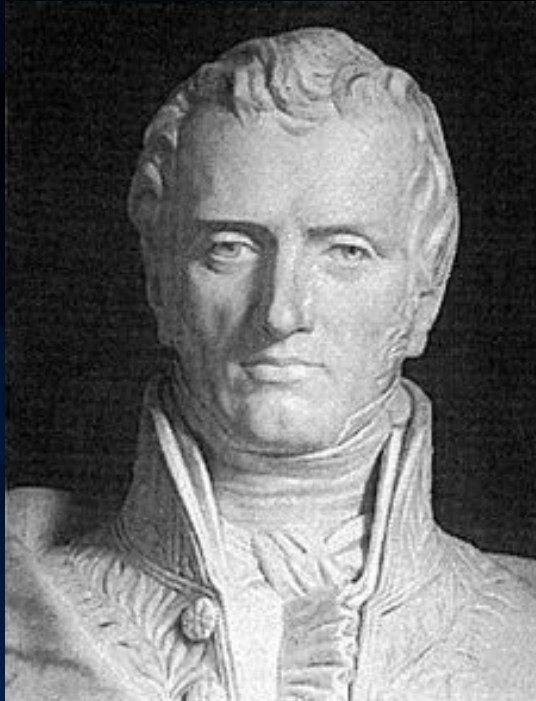


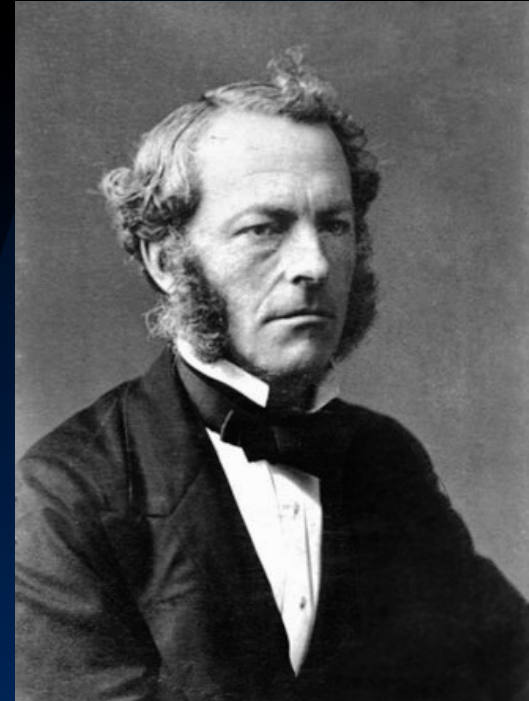


Unifying the Documentation Process
Malcolm Wallace (CD-adapco)
Thomas Barthel (SDL)
TCUK 2014

Who are CD-adapco?



Claude-Louis Navier
1785-1836



Sir George Stokes
1819-1903

$$\frac{\delta}{\delta t} \int_{\bar{V}} \mathbf{w} dV + \int_{\bar{V}} [\mathbf{F} - \mathbf{G}] \cdot d\mathbf{a} = \int_{\bar{V}} \mathbf{H} dV$$

Who are CD-adapco?



⊗ CFD-focused provider of engineering simulation software, support and services

CFD = Computational Fluid Dynamics

STAR-CCM+[®]

STAR-CD[®]

Optimate+[™]

SPEED[™]

Battery Design Studio[®]

HEEDS

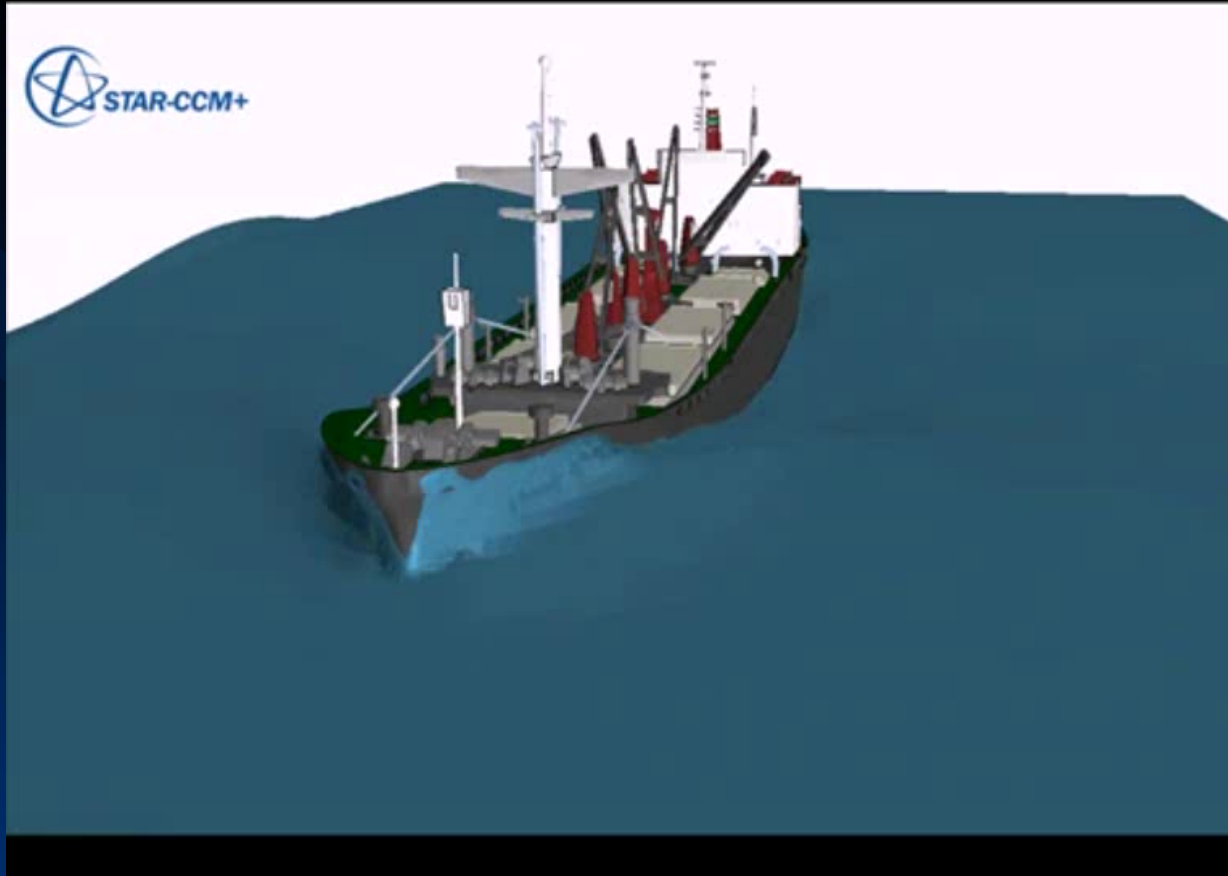
STAR-Cast

Battery Simulation Module[™]

DARS

<http://www.cd-adapco.com>

Simulating Physical Phenomena



Why Change the Tools?



- ⊗ Large FrameMaker files
- ⊗ Access limited to license holders
- ⊗ Expensive translation
- ⊗ PDF comments not supported on Linux

Integrated Content Pipeline?

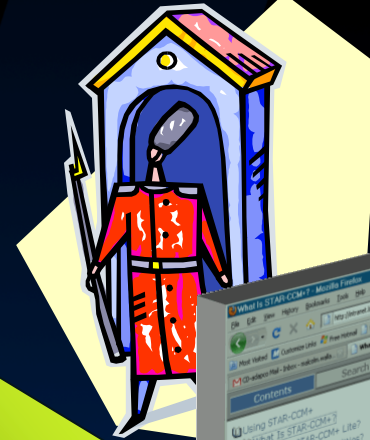


Agency



Developers

Editors



Unified Content Creation and Storage

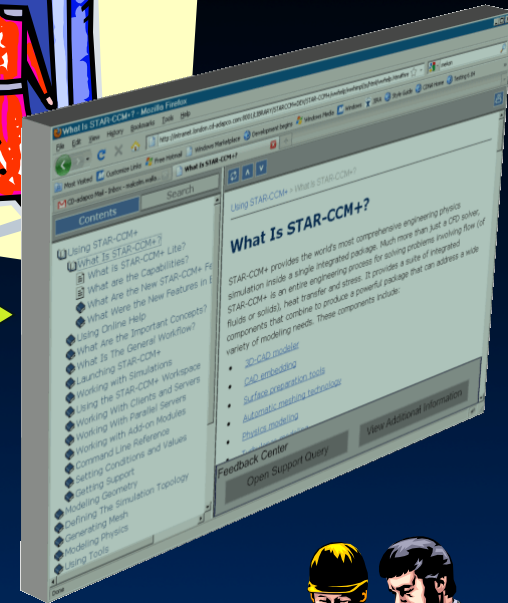


Newton
Industry Experts

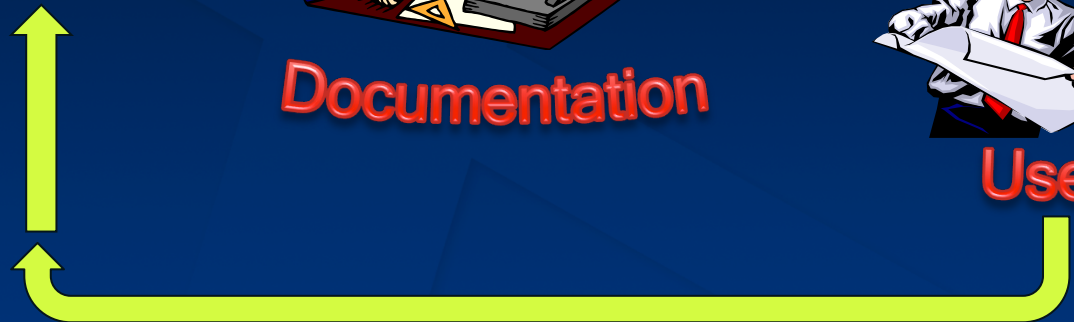
- Knowledge base
- Internal wikis
- Videos
- User Guide



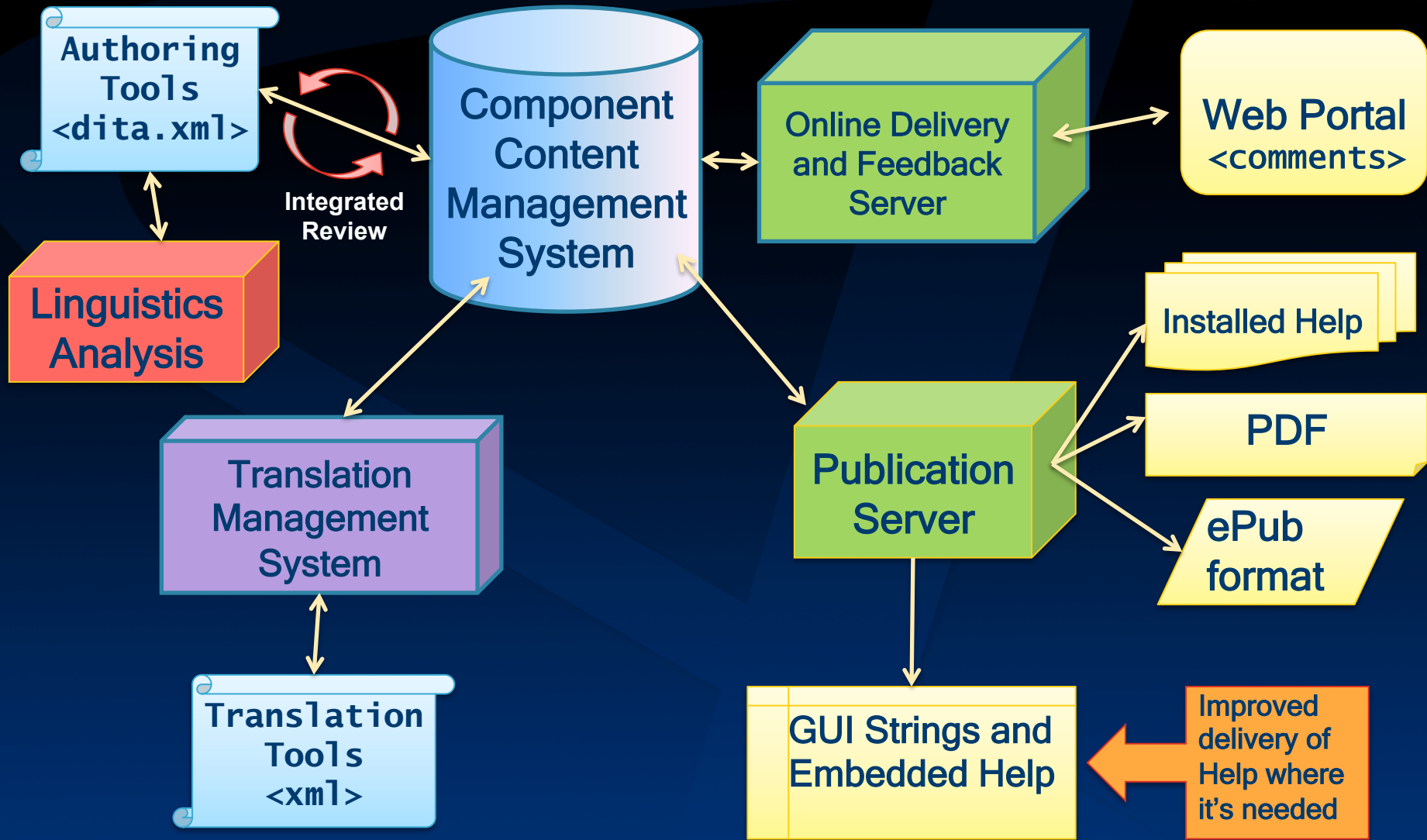
Documentation



Users



Potential System



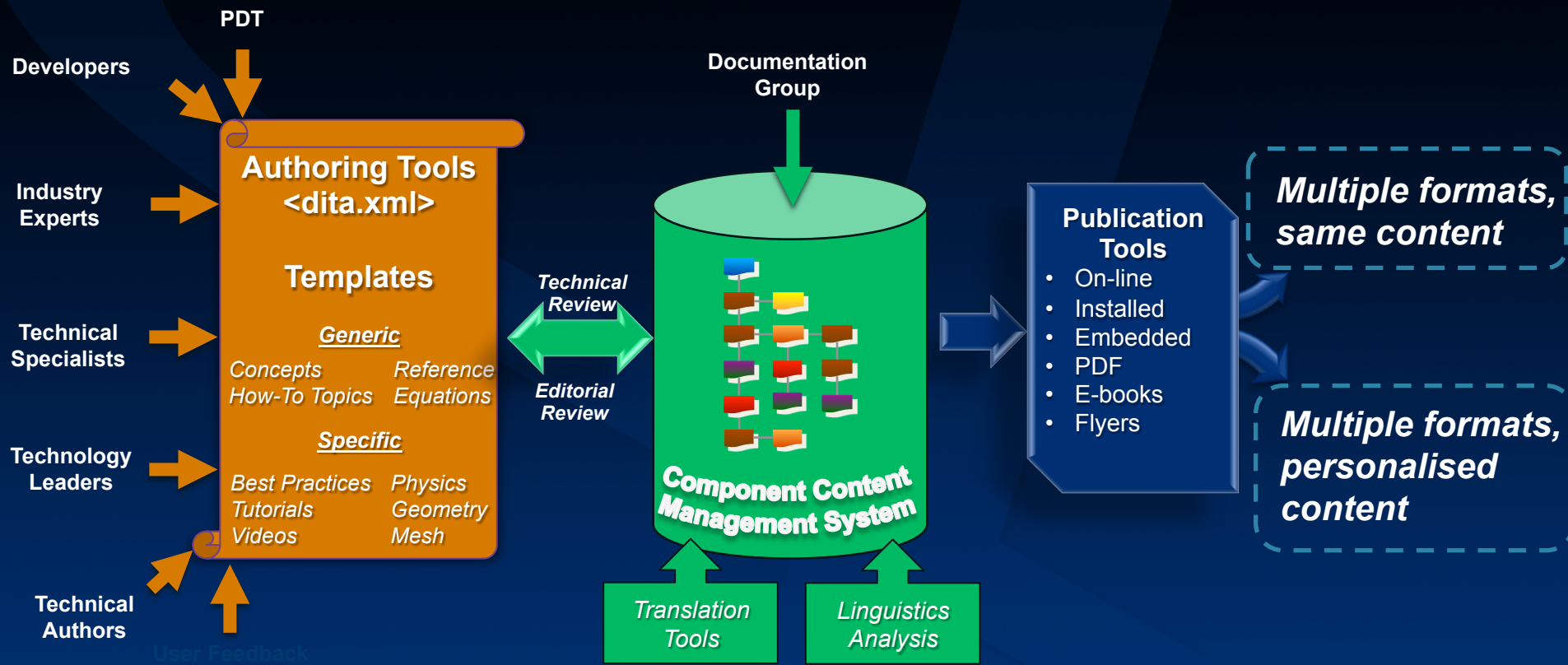
Unified Documentation Process



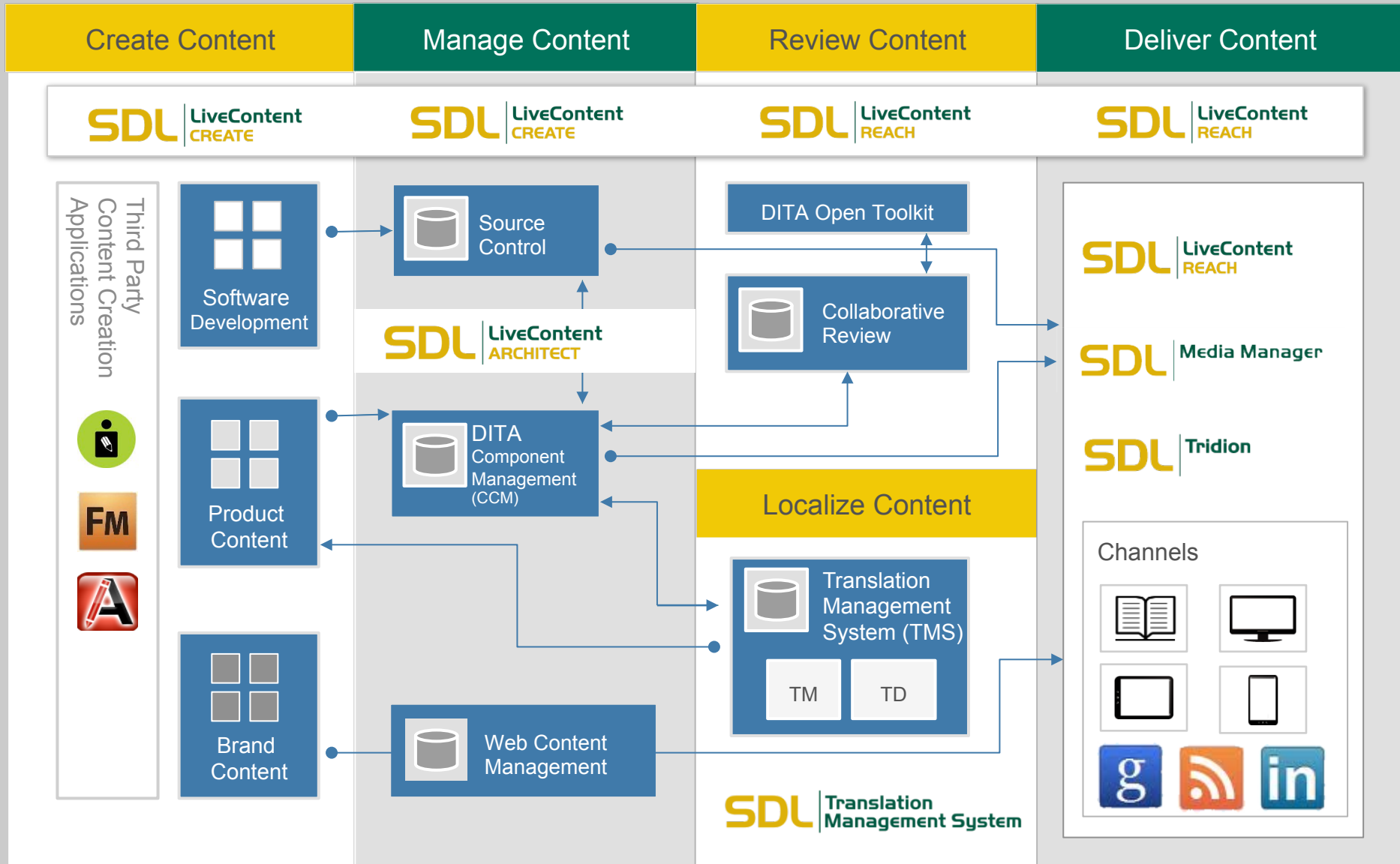
Authoring Process
(content creation)

Management / Review Process

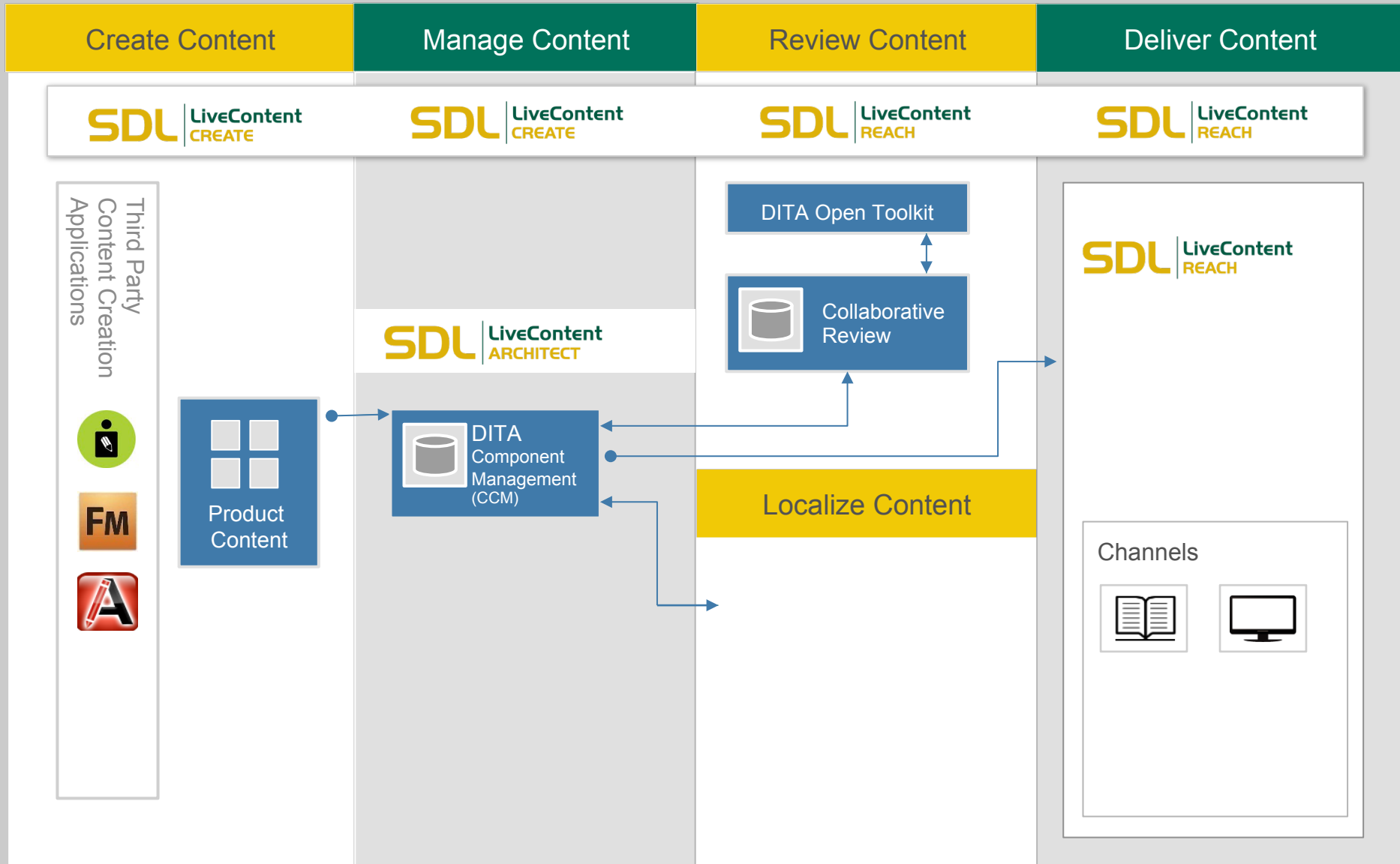
Publication Process



SDL LiveContent High Level Architecture



CD-adapco Components (1)



CD-adapco Components (2)



Create Content

Manage Content

Review Content

Deliver Content

SDL | LiveContent
CREATE

SDL | LiveContent
ARCHITECT

SDL | LiveContent
REACH

Third Party
Content Creation
Applications

Product
Content



DITA
Component
Management
(CCM)



Collaborative
Review

DITA Open Toolkit

ePublisher

ANTENNA HOUSE

Localize Content

SDL | LiveContent
ARCHITECT

Design Science
How Science Communicates™

SDL Architect: Web Client



Welcome

An integrated solution to create and deliver product content and user assistance across the entire customer journey.



SDL | LiveContent

Build 10.0.1708.5

Username

Password

Login



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The Power of GUIDs (1)



```
<?xml version="1.0" encoding="utf-8" standalone="no"?>
<!DOCTYPE task PUBLIC "-//OASIS//DTD DITA Task//EN" "task.dtd">
<task id="GUID-2624DF2A-2819-45B0-88D1-1DD00F322152"
xml:lang="en">
  <title id="GUID-6D7EFCDD-0B8E-4245-B4F7-B3847DE8B7B4">
Importing the Surface Mesh and Naming the Simulation</title>
  <shortdesc>A CAD file containing the fuse assembly has been
prepared for this analysis.
  </shortdesc>
  <taskbody>
```

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<stepxmp>
  <image href="GUID-5BD2D00F-DC17-42B3-B91A-087B0700850E"
placement="break" />
</stepxmp>
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The Power of GUIDs (2)



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navtitle>
  </topicmeta>
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    <topicmeta><navtitle>Prerequisites</navtitle>
    </topicmeta>
  </topicref>
  ...
```

Authors' Workspace



Ohmic Heating Tutorial Publication v.1 en [Woody Live] - SDL LiveContent Architect Publication Manager

Publication Edit View Baseline Object Conditions Tools Window Help



Content Baseline Variables Conditions Output

Ohmic Heating Tutorial Publication

- Ohmic Heating: Domestic Fuse
- Resources
- Product Names

Map: Ohmic Heating: Domestic Fuse

Version	Status	Author	JIRA number	Changes	Date

Ready

10.1.4/10.0.1708.5

XMetalL with MathFlow

XMetalL Author Enterprise - Fundamental Equations=GUID-7B56CCB9-C2F3-4B3F-93CA-095064DCAAFc=1=en.xml

File Edit View Insert Paragraph Reuse Tools Table Repository Window Help SDL LiveContent MathFlow Acrolinx

Fundamental Equations=GUID-7B56CCB9-C2F3-4B3F-93CA-095064DCAAFc=1=en.xml

Fundamental Equations

The fundamental equations,

- Faraday's law $\frac{\partial \mathbf{B}}{\partial t} + \nabla \times \mathbf{E} = 0$
- Maxwell-Ampere law $\frac{\partial \mathbf{D}}{\partial t} - \nabla \times \mathbf{H} + \mathbf{J} = \rho \mathbf{e}_z$
- Gauss' law for electric field $\nabla \cdot \mathbf{D} = \rho$
- Gauss' law for magnetic field $\nabla \cdot \mathbf{B} = 0$

and the conservation of electric charge

divergence of $\mathbf{J} + \frac{\partial \rho}{\partial t} = -\rho$

where:

- t is time;
- \mathbf{E} is the electric field intensity;
- \mathbf{D} is the electric flux density;
- \mathbf{H} is the magnetic field intensity;
- \mathbf{B} is the magnetic flux density;
- \mathbf{J} is the electric current density; and
- ρ is the electric charge density.

Only three of the above five equations are independent -- either the first three [xref: Eqn. \(2302\)-xref: \(2304\)](#), or

MathFlow Editor

File Edit View Insert Toolbar Properties Preferences Help

Algebra Derivs Statistics Matrices Sets Trig Geometry Tab 8 Tab 9

$\sqrt{a^2+b^2}$ $\lim_{x \rightarrow \infty}$ $\sqrt{b^2-4ac}$ $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $\frac{n!}{r!(n-r)!}$ $\frac{1}{2}$

Style: inherited MathML ancestry <math> : <mrow> : <mfrac>

$\frac{\partial \mathbf{B}}{\partial t} + \nabla \times \mathbf{E} = 0$

Design view Source view

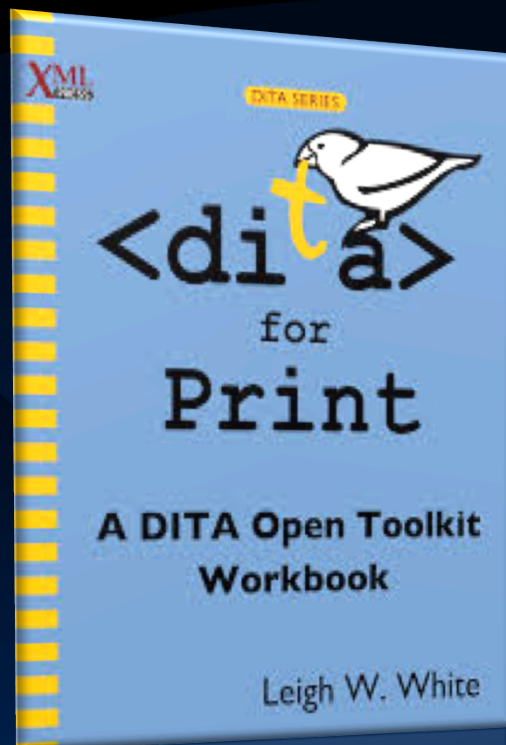
Unit in Zoom: 150%

OK Cancel

concept / conbody / p

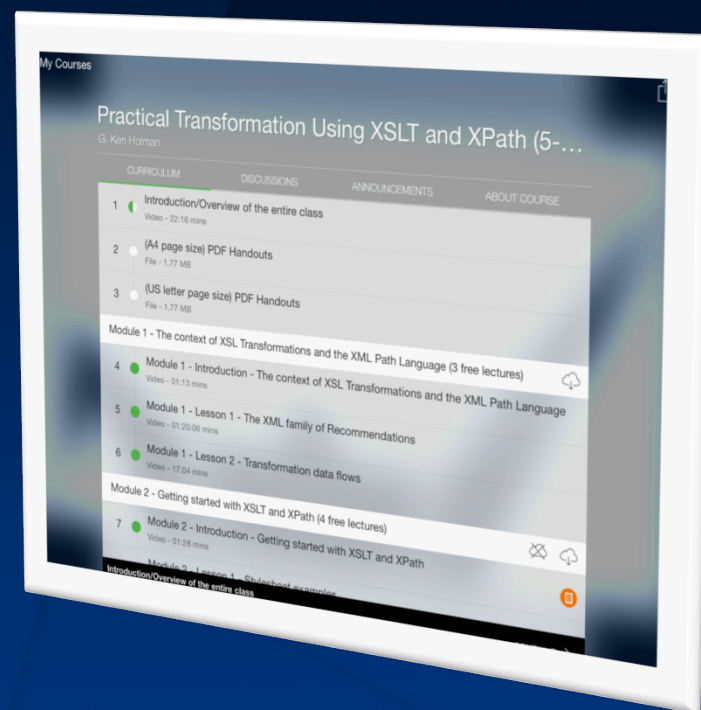
Rules Checking On CAP NUM SCRL

Some Hints On Publishing From DITA



**“DITA for Print” by Leigh W. White,
XML Press, October 2013**

**“Practical Transformation using XSLT
and XPath”
G. Ken Holman,
<https://www.udemy.com/>**



Equation Support

The velocity correction value is derived from the implicit pressure gradient term as

$$\mathbf{u}' = -\frac{\Delta t}{\rho} \nabla P^{n+1}, \quad (17)$$

With Eqs. (15), (16), and (17), a Poisson equation of pressure is obtained:

$$\langle \nabla^2 P^{n+1} \rangle_i = -\frac{\rho}{\Delta t^2} \frac{\langle n^* \rangle_i - n^0}{n^0}. \quad (18)$$

The right side is represented by the deviation of the particle number density from the constant value, while it is usually velocity divergence in grid methods. The left side of Eq. (18) is discretized by the Laplacian model [Eq. (14)]. Finally we have simultaneous equations expressed by a linear symmetric matrix. These are solved by the incomplete Cholesky conjugate gradient (ICCG) method.²⁷ The pressure gradient terms are calculated from the gradient model [Eq. (9)], where scalar ϕ is substituted by P^{n+1} .

The computation speed of the current model is much faster than the previous model used in Refs. 20, 21, and 22 since a matrix equation is constructed, and it is solved by ICCG. In addition, the calculation is more stable because of the robustness of ICCG, even if the particle configuration is strongly distorted.

Equation (18) is obtained through the manipulation of a differential equation so that the discretization form of Eq. (18) is inconsistent with discretization forms of the original equations [Eqs. (15), (16), and (17)]. In

In academic literature:

- Equations are numbered
- Equation numbers appear in cross-references

<code><equation-inline></code>	Use for inline symbols
<code><equation-block></code>	Use for equations that do not require numbering
<code><equation-display></code>	Use for numbered equations that become cross-reference destinations

```
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    </m:math>  
  </mathml>  
</equation-display>
```

Published Output (PDF and HTML)



The fundamental equations governing all macroscopic electromagnetic phenomena consist of four Maxwell's equations,

- Faraday's law of induction:

$$\frac{\partial \mathbf{B}}{\partial t} + \nabla \times \mathbf{E} = 0$$

- Maxwell-Ampere law:

$$\frac{\partial \mathbf{D}}{\partial t} - \nabla \times \mathbf{H} = -\mathbf{J} \tag{2}$$

- Gauss' law for electricity:

$$\nabla \cdot \mathbf{D} = \rho \tag{3}$$

ism:

$$\nabla \cdot \mathbf{B} = 0 \tag{4}$$

... known as the continuity equation,
... of Eqn. (2) and using Eqn. (3)

$$\frac{\partial \rho}{\partial t} = 0 \tag{5}$$

<equation-display>
<title> element is suppressed in output

<xref> elements contain no text in source when pointing to **<equation-display>**

Publishing process generates the text and number

PDF: DITA-OT/Antenna House
HTML: WebWorks ePublisher

Reach Workflow: Tutorials Testing (1)



Malcolm Wallace Administration

Dashboards Projects Issues Agile

+ Create Issue Quick Search



STAR-CCM+ / CCMP-26180

12 of 15

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Application of Ohmic Heating Model to a Domestic Fuse tutorial documentation issues

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More Actions

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Workflow

Share

Views

Details

Type:	Tutorial Report	Status:	Resolved (View Workflow)
Priority:	Essential	Resolution:	Fixed
Affects Version/s:	6.04 A	Fix Version/s:	6.04 A
Component/s:	None		
Labels:	None		
Platform:	Windows 64-bit		
Testcase Location:	Java macro: http://194.193.148.70/twiki/pub/TestGroup/CcmpTutTesting6x04/ohmicHeating604005.java		
Source:	Manual		
Sub-component:	DOCUMENTATION		
Rank:	29747		

People

Assignee:
Oleg Devyataikin

Reporter:
Oleg Devyataikin

Vote (0) Watching (4)

Dates

Created:
03/May/2011 02:30 PM

Updated:
16/May/2011 03:13 PM

Resolved:
16/May/2011 03:13 PM

Reach Workflow: Tutorials Testing (2)

STAR-CCM+ Tutorial Guide

Search...

Advanced Search

Content



Ohmic Heating: Domestic Fuse



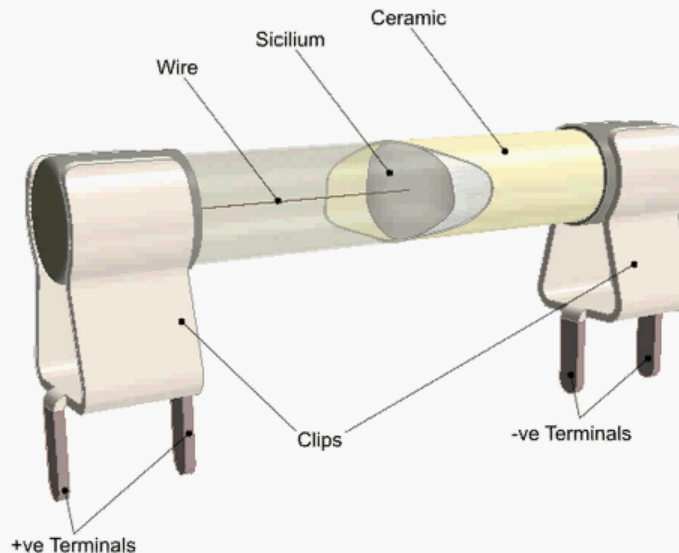
Comments (0)



- Solid Stress
- Aeroacoustics
- ▾ Electromagnetism
 - ▾ Ohmic Heating: Domestic Fuse
 - Prerequisites
 - Importing the Surface Mesh and Naming the Simulation
 - Examining the Imported Geometry
 - Increasing the Tessellation Density of the Fuse Wire
 - Assigning Geometry Parts to Regions
 - Setting up the Mesh
 - Adding a Volumetric Control
 - Generating the Mesh
 - Specifying Physics Models and Material Properties
 - Assigning Physics Continua

This tutorial demonstrates some of the capabilities of the Ohmic Heating model available in STAR-CCM+.

A simple domestic fuse geometry is used in the simulation to demonstrate the required steps. The geometry is shown below.



A fuse is a safety device to protect electrical equipment against unexpected high currents. Because of the Joule effect, the current going through the thin wire inside the fuse increases its temperature. If the current hits the critical current, the wire temperature exceeds its melting point, and breaks. The fuse assembly in this tutorial is 30 mm long and is composed of metal, ceramic,



There are no comments on this topic yet

CD-adapco custom tool: SDL-connect



- ⊗ CD-adapco automates all build jobs using Jenkins continuous integration server (<http://jenkins-ci.org/>)
- ⊗ Documentation must build using commands in shell or DOS scripts
- ⊗ CD-adapco Database Group created a command-line interface to SDL Architect

SDL LiveContent Architect API Reference

[What's new](#)

Changes to the Web Services API are highlighted.

[Concepts](#)

This section describes important concepts you must understand before using the Web Services API.

[Web services samples](#)

This section contains web service samples

[Classes](#)

Provides an overview of Web Services classes and methods.

[XML Structures](#)

Describes the XML signatures that are consumed and / or returned by the Web Services API.

[Enumerations](#)

Describes the enumerations used by the Web Services API.

Parent topic: [API Reference](#)

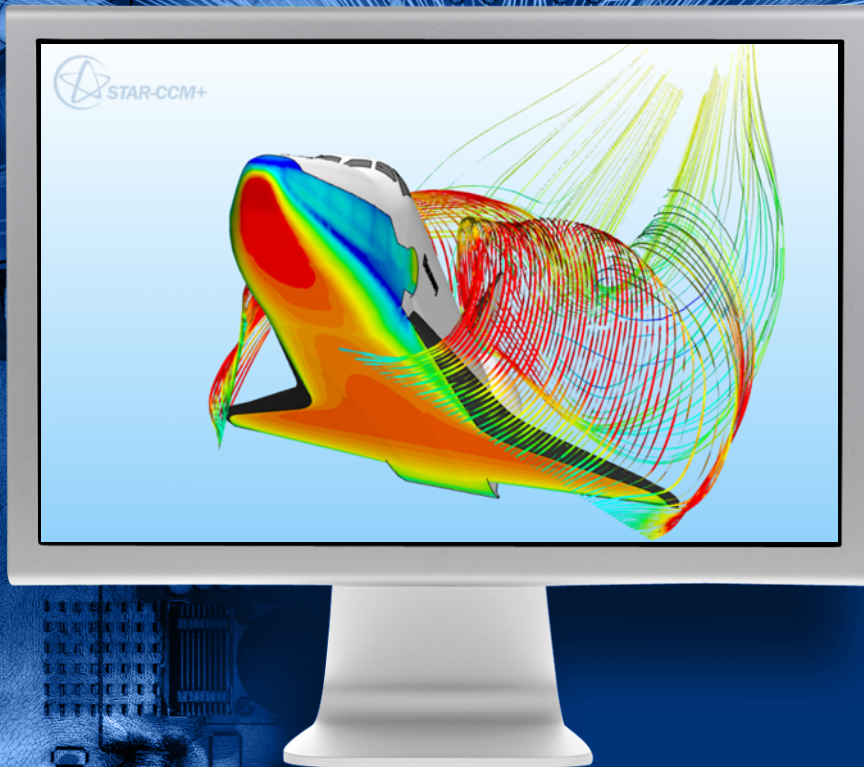


Jenkins

An extendable open source continuous integration server

		dev_build_doxvqen_meshing
		dev_build_doxvqen_server
		dev_build_doxvqen_startest
		dev_build_install_guide
		dev_build_install_guide_ia
		dev_build_release_notes
		dev_build_release_notes_ia
		dev_build_user_guide_html
		dev_build_user_guide_html_ia
		dev_build_user_guide_pdf
		dev_build_v_and_v_docs
		dev_deploy_install_guide
		dev_deploy_release_notes
		dev_repackage_user_guide_html
		dev_set_package_version
		dev_update_doc_version_file

Icon: [S](#) [M](#) [L](#)



Acknowledgements,
Questions,
Comments