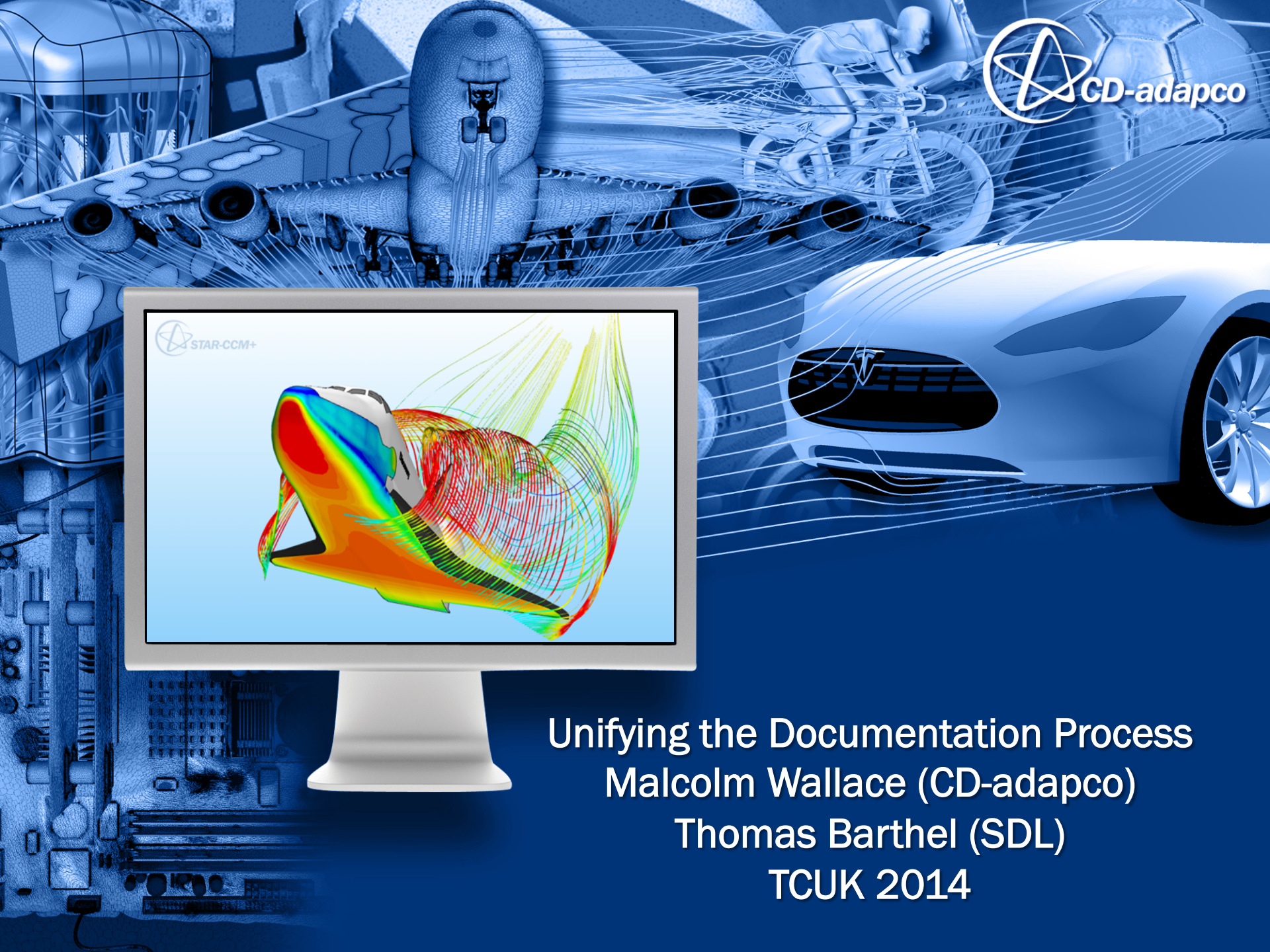
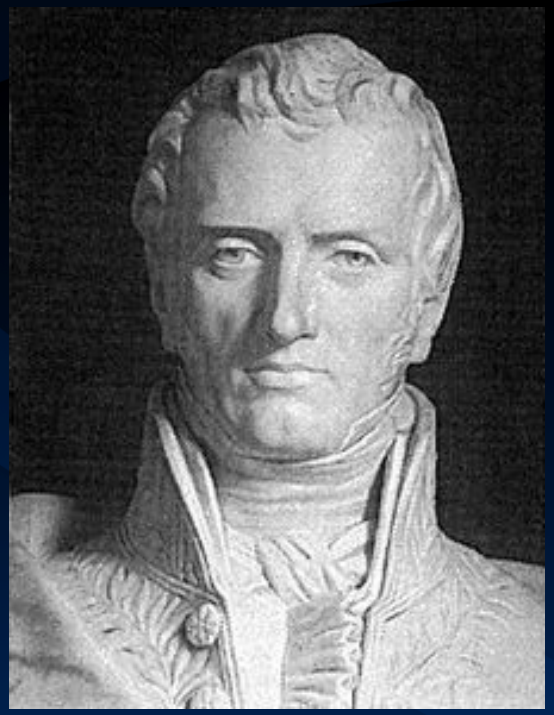


Unifying the Documentation Process

Malcolm Wallace (CD-adapco)
Thomas Barthel (SDL)

TCUK 2014

Who are CD-adapco?



Claude-Louis Navier
1785-1836

Sir George Stokes
1819-1903

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

Who are CD-adapco?

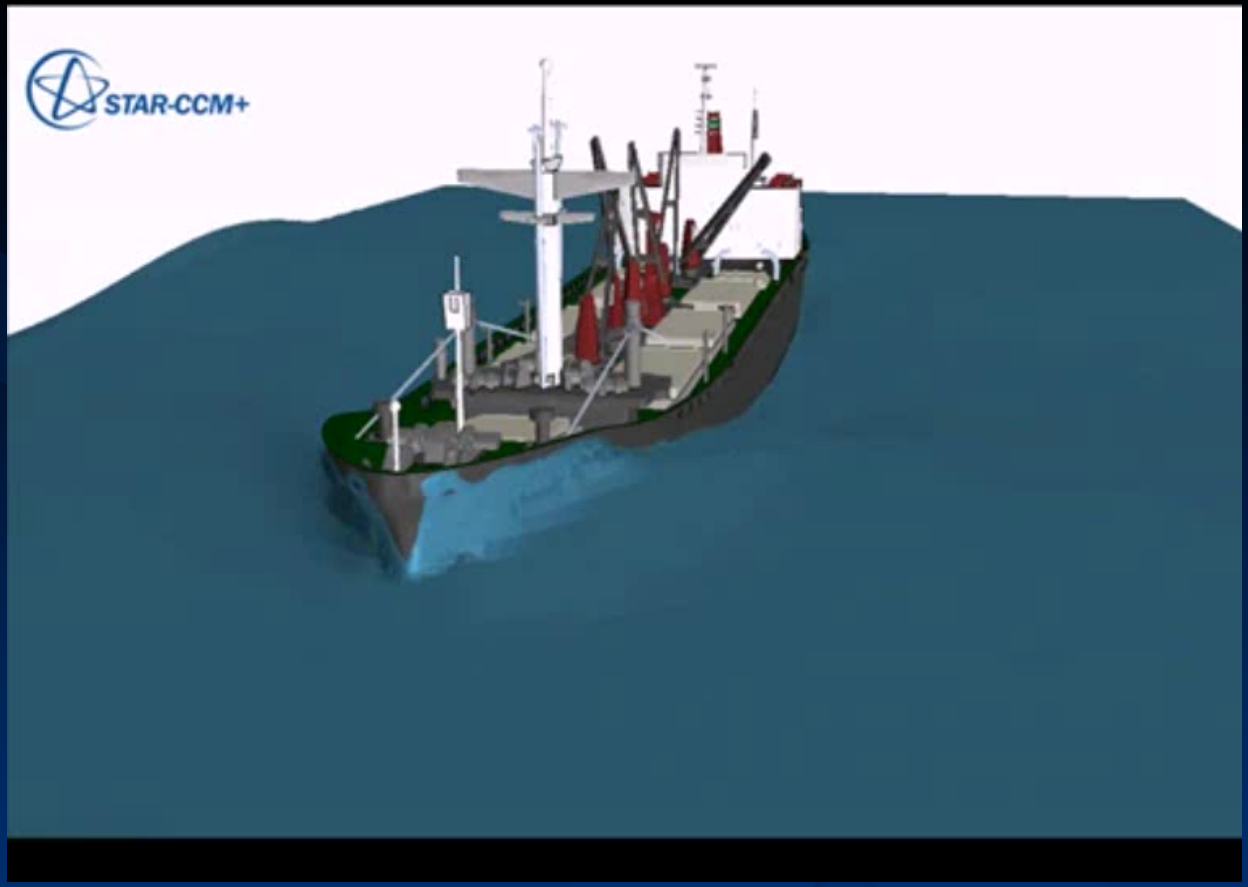
- CFD-focused provider of engineering simulation software, support and services

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?

CD-adapco

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

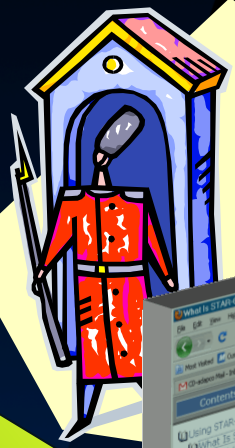
Integrated Content Pipeline?

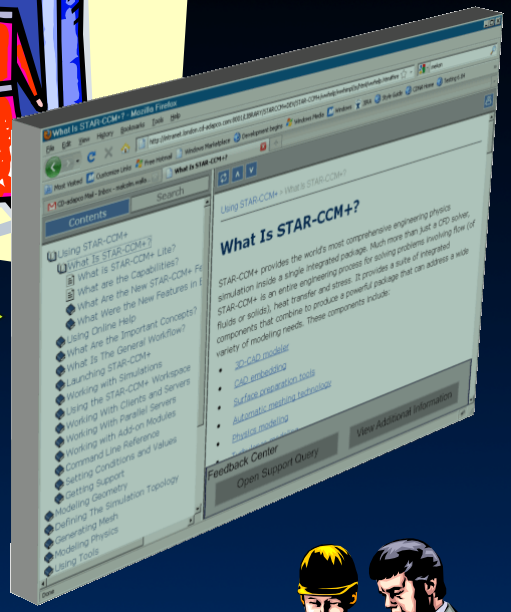
CD-adapco

Editors

Agency

Developers





Unified Content Creation and Storage

Newton

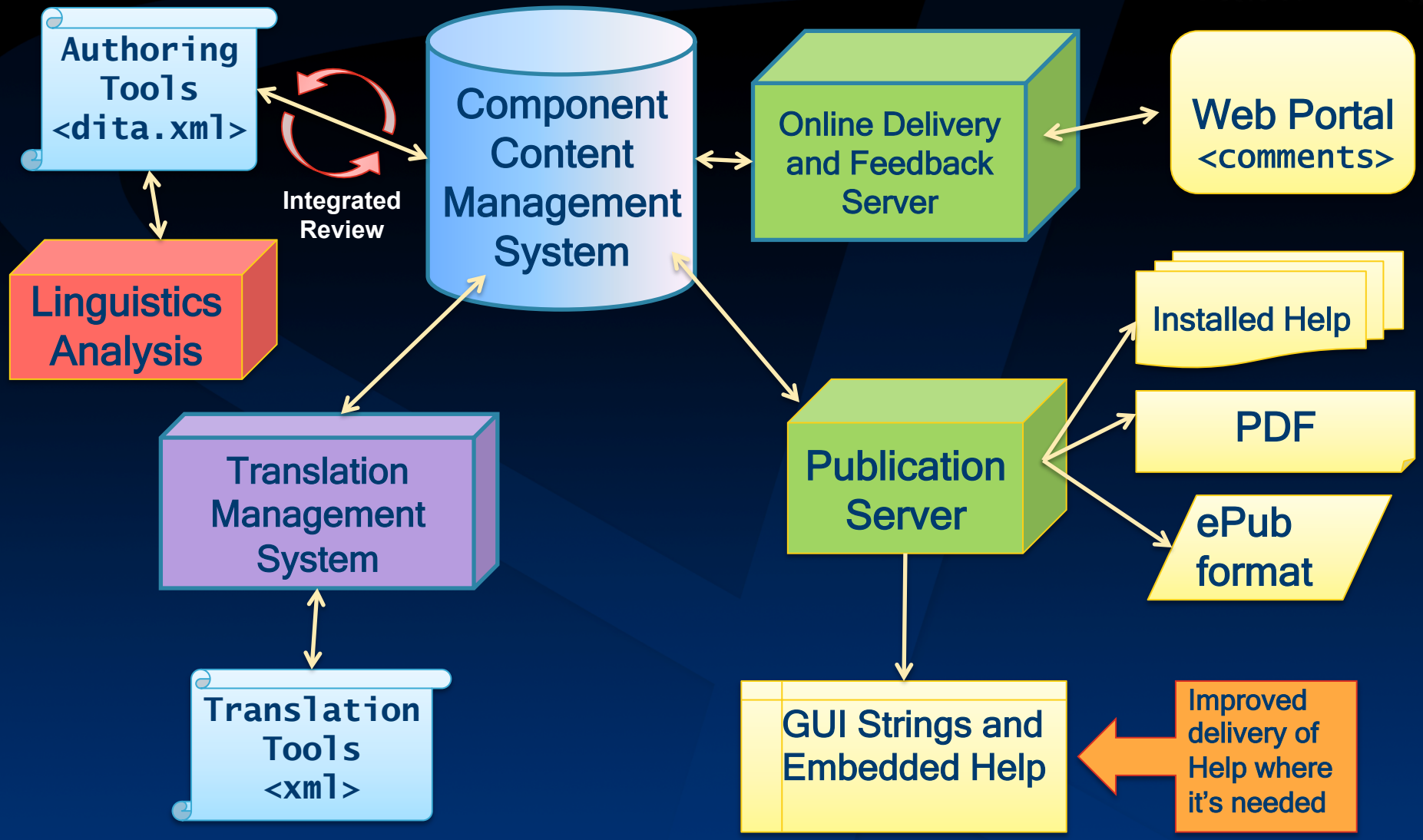
Industry Experts

- Knowledge base
- Internal wikis
- Videos
- User Guide

Documentation

Users

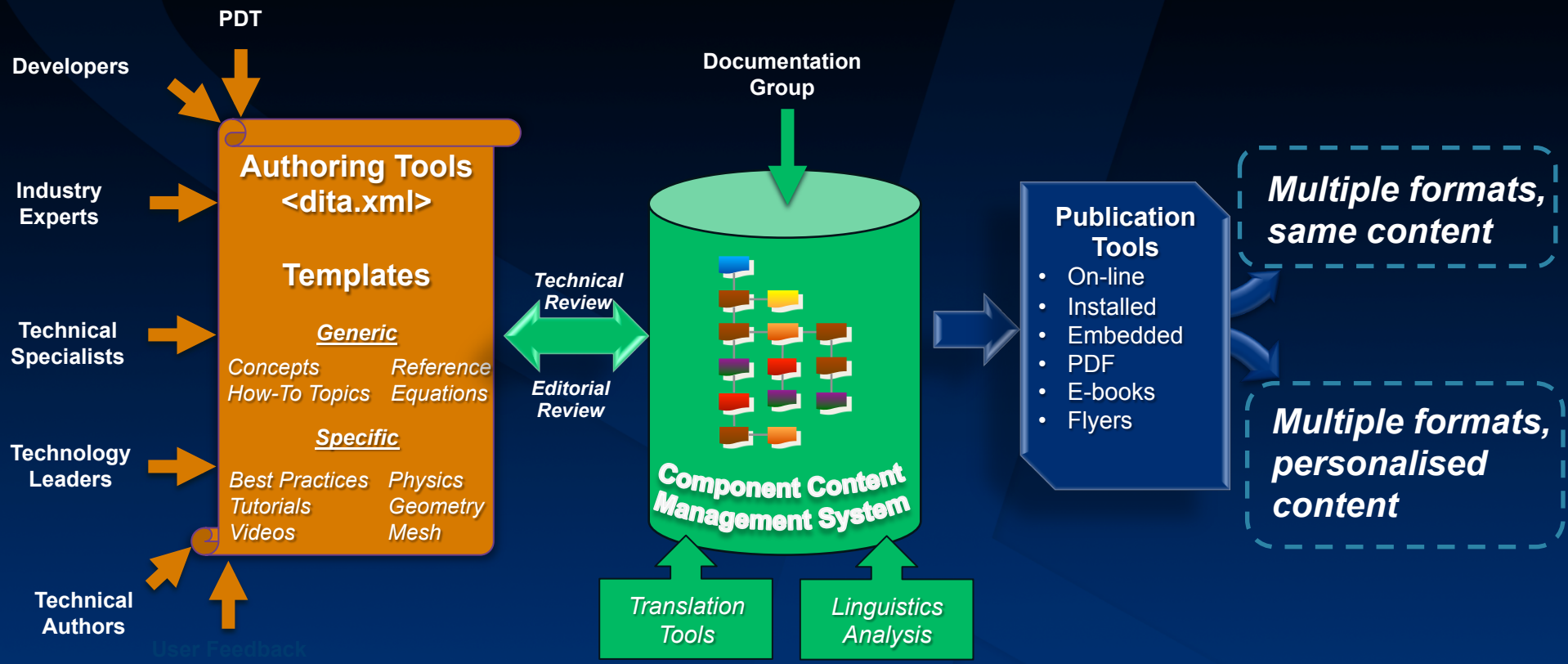
Potential System



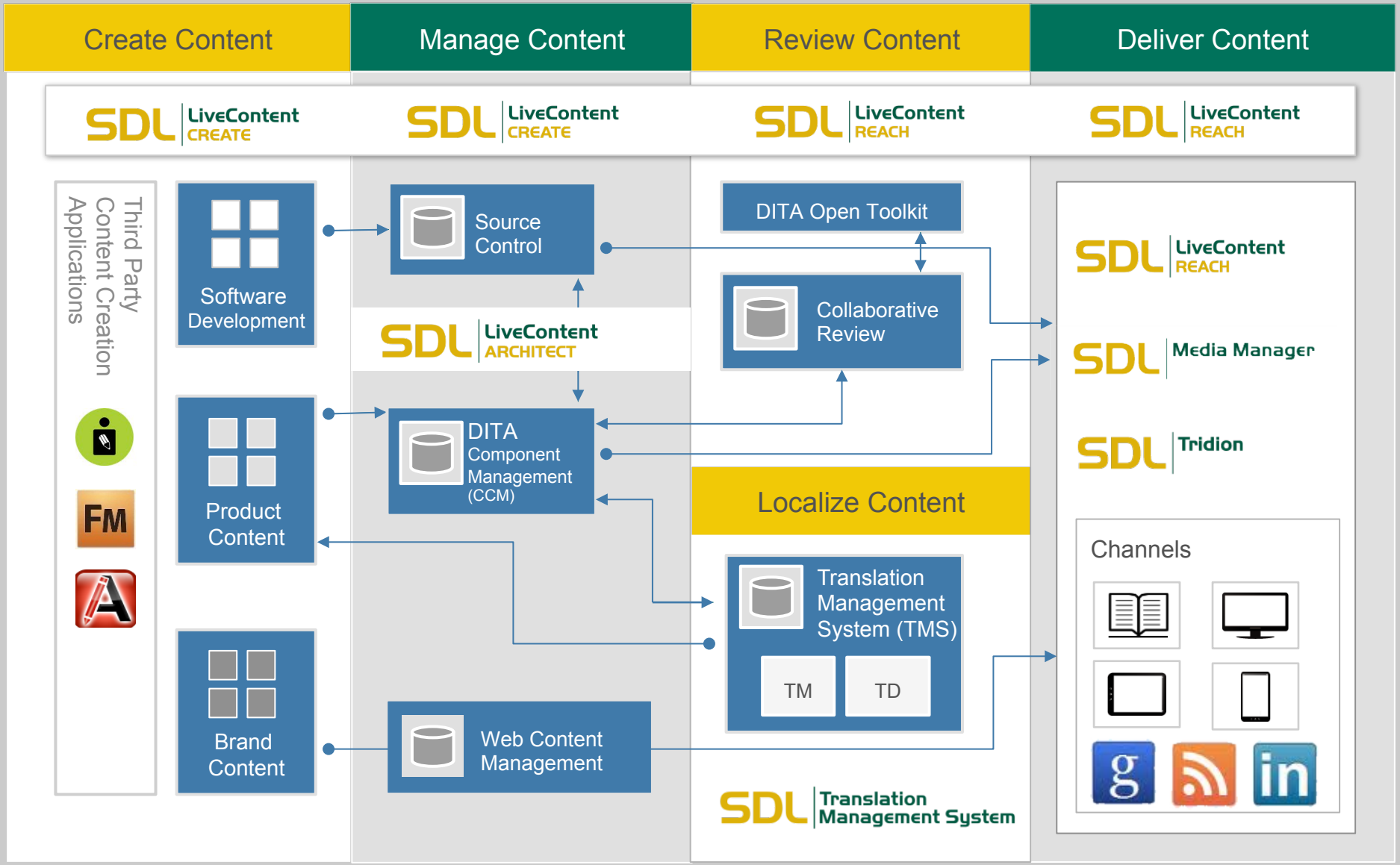
Unified Documentation Process

CD-adapco

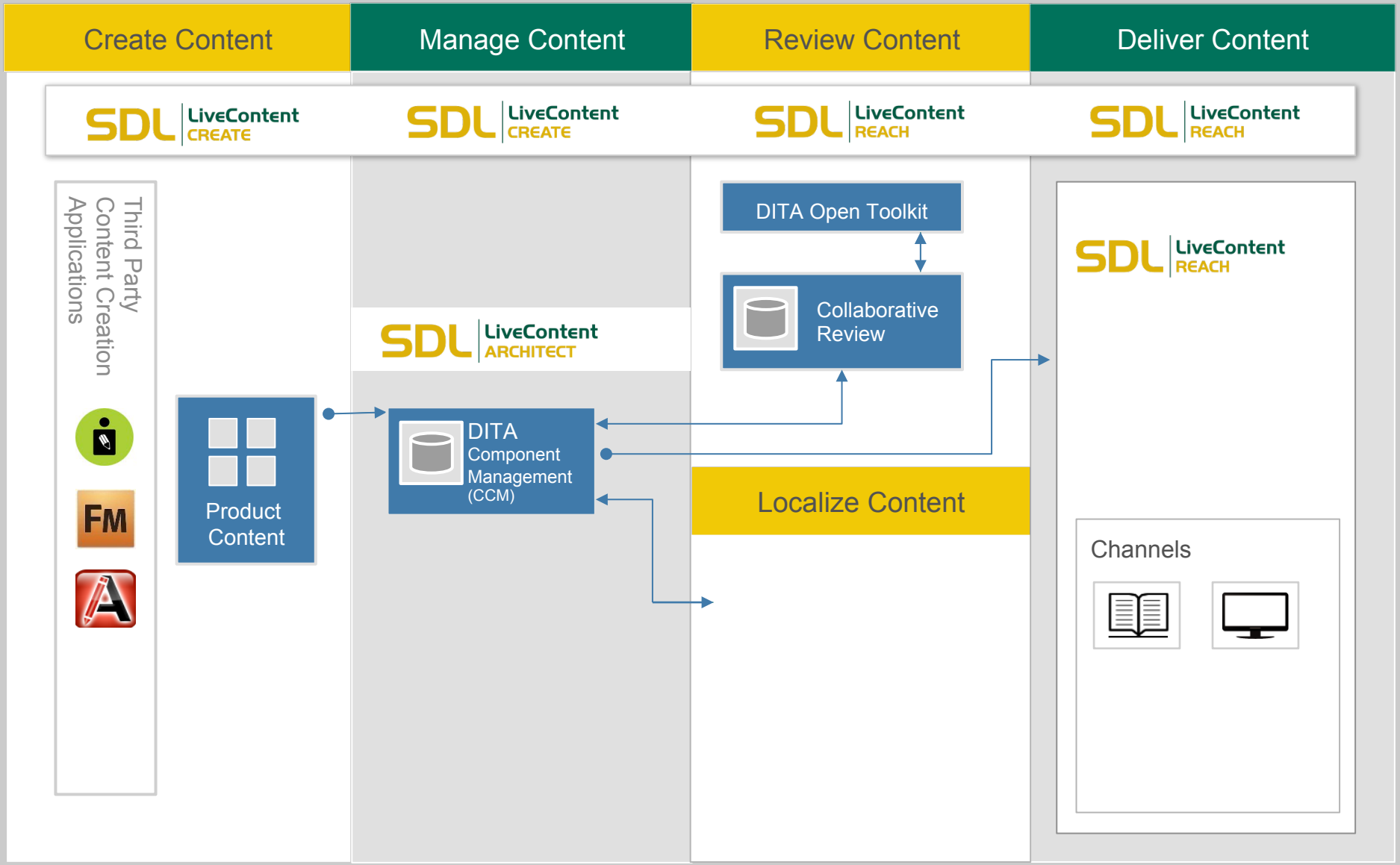
Authoring Process (content creation) → **Management / Review Process** → **Publication Process**



SDL LiveContent High Level Architecture



CD-adapco Components (1)

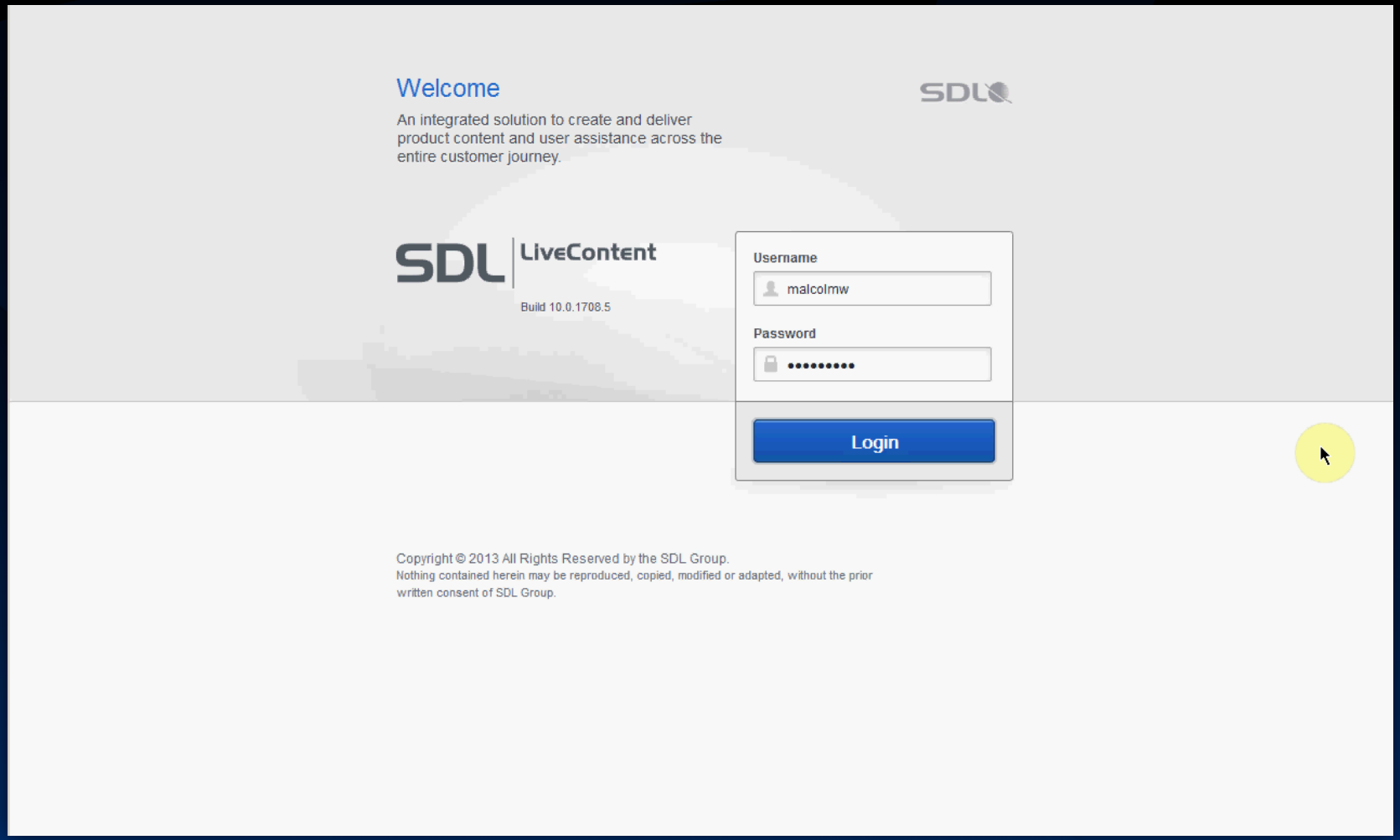


CD-adapco Components (2)

CD-adapco

Create Content	Manage Content	Review Content	Deliver Content
SDL LiveContent CREATE	SDL LiveContent ARCHITECT	SDL LiveContent REACH	
Third Party Content Creation Applications	DITA Component Management (CCM)	DITA Open Toolkit	ePublisher
Product Content		Collaborative Review	ANTENNA HOUSE
Design Science How Science Communicates™		Localize Content	
		SDL LiveContent ARCHITECT	

SDL Architect: Web Client



The Power of GUIDs (1)

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<?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>
```

```
      <stepxmp>
        <image href="GUID-5BD2D00F-DC17-42B3-B91A-087B0700850E"
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      </stepxmp>
```

The Power of GUIDs (2)

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navtitle>
  </topicmeta>
  <topicref href="GUID-AE05BC60-ECA3-44B3-
B8A2-7CDC97207964" format="dita">
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        </topicmeta>
  </topicref>
    ...
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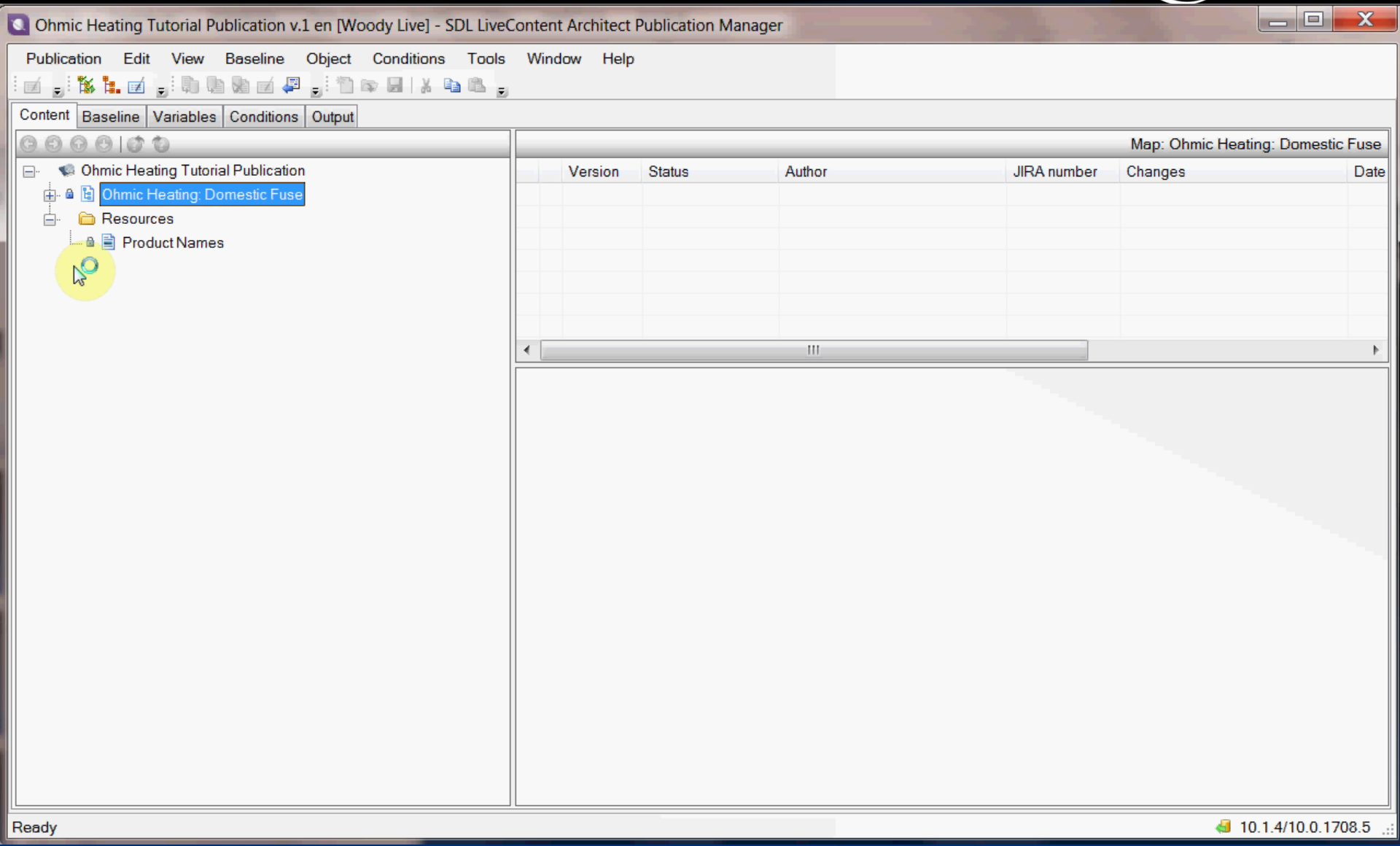
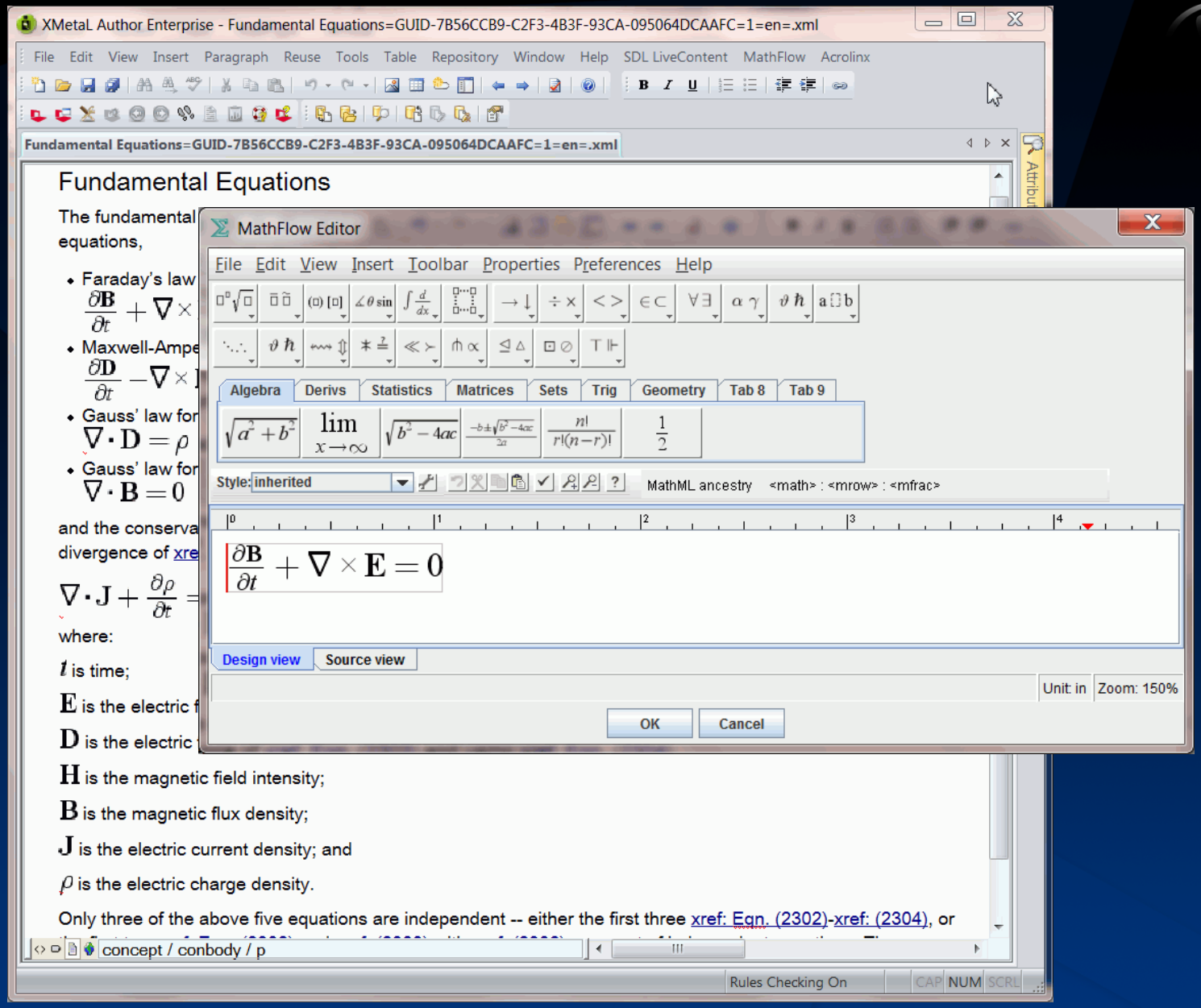
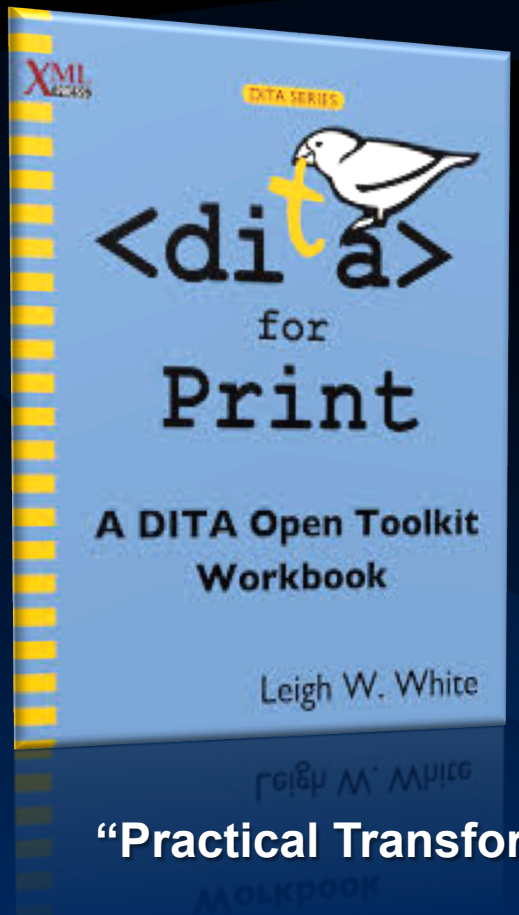
Authors' Workspace



XMetaL with MathFlow



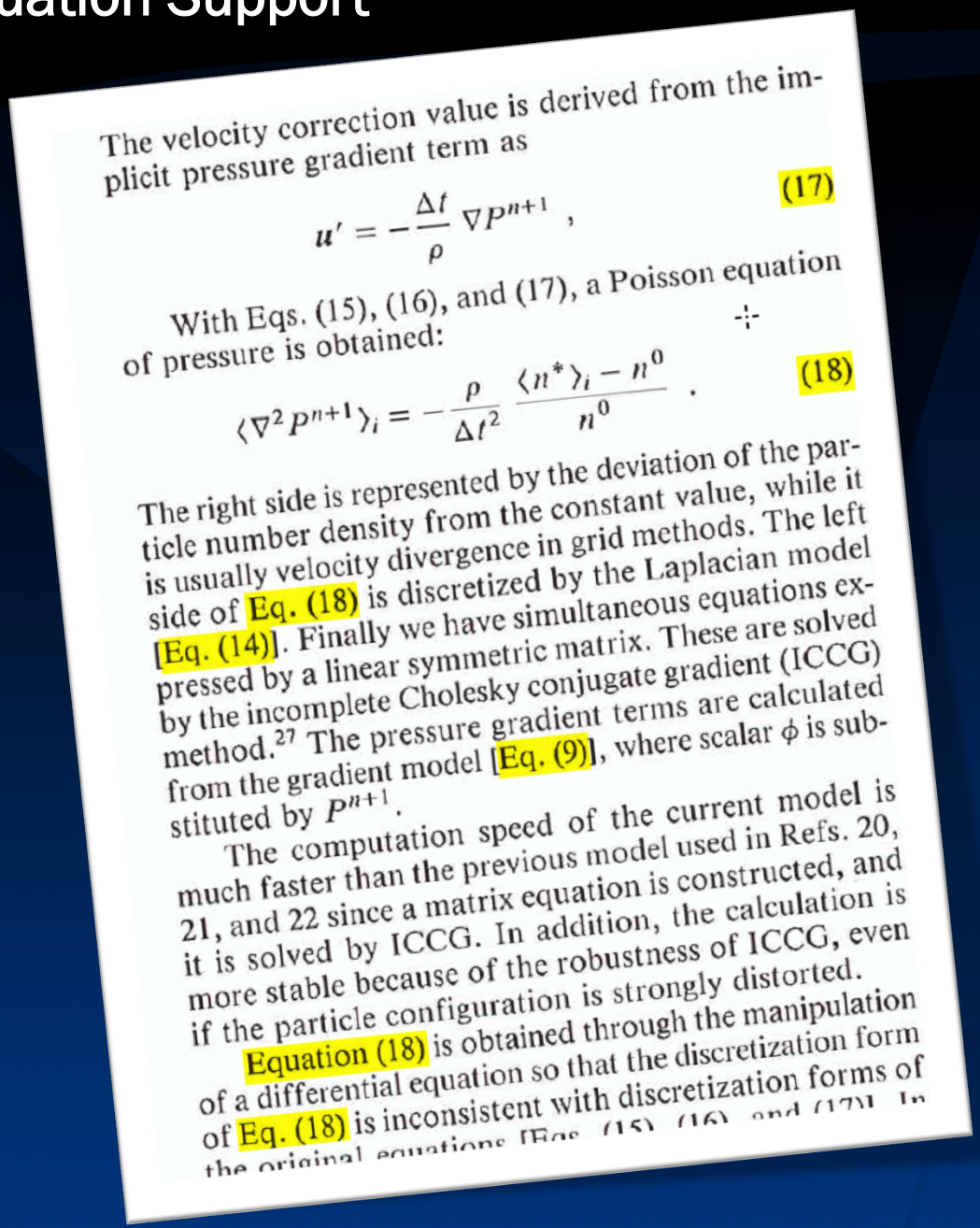
Some Hints On Publishing From DITA



**“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

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

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

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

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**

Anticipating DITA 1.3

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

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      <m:mfrac><m:mrow><m:mrow><m:mi>∂</m:mi> ...
    </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:

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

- Gauss' law for electricity:

$$\nabla \cdot \mathbf{D} = \rho \qquad (3)$$

ism:

$$\nabla \cdot \mathbf{B} = 0 \qquad (4)$$

own as the continuity equation,
f Eqn. (2) and using Eqn. (3)

$$\frac{\rho}{t} = 0 \qquad (5)$$

<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)

CD-adapco

JIRA | Malcolm Wallace | Administration

Dashboards | Projects | Issues | Agile | + Create Issue | Quick Search

STAR-CCM+ / CCMP-26180

12 of 15

Return to search

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

Edit | Assign | Assign To Me | Comment | More Actions | Reopen Issue | 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:

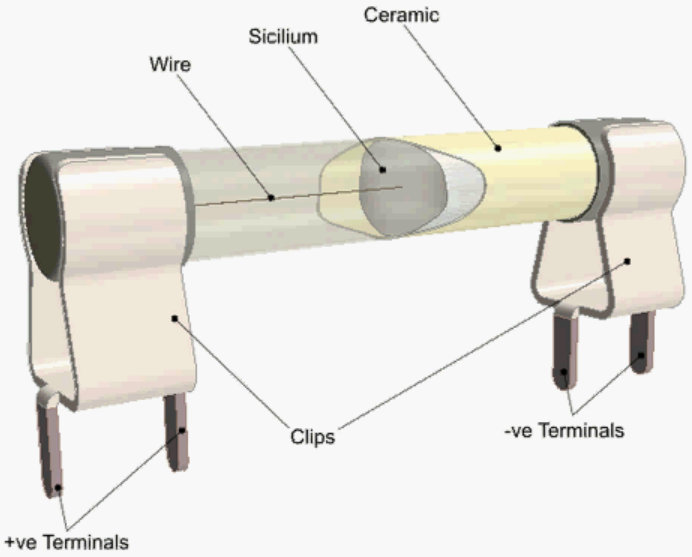
Reach Workflow: Tutorials Testing (2)

STAR-CCM+ Tutorial Guide

Ohmic Heating: Domestic Fuse

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.



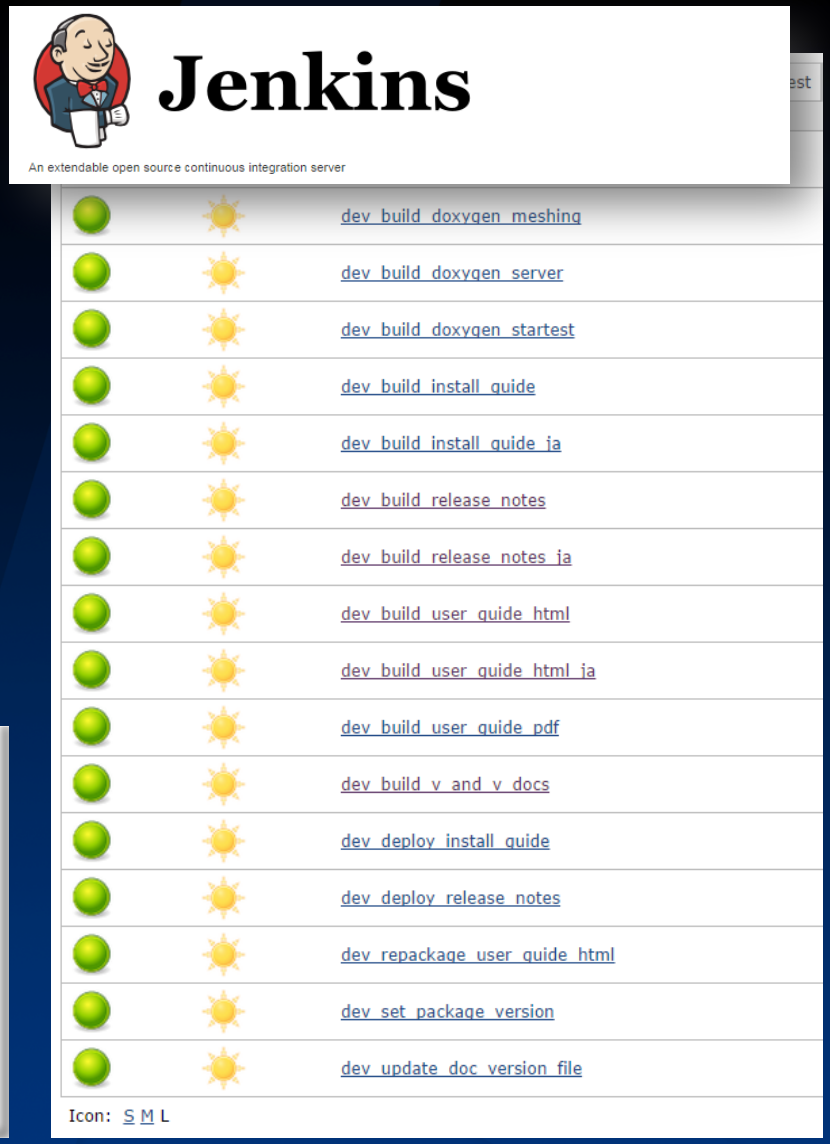
A fuse is a safety device to protect electrical equipment against unexpected high currents. Because of the Joule effect, the current going through the thin wire inside the fuse increases its temperature. If the current hits the critical current, the wire temperature exceeds its melting point, and breaks.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

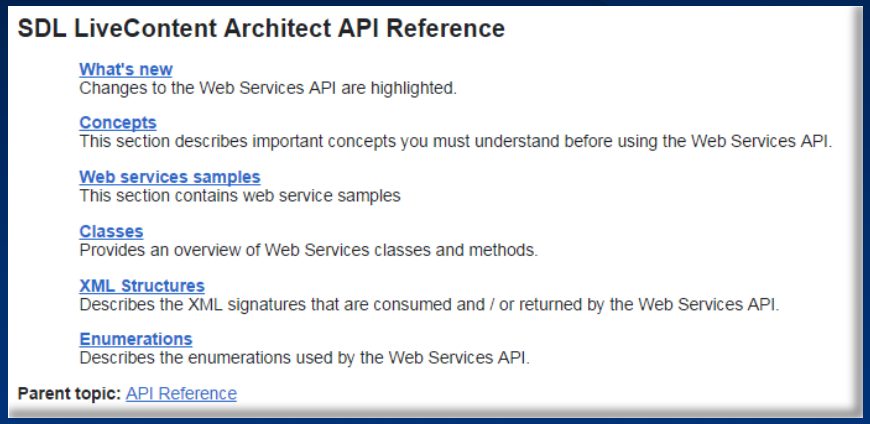
Comments (0)

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





Acknowledgements,
Questions,
Comments