Ramping Up Production

Jim Wilson • OAGi CEO and IOF Governance Board Chair
Webinar • 2023-09-06

About this webinar

- Questions?
  - Post them in your control panel.
  - IOF leadership will respond by email.
  - IOF leadership will create an FAQ page for appropriate questions.

- Comments?
  - We welcome them.
  - Post them in your control panel.

- This presentation material
  - A link to a PDF expression will be sent to attendees on Friday

About OAGi

- US-based non-profit industry association

- Founded in 1995

- Funded by members

- OAGi's **mission** is to continuously improve interoperability through business process models, data standards, documentation, tools, best practices, and training.

- **Key Resources:**
    - **connectSpec (OAGIS):** a standard used by a large number of global companies as an enterprise canonical model and B2B model
    - **connectCenter (Score):** An OAGi tool used to manage connectSpec and used by members to create connectSpec-based JSON schema, XML schema, and OAS-compliant API specs. NIST and OAGi jointly developed connectCenter.

Non-Profit Standards Organization

28 years

About IOF

- *IOF* is an initialism for *Industrial Ontologies Foundry*.

- IOF is an OAGi organizational unit established in 2021 from an ad-hoc organization formed in 2017.

- IOF's **mission** is to create a set of core and open reference ontologies that spans the entire domain of digital manufacturing. The IOF will work with industry, government, academic and standards organizations to advance data interoperability in their respective fields.

- **Key Resources:**
  - **Core ontology:** The ontology on which the domain ontologies are based
  - **Domain ontologies:** One ontology each specified for a domain (e.g., supply chain, maintenance) and based on the core ontology

OAGi Organizational Unit

6.5 years

Core Ontology

Domain Ontologies

IOF ontology work areas

- Ontology-development architecture, processes, and tools
- Core ontology
- Supply chain ontology
- Maintenance ontology
- Product service system ontology

- Production planning and scheduling ontology
- MT Connect ontology
- Systems engineering ontology
- Material science ontology
- Zero-defect manufacturing ontology (on hold)

IOF Members

Adapt Ready

Airbus

Amazon

ATB - Institut für Angewandte Systemtechnik Bremen GmbH

Beijing Institute of Technology

Beijing Zhangke Fengchao Ltd

BIBA GmbH - Bremer Institut fuer Produktion und Logistik

Bundesanstalt für Materialforschung und -prüfung (BAM)

Capgemini

China council of systems engineering

Cranfield University

Crown Point Technologies, LLC

Data and AI, Grundfos

Department of management, information and production engineering - University of Bergamo

DNV

Engineering Semantics, LLC

ENIT

EPFL

EPFL, SCI-STI-DK, ICT for Sustainable Manufacturing

Ericsson / DataEnlight

Federal University of Rio Grande do Sul (UFRGS)

Fraunhofer IAO

Fraunhofer Institute for Machine Tools and Forming Technology IWU

Fraunhofer MATERIALS

Gesellschaft für Technische Kommunikation – tekom Deutschland e.V.

Hypercube Limited

INP-ENIT

IRT Railenium

ISADEUS

Knar Global LLC

Lockheed Martin

Luleå University of Technology

M&M Group

ManTech

MRIIOT

National Center for Ontological Research

National Center of Ontological Research - Brazilian Chapter

National Technical University of Athens

NIST

Novitech

Ohio University

Parabole AI

Perpetual Labs Ltd

Purdue University

Shanghai Jiao Tong University

Stratasys Inc.

Texas State University

The Open University

Thematix Partners LLC

Troven

Tsinghua University

Universidad Politecnica de Madrid

Universidad Politècnica de València

University at Buffalo

University of Arizona

University of Electronic Science and Technology of China

University of Oslo

University of South Australia

University of Western Australia

University Selamat Sri

William & Valerie Sobel LLC

IOF Governance Board

- Serm Kulvatunyou • NIST, U.S. Department of Commerce
- Barry Smith • University of Buffalo
- Todd Schneider • Engineering Semantics
- Rebeca Arista • Airbus
- Dimitris Kiritsis • EPFL
- Jim Wilson • OAGi
- Chris Will • retired / invited guest

IOF current state

Good

- IOF name recognition

- Expert participation

- IOF Core Ontology

- Domain ontologies

- Ontology development, maintenance and release process

- Non-financial resources

Needs improvement

- Administrative support
  - New member onboarding
  - New expert onboarding

- Executive leadership

- Marketing & communications

- Some domains not active

- Funding

Desired IOF future state

- IOF will be well funded by industry

- IOF will have a person serving as executive director

- IOF will have a person serving as ontology engineer

- IOF will have a person serving as administrative assistant

- Members and their experts will be onboarded quickly and effectively, enabling their timely contribution to IOF work

Desired future state

- IOF will be well known for producing high-quality ontologies

- IOF work will be well represented in academia and research

- IOF will be well represented in select international conferences and workshops

- IOF ontologies will be implemented in industry and case studies will be documented that showcase the resulting benefits

- IOF will collaborate with other organizations

What needs funding?

- Executive Director

- Ontology Engineer

- Infrastructure
  - Ontology development, maintenance, testing, and release infrastructure <u>hosting</u>
  - Ontology development, maintenance, testing, and release infrastructure <u>support</u> (i.e., people)

- Administrative Assistant

- Staff travel

- Other
  - Website hosting
  - Website content management
  - Meeting services (e.g., Zoom)
  - Mail list services
  - Press release fees
  - And so on…

Membership

- Note: This is not new!

- Types
  - Business
  - Government agency
  - Research or academic institution
  - Non-profit organization
  - Industry expert or student

- Business tiers
  - 0 to 7
  - Determined by annual revenue

- Involvement levels
  - Governing
  - Contributing

- Fees
  - Dependent on type, tier (for business), and involvement level

- Membership period: Annual

- Payment options
  - Annually
  - Monthly

Membership Types and Levels

Organization/Individual Description	Governing	Contributing	Industry Expert	Student
Business	✅	✅		
Government institution	✅	✅		
Research or academic institution	✅	✅		
Non-profit organization		✅		
Industry expert, not employed by an organization*			✅	
Industry expert, employed by an organization*			GB discretion	
Student*				✅

Member Privileges

Privilege	Governing	Contributing	Industry Expert	Student
One voting seat on the Governance Board (GB). A person may serve on the GB and TOB simultaneously.	✓			
Eligible to be selected to serve as GB or TOB board chairperson (not both simultaneously).	✓			
Special recognition on IOF website (logo)	✓			
Participate in TOB meetings	✓	✓	✓	TOB chair's discretion
Serve on the GB in a non-voting advisory role if invited by the GB	N/A	✓		
Permission to attend various IOF events such as conferences, face-to-face working meetings, and workshops	✓	✓	✓	✓
Receive emails from the IOF general mailing list	✓	✓	✓	✓
Download conference and workshop presentation content (subject to presenter making such material available to the IOF)	✓	✓	✓	✓
Participate in IOF working group conference calls.	✓	✓	✓	✓
Recognized on IOF website (organization name, participant picture & biography, if desired)	✓	✓		
Participate in working groups	✓	✓	✓	WG chair's discretion
Edit access to applicable working group content	✓	✓	✓	✓
Eligible to chair WG	✓	✓	✓	

Membership Fees

Amounts in USD	Annual Revenue	Annual / Monthly Member Fees	
		Governing	Contributing
Business tier 0	10,000,000,000	30,000 / 2,500	15,000 / 1,250
Business tier 1	1,000,000,000	20,000 / 1,667	10,000 / 834
Business tier 2	250,000,000	15,000 / 1,250	7,500 / 625
Business tier 3	5,000,000	10,000 / 834	5,000 / 417
Business tier 4	500,000	10,000 / 834	3,750 / 313
Business tier 5	250,000	10,000 / 834	2,500 / 209
Business tier 6	100,000	10,000 / 834	1,250 / 105
Business tier 7	0	10,000 / 834	750 / 63
Government agency	N/A	10,000 / 834	3,000 / 250
Non-profit (other than research institute)	N/A	N/A	500 / 42
Research or academic institution	N/A	10,000 / 834	500 / 42

Miscellaneous topics

- **Information sheet**: Over the next few weeks, IOF leaders will compose a two-page IOF information sheet.

- **Website**:
  - By 2023-10-01, https://IndustrialOntologies.org will point to https://OAGi.org.
  - Thanks to Melinda Hodkiewicz and the University of Western Australia for covering hosting costs and Caitlin Woods for developing and maintaining the IOF website.

- **Biopharmaceutical industry ontologies coming soon!**

Next steps

- **September**: Existing member renew membership according to the new membership model and new organizations apply for membership.

- **1 October**: Commence operations under paid membership model

Thank you!