3D SCANNING
Reverse Engineering, Analysis & Inspection

May 1-2, 2007
Marriott Renaissance
Detroit, Michigan

REGISTER TODAY!
www.sme.org/3dscanning

FEATURING
- Industry leaders
- Problem solving panel discussion
- Exhibits
- Networking opportunities

Images courtesy of Direct Dimensions, Inc.
BONUS!

North America’s Largest Annual Rapid Manufacturing Event

This event is co-located with the RAPID 2007 Conference and Exposition. Your registration for the 3D Scanning event gains you access to the exhibits, May 1-3. RAPID 2007 brings buyers, sellers and end-users of design, prototyping, tooling, and direct manufacturing technologies together in an environment that facilitates networking and business interaction. Attendees can evaluate the latest materials and machinery, compare processes, talk to industry experts, and make valuable contacts. Join us at RAPID 2007 and find everything you need to stay one step ahead of the competition! Visit www.sme.org/rapid for show hours and the latest event information.
TUESDAY, MAY 1
1:30 p.m. – 4:15 p.m.
I Bought a New Scanner — What a Nightmare, and a Dream Come True
OK, you’re ready to buy a scanner, or at least you think you are...where do you start? What’s the first step? How do you cut through the sales speak and get to the bottom line of what the market scanners really can do? Go through the decision making process step by step to determine what scanner is truly the “best” for your application. Learn the right questions to ask of yourself and from the dealers. See data from many different technologies and learn about scanners that might work for you. This fast paced and fun presentation will give real examples and real numbers.
Matthew Cappel, Berding 3D Scanning

Creative and Non-Traditional Uses for Reverse Engineering Data
Using reverse engineering and scan data in non-traditional applications can maximize your products performance and customer appeal. The methods of how reverse engineering data is being used in tasks that include finite element analysis, generation of high-end visualization content and human anatomy modeling will be presented. Attendees will see real life case studies of how these techniques are being used in driving cutting-edge product development and marketing.
Jim Tepich, Structural Analysis Engineering

Using 3D Scanning Tools for Aircraft Design Optimization
With the goal to reduce aerodynamic drag, the project started with 25 year-old techniques using plaster as a mold medium to create a compartment to be analyzed for clearance between the cowling and the components already located inside. How this was done and the resulting design of ducts will be presented.
Richard Keyt, Dennis N. Polen Educational Foundation

X-Ray Eyes: Can Tricorders be Far Away?
Examples of radiographic and CT imagery will be shown and the process of converting a CT volume to a surface will be described. Expectations for resolution, sensitivity, speed, throughput, and some practical considerations will be discussed. Acquisition and operating costs, what is practical and what is necessary, and the general kinds of work will be provided. Finally, a few thoughts about what the future may hold — tricorders are not that far fetched.
Martin Jones, Ford Motor Company

5:00 p.m. – 6:30 p.m.
Networking Reception
Ontario Room
Join other attendees and exhibitors for a cocktail reception on the exhibit floor. This is your chance to catch up with old acquaintances, meet new ones and talk to industry leaders in a relaxed environment.

Program changes: SME has the right to amend this program as necessary. In the event of a program cancellation, SME is not responsible for incidental costs incurred by registrants. It is recommended that refundable airline tickets be purchased

WEDNESDAY, MAY 2
8:00 a.m. – 11:00 a.m.
3D SCANNING: INDUSTRIAL APPLICATIONS
3D Part Validation and Beyond-Effective Use of DSSP
Many uses of point cloud generated by DSSP in the electromechanical manufacturing including: first article inspection, last article inspection (when tools are moved or changed), predictive tool wear, conversion of 2D legacy drawing to 3D databases by validating the generated CAD model as compared with the existing part, and more. An overview will be presented along with what benefits were realized throughout the entire enterprise.
Ras Emerick, Schneider Electric

Using 3D Laser Scanning to Reverse Engineer a Transmission Tailpiece
To secure a source of supply for Light Armored Vehicle (LAV) transmission tail piece housing (a large complex aluminum casting with numerous machined ports, bolt holes, hose connections, and flange surfaces), the part was reverse engineered using coordinate measuring machine (CMM) in combination with the 3D laser scanner. A process for combining the highly accurate CMM data with point cloud data generated by the laser scanner was developed. This combined data was then processed to create a solid model.
Michael Haselkorn, Rochester Institute of Technology

Modernizing Classic Casting Designs Through Reverse Engineering
The use of scanning technology to aid in rapidly developing new patterns of a tamper casting used by the railroad industry will be presented. Efficiently integrating scanned data with CAD model development to validate the design intent and meet short production schedules will be included. The reverse inspection process enables manufacturers to validate final CAD models and eliminate manufacturing common casting errors such as shrinkage and warpage that are not addressed by typical scanning approaches.
Alvin Potter, Advanced Simulation Technology

3D SCANNING: MEDICAL APPLICATIONS
3D Scanning Technologies as Applied to Medical and Human Body Applications
The current state-of-the-art applications and users, methods and techniques, equipment and tools, cost and benefits, and attempt to outline a vision for the increased use of 3D scanning technologies for the creation of customized medical prosthetics, orthotics, and other personalized body-conforming products will be presented. Various projects in collaboration with Juan Garcia, medical staff member at Johns Hopkins Hospital will be discussed.
Michael Raphael, Direct Dimensions, Inc.

Application of 3D Scanning for Breast Surgery and Reconstruction
Recent work provides data to support the use of 3D imaging as a valuable tool in aesthetic and reconstructive breast surgery. A system has been developed for creating 3D breast models that provides clinical data that can help guide surgical management. Three-dimensional imaging may be applied to various plastic surgery procedures including breast reconstruction with implant/tissue expanders, local flap reconstruction, free-flap reconstruction, breast augmentation, and breast reduction surgery. The approach provides advantages over procedures and are based on two-dimensional photographs and visual size estimates.
Dr. Oren Topper, New York University

11:00 a.m. – 1:00 p.m.
Lunch on the Show Floor
1:00 p.m. – 3:45 p.m.
3D Scanning and Reverse-Engineering a Crime Scene
A beta version of a software program designed to aid in putting a face on skeletal remains or those unrecognizable is the result of a continuing development with General Electric and the FBI. It requires a CT Scan or a sub millimeter scan of the remains in an mri format. A demo will be given to show the current progress in development of this software, which is free to all law enforcement agencies and crime labs.
Carl Adrian, FBI

Reconstructing George Washington in 3D
In 2004, Mt Vernon commissioned a forensic anthropologist and a computer scientist to lead a project to reconstruct George Washington in 3D of the ages of 19, 45 and 57 based on images and other 3D evidence. The challenges of scanning and reverse engineering/aging of a figure and the project process will be presented.
Amilhausen Razdan, Arizona State University

PANEL DISCUSSION: How to Scan My Part
Here’s your chance to consult with several industry leaders all at one time! Visit the event Web site to fill out a form for the chance to learn what these experts think will be your best hardware, software and process solutions. Panelists will include:
• Mathew Cappel, Berding 3D Scanning
• Giles Gaskell, IVision
• Rick Moore, US Army Edgewood RDE Center
• Michael Raphael, Direct Dimensions, Inc.

3:45 p.m. – 4:30 p.m.
TECH GROUP MEETING: 3D Data Capture/Reverse Engineering
The 3D Data Capture/Reverse Engineering Tech Group focuses on processes that combine hardware and software technology to capture 3D spatial measurement data to create 3D digital representations of physical objects for downstream applications. This meeting will provide updates on activities including:
• 3D Scanning conference development
• Standards sub group
• Brainstorming ideas for member benefits

4:30 p.m. – 6:00 p.m.
Networking Reception
Renaissance Room
A second reception on the show floor that gives you another opportunity to relax and make contacts that could help you solve your next rapid related challenge.
3D SCANNING CONFERENCE
REGISTRATION FORM
May 1-2, 2007 • Marriott Renaissance • Detroit, Michigan
EARLY REGISTRATION DEADLINE: APRIL 14

CODE: 3D

SECTION A: Personal Information
Please Print — One Form per Person

A ❑ Mr.  ❑ Ms.
Name ____________________________________________________________
Title ____________________________
BUSINESS ADDRESS REQUIRED:
Company __________________________________________________________
Address ___________________________________________________________
City/State/Zip ______________________________________________________
Postal Code/Country ________________________________________________
Mail Stop __________________________________________________________
Address ___________________________________________________________

1. Check your ONE primary job function:
   1. Job Shop Owner
   2. Corporate Executive
   3. Manufacturing Production
   4. Manufacturing Engineering
   5. Product Design/Development
   6. Design Engineer
   7. Educator
   8. Other

2. Check the number of employees at your facility:
   0 ❑ Less than 20
   1 ❑ 20-49
   2 ❑ 50-99
   3 ❑ 100-249
   4 ❑ 250-499
   5 ❑ 500-999
   6 ❑ 1,000-2,499
   7 ❑ 2,500 and Over

3. Indicate the technologies you plan to evaluate at the show:
   A ❑ Casting
   B ❑ Computer-Aided Design
   C ❑ Computer-Aided Engineering
   D ❑ Data Translation/Interoperability
   E ❑ Finishing & Coating
   F ❑ Machining/Prototype/Short Run
   G ❑ Materials
   H ❑ Mold, Tool & Die Design
   I ❑ Product Design & Automation
   J ❑ Rapid Manufacturing
   K ❑ Rapid Prototyping
   L ❑ Rapid Tooling
   M ❑ Reverse Engineering
   N ❑ Software, CAD/CAM

4. Select your department's total budget for these technologies during the next 12 months:
   A ❑ Up to $20,000
   B ❑ $20,001 - $50,000
   C ❑ $50,001 - $200,000
   D ❑ $200,001 - $500,000
   E ❑ $500,001 - $1,000,000
   F ❑ $1,000,001 - $5,000,000
   G ❑ Over $5,000,000

5. Select your role in the purchase of these technologies:
   A ❑ Evaluate/Recommend Products
   B ❑ Specify Suppliers
   C ❑ Approve Purchases
   D ❑ No Role

6. Check your level of expertise with these technologies:
   A ❑ New User
   B ❑ Little Experience
   C ❑ Experienced
   D ❑ Expert

7. Select your primary type of business or industry:
   A ❑ Automotive
   B ❑ Aircraft/Aerospace
   C ❑ Other Transportation
   D ❑ Electronics/Computers
   E ❑ Consumer Goods
   F ❑ Plastic Products
   G ❑ Fabricated Metal/Stampings
   H ❑ Industrial and Commercial Machinery
   I ❑ Medical/Surgical
   J ❑ Other Manufacturing
   K ❑ Research & Development
   L ❑ Consulting/Engineering
   M ❑ Academic Institutions
   N ❑ Government/Military

SECTION B: Member Status
❑ SME Member # _____________________
   (required for member rates)
❑ New Member
❑ Yes! I want to become an SME member and save on my registration fees.
   SME Member Dues: $125
Section B Total: $__________

SECTION C: Conference Purchase
Conference registration includes exhibit attendance at RAPID 2007.

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<tr>
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<th>MEMBER</th>
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<td>Thru 4/14</td>
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<td>D ❑ 3D SCANNING: Reverse Engineering, Analysis &amp; Inspection Conference May 1 – 2, 2007</td>
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Section C Total: $__________

SECTION D: Payment Information
Total of Sections B & C in U.S. $.

Select Payment Method: Registrations will not be processed without payment information.
❑ Check Enclosed (Payable to SME) ❑ Visa ❑ MasterCard ❑ American Express ❑ Discover
Card # ____________________________
Expiration Date ______________________
CCV/CID# ______________________
Signature ____________________________

CANCELLATION POLICY: Only written requests received on or before April 14, 2007 will receive a full refund.

ROOMS & LODGING
All sessions for 3D Scanning will be held at:
Marriott Renaissance
Detroit, MI 48243
313.568.8000

Room Reservations:
A block of rooms at reduced rates of $135.00 single and double is being held at the Marriott Renaissance for attendees of this event. Rooms in the SME block not reserved by April 14, 2007 will be released. After this date, reservations will be accepted but not guaranteed at SME’s group rate. Make your reservations by calling the hotel at 313.568.8000 or toll-free 800.228.9290. (Mention SME to receive our reduced rates!)