the crisis.

In short, the drop in consumer confidence following the 9/11 tragedy has rebounded only slightly, resulting in a general profit weakness for automakers and their suppliers. Volatile inventory supply, combined with pressure on the pricing market from new manufacturers, has forced the traditional manufacturers to cut prices to maintain market share. In addition, this collapse in pricing and pressure on retail car prices has resulted in lower operating margins and returns on assets for industry equipment manufacturers and suppliers. Finally, as both domestic and foreign manufacturers' market shares begin to converge, mostly due to the more rapid introduction of new products and replacement of old products by automakers, it is clear that only the strong will survive.

According to Casesa, "there will be fewer, stronger suppliers with balance sheets that enable them to invest in technological development and drive a lot of innovation within the industry."

### INNOVATION AND EFFICIENCY

These shifts in the business environment have forced automakers to explore new ground in creativity and innovation. While automakers consider carefully where their investments might produce the best results – minimizing losses while improving service to the consumer – it is becoming increasingly clear that technology will play a key role in improving efficiencies and profits across the board. How can automakers apply technology to gain insight into their new and used car marketplace? How can they use innovative technologies to improve vehicle production and distribution, and establish better pricing strategies?

To examine and solve their complex business problems, several leading automakers have turned to the scientists and technologists at NuTech Solutions. NuTech's suite of automotive solutions – ClearVu Remarketing, ClearVu Residuals and ClearVu Engineering– is built using Intelligent Business Engines™ that are designed to optimize, not just automate, R&D, design, engineering, marketing, remarketing, and more.

### ClearVu Remarketing™: Reliable Re-sales Profits

General Motors (GM) Remarketing Department is responsible for selling approximately 700,000 used vehicles each year. How do they make the most efficient and profitable vehicle logistics decisions? ClearVu Remarketing. Originally implemented in 2002, GM has extended its ClearVu Remarketing license through 2008 to maintain profit optimization in the re-sale channel. On the heels of GM's success, the American finance division of a major Japanese automaker has also licensed ClearVu Remarketing for 36 months. NuTech's quick-pilot toolset uncovered the value of improved re-sale distribution for the popular auto brand.

Addressing the complex needs of the re-sale marketplace, ClearVu Remarketing considers current and future prices, auction location, fixed and variable costs such as transportation costs and auction fees, market saturation, seasonal changes, and more. The software adapts and learns from this vast set of variables, and recommends an optimal price and auction site for every vehicle, at any given time of year. With ClearVu Remarketing, auto resellers improve vehicle logistics efficiency, decision making, and operating results.

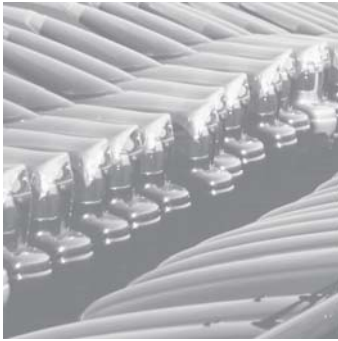


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### **ClearVu Residuals: Residual Forecasts that Add Value**

Innovator Ford of Europe takes the re-sale challenge to the next level by analyzing used car sales and pushing that information back up the supply chain to influence new-car production and promotion. Using ClearVu Residuals, Ford can predict used-car residual values and use that information to plan for the most profitable future production volume and optimal vehicle mix to maximize profits on both new and used car sales. Risk planning, pricing and promotional strategies are also heavily influenced by the insights available through ClearVu Residuals.

NuTech Solutions developed this comprehensive forecasting and statistical tool to capture diverse factors, such as vehicle characteristics, supply/demand issues and market trends affecting residual values, using advanced algorithms. ClearVu Residuals helps answer questions such as:

- ▲ How many large sedans are needed in the marketplace?
- ▲ Who wants them used and at what price?
- ▲ What accessories and options are required?

Rather than relying on various industry-published average residual values, NuTech's ClearVu Residuals uses actual data specific to Ford of Europe's business, resulting in the most precise residual value forecasts possible. Ford of Europe uses ClearVu Residuals to maximize profits while better meeting their customers' needs.

### **ClearVu Engineering: Speeding Profitable Designs to Market**

NuTech's innovations in the automotive industry are not focused solely on sales and re-sales. ClearVu Engineering's powerful evolutionary strategy optimizer helps provide quantifiable value for design engineers at the beginning of the production cycle.

Leading German automakers are using ClearVu Engineering to solve highly-complex design optimization problems. Supporting a faster "virtual" design development process, ClearVu Engineering software uses models to predict ideal attributes of designs, reincorporating the most desirable design attributes iteratively and automatically until the best solution is delivered. One manufacturer focused on safety applications shortened the time to "best" design by three weeks.

The virtual recombination of ideal characteristics can also uncover previously elusive product design innovations. In this case, the ClearVu Engineering solution revealed a new design that was 30 pounds lighter than expected.

## **SOLUTIONS THAT MAKE THE DIFFERENCE**

Accurate prediction, rapid analysis and effective optimization form the foundation for NuTech Solutions' ClearVu software products for the automotive industry. With ClearVu Remarketing, ClearVu Residuals

and ClearVu Engineering, NuTech Solutions delivers innovation, and more importantly, automakers are realizing results – improved operational efficiencies, increasing profits, and positive brand image – and at the same time better serving their customers and a global marketplace.



## INTRODUCING OUR SCIENTIFIC TEAM

The NuTech Solutions Newsletter is launching a new series of articles dedicated to our scientific team. The team features several of the most prominent practitioners in the fields of evolutionary computation, data mining and complexity science.

This issue's featured scientific team member is Miles Parker, one of our Software Architects. Miles plays a dual role in the world as a scientist and a naturalist. As a Shambhala Buddhist he strives to live in harmony with nature and his profession. Miles takes nature's discoveries and applies them to the development of NuTech Solutions' advanced software. Looking at complex systems in nature and social systems, from foraging insects to markets, enables Miles to solve challenging business problems in innovative ways. He is a leader in the development of Agent-Based Modeling (ABM) tools.

Miles began his career as an independent developer of

database systems for a broad range of customers, including work on enterprise database tools for Java, at Sun Microsystems. In 1997, he joined the famed Brookings Institution where he worked with leading experts Joshua Epstein and Robert Axtell to develop agent-based models of important social and economic systems. Miles has continued his expertise in ABM's during his six years at NuTech, where he is known as the "father" of Ascape, a powerful and innovative software development environment for creating agent-based models. Today he leads software teams in developing groundbreaking complex system models for a variety of government and commercial applications. He has a particular interest in applying agile software development methodologies to the development of research-oriented software.

Beyond agent-based modeling, Miles also has a strong interest in related areas of complexity

science research, including the science of evolutionary computation, ant algorithms, fuzzy logic, neural networks, search, and computational complexity.

Recently Miles, working with another NuTech scientist, Mario Inchiosa, has been doing innovative work using agent-based approaches to Artificial Reasoning to make inferences across very large sets of geospatial and other data.

Although science is important to Miles, he also has hobbies and passions outside the work environment. Last summer he spent a month as a seminary student at the Shambhala Mountain Center, a Buddhist retreat in Colorado. When he's not using the science of nature to help NuTech's customers, you'll find him skiing and enjoying nature in the great outdoors of Park City, Utah.



## WORLD-RENOWNED OPTIMIZATION EXPERTS ASSEMBLED IN SPIN-OFF, VGO ASSOCIATES

NuTech Solutions announced the creation of a spin-off to advise clients in strategic planning and deployment preparation for optimization solutions. The new company will be called VGO Associates.

"NuTech Solutions helps many of the largest international companies solve their challenging business problems, and VGO's experts are passionate about real-world applications of optimization techniques," said VGO Associates' founder David Davis, Ph.D. "Our consultants

typically have more than 15 years of experience in creating and deploying industrial optimization systems."

Tom Wilson, CEO of NuTech Solutions noted, "VGO Associates will provide our software customers the added advantage of strategic optimization consulting services. We are looking forward to being able to provide, through our partnership, the additional value of optimization expertise for those clients who do not have the skills in-house. This new entity, in which we will hold a minority

interest, will enable us to attract talented professionals who, because of academic or other commitments, are not interested in becoming full-time employees of NuTech."

As a team, VGO and NuTech Solutions are uniquely positioned to provide customers a complete optimization solution, from strategy to software.

*VGO Associates is led by Dr. David Davis, a NuTech Senior Fellow and one of the original chief consulting scientists at NuTech. The VGO team's consultants provide their thought leadership in optimization as a complementary offering to NuTech Solutions' science and software for business.*



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*NuTech Solutions continues to live up to our "Science for Business" motto, as our scientific team participates at conferences throughout the year, discussing and sharing their knowledge about complexity science, evolutionary computation, data mining and simulation.*



## LIVING UP TO "SCIENCE FOR BUSINESS™"

NuTech Solutions' team kicks off the new year with appearances at several scientific events and conferences in both the private and public sectors.

### FEBRUARY

On February 21 -22 Kevin Kostuik, Vice President of Industry Solutions, visited the Society of Petroleum Engineers (SPE) Digital Energy 2006 Conference. For the second year in a row, NuTech joined this annual conference for oilfield applications of digital technology in Houston, TX. Digital Energy 2006 promoted cutting-edge applications, future technologies, and innovative solutions for the exploration and production (E&P) segment of the oil industry. Featured topics included asset optimization and production operations monitoring - - two subjects which are the focus of NuTech Solutions' petroleum industry solutions. As usual the Digital Energy conference brought together hundreds of technical professionals in the industry to share technology and best practices.

### MARCH

In a completely different industry and country, the "Evaluation 2006" conference in Bochum, Germany, March 6 – 9, was a meeting place for health industry employees and

scientists who develop evaluation tools. This annual convention addresses the information evaluation requirements of today's complex healthcare industry. Some of the topics included bioinformatics, placebo effect, genetic epidemiology, and other various issues related to health care and information technology. NuTech Solutions' Dr. Thomas Baeck gave a presentation entitled "Knowledge Extraction applied to Biotechnology."

### APRIL

NuTech Solutions' strong reputation in the public sector results in interesting speaking opportunities. This spring, Mario Inchiosa, Senior Scientist at NuTech Solutions will give a presentation at the SPIE (SPIE — The International Society for Optical Engineering) Defense and Security Symposium 2006. The symposium will take place on April 17-21 in Orlando, FL. Mario's presentation is entitled "Agent-Based Reasoning for Distributed Multi-INT Analysis," and will be presented as a part of the conference's technology track called "Intelligent and Unmanned Systems." This track covers several topics in which NuTech Solutions specializes, including data mining, genetic and evolutionary learning processes, information retrieval, neural networks for detection and discrimination and adaptive networks.

### MAY

One of our international teams of NuTech Solutions scientists will be recognized at the International Coalbed Methane Symposium 2006. The symposium will be hosted by the University of Alabama's College of Continuing Studies and College of Engineering May 22-26. The event is dedicated to the international advancement of the science and technology of unconventional gas extraction and utilization. The focus of this symposium is on the accurate delineation and efficient recovery of both mine-related and stand-alone coalbed methane resources worldwide. Marco Woermann from NuTech Solutions Germany will coauthor a paper which will be presented at this symposium.

NuTech Solutions continues to live up to our "Science for Business" motto, as our scientific team participates at conferences throughout the year, discussing and sharing their knowledge about complexity science, evolutionary computation, data mining and simulation. As a leader in the commercialization of these techniques, NuTech and our clients benefit from the leading-edge scientific solutions highlighted at these events.