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**SolidWorks/Excel Integration using VBA/API**
Intensive Hands-On Workshop for CAD Design Engineers
**Instructor: Chris Stimson, M.S.**

November 13-15, 2006
Los Angeles, CA

**Spreadsheet Aided Engineering**
**Instructors: Dr. Tom R Mincer & David R McDaniel, M.S.**
**Featuring latest new tool, Roark’s Formulas for Excel**

October 30-November 3, 2006
Los Angeles, CA
January 15-19, 2007
S. Lake Tahoe, CA
June 18-22, 2007
Mackinac Island, MI

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SolidWorks/Excel Integration using VBA-API

Focus
This hands-on workshop is designed to have an immediate impact on the way that SolidWorks CAD users can integrate their CAD models with systems level analysis, trade studies, and system level optimization. Excel Spreadsheets are utilized as the system level tool integration platform. The underlying key to implementing this process is for the user to gain experience and knowledge on the use of Visual Basic for Applications (VBA) in both Excel and SolidWorks. Extensive use of VBA is the key to unlocking all the features of SolidWorks and reducing the amount of tedious work. This provides the ability to move away from the CAD interface to the more familiar Excel application. Those who attend this intensive hands-on workshop experience a dramatic change in their use of SolidWorks in the design integration process. Benefits include increased productivity, automation of tedious tasks, SolidWorks’ part and assembly automation, development functions, forms and templates, improved documentation and configuration management, and improved team interaction and parameter sharing.

Instructor
Chris Stimson, M.S., Project Engineer, Moog, Inc. Chatsworth, CA. SolidWorks/Excel Applications Specialist, SpreadsheetWorld, Inc. and is an instructor at California State Northridge (CSUN). Mr. Stimson is a pioneer in the integration of Excel and SolidWorks using the VBA Application Programming Interface (API). At Moog, he oversees the development of Moog’s space components product line. He teaches an advanced design integration graduate course at CSUN which includes topics taught in this workshop. He received his Master’s Degree in Mechanical Engineering at CSUN, where his Master’s Project focused on “Automation of the CAD Design of a Positive Displacement Pump” using the integration of SolidWorks and Excel. In his project, he developed the concept of using the Excel platform to command, control and communicate design parameters to Excel.

Audience
This workshop requires advance knowledge of SolidWorks and Excel VBA. Design engineers using CAD programs find these courses immediately useful, practical and eye-opening. Participants should have a computer background including basic keyboard and Excel skills.

Course Materials
Each participant receives a 3-volume set of workshop notes which include all the PowerPoint slides used during the workshop for concept discussion and setting up of workshop exercises. The CD-ROM contains an electronic version of the course notes; the workshop examples; and selected SpreadsheetWorld Engineering XLToolboxes. Workshop attendees receive free updates on selected software for 5 years. Participants also receive a copy of Computational VBA, which is written by SpreadsheetWorld.

Computer Requirements
Attendees must bring their own laptop and have a complete installation of Excel and SolidWorks, a CD-ROM drive and a mouse. Verify that the Solver, Analysis Toolpak Add-ins and the Excel and VBA help files have been installed.

Outline

Overview of SolidWorks Environment
- SolidWorks API Overview
- SolidWorks VBA Menu
- SolidWorks Macros and Microsoft VBA Overview
- SolidWorks API Standalone and Add-in Applications Overview
- SolidWorks API Object Model Overview
- ModelDoc2 Object
- OLE applications
- PartDoc Object
- AssemblyDoc Object
- DrawingDoc Object

Overview of Excel Environment
- The central role of VBA in Excel
- The Excel VBA application object library
- Excel menus and toolbar objects
- Setting application level preferences
- Forms for simple worksheet user interface
- Using the VBA Recorder

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Spreadsheet Aided Engineering

Workshop Instructors

Tom R. Mincer, Ph.D., Founder and President of SpreadsheetWorld, Inc. and Professor of Mechanical Engineering, California State University, Northridge (CSUN). Dr. Mincer is widely recognized as an early pioneer in the extensive use of Excel, VBA and FORTRAN DLLs in engineering. In 1985, he initiated extensive use of Excel into the curriculum at CSUN by integrating it into the courses on systems design, computational methods and engineering-aided engineering. For the past 15 years he has worked extensively in the areas of systems design, simulation and optimization using the Excel Structured Spreadsheet environment. In 1995, he extended his efforts to industry by launching his popular hands-on workshop on Spreadsheet Aided Engineering, which has now been taught over 150 times to engineers from over 150 companies worldwide. Alumni from these workshops exceed 2,500 engineers. This workshop is offered on a regular basis at over 30 companies. Dr. Mincer founded SpreadsheetWorld to extend the training services to include development of a high quality line of engineering XLToolboxes, and process consulting services to enhance the implementation of the best practices and methods taught in his workshops for individuals and teams.

David R. McDaniel, M.S., Vice President, Applications Development, SpreadsheetWorld, Inc. and former Asst. Professor of Aeronautics, U.S. Air Force Academy. Mr. McDaniel made extensive use of Excel spreadsheets and VBA programming as a flight dynamics flight test engineer at the Air Force Flight Test Center at Edwards Air Force Base, California while testing and evaluating the B-2A and B-1B aircraft. He manages the continued upgrades for the SpreadsheetWorld Toolbox Manager as well as the ongoing development of specialized toolboxes which are integrated into Excel using the Toolbox Manager. Mr. McDaniel specializes in advanced Excel/VBA techniques such as the use of class modules, the development of custom dynamic link libraries, and the integration of these capabilities into higher level modeling and analysis loops. He has been teaching courses covering these topics as well as many other workshops for the past five years at various locations.

Computer Requirements

Attendees must bring their own laptop and have a complete installation of Excel, a CD-ROM drive and a mouse. Verify that the Solver; Analysis Toolpak Add-ins and the Excel and VBA help files have been installed.

Audience & Prerequisites

Engineers from all disciplines find these courses immediately useful, practical and eye-opening. Participants should have a computer background including basic keyboard and Excel skills.

Course Description

This workshop is designed to have an immediate impact on the way that Excel Spreadsheets are used in the engineering process. The underlying key to this change is for the user to gain experience and knowledge on the use of Visual Basic for Applications (VBA) in Excel. Extensive use of VBA is the key to unlocking all the features of Excel, and moving away from attempting to program on worksheets. Those who attend this intensive hands-on workshop experience a dramatic change in their use of Excel and VBA. Benefits include increased productivity, automation of tedious tasks, increased use of XLToolboxes and Add-ins, development of re-usable functions, forms and templates, improved documentation and configuration management, and improved team interaction and parameter sharing.

Course Materials

Each participant receives a 3-volume set of workshop notes which include all the PowerPoint slides used during the workshop for concept discussion and setting up of workshop exercises. The CD-ROM contains an electronic version of the course notes; the course examples; engineering case studies; and many SpreadsheetWorld Engineering XLToolboxes including XL QuikPlot, XL Numerical Methods, XL Simulation, XL Thermal-Fluids, XL Heat Transfer, XL GasDynamics, geometric modeling add-in, and data analysis add-in. It also includes the new and popular Units Converter PowerBook which brings a comprehensive capability of unit conversion as well as extensive engineering constant reference. Workshop attendees receive free updates on all included software for 5 years. Participants also receive 30-day demo copies of other selected XLToolboxes including XL Eigenvalues, XLProPlot, XL Linear and Roark for Excel. Participants also receive a copy of the course textbook Computational VBA, which is written by the course instructors.

The participants in this workshop will learn how to:

- Define the mission and process flows
- Define system physical object structure
- Create engineering information tables
- Develop re-useable system functional models
- Monitor the impact of key design and process variables
- Monitor performance and constraint functions
- Deal with implicit relationships using Goal Seeker
- Develop and use VBA Add-Ins for rapid modeling
- Use XLToolboxes to support modeling
- Solve systems of equality and inequality rules
- Dynamic system simulation
- Do system optimization using Solver
- Monitor System Requirements using Solver
- Setup system sensitivity maps about a design point
- Do dynamic system simulation in the optimization loop
- Setup Configuration Trade-Study Matrix
- Use Userforms for man-in-the-loop design and analysis
- Develop graphic user interfaces for systems design
- Setup system modeling for integrated design teams
- Use Fortran and C modules from Excel
- Use MATLAB models in Excel

For a complete outline go to: www.peinternational.com/576

Spreadsheet Aided Engineering

Key Workshop Topics of this hands-on engineering workshop include:

- The Excel/VBA Platform
- Structured Spreadsheets and Documentation
- Visual Basic for Applications (VBA)
- Building Engineering Function Libraries
- Object Oriented Programming
- Userforms & ActiveX for Project Control
- System Optimization & Rules Solving
- Numerical Methods for System Modeling
- Data & Data Analysis and Graphing
- Interfacing VBA & FORTRAN-DLLs

Call PEI today for details about this exciting workshop! See back page for schedule of offerings.
Spreadsheet Aided Engineering On-Site Sponsor Members

The following organizations have sponsored on-site offerings of Spreadsheet Aided Engineering at their facility. Many of the organizations below sponsor these workshops on an on-going basis and comment on how their engineers benefit immediately by methods taught in SpreadsheetWorld hands-on workshops. Your technical staff can also benefit from the best practices taught in this program by hosting the workshop on-site.

- NASA
  Dryden Test Flight Center
  Glenn Research Center
  Goddard Space Flight Center
  Jet Propulsion Lab
  Johnson Space Center
  Marshall Space Flight Center
- United Technologies
  East Hartford, CT
  US Army Tank Command
  Warren, MI
- General Motors
  Milford, MI
  Pontiac, MI
- Hamilton Sundstrand
  Rockford, IL
  Windsor Locks, CT
- U.S. Air Force
  Arnold AFB
  Edwards AFB
  Eglin AFB
  Rocket Research Lab
- National Security Agency
  Hansover, MD
- Pratt & Whitney
  West Palm Beach, FL
- L.A. Water District
  Los Angeles, CA
- U.S. Navy
  Indianapolis, IN
  Patuxent River, MD
  NRL-Washington, DC
- L3 Ocean Systems
  Sylmar, CA
- Booz-Allen Hamilton
  McLean, VA
- Delphi Steering
  Saginaw, MI
- Northrop-Grumman
  Palmdale, CA
- Lockheed Martin
  Fort Worth, TX
  Marietta, GA
  Palmdale, CA
- Honda R&D
  Raymond, Ohio
- ERDC
  Vicksburg, MS
- Harley-Davidson
  Wauwatosa, WI
  Talladega, AL
- Goodyear Tire
  Luxembourg
  Akron, Ohio
- TRW
  Redondo Beach, CA
- Raytheon Consulting
  Troy, MI
- Dow Chemical
  Midland, MI
  Freeport, TX
- International Truck
  Fort Wayne, IN
- Parker-Hannifin
  Irvine, CA
- Goodrich
  Rome, NY
- SAIC
  Houston, TX
- Ricardo
  Detroit, MI

New! Roark's Formulas for Excel. Go to www.spreadsheetworld.com/Roark for details!

Course: SolidWorks/Excel Integration using VBA-API
Date: November 13-15, 2006
City/Number: Los Angeles, CA/1844.01
Fee: $1795
Time: 8:30 a.m. - 4:30 p.m.
Units: 2.1 CEUs

Course: Spreadsheet Aided Engineering
Date: October 30-November 3, 2006
City/Number: Los Angeles, CA/576.214
Fee: $2495
Time: 8:30 a.m.—4:30 p.m. (M-Th)
7:00 a.m.—12:00 p.m. & 7:00 a.m.—12:00 p.m. &
8:30 a.m.—12:00 p.m. (F)
7:00 a.m.—12:00 p.m. (M-Th)
5:00 p.m.—7:00 p.m. (M-Th)
7:00 a.m.—12:00 p.m. (F)
Units: 3.5 CEUs

Course Fee and Payment: SolidWorks/Excel Integration using VBA-API: $1,795/student; Spreadsheet Aided Engineering: $2,495/student ($1,995 for on-site members). Fee includes tuition, course materials and refreshments. Checks or purchase orders should be made payable to Professional Education International. Major credit cards are accepted.

Discounts:
Group: Available when registered as a group and requested in advance: 3-5=10%, 6-10=20%, 11+=30%.
Full-time Faculty, Graduate Students and Small Business: 50%
Alumni Refresher (Spreadsheet Aided Engineering Only): $300 (Complimentary if you bring a full paying associate and assist during the help sessions)
Refunds: The course fee (less a $50 processing fee) will be refunded if cancellation is received at least one week prior to the first day of the course. Substitutions may be made at any time.

Other Upcoming public courses selected from our library of over 300 on-site engineering courses:

For detailed brochures or on-site information, call toll free 1-866-272-8095 or e-mail: info@peinternational.com

Spreadsheet Aided Engineering
10/30-11/03, 2006
Los Angeles, CA

10/15-11/04, 2006
Los Angeles, CA

10/03-10/04, 2006
Los Angeles, CA

10/01-10/02, 2006
Ponctiac, MI

10/18-10/19, 2006
Ponctiac, MI

10/02-10/06, 2006
Santa Fe, NM

Advanced Spreadsheet Aided Engineering
10/16-10/17, 2006
Ponctiac, MI

04/23-04/24, 2007
Southfield, MI

06/14-06/22, 2007
Southfield, MI

Design & Development of Auto A/C Systems
04/25-04/26, 2007
Southfield, MI