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Engineering Knowledge Management
Harnessing the Value of Experience

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Outline

- Why manage simulation process and data?
- ANSYS Engineering Knowledge Manager (EKM): The ANSYS Simulation Process and Data Management (SPDM) Initiative
- Demo
- Q & A
Industry Survey: Current Situation

**Knowledge Capture***

- Database & Templates for Most Tasks: 47%
- Database for Some Simulation Tasks: 29%
- Verbal & Informal Exchange: 20%
- Other: 4%

**Data Management***

- Legacy Database or In-house Solution: 35%
- Commercial PDM: 13%
- Simulation Data Mgmt: 6%
- Other: 4%
- User’s Local Machine: 42%

* Data: CPDA 2007 PLM Road Map Conference
Why Manage Simulation Data?

• Managing simulation data reduces engineering costs
  – Eliminate wasted time looking for data
  – Enable reuse
    • Don’t do the same thing more than once
    • Modify existing models rather than building from scratch
  – Protect intellectual property
    • Stored, organized, searchable, controlled access
Why Manage Simulation Processes?

- Managing simulation processes and workflows
  - Enables a collaborative environment for distributed workgroups
  - Enables management of methods and control of handoffs
  - Creates reusable templates to capture best practices and minimize reinventing methods
  - Enables effective knowledge transfer to new engineers

Scenario 1

Scenario 2
ANSYS EKM Differentiators
A User Scalable Solution

Accessible from ANSYS Workbench

Model & Data Sharing

Work Group

Automated Workflow

Enterprise

Knowledge Capture
Data Mgmt
Protect Intellectual Property

Organization/Process Maturity

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ANSYS EKM Differentiators
IT Scalability (Architecture/Technologies)

IT scalability

Single user
Workgroup
Global enterprise

Plug-and-play

Web Browser (IE, Firefox, etc.)
Application Server (Jboss, WebSphere, etc.)
Firewall
Content Management Repository (Jackrabbit, etc.)
Desktop Application (ANSYS Workbench, VB, etc.)
File Server (http, ftp)
Compute Cluster
Relational Database (Mysql, Oracle, DB2, etc.)

Executes simulations and extracts data using a batch system such as RSM, LSF, SGE
Stores metadata
Repository of all archived files and applications
ANSYS EKM Differentiators
A CAE-focused Solution

Automatic meta-data extraction

- Large files put in repository
- Meta-data copied to database

EKM File Server

Download

Upload

(Large file > 50MB)

boundary conditions, solver settings, material data, etc..

Simulation Meta-Data
(Small file <10KB)

EKM Database

User’s machine

Geometry
1010010010100010
010010101010100..

Results
0100100010100010
010010101000011..

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ANSYS EKM Differentiators
A CAE-focused Solution

• Simulation process management & automation
• Tight integration with ANSYS and other CAE products
• Variation analysis
• Data mining of simulation results
• Host simulation files in a central repository, distributed repositories or locally

• CAE-focused: Individual analysts and engineers need pragmatic solutions that let them work more productively
Collaborative Engineering

Solutions beyond the tools and technology level…
enable true Simulation Driven Product Development.
• Data Management Scenario
  – Search for a previous study
  – Download-Modify-Upload files
  – Data mining

• Process Management Scenario
  – Simulation workflow management
  – Multi-discipline collaboration
Advantages

• **ANSYS EKM provides**
  – A scalable SPDM Solution with strong CAE focus
  – Tight integration with other products from ANSYS, Inc.

• **SPDM helps engineers to:**
  – Improve working relationships and communication
  – Establish a collaborative environment
  – Reduce the time to find and retrieve data
  – Document the work, know-how and best practices
  – Automate processes and reduce errors
  – Concentrate on physics and functionality