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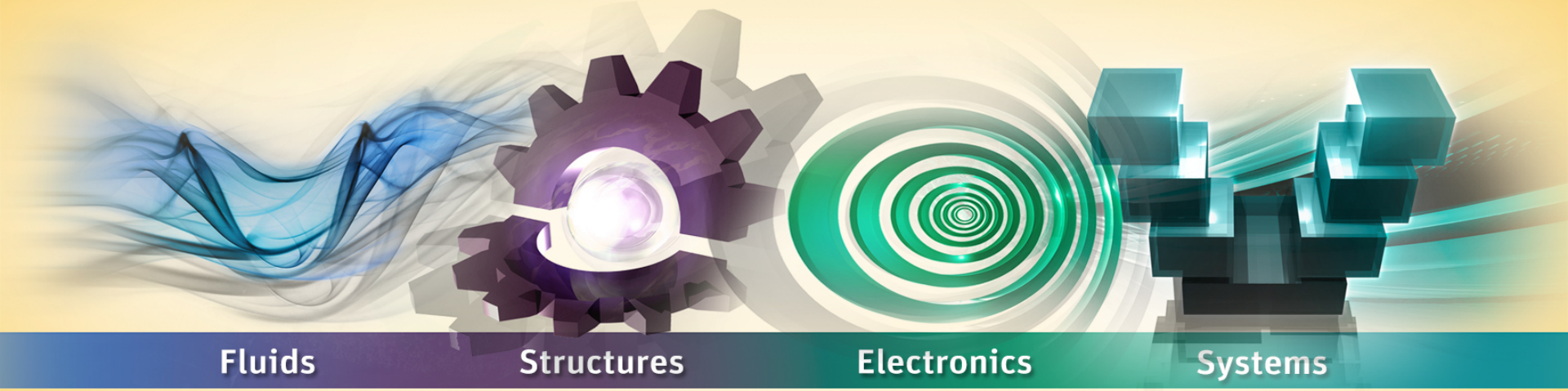
武汉制信科技有限公司

ANSYS

Realize Your Product Promise®

ANSYS EKM
研发仿真数据管理与流程管理方案



侯明刚

Shihu.ma@ansys.com

ANSYS China

EKM的着眼点——仿真面临的问题

- 庞大的仿真数据管理问题
  - 数据孤岛问题、快速检索、数据复用…
- 繁琐的仿真流程和膨胀的计算资源需求
  - 同类型的问题，同样的仿真过程，同样的耗时
  - 仿真需要越来越多的计算资源
- 复杂的仿真流程管理
  - 仿真通常需要多部门协作

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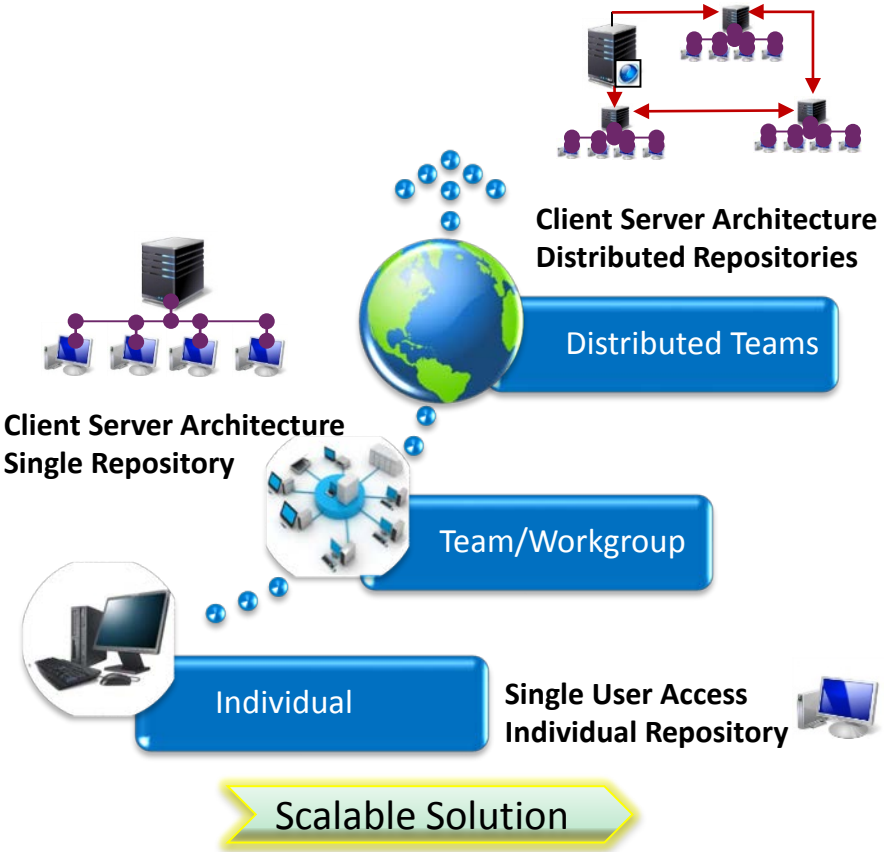
EKM：专业的仿真数据与流程管理方案

- 功能
  - Ease of Use
  - Data Search and Retrieval
  - Results Visualization
  - Design Comparisons
  - Multi-Location Collaboration
  - Process Control
  - Job Submission
  - Workbench Integration



Strategic Intent:

- *Get the right resources* to the right people at the right time*

*** Resources = data, information, compute power**

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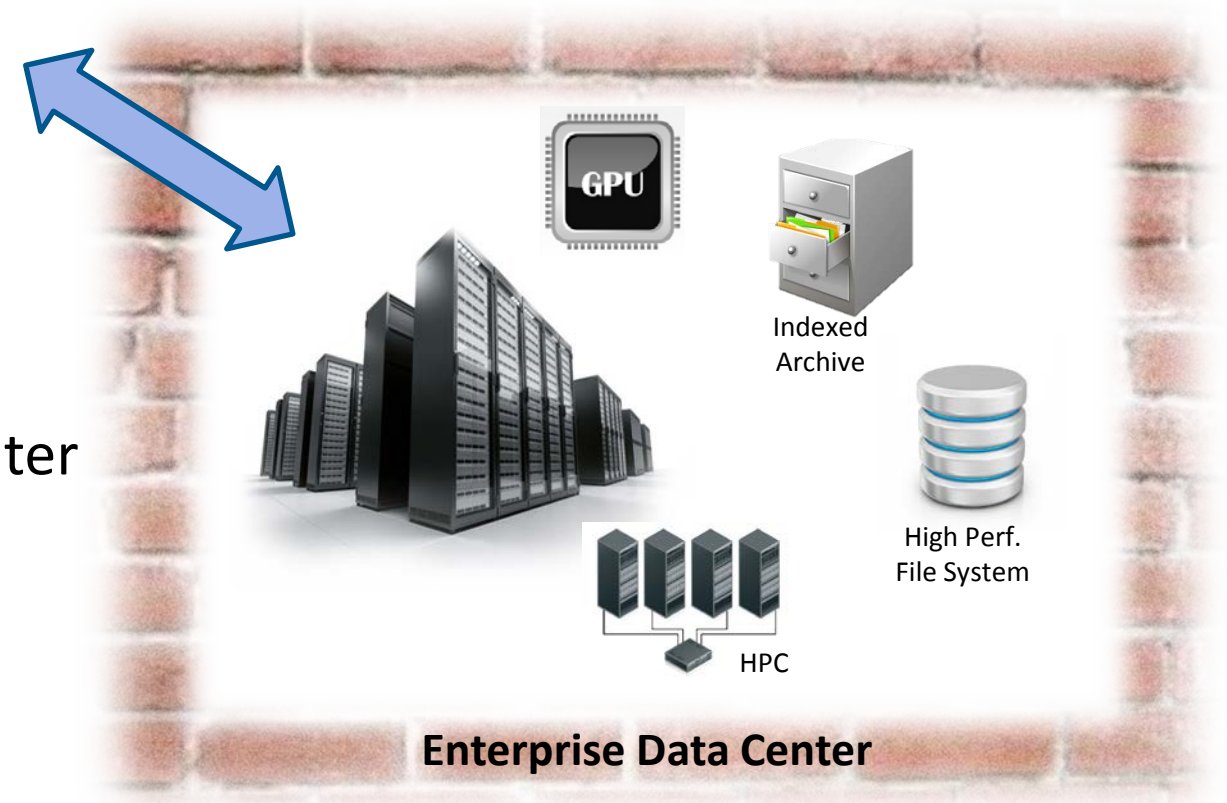
EKM: 企业级仿真端口



- Web portal to the simulation data center
- Data management
- Job management
- Interactive use

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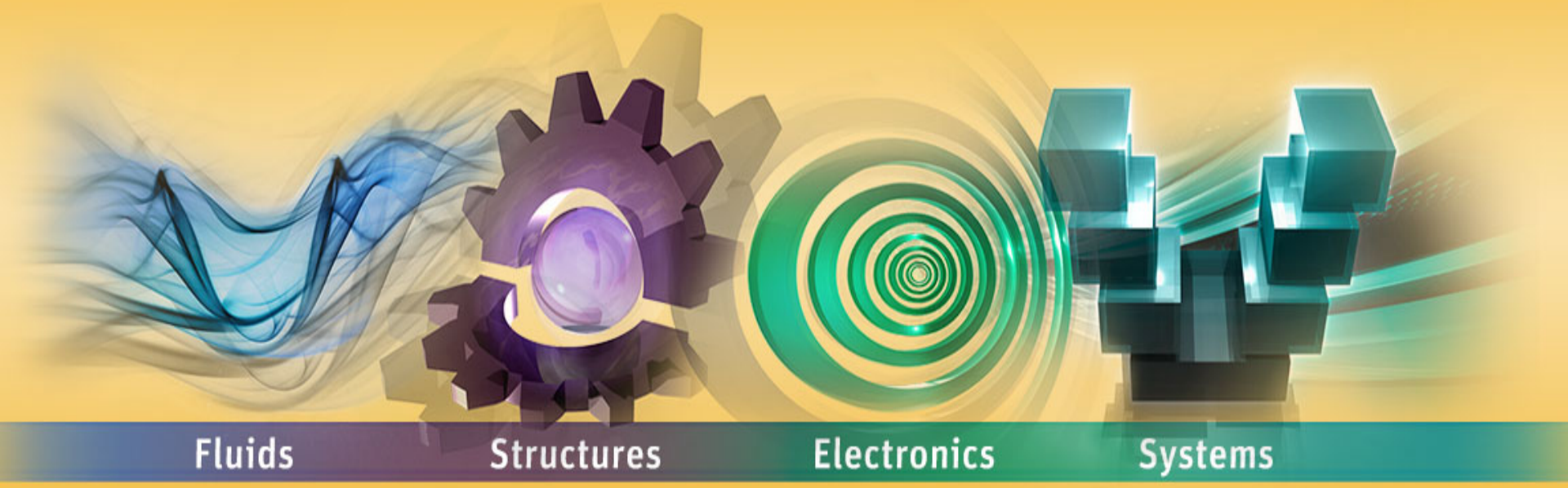
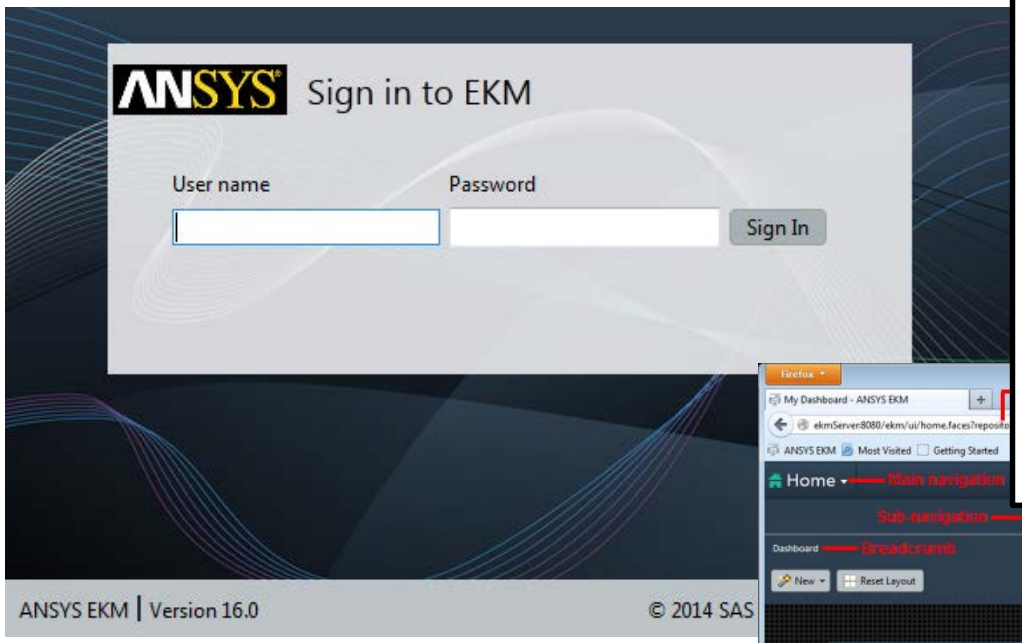
EKM的仿真数据管理



ANSYS EKM 16.0 网页界面

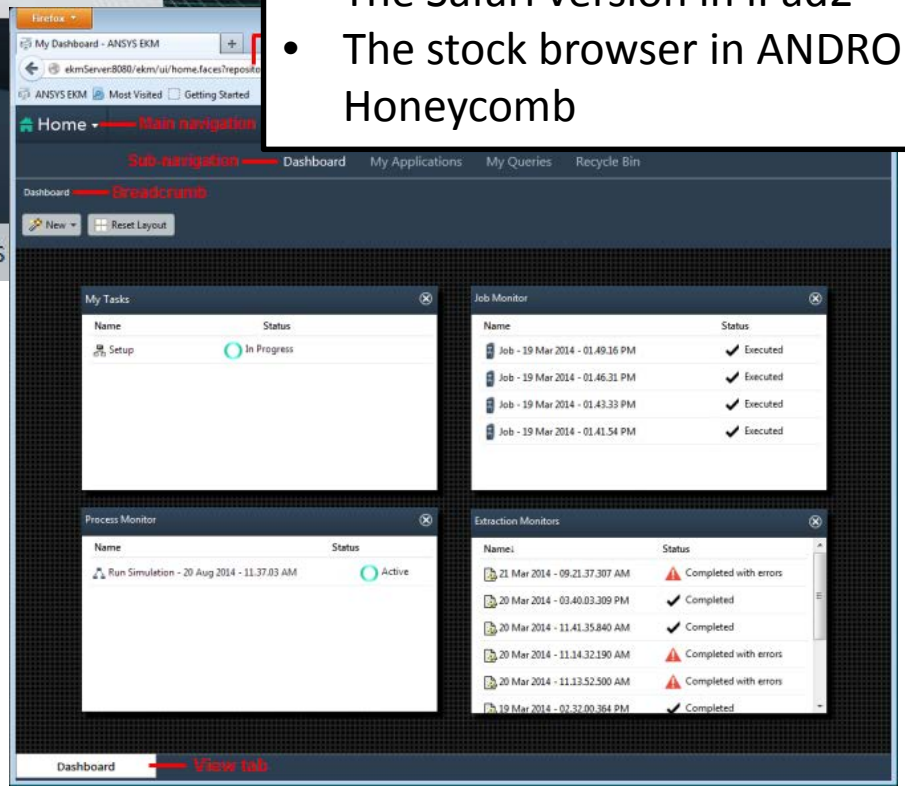


EKM R16.0 runs best on

- Internet Explorer 10+
- Firefox 31.0+
- Chrome 36+

EKM is also supported on the following browsers:

- The Safari version in iPad2
- The stock browser in ANDROID 3.1 Honeycomb



ANSYSTechTips videos available!
http://youtu.be/ZfYhk2cYB3s

ANSYS EKM元数据（ Meta-Data ）抽取

- Simulation properties and other metadata are automatically extracted from files
- Procedure can be customized in various ways, such as
  - Customization of the built-in extractors
  - Implementation of custom extractors

Download **Upload**

(Large file > 50MB)
boundary conditions, solver settings, material data, etc..

Geometry
1010010010100010
010010101010100..
Results
0100100010100010
010010101000011..

User's Machine

Simulation Meta-Data
(Small file <10KB)

EKM Database

- Large files put in repository
- Meta-data copied to database
- Meta-data information can be configured
- User defined meta-data can be added

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ANSYS EKM Highlights: Search & Reuse

Advanced Search

Folder(s) to search in: Shared Data, My Data Edit

Select object type: Fluent Case — Object filter

Property

- Fluent Case
  - -- Any Type --
  - -- Any Keyword --
  - Checked out by
  - Checkin policy
  - Content type
  - Created by
  - DPM Model
  - Date content created
  - Date content modifi
  - Date created
  - Date modified
  - Description
  - Energy Model
  - Expiration date
  - Fluent Version

Expression

Matches: all of the following Add sub-exp Clear All

Energy Model | Equal To | Off | Remove

Property | Condition | Value

Show child properties | Allo

Clear Results | Edit Query | Save Query | Save Results | Search Reports | Expand Search

Path	Size	Type
/Data/Shared Data/CAE Files/pipe-optimization.wbpz/__projectFiles__/pipe-optimization_files/dp0/FLU/Fluent/pipe-coarse-2.cas.gz	50 KB	Fluent Case
/Data/My Data/custom-dialog-node-workflows/mixing-tank/resources/tank.cas.gz	33 KB	Fluent Case
/Data/Shared Data/CAE Files/pipe-optimization.wbpz/__projectFiles__/pipe-optimization_files/dp0/FLU/Fluent/pipe-coarse-1.cas.gz	50 KB	Fluent Case
/Data/Shared Data/CAE Files/pipe-optimization.wbpz/__projectFiles__/pipe-optimization_files/dp0/FLU/Fluent/pipe-coarse-3.cas.gz	50 KB	Fluent Case
/Data/Shared Data/CAE Files/pipe-optimization.wbpz/__projectFiles__/pipe-optimization_files/dp0/FLU/Fluent/pipe-coarse.cas	157 KB	Fluent Case
/Data/Shared Data/Sample Files/custom-apps/mixing-tank-resources/tank.cas.gz	33 KB	Fluent Case

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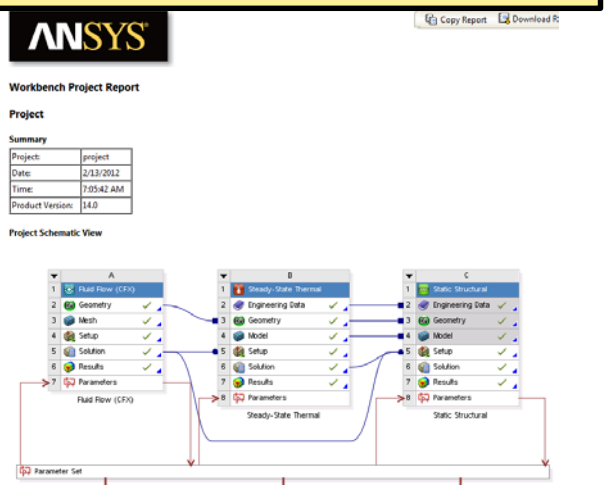
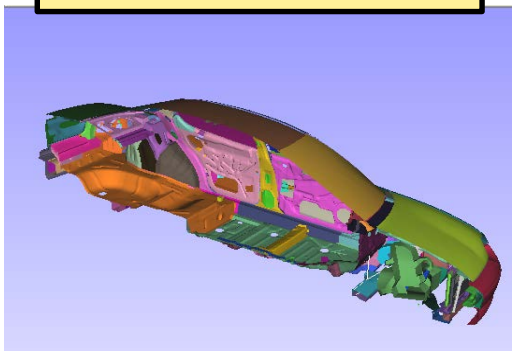
ANSYS EKM 数据检索与定位

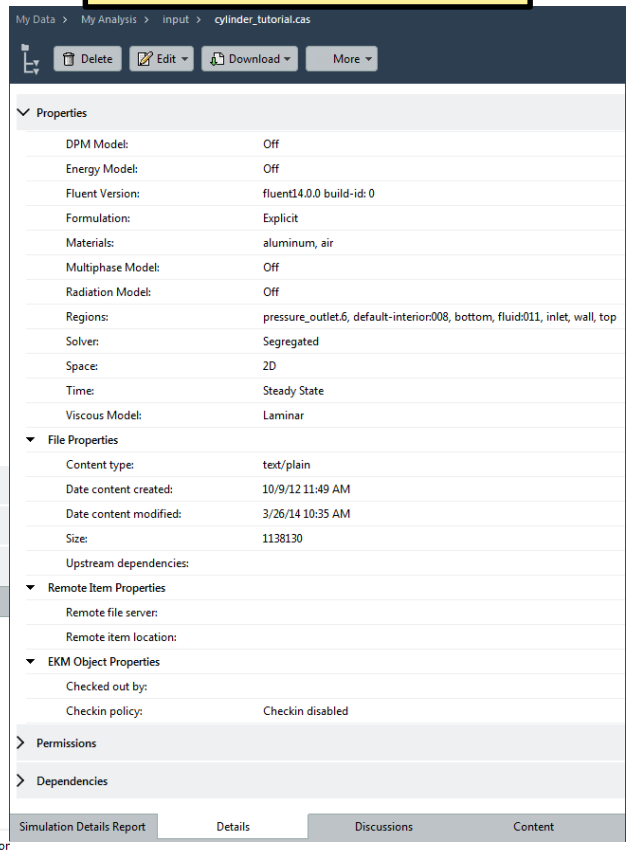
Simulation Details Report



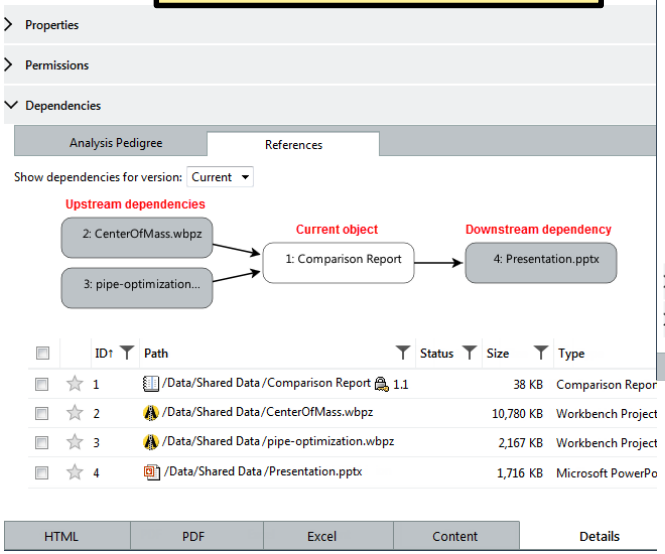
Image



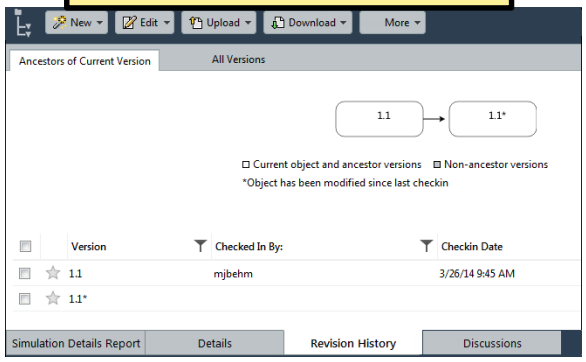
Properties



Dependencies



Revision history



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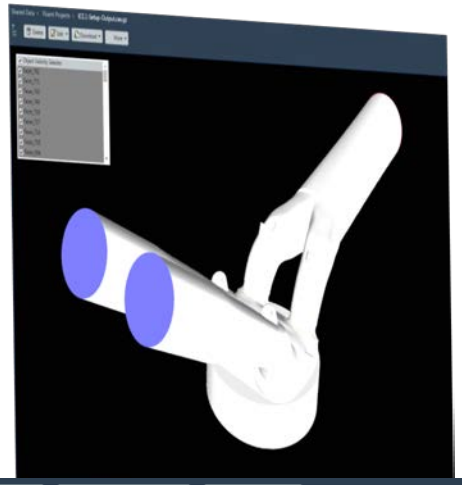
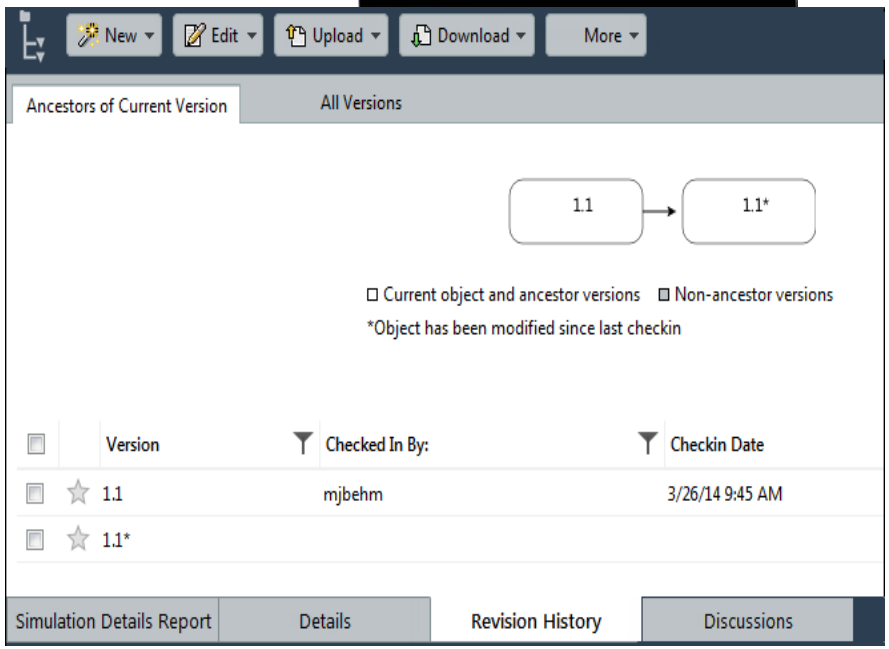
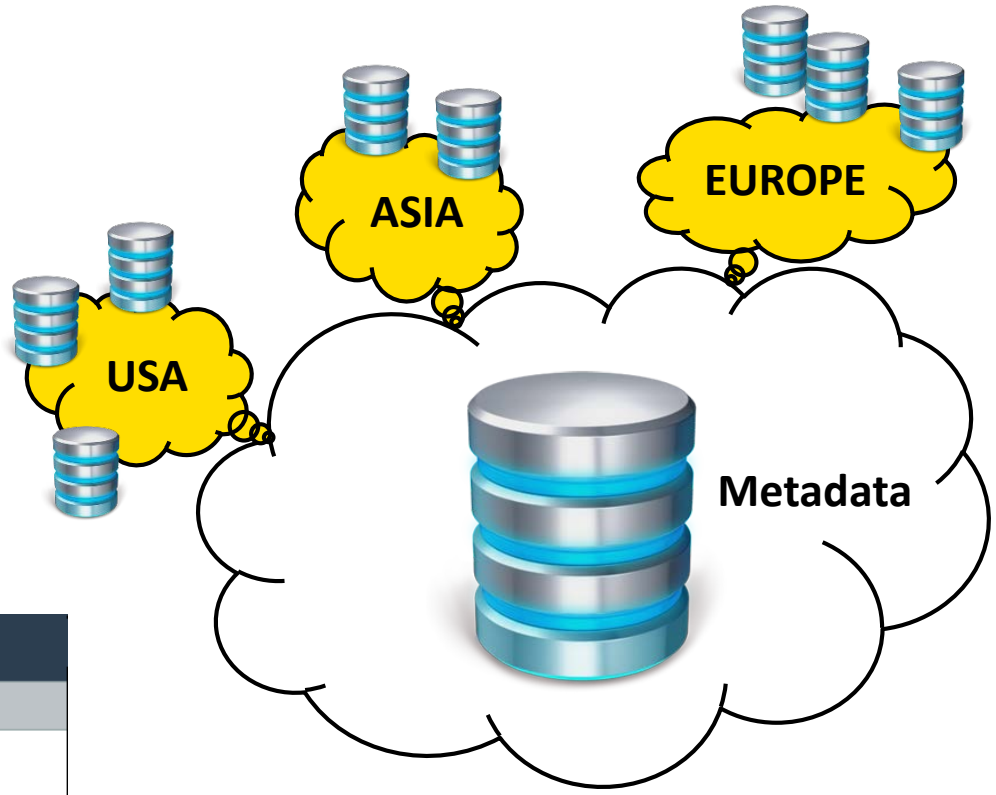
EKM: IP 保护







- Check-in/Check-out vault capability tracks Revision History
- Robust security model
- Manage the project Life Cycle with controlled access based on Life Cycle

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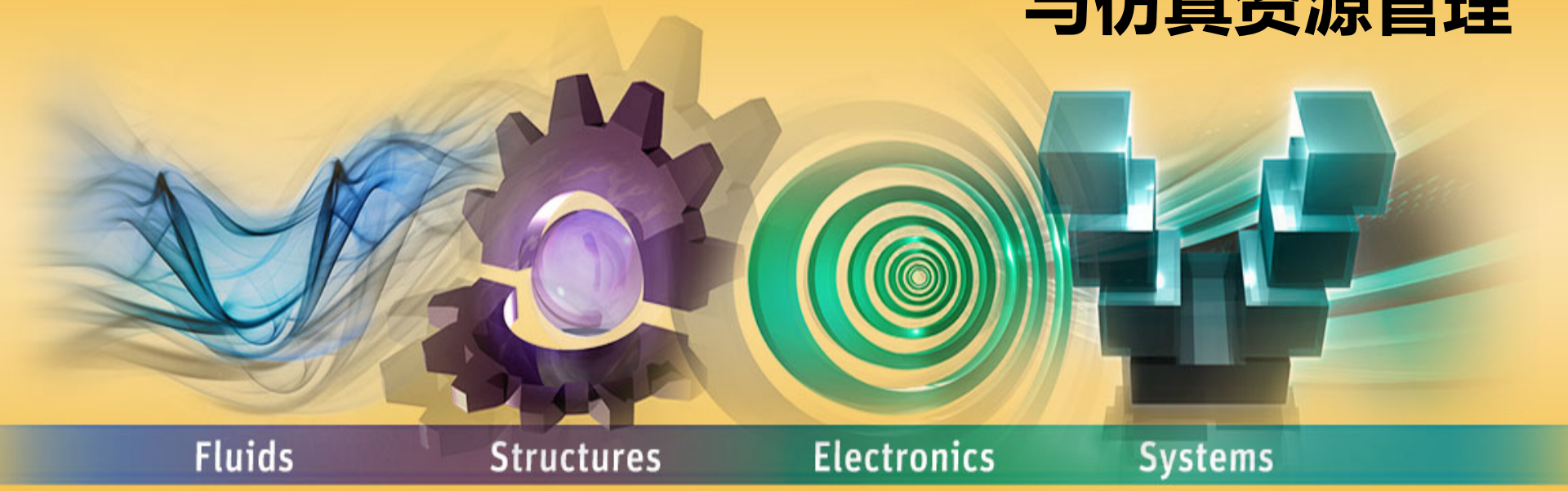
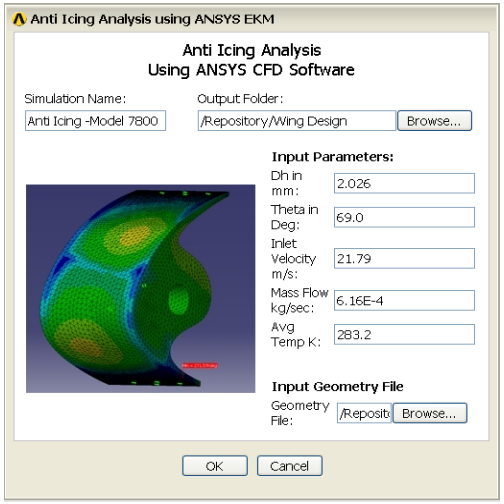
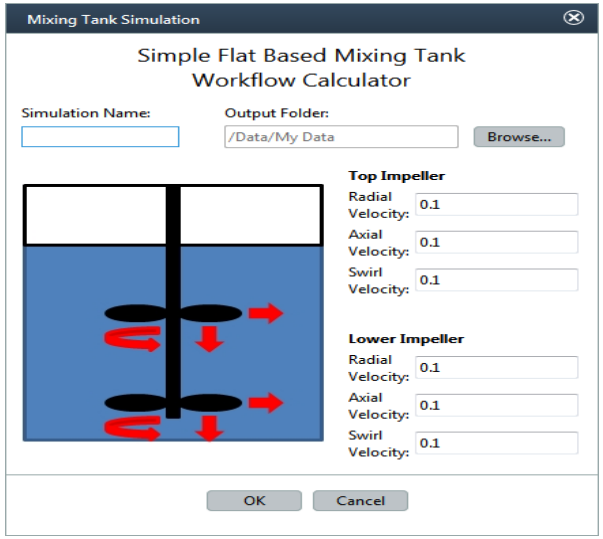
知识利用、仿真流程压缩与仿真资源管理



EKM：仿真知识再利用

- **Custom application or Template based deployment**





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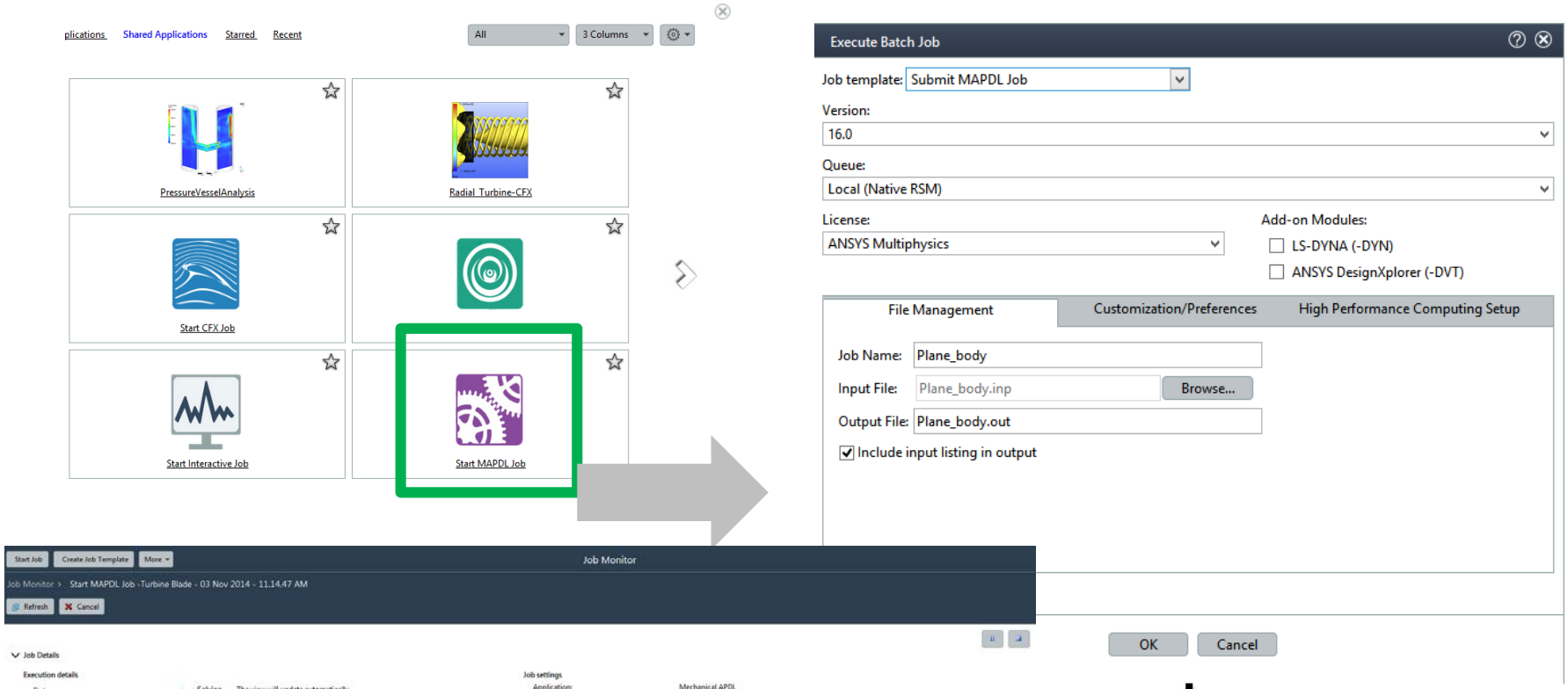
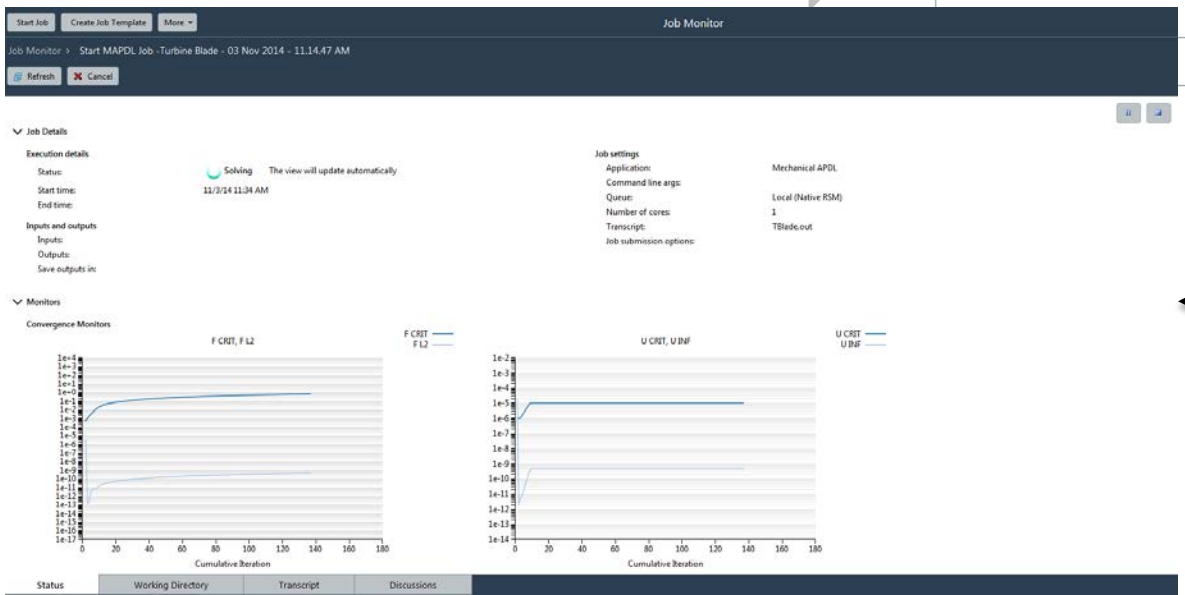
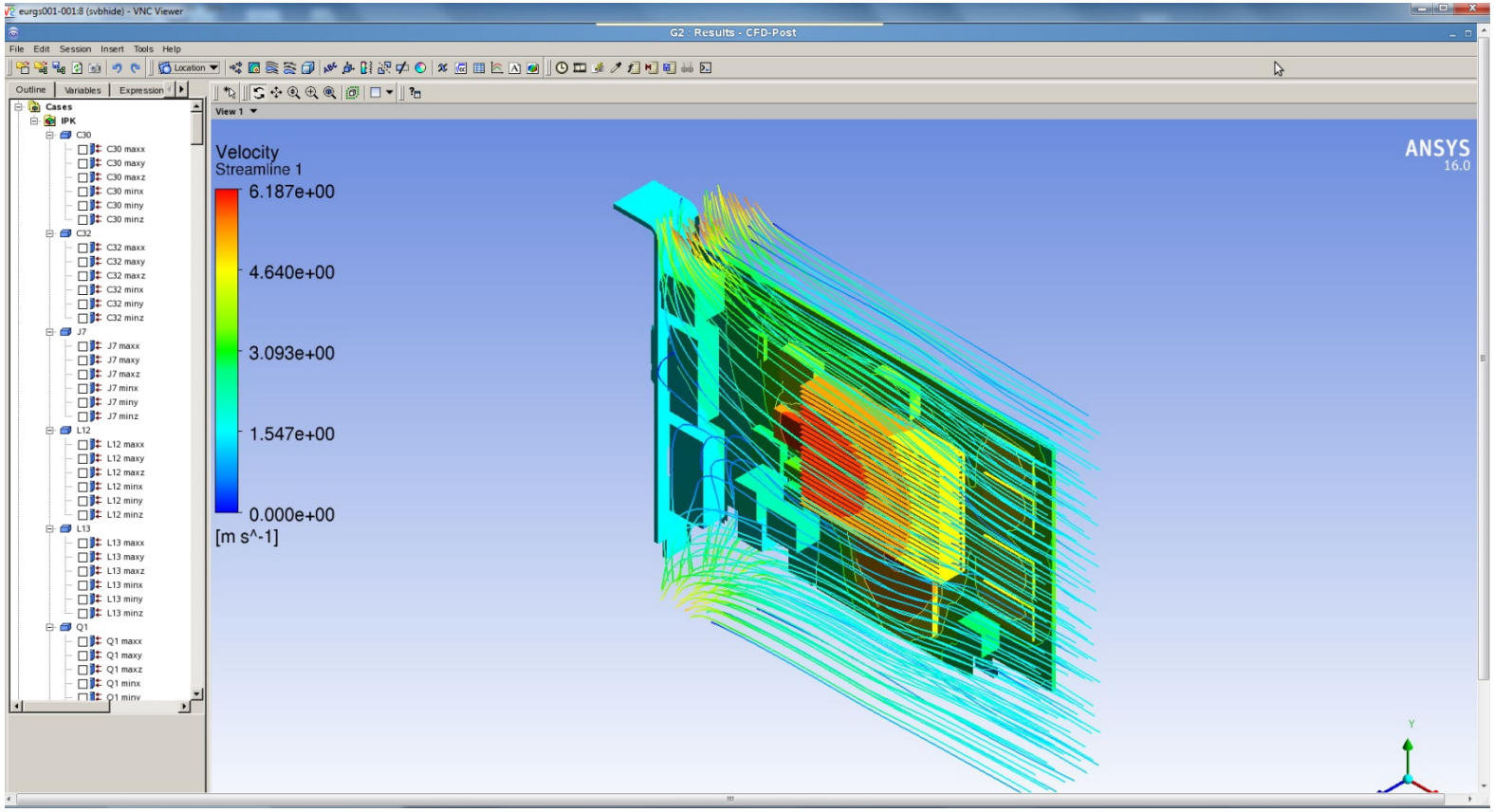
EKM：远程任务管理





Monitor

EKM: 远程资源调用



- Access High Performance Compute resources from a lightweight client

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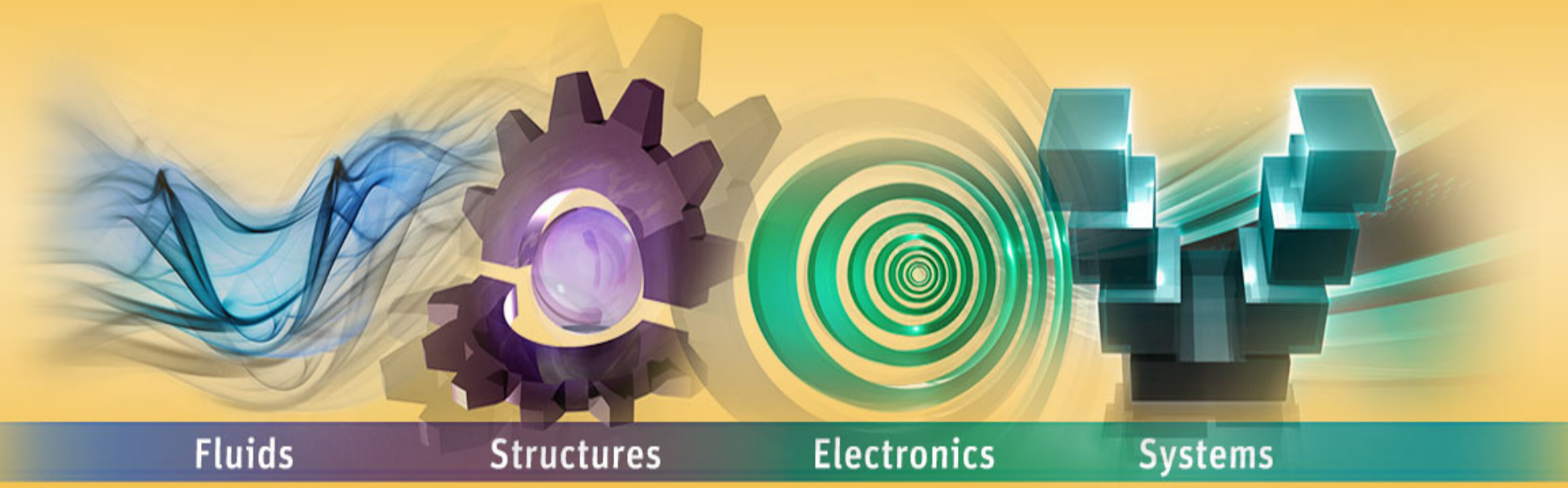
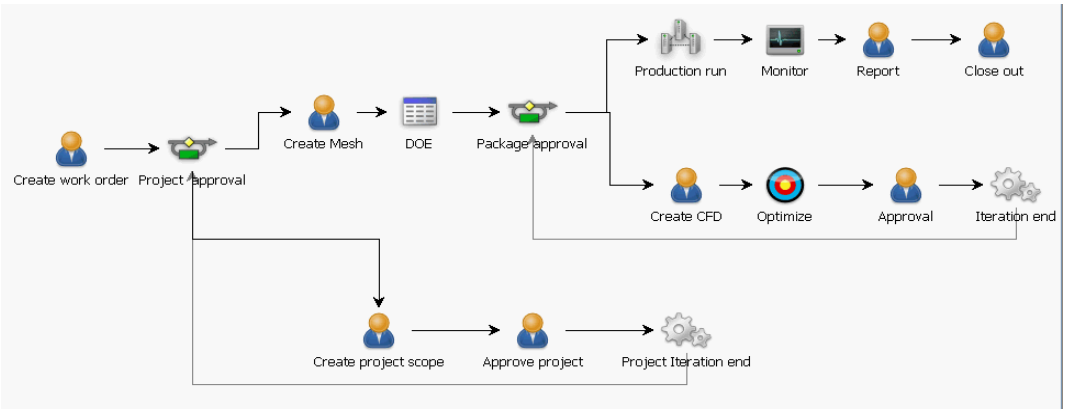
仿真流程管理

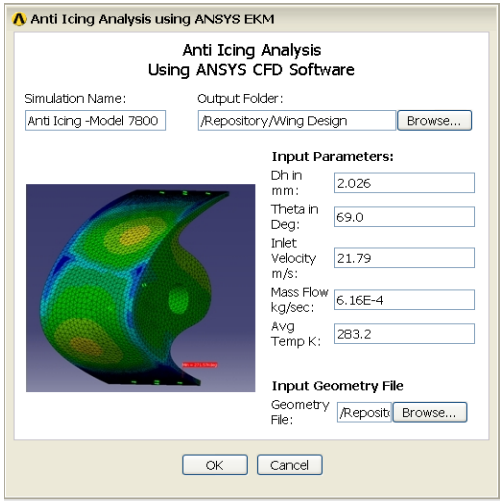


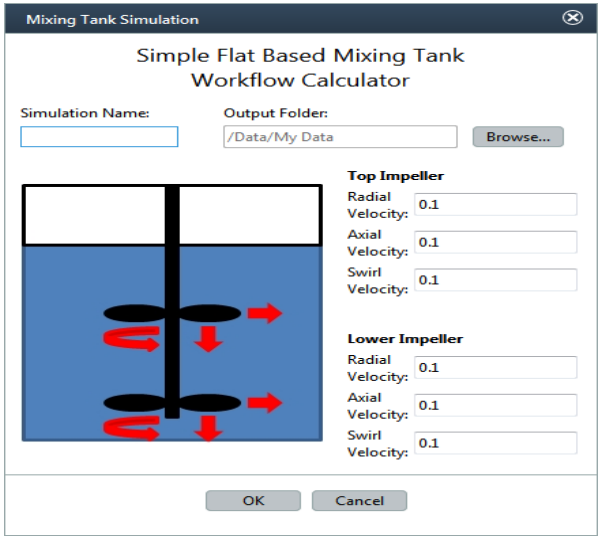
EKM：协作

- **Multi-user, workflow based collaboration**



- **Custom application or Template based deployment**





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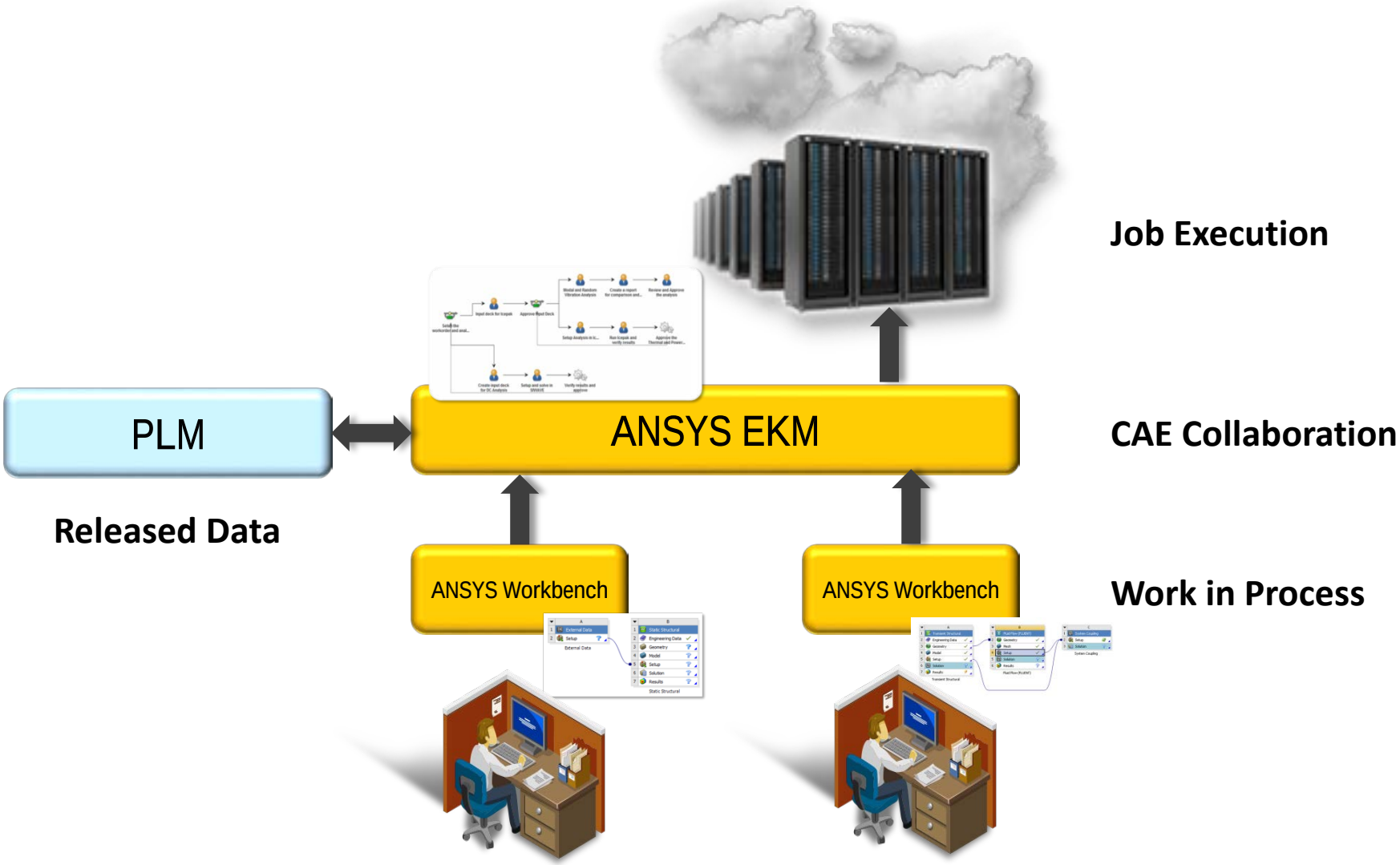
EKM: 企业级协作



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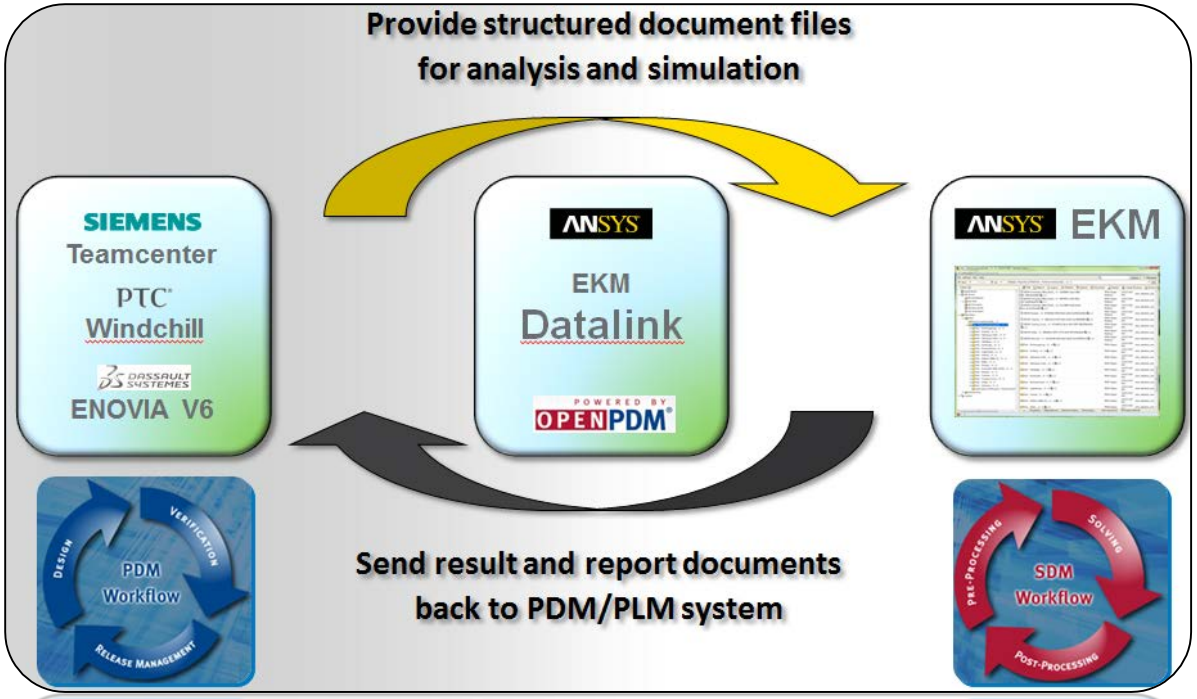
EKM: PLM 链接



Initial load

- From PLM or EKM, locate CAD geometry in PLM and transfer to EKM
- Utilize geometry in meshing for simulation

Update

- From EKM, check for geometry changes in PLM and transfer to EKM

Result transmission

- From EKM, transfer results data (e.g. simulation results reports) to PLM

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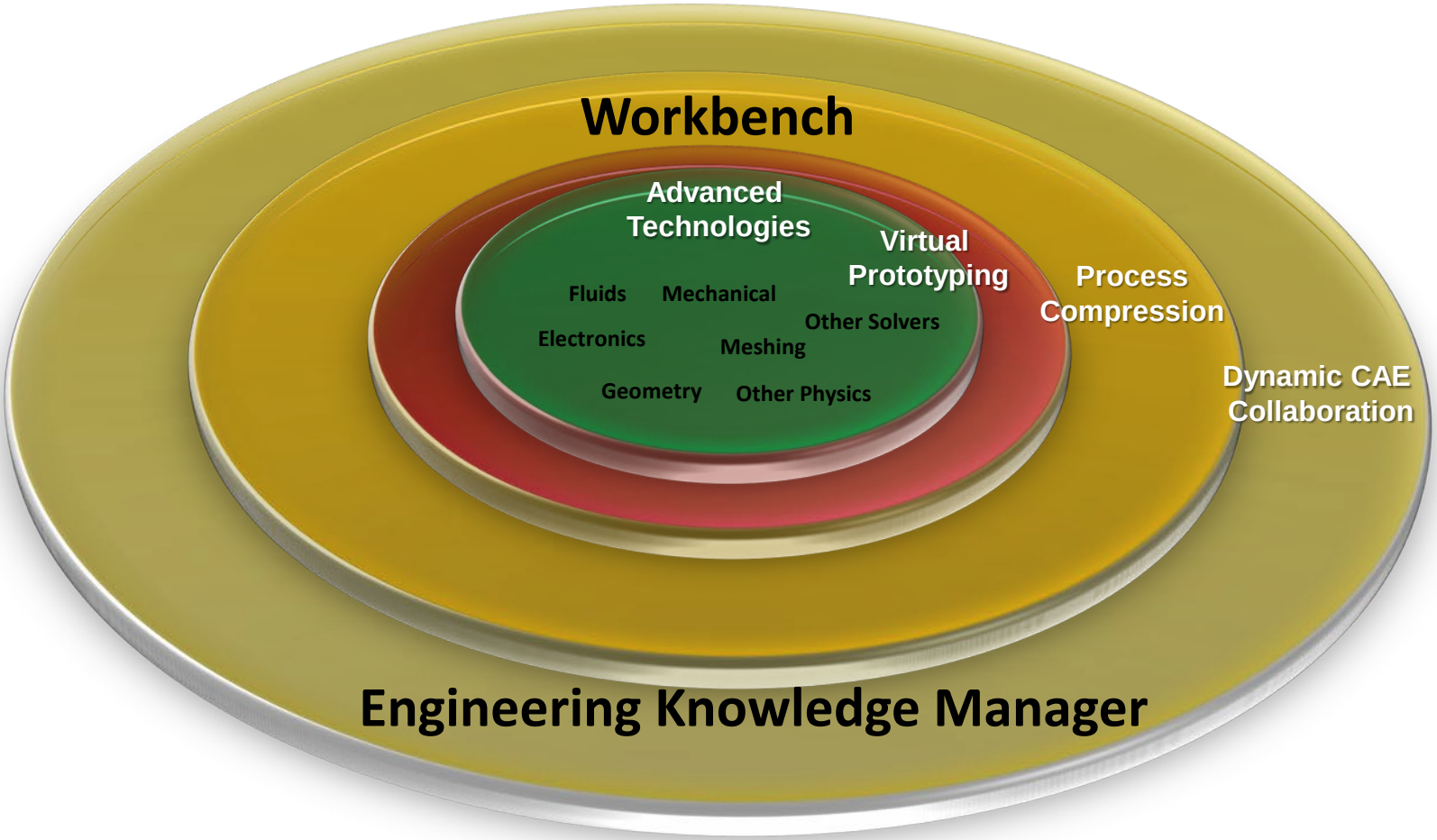
总结：ANSYS技术平台

Enables Virtual Design and Verification



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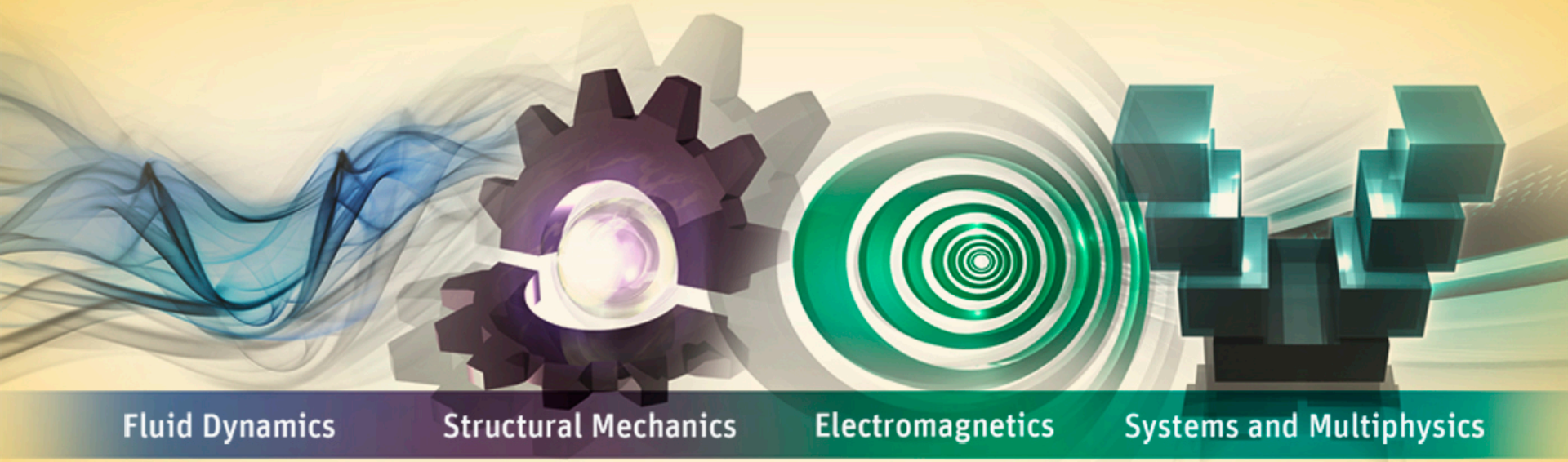
谢谢！



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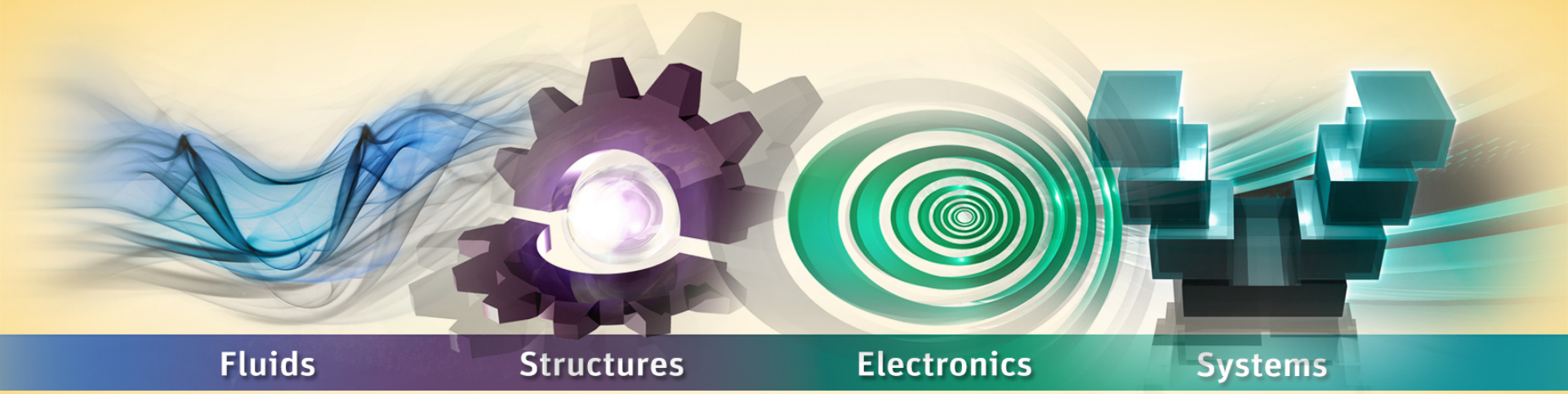
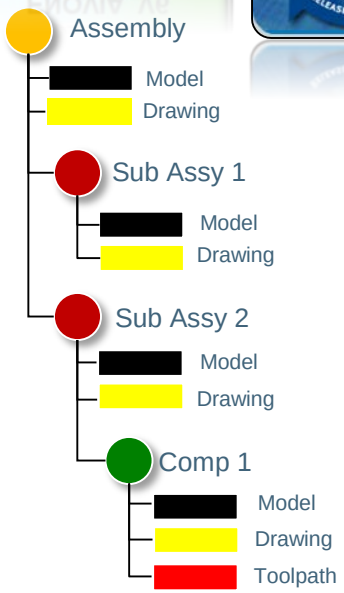
附录



PLM: Optimized to Manage CAD Data

- **Provides "CAD-Centric" document management functionality**
- **CAD Data Management requires specialized capabilities and workflows**
- **Supports collaboration for CAD engineers**



- CAD data is complex
- Multiple files per part
- Associative relationships between files
- Multiple revisions per part
- BOM structure and CAD file structure synchronization
- Visualization of CAD file formats

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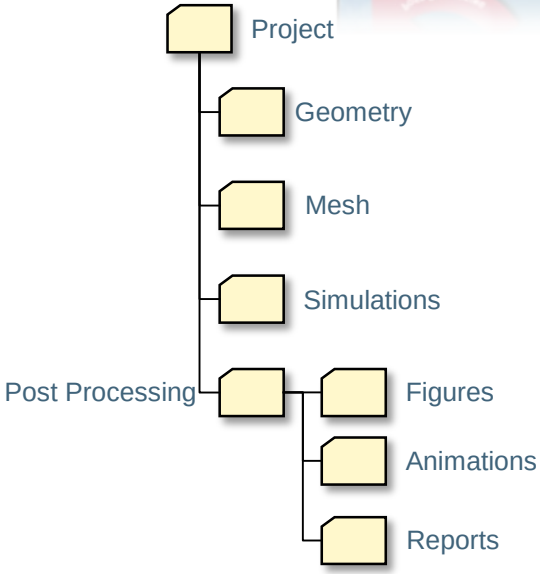
EKM: Optimized to Manage Simulation Data

Concept → Design → Prototype → Test → Analyze → Produce

- **Extends PLM capabilities**
- **Focused on Simulation and Analysis Tasks**
- **Provides "Simulation-Centric" document management functionality**
- **Simulation Data Management requires specialized capabilities and workflows**
- **Supports collaboration for CAE analysts**



- Simulation data is complex
- Extremely large file sizes
- Associative relationships between files
- Dependencies between files
- Multi-step process execution
- Visualization of simulation file formats

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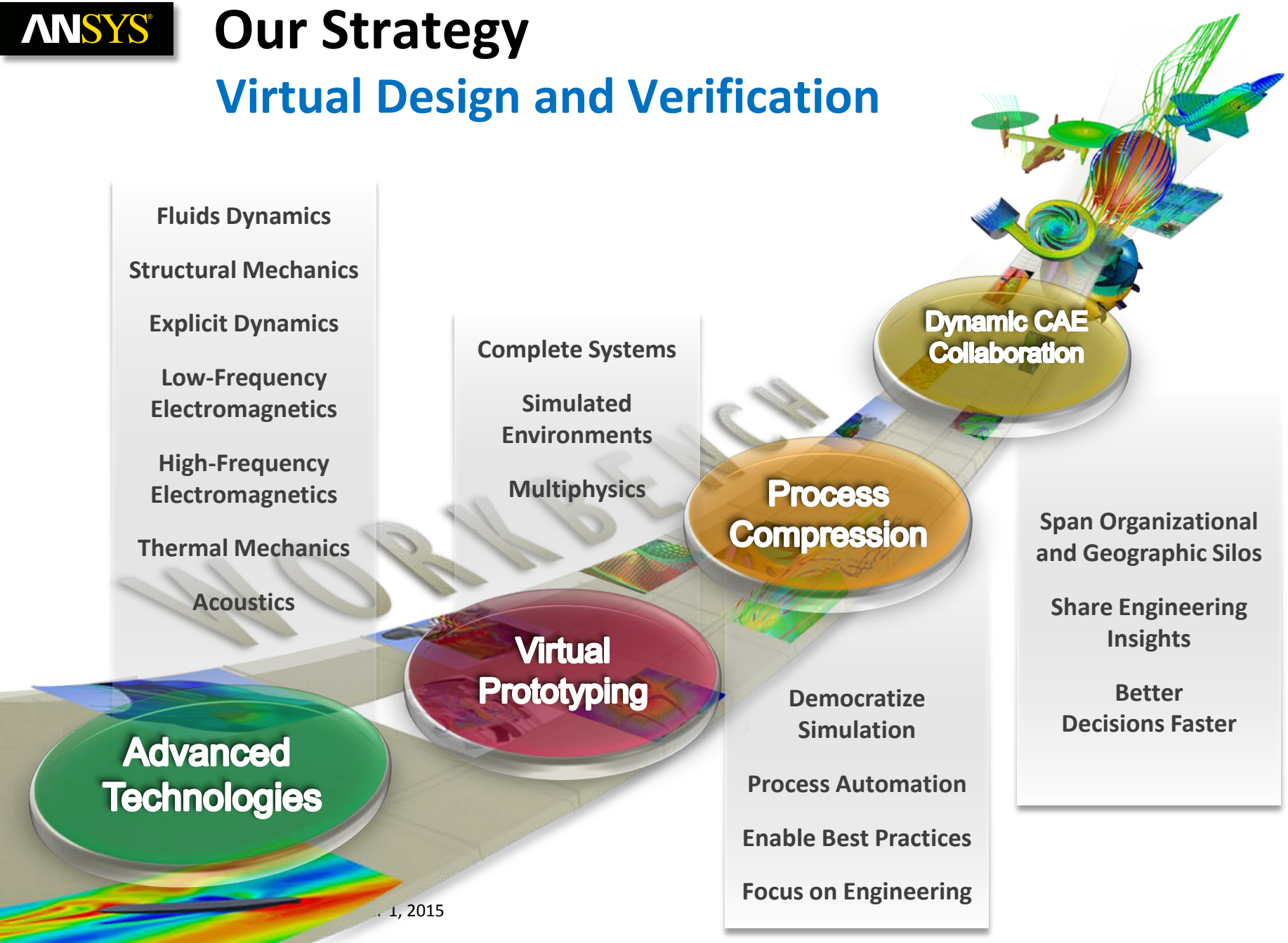
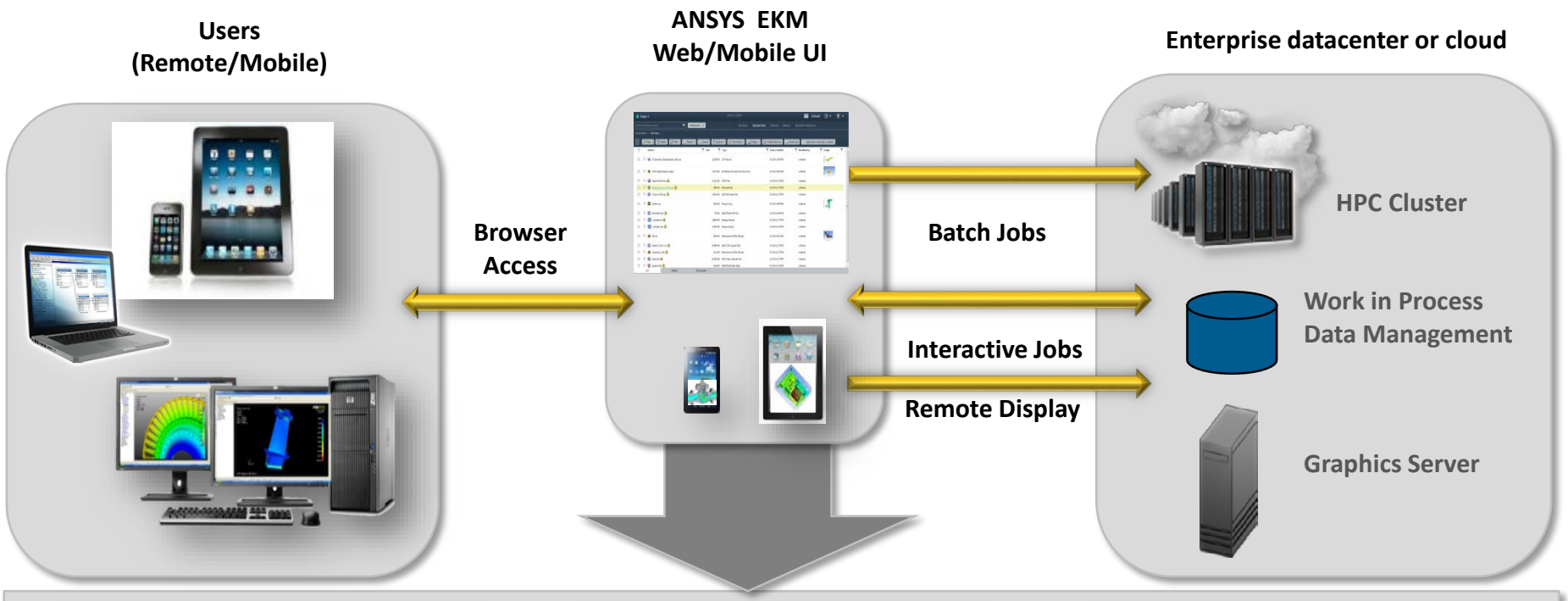
Our Strategy

Virtual Design and Verification



Engineering Knowledge Manager (EKM)



Mobility & Remote Access

- Web & Mobile UI
- Interactive Remote Display with 3D Graphics
- Detach/Re-attach

IP Protection

- Knowledge Management
- Best Practices
- Search & Retrieve
- Light Weight Visualization
- Security & Access Controls

Remote Job Management

- Job Submission Templates
- Remote Monitoring
- Access to Interactive Controls
- Support for Leading Schedulers and Resource Managers

Open Platform: Supports ANSYS and 3rd Party Applications

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