INTERNATIONAL SEMANTIC WEB CONFERENCE 2019
Knowledge Graphs, Linked Data, Linked Schemas and AI on the Web

THE UNIVERSITY OF AUCKLAND
26-30 OCTOBER
OUTLINE
01 Local team welcome
02 SWSA Welcome & Awards
03 Program chairs welcome
04 Overview of the conference
Nau mai, haere mai ki Aotearoa.

LOCAL ORGANISING TEAM

Professor Gillian Dobbie
Co-Chair
Director of ICT Graduate School
School of Computer Science
The University of Auckland, NZ

Associate Professor Jing Sun
Co-Chair
School of Computer Science
The University of Auckland
New Zealand

Tiffany Peters
Conference Manager
Events & Conference Coordinator
Commercial Services | Campus Life
The University of Auckland, NZ
REGISTRATION STATS

- 308 registered participants
- 40 countries
- 50% Europe

**Participants by Country:**
- United States: 37, 12%
- Australia: 26, 8%
- Austria: 5, 2%
- Belarus: 1, 0%
- Belgium: 8, 3%
- Brazil: 3, 1%
- Cameroon: 3, 1%
- Canada: 4, 1%
- Chile: 6, 2%
- China: 18, 6%
- Czech Republic: 1, 0%
- Denmark: 2, 1%
- Estonia: 1, 0%
- France: 27, 9%
- Germany: 49, 16%
- Greece: 2, 1%
- Hungary: 1, 0%
- India: 2, 1%
- Ireland: 6, 2%
- Italy: 12, 4%
- Japan: 12, 4%
- Luxembourg: 1, 0%
- Mexico: 2, 1%
- Netherlands: 5, 2%
- Norway: 5, 2%
- New Zealand: 11, 4%
- Norway: 5, 2%
- South Africa: 2, 1%
- Slovenia: 2, 1%
- South Korea: 8, 3%
- Sweden: 6, 2%
- Switzerland: 4, 1%
- Viet Nam: 1, 0%
- United Kingdom: 22, 7%
Auckland had wide ranging support in hosting ISWC 2019, including the following leaders and organisations:

- The University of Auckland
- New Zealand IoT Alliance
- AI Forum New Zealand
- NZ Tech
- Microsoft New Zealand
- Mayor of Auckland
- Auckland Convention Bureau
- Tourism New Zealand
SUPPORT & SPONSORS

Gold Plus Sponsor:
IBM Research

Silver Sponsors:
Google, GE Global Research

Bronze Sponsors:
Springer, The University of Auckland, School of Computer Science

Gold Sponsor:
metaphacts, data.world

Other Sponsors:
Inria, Franz Inc.
If needed, you can leave the luggage at the registration desk.

Power extensions are at back or the front of the rooms.

Remote presentations: please contact the registration desk in advance.

Lunches are served at 12.40pm in the Level 1 Foyer.

If you are presenting a paper, remember to submit the signed consent form for the video recording, and put your presentation on USB key for post-processing.

Approach session volunteers or staff at registration desk for assisting with the lecture room facilities and setting up your presentation at the break before.

Sky tower ticket and gaming coupon at the back of your name tag. You can visit the Sky Tower at any time during your stay in Auckland. Please remember to wear your name tag at all times during the conference.
Decima Glenn room is on 3rd floor e.g. DC Lunch served there

A Job Fair is scheduled on Wed 30 Oct at 12:40-2pm in OGGB Level 1 Foyer. Interested parties (e.g., industry representatives, students) are welcomed and encouraged to attend the session.

Some of you already have requested exhibition space for the Job Fair, if you have not and would like to do so, please let the registration desk know as soon as possible to secure your space.

Sightseeing and excursion information are provided by Exclusive Tours. For bookings, please find Anne-Marie on Monday or Tuesday in the Level 0 Foyer (next to the registration desk).

Welcome reception with posters and demos starts from 18:00 to 22:00 on 28 Oct at the OGGB Level 0 Foyer.

If you have any questions or queries please do not hesitate to contact the local team at the registration desk. 😊
Gala Diner 29 Oct at 19:00 at Skycity (New Zealand Room)

Drinks & Canapés with Craft Beer Tasting is outside the function room at 6:30pm. Bus transportation from the University (conference venue) to the Sky City at 6pm. For extra Conference Dinner tickets, please contact the staff at the registration desk.
We invite you to experience everything magical that New Zealand has to offer.
The Semantic Web Science Association (SWSA) is a non-profit organisation for promotion and exchange of the scholarly work in Semantic Web and related fields throughout the world. The main SWSA activities include:

- supervision of the organisation of the International Semantic Web Conference series (ISWC);
  - student travel support;
  - code of conduct (http://swsa.semanticweb.org/content/code-conduct-iswc);
  - Town Hall meeting Tuesday @14:00-15:00 in 098: your chance to provide feedback and make suggestions;

- Awards:
  - SWSA Distinguished Dissertation Award
  - SWSA Ten-year award

---

Professor Ian Horrocks
President SWSA
University of Oxford, UK
SWSA Distinguished Dissertation Award

- Recognises theses that present innovative research results related to the combination of semantics, data and the Web

  Thesis awarded between January 1, 2018 and December 31, 2018

- Winning theses receive
  - a certificate
  - an award of €1000
  - travel costs and a free registration to ISWC

- IOS Press will also invite the winner to publish the dissertation as a book in the “Studies on the Semantic Web” series
SWSA Distinguished Dissertation Award

Winner:

Petar Ristoski (Universität Mannheim)

Exploiting Semantic Web Knowledge Graphs in Data Mining
**SWSA Ten-year Award**

- Recognizes the highest impact paper(s) from the ISWC proceedings ten years prior, i.e., 2009 (Washington D.C., USA)

- Winning paper(s) receive
  - a certificate for each author
  - an award of $1000
SWSA Ten-year Award

Winners:

Olaf Hartig, Christian Bizer, Johann-Christoph Freytag

Executing SPARQL Queries over the Web of Linked Data

Julius Volz, Christian Bizer, Martin Gaedke, Georgi Kobilarov

Discovering and Maintaining Links on the Web of Data
PROGRAM CHAIRS

Chiara Ghidini  
Program Co-Chair  
Fondazione Bruno Kessler (FBK)  
Trento, Italy

Olaf Hartig  
Program Co-Chair  
Linköping University  
Linköping, Sweden
Research Track: Stats

- 194 valid full paper submissions
Number of authors per country (with 10 or more authors)

- China: 125
- Germany: 90
- United States: 70
- United Kingdom: 50
- France: 40
- Italy: 30
- Australia: 20
- Brazil: 15
- Netherlands: 10
- Spain: 10
- Chile: 10
- Austria: 10
- Other: 75
Number of submissions per topic (with more than 10 submissions)

- Database, information retrieval, information extraction, natural language
- Search, query, integration, and analysis on the Semantic Web
- Knowledge graphs and deep semantics
- Machine learning and data mining methods for the Semantic Web
- Knowledge representation and reasoning on the Web
- Data mining and knowledge discovery in Linked data and ontologies
- Languages, tools, and methodologies for representing and managing
- Robust and scalable management of semantics and data on the Web and
- Question answering over Linked Data and ontologies
- Ontology-based data access and integration/exchange on the Web
- Ontology modularity, mapping, merging, and alignment for the Web
- Cleaning, quality assurance, and provenance of Semantic Web data,
- Ontology engineering and ontology patterns for the Web
Number of submissions per topic (with less than 5 submissions)

- Geospatial semantics and data on the Web
- Programming the Semantic Web
- Methods to investigate and catalogue semantic primitives used in ontology
- Data streams and the Internet of Things
- Crowdsourcing semantics; methods, dynamics, and challenges
- Trust, privacy, and security on the Semantic Web
- Semantic Web and Linked Data for cloud environments
- Semantic social network mining, analysis, representation, and management
- Supporting multi-linguality in the Semantic Web
- Processing and storage of semantic data on the blockchain
- Access control and privacy in semantic data
- Semantic technologies for mobile platforms
Research Track: Stats

• 194 valid full paper submissions
• Reviews
  ○ almost all submissions had 4 reviews, some even 5
  ○ 738 reviews overall

194 valid full paper submissions
738 reviews
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<tr>
<th></th>
<th>Name</th>
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<tr>
<td>1</td>
<td>Lora Aroyo</td>
<td>Google</td>
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<tr>
<td>2</td>
<td>Paul Buitelaar</td>
<td>Insight Centre for Data Analytics, National University of Ireland Galway</td>
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<td>3</td>
<td>Emanuele Della Valle</td>
<td>Politecnico di Milano</td>
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<td>4</td>
<td>Gianluca Demartini</td>
<td>The University of Queensland</td>
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<td>5</td>
<td>Paul Groth</td>
<td>University of Amsterdam</td>
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<td>6</td>
<td>Armin Haller</td>
<td>Australian National University</td>
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<td>Annika Hinze</td>
<td>University of Waikato</td>
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<td>Katja Hose</td>
<td>Aalborg University</td>
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<td>9</td>
<td>Andreas Hotho</td>
<td>University of Wuerzburg</td>
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<td>10</td>
<td>Wei Hu</td>
<td>Nanjing University</td>
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<td>11</td>
<td>Mustafa Jarrar</td>
<td>Birzeit University</td>
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<td>12</td>
<td>Sabrina Kirrane</td>
<td>WU Wien</td>
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<td>13</td>
<td>Markus Luczak-Roesch</td>
<td>Victoria University of Wellington</td>
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<td>14</td>
<td>David Martin</td>
<td>Samsung Research America</td>
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<td>15</td>
<td>Tommie Meyer</td>
<td>University of Cape Town &amp; CAIR</td>
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<td>16</td>
<td>Matteo Palmonari</td>
<td>University of Milano-Bicocca</td>
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<td>17</td>
<td>Jorge Pérez</td>
<td>Universidad de Chile</td>
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<td>Axel Polleres</td>
<td>WU Wien</td>
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<td>Achim Rettinger</td>
<td>Trier University</td>
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<td>Marco Rospocher</td>
<td>Università degli Studi di Verona</td>
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<td>21</td>
<td>Luciano Serafini</td>
<td>Fondazione Bruno Kessler</td>
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<td>22</td>
<td>Hideaki Takeda</td>
<td>National Institute of Informatics</td>
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<td>23</td>
<td>Valentina Tamma</td>
<td>University of Liverpool</td>
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<td>24</td>
<td>Kerry Taylor</td>
<td>Australian National University and University of Surrey</td>
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<td>25</td>
<td>Tania Tudorache</td>
<td>Stanford University</td>
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<tr>
<td>26</td>
<td>Maria Esther Vidal</td>
<td>Universidad Simon Bolivar</td>
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Research Track: Program Committee

INTERNATIONAL SEMANTIC WEB CONFERENCE 2019

1. Maribel Acosta
2. Harith Alan
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175. Maya Ramanath
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178. Blake Regalia
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181. Marion Rezk
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183. Mariano Rodríguez Muñoz
184. Dimitru Roman
185. Ana Roxin
186. Sebastian Rudolph
187. Anisa Rula
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189. Muhammad Saleem
190. Kai-Uwe Sattler
191. Simon Scerri
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233. Jacco van Ossenbruggen
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236. Serena Villata
237. Boris Villazon-Terrazas
238. Plek Vossen
239. Domagoj Vrgoce
240. Simon Walk
241. Kewen Wang
242. Xin Wang
243. Zhichun Wang
244. Grant Weddell
245. Gregory Todd Williams
246. Frank Wolter
247. Josiane Xavier Parreira
248. Guihui Xiao
249. Fouad Zablith
250. Ondřej Zamazal
251. Veruska Zamborlini
252. Amirapali Zaveri
253. Georg Zenz
254. Kalliope Zervou
255. Lei Zhang
256. Wei Emma Zhang
257. Xiaowang Zhang
258. Ziqi Zhang
259. Jun Zhao
260. Luihua Zhao
261. Antoine Zimmermann
262. Ahmad Zouaq
263. Michael Cochez
264. Simon Steyskal
265. Gaetano Rossiello
266. Maria Poveda-Villalón
267. Angelo Antonio Salatino
Winner: Katja Hose  
Aalborg University

Honorable mention: Matteo Palmonari  
University of Milano-Bicocca
Research Track: Best PC Member Award

Winners:  
Giuseppe Pirrò  
Sapienza University of Rome

Dagmar Gromann  
TU Dresden

Honorable mention:  
Eva Blomqvist  
Linköping University

Aidan Hogan  
Universidad de Chile

Peter Patel-Schneider  
Samsung Research America
Research Track: Stats

- 194 valid full paper submissions
- Reviews
  - almost all submissions had 4 reviews, some even 5
  - 738 reviews overall
- 42 papers were selected
- acceptance rate of 21.6%

194 valid full paper submissions
738 reviews
42 papers accepted
22% acceptance rate
Important reminder for Presenters

- See you session chair and the volunteers before your session

- 20 minutes slots (research, in-use, resource, journal)
  - 15 minutes for the presentation
  - 5 minutes for Q&A

- Keep to your time!
  People may want to switch between talks in parallel sessions

- Videolectures record the talks
  fill in their consent form before your session
In-Use Track: Best Reviewer Award

Winner: Matteo Palmonari
University of Milan-Bicocca

Honorable mention: Rafael S Gonçalves
Stanford University
Armin Haller
Australian National University
Vanessa Lopez
IBM Research Ireland
Matthäus Zloch
GESIS – Leibniz Institute for the Social Sciences
The Fellowship of the Chairs
Alejandra Gonzalez-Beltran, Science and Technology Facilities Council, UK
Michael Cochez, VU Amsterdam, Netherlands, Univ. Jyvaskyla, Finland
*Reproducibility Track Chairs*

Isabel Cruz, University of Illinois, Chicago, USA
Aidan Hogan, Universidad de Chile, Santiago, Chile
*In-Use Track Chairs*

Maria Maleshkova, University of Bonn, Germany
Vojtěch Svátek, University of Economics, Prague, Czech Republic
*Resource Track Chairs*

Anna Lisa Gentile, IBM Research, California, US
Christophe Gueret, Accenture Labs, Dublin, Ireland
*Industry Track Chairs*
Claudia d’Amato, University of Bari, Italy
Lalana Kagal, MIT, Cambridge, MA, USA
*Journal Track Chairs*

Sofia Pinto, Universidade de Lisboa, Portugal
武田 英明, Hideaki Takeda, National Institute of Informatics, Tokyo, Japan
*Workshops & Tutorials Chairs*

Mari Carmen Suárez-Figueroa, Universidad Politécnica de Madrid, Spain
程 龚, Gong Cheng, Nanjing University, China
*Posters & Demos Track Chairs*

Valentina Presutti, National Research Council, Rome, Italy
Gianluca Demartini, The University of Queensland, Brisbane, Australia
Axel Ngonga, Paderborn University, Germany
*Semantic Web Challenges Track Chairs*
乔淼, Miao Qiao, University of Auckland, New Zealand
Mauro Dragoni, Fondazione Bruno Kessler, Trento, Italy
*Doctoral Consortium Chairs*

Oshani Seneviratne, Rensselaer Polytechnic Institute, Troy, US
岑超榮, Bruce, Chiu-Wing Sham, The University of Auckland, New Zealand
*Students Coordination Chairs*

Irene Celino, Cefriel, Milano, Italy
Armin Haller, Australian National University, Canberra, Australia
*Minute Madness Chairs*

Maria Keet, University of Cape Town, South Africa
Abraham Bernstein, University of Zürich, Switzerland
*Outrageous Ideas track Chairs*
宋劼, Jie Song, Memect Technology, Beijing, China
Maxime Lefrançois, IMT MINES, Saint-Étienne, France
Proceedings Chairs

Maribel Acosta, Karlsruhe Institute of Technology, Germany
Andrea Giovanni Nuzzolese, ISTC-CNR, Rome, Italy
Metadata Chairs

Valentina Ivanova, RISE Research Institutes, Linköping, Sweden
فؤاد زبلط, Fouad Zablith, American University of Beirut, Lebanon
นчас ชลดารงค์กิล, Nacha Chondamrongkul, The University of Auckland, New Zealand
Publicity Chairs & Web Chair

彭麗姬, Lai Kei Pang, University of Auckland, New Zealand
Cédric Pruski, Luxembourg Institute of Science and Technology
Oktie Hassanzadeh, IBM Research, New York, US
Sponsorship Chairs
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<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Overview</th>
<th>Location</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Monday</td>
<td>9:00</td>
<td>Opening</td>
<td>Room: 010</td>
<td>Logo: B. van Harmelen</td>
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<td>Keynote - Doug Webb</td>
<td>Room: 011</td>
<td>Chair: Chark</td>
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<td>Panel after keynote: “How much semantics goes how long a way”</td>
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<td>Chair: Chark</td>
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<td>Keynote - Melanie Johnston-Hollif</td>
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<td>13:00-15:30</td>
<td>Break</td>
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<td>16:00-18:00</td>
<td>Minute madness (1/2)</td>
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<td>Sunday</td>
<td>09:00-10:00</td>
<td>Tutorials and workshops</td>
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<td>Break</td>
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**Welcome Reception with Posters and Demos**
Room: OGGB8 foyer
# OVERVIEW

## INTERNATIONAL SEMANTIC WEB CONFERENCE 2019

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session Details</th>
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<tr>
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<td></td>
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<td>Keynote - Doug Webby</td>
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<td>Panel after keynote: &quot;How much semantics goes how long a way&quot;</td>
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<td>11:00</td>
<td>Lunch with reserved tables for DC Lunch</td>
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<td>13:00</td>
<td>Lunch with reserved tables for Lunch</td>
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<td>Monday</td>
<td>09:00</td>
<td>Keynote - Melanie Johnston-Hollitt</td>
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<td>10:00</td>
<td>Lunch with reserved tables for DC Lunch</td>
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<tr>
<td>Tuesday</td>
<td>09:00</td>
<td>Panel after keynote: &quot;How much semantics goes how long a way&quot;</td>
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<td>10:00</td>
<td>DC Dinner (booked for 18:00)</td>
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</table>

*Please note that the schedule is subject to change.*

---

**Welcome Reception with Posters and Demos**

**DC Dinner (booked for 18:00)**

*My City - Fortuna Restaurant*
# OVERVIEW

## INTERNATIONAL SEMANTIC WEB CONFERENCE 2019

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**BREAK**

**LUNCH**

**Welcome Reception with Posters and Demos**

**DC Dinner (booked for 19:45)**

**Keynote - Dougal Wall**
Room: O08
Chair: Chiusa
Panel after keynote: “How much semantics goes how long a way”
Room: U08
Chair: Cz Sch"
Spotlight papers

including best paper nominees and indicated in the program by... Spotlight
Reproduced papers

research papers that completed the reproducibility track and indicated in the program by... Reproduced
VOTE for your favorite POSTER and DEMO at: sli.do

Code for best poster vote: iswc19poster
Code for best demo vote: iswc19demo

Vote will be closed at 23:59 local time, Oct 29.
KEYNOTES

Dougal Watt
*The business technology disruptor of the future*

Jérôme Euzenat
*For knowledge*

Melanie Johnston-Hollitt
*Extracting Knowledge from the Data Deluge to Reveal the Mysteries of the Universe*

Panel
*How much semantics goes how long a way*
Semantics
The business technology disruptor of the future
The Parable of the Table
The Parable of the Table
Ecology of Semantic computing

- User interface and applications
- Trust
- Proof
- Unifying Logic
- Querying: SPARQL
- Ontologies: OWL
- Rules: RIF/SWRL
- Taxonomies: RDFS
- Data interchange: RDF
- Syntax: XML
- Identifiers: URI
- Character Set: UNICODE

Ecology of Business computing

- Huge number of frameworks etc
- No standard trust model
- No standard proof model
- No standard
- Plethora of query languages
- No standard modelling language
- Many incompatible rules languages
- No standard taxonomic representational languages - XML common
- No standard data interchange languages
- XML
- No concept of URI
- Unicode Pervasive
Process-centric thinking
1950’s until 1990’s

Application Centric Thinking
1950’s until now

what does this system need to do?

automate these manual work flow tasks
Information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences.

This sometimes involves those who have a stake in, or a right to that information. Management means the organization of and control over the structure, processing and delivery of information.

ISO 42010: Information (in information processing)

Knowledge concerning objects, such as facts, events, things, processes, or ideas, including concepts, that within a certain context has a particular meaning.
<table>
<thead>
<tr>
<th></th>
<th>Strategy</th>
<th>Process</th>
<th>Organisation</th>
<th>Technology</th>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure Development</td>
<td>![Image]</td>
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<td>![Image]</td>
</tr>
</tbody>
</table>

The diagram shows a hierarchical structure with the following nodes:

- **Preliminary**
- **A. Architecture Vision**
- **B. Business Architecture**
- **C. Information Systems Architectures**
- **D. Technology Architecture**
- **E. Opportunities and Solutions**
- **G. Implementation Governance**
- **H. Architecture Change Management**

The diagram is credited to The Open Group.
Pre-literate
Oral information transmission

Literate
Invention of alphabets and writing

Printed Word
Creation of moveable type printing press

Modern Computing
Invention of computing and data storage

WWW
Hypertext based online publishing

Context
Information Abundance; Decisioning; Shared meaning
Application Centric Thinking

- Ongoing high project failure rates
- Many epic failures e.g. Affordable Care solutions in US, ERP payroll solutions in AU, health projects in the UK...
- High costs of change
- Over complex solutions

The Modern Resolution defines a project as satisfactorily completed if it is On Time, On Budget and within the scope of the project. The data below is from the PMI database. Please note this definition is different to that used in the previous Chaos Report. Modern Resolution definition is the 'end-users' perspective.
Application Centric Thinking

Relational DB

Problems
- SQL interoperability
- Costly
- Scaling hits a wall
- Data silos
- Limited semantics
- Data complexity causes data proliferation & code proliferation

Enterprise Resource Planning

Problems
- Ever increasing complexity and feature creep
- Costly
- Massive underlying databases (>10,000 tables)
- Implementation failures
- Integration complexity

Enterprise Data Modeling

Problems
- Skills mismatch
- Long implementation timeframes
- ‘Ivory tower’ syndrome
- Round trip modelling - Conceptual/Logical/Physical
- Massively complex models

SOA

Problems
- Process centric
- Complex technology stacks
- Shared message culture
- ESB’s were very complex
- Still lots of point to point integration
- Information was missing!!!

Data Warehousing

Problems
- ETL slow
- Data completeness
- Resource intensive
- Complexity
- Schema agreement

Application Centric Thinking

Application Centric Thinking
The Parable of the Bank

Traditional Approach
Application-centric
- Branches
- Tellers
- Cash

Revolutionary Approach
Knowledge-centric
- Customers
- Accounts
- Interest Rates
- Balances
- Credit

Banking Example

1968
- Customers
- Accounts
- Interest Rates
- Balances
- Credit

1997
- Branches
- Tellers
- Cash
- Desktop Computing
- ATM
- Electronic Transfers

1998
- Branches
- Tellers
- Cash
- Desktop Computing
- ATM
- Electronic Transfers

2018
- Branches
- Tellers
- Cash
- Desktop Computing
- ATM
- Electronic Transfers

No change

Mobile Apps
Block Chain
Business Models

Key Partners | Key Activities | Value Propositions | Customer Relationships | Customer Segments

Key Resources | | |

Cost Structure | Revenue Streams |
<table>
<thead>
<tr>
<th>RESOURCES</th>
<th>RAW MATERIAL</th>
<th>INGREDIENT</th>
<th>PRODUCT</th>
<th>SYSTEM</th>
<th>SOLUTION</th>
<th>CONSUMER</th>
<th>OPERATING UNIT</th>
<th>COMMUNITY</th>
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<tr>
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<td>Flour</td>
<td>Bread</td>
<td>Sandwich</td>
<td>Meal</td>
<td>Family</td>
<td>Club</td>
<td>Govt</td>
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Flooring Retail / Wholesale business

**Before**

Small data domain (POS)
Transactional - sell, ship, install, forget
Many manual processes
Reactive, based on largest application (ERP)

**After**

Consumer experience paramount
Automation everywhere
Greatly increased data domain - CRM, Social, Media, in-home Installer App

Transform
Business Need

- Agility
- Low Marginal Cost Operation
- Persistent & Valuable Asset Base
Technology Need

Doing

Analysing

Knowing
Business Technology Market Fit

- Consumer
- SME
- Enterprise

Browse Our Software Categories
Find your software in one of our 700+ categories. From Accounting to Yoga Studio Management, we cover it all!
Traditional IT solutions are complex, expensive and inflexible. Most businesses don’t even know where to start.

<table>
<thead>
<tr>
<th>Integration</th>
<th>Intelligence</th>
<th>Implementation</th>
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</thead>
<tbody>
<tr>
<td>Bespoke integrations</td>
<td>Modelling data</td>
<td>Lack of resources</td>
</tr>
<tr>
<td>Middleware</td>
<td>Unifying data</td>
<td>Lack of expertise</td>
</tr>
<tr>
<td>Expensive vendors</td>
<td>Warehousing data</td>
<td>Don’t know where to start or who to trust</td>
</tr>
<tr>
<td>Complex platforms</td>
<td>Transforming data</td>
<td>Multiple vendors</td>
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<tr>
<td>Constant maintenance</td>
<td>Finding insights</td>
<td>Incompatible software</td>
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<tr>
<td>22% of global IT spend</td>
<td>Confusing products</td>
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<td></td>
<td>Lack of capability</td>
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<td>80% of projects fail</td>
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</tbody>
</table>
Data is locked up in our applications and is hard to extract for use across the business.

Application-sourced data does not play nicely across the enterprise.

Data relationships are not explicit and context is missing so we rely on expensive and complex manual or code fixes to solve problems.

The answer is in the knowledge.
Knowledge brings business and technology together

- Business
- IT
- Data

- UX
- Agility
- Automation

- Integration
- Intelligence
- Implementation

- Unification
- Quality
- Meaning
Explicit Knowledge =

Coded
+ Accessible
+ Maintainable

- Trust
- Proof
- Unifying Logic

Querying: SPARQL
Ontologies: OWL
Rules: RIF/SWRL
Taxonomies: RDFS
Data interchange: RDF
Syntax: XML

Identifiers: URI
Character Set: UNICODE
Build Business Model becomes schema. Business Model drives “build and operate”.

Legacy data ingestion + transformation
Application & Service Integration
Transactional and analytics use cases

Master data management
Information governance
Security and platform management
Asset life cycle management
Future Research & Development Directions

- Entity resolution
- Very large scale ontology / instance data visualisation
- Declarative UI generation from Shapes
- Low / no code semantic model driven development
- IoT integration with semantics
- Standardised transaction support for SPARQL
- Horizontal scalability in triple stores
- Performant real-time reasoning
- Effective graph partitioning for multi tenancy


http://www.datacentricmanifesto.org
Dougal Watt
CTO & Co-Founder
Meaningful Technology

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dougal@meaningful.co.nz