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Model-Based Engineering résumé

Dr Darren R. C. KELLY

Webel IT Australia consultancy (established 2000)

Version date: 21 June 2025

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1) Personal details and contact information

Full name: Dr Darren Raoul Charles KELLY, BSc, PhD, OCSMP

Birthplace: Sydney, Australia

Nationality: Australian

Languages: English and German

Business name: Webel IT Australia (trading as WEBEL.COM.AU)

Australian Business Number (ABN): 67 677 268 579

Postal address: PO Box 1816, Bondi Junction, NSW 1355, Australia

Residential address: *(Only available on request)*

Mobile/Cell: +61 405 029 008

Telephone: +61 (2) 9386 0090

Email: Please visit[1]: `https://www.webel.com.au/contact`

Web: `https://www.webel.com.au`

LinkedIn: `https://www.linkedin.com/in/drdarrenkelly`

LinkedIn company: `https://www.linkedin.com/company/webel-it-australia`

[1]For spam prevention direct email is only provided after the initial contact because this document is also made available online.

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2) About this Model-Based Engineering résumé version

The focus of this résumé version is on experience with Model-Based Systems Engineering (MBSE) and the OMG Systems Modeling Language (SysML), model-based software engineering and architecture with the OMG Unified Modeling Language (UML), supporting technologies such as OMG Object Constraint Language (OCL), and semantic web and ontology technologies such as RDF/S and the Web Ontology Language (OWL). It also describes promotion of the above technologies through IT Training courses and online education.

Only activities directly involving use of SysML or UML are listed in **this** Model-Based Engineering résumé. A **separate** Software Engineering résumé with a focus on use of: coding languages such as Python, Java, C++, and C#; web languages such as PHP, JavaScript, HTML, XSL, CSS, and SASS; data-oriented languages such as JSON and XML; the Wolfram Language for Mathematica; and database technologies is available at:

`https://www.webel.com.au/resume/softeng`

There is also a separate Web Technologies résumé with a focus on use of PHP for Drupal Content Management System web sites (as used for the Webel IT Australia site and clients' web sites) at:

`https://www.webel.com.au/resume/web`

A detailed, full-career, biographical Curriculum Vitae document is also available on request, and there is a database-driven online CV listing all major activities and organisations I have been involved with at:

`https://www.webel.com.au/cv`

3) Model-Based Engineering career profile

> *In the following descriptions, the terms 'model-based' and 'model-driven' do not refer only to generation of computer code through forward engineering. They refer also to graphical modelling for systems engineering as well as use of graphical modelling for reverse engineering and refactoring of existing code systems, and the combination of model-based systems engineering strategies with software systems and hybrid systems.*

My name is Dr Darren Kelly, the proprietor of Webel IT Australia. I specialise in applications of Model-based Systems Engineering (MBSE) with Systems Modeling Language (SysML) to tasks in industry, engineering, information technology, science, and education, and am recognised as a world leader in the field. I am also an advocate for use of model-based software engineering strategies including the use of graphical Unified Modeling Language (UML) in combination with compatible object-oriented coding languages such as Java and C++ and data structure languages such as XML Schema, and for use of object-oriented *Design Patterns*, which are reusable strategies for robust software architectures and software engineering recorded in UML.

Webel IT Australia was founded in 2000 in Sydney Australia to promote the use of advanced information technologies, and since 2007 has offered SysML/MBSE Consultancy and IT Training. The Webel IT Australia web site is likely the world's largest public educational resource on how to apply SysMLv1 to real projects.

I was an Expert Advisor to No Magic Inc. (original developers[2] of the MagicDraw UML and Cameo Systems Modeler tools) supervising improvements to their SysML Plugin, and was one of the most active long term contributors to the Object Management Group (OMG) *Revision Task Force (RTF)* for development of the SysMLv1 language specifications. I created the world's first online eSchool for SysML, and the **Webel Best Practices** modelling tips for SysML and MagicDraw/Cameo tips are visited by many SysML users daily.

Webel IT Australia has offered onsite and online courses in SysML for MBSE and UML for two decades.

Readers of this résumé are welcome to request access to watermarked versions of selected slide set PDFs from the Webel SysMLv1/MBSE Workshop Seminar course, which include coverage of the SysMLv1 language, MagicDraw/Cameo tool tips, fully worked sample problems, and links to simulation videos.

Webel IT Australia is an OMG Accredited Training Provider for SysML, and one of the only organisations certified to offer preparation for the OMG-Certified Systems Modeling Language™ Professional (OCSMP) exams up to level Model Builder Intermediate.

[2] The MagicDraw UML tool and Cameo Systems Modeler tool for MBSE with SysML now also have **CATIA Magic** branding product names since No Magic Inc. was acquired by Dassault Systèmes, please visit **this Webel guide** for equivalent product names.

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In early 2025, I developed the **Webel Q&A** online self-testing system for SysML, which covers every OCSMP exam topic up to level Model Builder Intermediate, and is integrated with the Webel SysMLv1/MBSE course resources, including many simulation videos using the Cameo Simulation Toolkit (aka Magic Model Analyst). The Webel Q&A system is now being expanded to include Question Sets covering the new SysMLv2 version.

I am also the developer of the **Webel Parsing Analysis** recipe for SysML, a modelling technique for traceable elicitation of SysML models from text extracts from engineering domain source documents, which approach pre-empted the automation of model creation using Large Language Models (LLM) and machine learning.

My expertise with model-based engineering technologies falls into roughly five closely related categories:

1. Applications of SysML to MBSE including formal Systems Engineering, Requirements Engineering, modelling of scientific instruments (such as particle accelerators, radio telescopes, neutron beam instruments, and astronomical instruments), electronic devices (such as air conditioners and medical instruments), defence systems (such as communication networks), and models of physical systems. This includes also simulation of StateMachines and Activities, and integration with external maths engines.

2. Use of the SysML Extension for Physical Interaction and Signal Flow Simulation (SysPhS) and Modelica.

3. SysML for software development project tracking, and applications of SysML to hybrid systems and modelling of software systems, including recipes for analysis modelling of Python, PHP, and the Wolfram Language for Mathematica (and strategies also for capturing some functional programming aspects).

4. Use of UML for software development, especially reverse-engineering of object-oriented languages such as Java, C++, and C#, and refactoring using Design Patterns and strategies of robust software architectures.

5. Use of the Resource Description Framework (RDF), RDF Schema (RDFS), and Web Ontology Language (OWL) technologies of the World Wide Web Consortium (W3C) for semantic web and ontology modelling.

I originally trained as a physicist (radio astronomy) and have a PhD in Astrophysics & Applied Mathematics (supernova explosion simulation), and worked for some years primarily as a scientific computing expert and instrument scientist (particle accelerators, radio telescopes, and neutron beam instruments).

I was first introduced to object-oriented software engineering with C++, the Unified Modeling Language (UML), and Design Patterns, at the Deutsches-Elektronen Synchrotron (DESY) particle accelerator institute in Hamburg, Germany, where I worked as a postdoc physicist until late 1998. In 2003, I explored creating a port-based model of a radio telescope using UML as part of a project modelling the radio telescope in Java.

My first use of SysMLv1 was in 2007 whilst working for the Australian Nuclear Science and Technology Organisation (ANSTO) as part of a project modelling neutron beam instruments and developing Java based Model Server control system software, with UML modelling of the software development throughout.
I also employed UML during development of Webel's Java-based NeXML XML binding system for the Nexus neutron science data format. SysML/MBSE has been a primary focus of my professional career ever since.

A list of some professional activities involving use of SysML for MBSE and UML for software engineering is provided in the next section. For a list of links to examples on the Webel IT Australia site of applications of SysML to a range of tasks in industry, engineering, science, and education, visit the Links section below.

4) Record of activities involving Model-Based Engineering

This section lists some employment, consultancy, IT Training, and R & D activities involving use of SysML for Model-Based Systems Engineering (MBSE), UML for model-based software engineering, and OWL for semantic web and ontology modelling, in approximate reverse chronological order (in some cases with some overlap). For a full list of professional activities and organisations I have been involved with visit:

http://www.webel.com.au/view/activity

Where coding languages are involved more details can be found in my Software Engineering résumé.

2025-05 Webel IT: SysML Education: Collation of selected Webel SysMLv1/MBSE Workshop Course slide set PDFs as a personal use edition download bundle and online sales and promotion.

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2025-01 – 2025-04: Webel IT: Development of the **Webel Q&A** online self-testing system for SysML OCSMP exam preparation and general SysML study using the Wolfram Language and Mathematica for development of a Wolfram Cloud web application, backed by a Python REST API (MariaDB serving layer). As of early 2025, the available Question Sets cover all SysMLv1 OCSMP exam topics up to Model Builder Intermediate, with SysMLv2 Question Sets planned for later in 2025 or early 2026. On answering a Question users are offered rich explanations, including specification quotes, diagrams (many of which embed slides from the Webel SysML/MBSE course), and simulation videos using Cameo Simulation Toolkit (aka Magic Model Analyst).

2024-09 – 2025-04: Simplx Pty Ltd (client, multiple contracts): SysML-based software architecture analysis of a prototype Python-based building modelling system and code refactoring using object-oriented Design Patterns, Functional Patterns, and robust software architecture strategies. Development of RESTful Web Service JSON end points using FastAPI for Python, supported by an XML/XSL-driven HTML demo web application and deployment to an Elastic VPS using Docker and Traefik reverse proxy. SysMLv1 was used throughout to model selected aspects of the pre-existing Python code, to model new Python code for REST end points, to track dependencies between components, track the deployment, and for documentation.

2024-06 – 2024-09: Webel IT: R&D and online education: Wolfram Mathematica code library and technical slide trail development with SysMLv1 models (using the Webel **SysML4Mathematica** modelling recipe). Developed the **Webel ADT** (Abstract Data Type) *pseudo-class* libraries with SysMLv1 models.

2024-04 – 2024-05: Webel IT: R&D and SysML Education: Developed a port-based SysMLv1 model of Radio Nets (defence communication networks) in Cameo Systems Modeler with simulation in Cameo Simulation Toolkit. (Related to projects of Babcock Australia, partially available as a public online trail).

2024-03: Webel IT: Trainer: Held a SysML/MBSE Workshop Seminar course for client Babcock Australia (defence), with follow-up consultancy. [Details subject to commercial confidence.]

2024-03: Webel IT: SysML Education: Developed an online tutorial for the Webel simplified Systems Engineering recipe for pragmatic, tool-friendly, *functional analysis* breakdown in Cameo Systems Modeler. Please visit also this large overview slide illustrating the entire modelling recipe for one Use Case scenario.

2024-02: Webel IT: Educational consultant for SysML/MBSE to client Saber Astronautics (defence communication networks). [Details are subject to commercial confidence.]

2023-09: Webel IT: Trainer: Held a SysML/MBSE Workshop course for the Advanced Instrumentation and Technology Centre (AITC), Research School of Astronomy and Astrophysics, Australian National University.

2023-04 – 2023-04: Webel IT: R&D and Education: Development of the Webel Psy library for psychrometrics (humid air physics) in Mathematica and CoolProp with SysML models using the Webel **SysML4Mathematica** modelling recipe and domain-specific stereotype profiles. Relates to work for client Daikin Australia Air Conditioning. Please visit this tutorial trail. For SysMLv1 Parametrics and Activity models start at this slide.

2021-07 – 2023-12: Daikin Australia Air Conditioning (client, multiple contracts): SysML modelling of air conditioners and the Daikin Process for product development. Developed Mathematica applications and libraries using the Wolfram Language for simulation of heat exchangers, 3D device modelling, data analysis, data visualisation, and spreadsheet data migration for air conditioner calculations. Developed the Webel **SysML4Mathematica** recipe for modelling the Wolfram Language in SysML, which was used for detailed analysis modelling of the Wolfram Language packages and functions. Used SysMLv1 Parametrics for air conditioner calculations. Simulated the air conditioner refrigerant cycle using SysMLv1 StateMachines and Activities. SysMLv1/MBSE was used throughout for Requirements Engineering, project tracking, and documentation of all projects. [Details of the specific applications are subject to commercial confidence.]

2020-11: Webel IT: R&D and Education: Development of the **Webel Digital Twinning** recipe for SysMLv1, with simulation of scenarios for Digital Twin acquisition and creation of physical building assets in Cameo Simulation Toolkit. Please visit also this detailed online technical trail and this narrated screencast video, which demonstrate also use of the **Webel Parsing Analysis** recipe for SysML with domain documents.

2020-10: Webel IT: R&D and Education: Demonstration of the **Webel Parsing Analysis** recipe for SysML applied to the Mars Society University Rover Challenge (please visit the PDF slides and simulation video).

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2020-08 – 2020-11: Webel IT: SysML Education: Developed online tutorial trails and videos for SysML and Cameo Simulation Toolkit and the **theory** behind the **Webel Parsing Analysis** recipe for SysML. Developed the online version of the **Webel Best Practice** policy notes for SysML, linked to application examples and to SysMLv1/UML2 specification "snippet" text extracts (used with permission for educational purposes).

2020-07: Webel IT: Trainer: Held a SysML/MBSE Live Online web seminar course for Dräger Medical in collaboration with Project Performance International (PPI). Included development of StateMachine and Activity simulations for medical devices using Cameo Systems Modeler and Cameo Simulation Toolkit.

2020-02: Webel IT: Trainer: Held a SysML/MBSE Workshop Seminar course for Australian Astronomical Optics (AAO), Macquarie University [astronomy, instrumentation]

2019: SysML/MBSE consultant to client Lendlease Digital Delivery: Used SysML for modelling of stages of building design, and Requirements Engineering using the **Webel Parsing Analysis** recipe for SysML applied to stakeholder documents, industry standards documents, and product descriptions. Applied MBSE with SysML to Digital Twins for building and construction. Reverse engineered C# code and JSON Schema to UML for code refactoring analysis. [Details are subject to commercial confidence restrictions.]

2019-07: Webel IT: Trainer: Held a SysML/MBSE Workshop Seminar course for client Lendlease Digital Delivery (Digital Twins for building and construction and model-based software development).

2019-02 – 2019-07: Webel IT: Consultant: Drupal CMS web site migration and PHP scripting for a systems engineering resources web site for client Project Performance International. Used SysMLv1 for analysis modelling of PHP code and for Requirements Engineering, project tracking, and documentation.

2018-09 – 2019-05: Webel: IT: SysML/MBSE Consultancy for the ANU Advanced Instrumentation and Technology Centre (AITC) [astronomy]. Developed a port-based light flow model of the Giant Magellan Telescope (GMT) and Giant Magellan Telescope Integral-Field Spectrograph (GMTIFS) in SysMLv1.

2018-08: Webel: IT: Trainer: Held a SysML/MBSE Workshop course for the Advanced Instrumentation and Technology Centre (AITC), Research School of Astronomy and Astrophysics, Australian National University.

2017-02: Webel IT: Trainer: Held a SysML/MBSE Workshop Seminar course for Ultra Electronics (Avalon Systems) [electronics, defence].

2017-01 – 2017-03: Webel IT: SysML Education: SysML seminar course preparation, online SysML tutorial trail creation, and specification tracking [SysML1.5/1.6] as OMG SysML Revision Task Force (RTF) member.

2016-12 – 2017-01: Webel IT: R&D: Employed SysML for development of a motion-controlled music and visuals creation system with custom electronics, and created electronics schematics diagrams using SysML.

2016-05 – 2016-06: Webel IT: IT Consultant: Web Ontology Language (OWL) semantic web modelling and integration with an Eclipse Modeling Framework Java application for the National eHealth Transition Authority (NEHTA) for health informatics and HL7 Fast Healthcare Interoperability Resources (FHIR).

2016-03 – 2016-04: Webel IT: SysML Education: SysML seminar course preparation, online SysML tutorial trail creation, and specification tracking [SysML1.4/1.5] as OMG SysML Revision Task Force (RTF) member.

2015-10 – 2016-02: Webel IT: Consultant: Integration of Object Constraint Language (OCL) and Unified Modelling Language (UML) with the Eclipse-based Model-Driven Health Tools (MDHT) Java application for the National eHealth Transition Authority (NEHTA).

2015-12 – 2016-01: Webel IT: R&D: Embedded C++ programming for a motion-controlled light art visuals generation system using an Arduino microcontroller, custom electronics, and accelerometer signals. Used UML for C++ software engineering and SysML for project tracking and electronics schematics.

2015-06 – 2015-08: Webel IT: Trainer: Developed and held a course on Object Constraint Language (OCL) and Unified Modelling Language (UML) for the National eHealth Transition Authority (NEHTA).

2011 – 2019: Consultant to client GreenSoft Pty Ltd (multiple long term engagements): Developed an Enterprise Java (Java EE) web application for tracking the Green Star Office environmental rating scheme of the Green Building Council of Australia (GBCA). Modelled software architecture using SysML and used

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model-based Java engineering with UML. The **Webel Parsing Analysis** recipe for SysML was applied to text from the Green Star Office specification document to elicit SysML model elements corresponding to the categories and credits of the Green Star scheme, with bridging to Java classes using reverse-engineered UML. SysML was used throughout to track requirements, features, deployment, and for documentation.

2010: Beta participant in the OMG-Certified Systems Modeling Language™ Professional (OCSMP) exams.

2009-09 – 2010-01: Webel IT: Consultant: Development of a PHP-driven Drupal Content Management System systems engineering resources web site for the Systems Engineering and IT Training organisation Project Performance International (PPI). Included reviewing 1000s of software engineering, systems engineering, engineering standards, and defence standards resources and documents.

2009-09 – 2009-10: Webel IT: Trainer: Held a SysML/MBSE Workshop Seminar course for the Australian Defence Science and Technology Organisation (DSTO) and the Royal Australian Air Force (RAAF).

2008-10: Webel IT: R&D: Developed the Java-based NeXML XML bindings system: 'A generative XML schema for the NeXus neutron science data format using the Eclipse Modeling Framework (EMF)'. Used UML for Java application development. Visit also this conference video and this technical report PDF.

2008-07: Webel IT: R&D: Development of a Java visuals and sound synthesis GUI application for a motion-controlled real-time music and visuals creation "air instrument" using wireless accelerometer signals. Used UML for Java software development and SysML for port-based device models and electronics schematics.

2007-04 – 2008-09: Webel IT: Consultant: Expert Advisor for Science, Engineering, and Education to No Magic Inc (original developers of the MagicDraw UML and Cameo Systems Modeler tools prior to acquisition by Dassault Systèmes). Supervised feature improvements for the SysML Plugin for the Java-based MagicDraw UML tool (bundled as Cameo Systems Modeler, now aka Magic Cyber-Systems Engineer), and tracked compliance against the SysMLv1 specifications. Represented No Magic Inc as a member of the OMG SysMLv1 Revision Task Force (RTF). Held Workshop Seminar courses and training sessions for staff. Authored the MagicDraw Online eSchool with SysMLv1 and UML2 tutorial trails and tips [site now defunct]. Proposed a SysML-based Instrument Control and Simulation Modeling Language (ICSML) (see these slides).

2005-09 – 2007-11: Australian Nuclear Science and Technology Organisation (ANSTO): Computational physicist, data analysis developer, and software architect. Java-based data analysis and neutron beam instrument Model Server development with UML software architecture and SysML instrument modelling.

2004-08 – 2005-03: Macquarie E-Learning Centre Of Excellence (MELCOE), Macquarie University: Java and XML developer, and Unified Modeling Language (UML) architect. Held staff training in UML software design. Developed a federated resource search web client using XML, JavaServer Pages (JSP), XSL transformations, XPath, XML query language (XQuery), and resource metadata technologies, with UML software design. UML reverse engineering and analysis modelling of technologies such as: Security Assertion Markup Language (SAML), eXtensible Access Control Markup Language (XACML), the JAFER toolkit for Z39.50, DSpace repository, Dublin Core metadata schema, MARC21 and MARC XML metadata schema, OAI metadata schema, and the UKeduPerson schema. Modelled the MAMS secure web services architecture and the Shibboleth secure Single Sign-On (SSO) federated access technology in UML using Sequence Diagrams.

2003-01 – 2004-05: Webel IT: Consultant to The Astrophysics Group, School of Physics, University of Sydney. Developed a Java-based information system and entity model for the MOST radio telescope using Java Data Objects (JDO) object-relational database mapping and JavaServer Pages (JSP), as well as a Java3D modelling and animation client and a Java Swing desktop client. Employed UML analysis, design, reverse engineering, and documentation throughout the project. Developed a port-based model of a radio telescope using UML2, preempting the need for a Systems Modeling Language (SysML) dialect of UML.

2003-08 – 2003-09: Centre for the Mind, University of Sydney: Java-based semantic word network application development using the Java Universal Network/Graph Framework (JUNG) and UML.

2003-03 – 2003-06: International Institute of Business and Information Technology (IIBIT): IT Lecturer: Topics included: Software Engineering Process and Analysis & Design with UML.

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2001-11 – 2002-05: Computer Lab Assistant: VisLab, University of Sydney, Australian Technology Park: Java distributed computing Event Heap research, CT scan and tomography visualisation using C++ and the Visual Toolkit (VTK), and Ambisonics (3D sound fields) research. Used UML to support software development.

1999-01 – 1999-03: Consultant to Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany: C++ programmer, particle accelerator beam data analysis and visualisation, Qt C++ GUI design with UML models.

1994-05 – 1998-11: Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany: Postdoctoral research scientist, particle accelerator physics. Beam simulation and data analysis. First introduction to Unified Modeling Language (UML) for software design and Design Patterns for object-oriented programming.

5) Links: SysML and UML tutorial trails and videos

This section supplements the links to examples embedded in the activities descriptions above.

As of 2025, the Webel IT Australia web site has over 4000 pages of public educational content, most of which are dedicated to applications of MBSE with SysML, aspects of UML2 required for SysMLv1, use of UML for software engineering, recipes for combining SysMLv1 with software engineering, and recipes for analysis modelling of various languages (such as the Wolfram Language for Mathematica) in SysMLv1.

Please note that there is currently less public content for the new SysMLv2 language version, and a decision has been made to no longer offer so much educational content completely free to the public. New training materials for SysMLv2 will mostly instead be incorporated into: the **Webel Q&A** online self-testing quiz system for SysML; new on-demand subscription videos; and new private group training slide resources.

To learn about Webel IT's SysMLv1/MBSE group courses (with both a hands-on Workshop Seminar tool version for Cameo Systems Modeler and a SysML language-only version for OCSMP exam preparation) visit:

https://www.webel.com.au/course/sysml/mdsysml

For information about Webel IT's Educational Consultancy Live Online web sessions for SysML for individuals and smaller groups (including dedicated assistance with preparation for OCSMP exams) visit:

https://www.webel.com.au/sysml/websessions

The following popular multi-section public tutorial trail introduces the basics of UML2 required for SysMLv1 and most of the main modelling elements and Diagram types for SysMLv1. Please note that this public trail **deliberately** does not include all of the slides from the main Webel IT SysMLv1/MBSE course, and some topics sections are **deliberately** just placeholders/stubs for topics covered only in booked (paid) courses:

https://www.webel.com.au/sysml/tutorial

For an overview of most Webel tutorials trails (most of which are for SysMLv1 or UML2 for SysMLv1) visit:

https://www.webel.com.au/view/tutorial

For an overview of public SysML/UML mini simulation videos created using Cameo Simulation Toolkit visit:

https://www.webel.com.au/view/video/mini

For an overview of public SysML tutorial and technical videos (including full length narrated videos) visit:

https://www.webel.com.au/view/video/sysml

For the **Webel Best Practice** Policy Notes pages for SysMLv1 (linked to many examples of usage) visit:

https://www.webel.com.au/sysml/wbp/v1

To learn about the **Webel Parsing Analysis** recipe for SysML (SysMLv1 version) with links to a White Paper PDF, a dedicated theory trail, related tutorial trails, and related Webel Policy Note pages visit:

https://www.webel.com.au/sysml/parsing_analysis

To learn about the **Webel Q&A** online self-testing quiz system for SysML visit:

https://www.webel.com.au/qanda

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For an introduction video tour for the **Webel Q&A** system for SysML visit:

https://www.webel.com.au/qanda/video/tour

For a search view of all **Webel Policy Note** pages (which are cross-linked to many related slides) visit:

https://www.webel.com.au/view/note

For searchable tips and issues specific to the MagicDraw/Cameo (CATIA Magic) tools visit:

https://www.webel.com.au/view/magicdraw/tip

https://www.webel.com.au/view/magicdraw/issue

To search for content by SysMLv1 or UML metaclass, stereotype, concept, or keyword/tag visit:

https://www.webel.com.au/view/keyword/umlsysml

To search for content by SysML Extension for Physical Interaction and Signal Flow (SysPhS) keyword visit:

https://www.webel.com.au/view/keyword/sysphs

For a search view of all "snippet" text extracts from OMG specifications, which are cross-linked to many related slides and Webel Policy Note pages, visit:

https://www.webel.com.au/view/snippet

For an overview of all slide pages for all tutorial trails on all topics (may take some time to load) visit:

https://www.webel.com.au/view/slide

For Webel IT's personal use SysMLv1 course slide set sales visit:

https://webel.gumroad.com

Some other notable larger tutorial trails:

TRAIL: The SysML-1.6 Hybrid SUV sample and specification diagrams in MagicDraw/Cameo (with annotations) [UNDERGOING UPDATE to SysML1.7]

TRAIL: SysMLv1/UML: Cameo Simulation Toolkit® (Magic Model Analyst®): Some basics for beginners and some more advanced cases [with mini videos]

HOWTO simulate UML-2.5.1 'Figure 14.7 Composite State with two States' in Cameo Simulation Toolkit – Operation-driven Transition case study

TRAIL: HOWTO simulate Dependency Injection of SysML Parametric calculations

TRAIL: A SysMLv1.6+ model of the Arduino Mega2560Rev3 microcontroller board

TRAIL: SysML+SysPhS vs Modelica By Example in MagicDraw/Cameo SysML and Wolfram SystemsModeler

TRAIL: SysPhS-1.1 specification body figures in MagicDraw/Cameo SysML vs Modelica

TRAIL: SysPhS-1.1 Annex A examples in MagicDraw/Cameo SysML vs Modelica (Wolfram SystemsModeler)

TRAIL: The Webel SysMLv1 Pattern for Digital Twinning

DEMO: Webel SysML Parsing Analysis: The Mars Society University Rover Challenge 2020

The following trails involve the Webel **SysML4Mathematica** recipe for modelling the Wolfram Language:

TRAIL: Air Conditioning Psychrometrics (vs CED Engineering course): Example results in Mathematica and SysML using the Webel Psy package and MPsy class

[TECHNICAL SLIDE TRAIL] The Webel libraries for Wolfram Mathematica: With SysMLv1 models.

Mathematica: POLICY NOTES for the Webel Abstract Data Type (ADT) pseudo classes with inheritance for the Wolfram Language

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6) Academic qualifications

6.1) High school education

Level: NSW Higher School Certificate (HSC) completed 1984.

Institution: Dubbo South High School, NSW, Australia.

Result: 461/500 (top 1% of state).

Certificate subjects: Physics, Chemistry, Maths (4-unit, advanced), English (3-unit, advanced).

Non-certificate subjects: History, German, French.

6.2) Bachelor of Science (Physics, honours class 1)

Period: 1985 – 1988.

Institution: University of Sydney.

Subjects: Physics, Pure and Applied Mathematics, Chemistry, Computer Science.

Honours thesis: “An analysis of image formation in MOST”. A computational study of rotational aperture synthesis radio astronomy.

6.3) Doctor of Philosophy: Astrophysics & Applied Mathematics

Period: 1989 – 1993 (conferred Jan 1994).

Institution: University of Sydney, School of Mathematics and Statistics, Australia, in conjunction with the Institute for Theoretical Astrophysics, University of Heidelberg (Ruprecht-Karls-Universität), Germany.

Thesis title: “Radiation hydrodynamics of early stages of type II supernovae”

Research areas: Supernovae; hydrodynamics, radiation transfer; numerical modelling, adaptive grids; partial differential equations; computer simulation and multi-dimensional visualisation; symbolic algebra.

7) Professional memberships, certifications, and awards

- Member: Object Management Group (OMG)
- Certification: OMG Certified Systems Engineering Professional (OCSMP)
- Certification: OMG Accredited Training Provider for SysML
- Member: Systems Engineering Society of Australia (SESA)
- Member: International Council on Systems Engineering (INCOSE)
- Scholarship: Australian Post Graduate Research Award (APRA)
- Certification: Die Prüfung zum Nachweisdeutscher Sprachkenntnisse (PNdS)
  (The German language examination as recognised by the Goethe-Institut.)
- Scholarship: Deutscher Akademischer Austauschdienst (DAAD)
- Member: Australian Alumni of the German Academic Exchange Service (DAAD)