

CO-LaN Activities Report 2020

**AGM of CO-LaN 2020
Online Meeting
October 15, 2020**

CO-LaN Activities Report 2019/2020

❑ CO-LaN Overview

- ⇒ Current members and management board
- ⇒ Contracts and software licences

❑ Usage and awareness

- ⇒ Website, forum, publications, training

❑ Special Interest Groups: Summary Reports

❑ Strategic activities

- ⇒ Consultancy Service Scheme
- ⇒ Intellectual Property and Licencing
- ⇒ CAPE-OPEN middleware (COBIA)
- ⇒ New CAPE-OPEN version 1.2
- ⇒ CAPE-OPEN Certification

CO-LaN Overview

Membership

❑ As of September 2020 more than one hundred Members

- ⇒ 6 Full Members
- ⇒ 80 Corporate Associate Members
 - 50 Suppliers and/or consultants
 - 27 Academics
 - 3 Public & Federal Agencies
- ⇒ 22 Individual Associate Members

❑ New Associate Member 2019/20

- ⇒ Cape-Town University (Klaus Moller)

❑ Members leaving

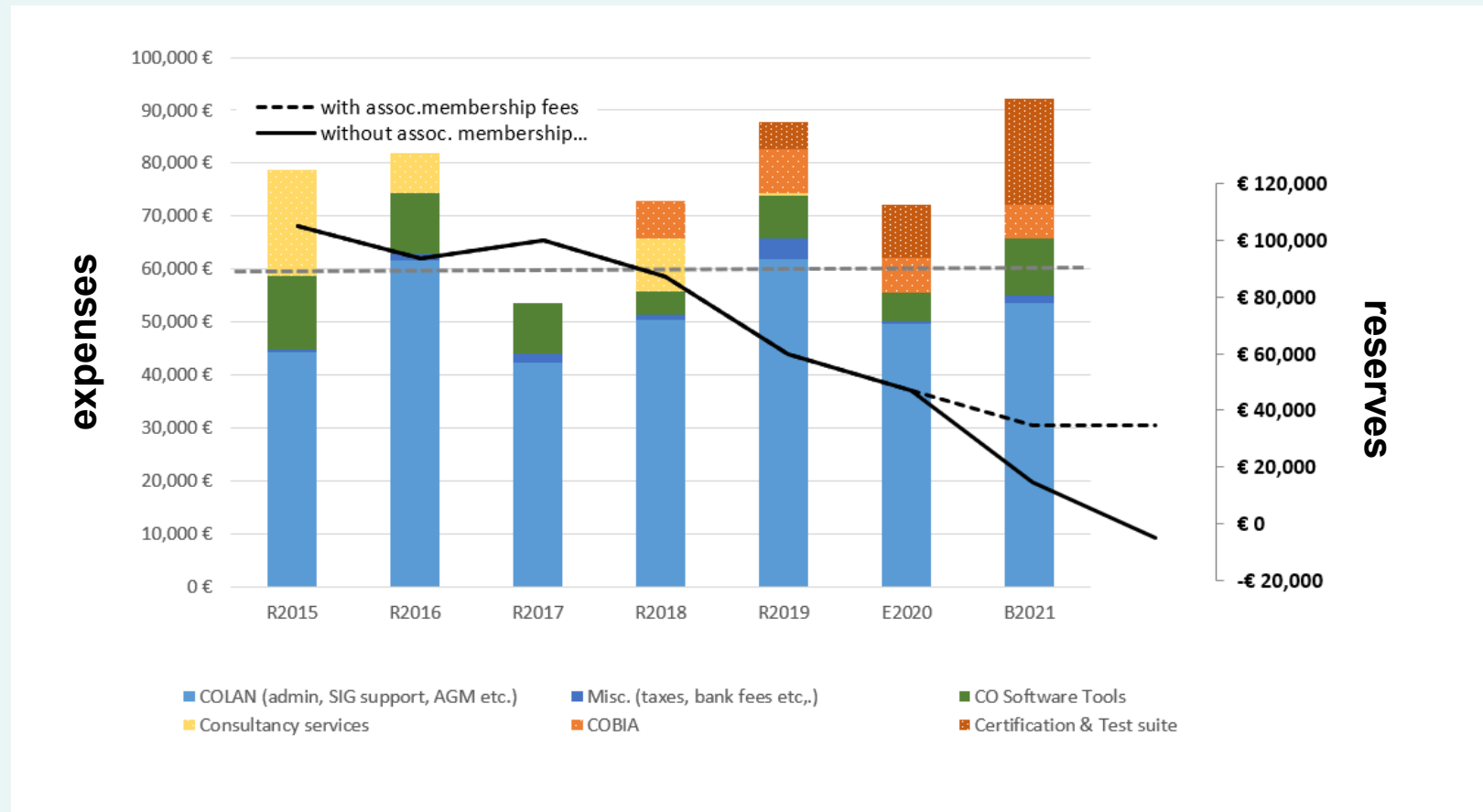
- ⇒ COSMOLOGIC, RWTH-I5 have left

It is vital that each Member assists CO-LaN in its missions and contributes to its life

CO-LaN Funding Model

Membership

□ Background to introduction of Associate Member fees



Plan is to operate without loss by 2022

CO-LaN Funding Model

New Membership fees

- ❑ The CO-LaN management board will introduce associate membership fees ***for the next lifetime period of CO-LaN (2021 – 2026)*** to sustain work on key current developments
 - COBIA Phase III
 - Test suite and Certification
 - CTO succession plan

- ❑ All Members continue to have access to all CO-LaN resources and source code

- ❑ New licence scheme introduces restrictions for non-members

CO-LaN Funding Model

Annual Membership Fees:

- ❑ Full Members: 10k Euros
- ❑ Commercial providers of CAPE software
 - Group A (> 20 employees): 2000 Euros
 - Group B (\leq 20 employees): 100 Euros

Group B Members must pay their fees for the current calendar year and for subsequent calendar year(s) up to the limit of the duration of the Society
Upon resigning from the Society, membership fees paid in advance by any Member are refunded (for future full calendar years).

- ❑ Remaining Associate Members are free of charge
- ❑ First Membership fees in 2021
- ❑ New membership fees have been incorporated into the CO-LaN bylaws - to be voted on at 2020 AGM

CO-LaN Funding Model

New Membership fees - Membership feedback

- ❑ Positive response to proposal at 2019 AGM

- ❑ Subsequent RFC: 16 member comments received
 - ⇒ 15 (generally) positive responses with comments
 - ⇒ 1 negative response (“no business case for this”)

- ❑ Key messages
 - ⇒ An expectation that certification, improved component testing, is included in membership
 - ⇒ Some concerns over the fee structure
 - Transition between less/greater than 20 employees
 - Should be higher fees for large software providers

CO-LaN Membership

- ❑ **CO-LaN management board wish to attract new Members with the planned developments**
 - ⇒ Evolution of CAPE-OPEN standard towards version 2.0
 - ⇒ COBIA
 - Phase III (multiple languages and platforms)
 - Phase IV (maintenance)
 - ⇒ Certification process
 - ⇒ Self-test software suite

- ❑ Members unable to accept the new bylaws should use the resignation form available on the CO-LaN website

- ❑ CO-LaN strongly values, and has derived great benefit from, the membership to date

CO-LaN Overview

Management Board

- ❑ **Responsible for day to day running of CO-LaN**
- ❑ **Composed only of representatives of Full Members**
- ❑ **Management Board (current)**
 - ⇒ Shell Global Solutions Richard Baur (President)
 - ⇒ Air Liquide Philippe Arpentinier (Treasurer)
 - ⇒ BP Kathryn Yearsley (Secretary)
 - ⇒ BASF Norbert Asprion
 - ⇒ Dow Michael Berger
 - ⇒ Linde Oliver Koch
- ❑ **Monthly conference calls of 1½ h, plus twice yearly physical meetings and additional meetings on specific topics**
 - ⇒ Only virtual meetings used for 2020

CO-LaN Overview

Daily Operations: Annual contracts awarded by CO-LaN

❑ Michel Pons Technologie, CTO

Communication, Website, Forum, Newsletter, SIG management, interoperability testing etc.

❑ Michael Halloran

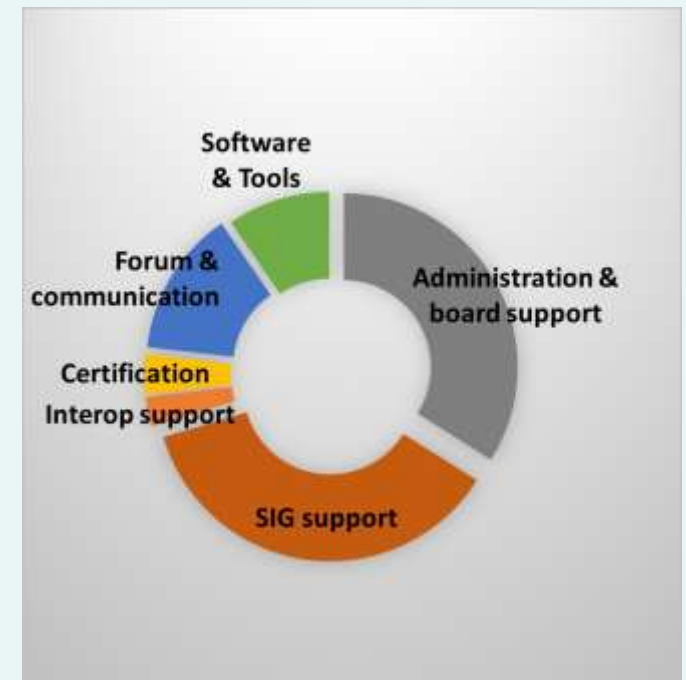
COLTT & Type Libraries/PIA

❑ Stenhouse Simulations Ltd

Secretarial support

❑ MRW Consulting

Project lead for certification & testing suite



CO-LaN Overview

Project related contracts awarded by CO-LaN providing software services to CO-LaN:

AmsterChem

COBIA Phase II, software services, test-suite design & development, consultancy services

Loïc d'Anterroches

Software services & test-suite development

Marcus Bruno Fernandes Silva

Software services & test-suite development

These contracts are managed via dedicated work orders

CO-LaN Overview

Software available to CO-LaN

All major vendors have continued to provide their software to CO-LaN for interoperability testing & demonstration

Results of the testing are kept confidential to the vendor, the CO-LaN CTO and the Management Board

CAPE-OPEN usage and awareness

□ Numerous articles refer to, or use CAPE-OPEN, e.g.

- E.B. Melo, E.T. Oliveira and T.D. Martins, neural network correlation for molar density and specific heat of water: Predictions at pressures up to 100 MPa, Fluid Phase Equilibria 506 (2020)
- Olmedo Gómez, Castaños Calleja, M., Aldea Fernández, L., Kiedrzyńska, A. Lewtak, R., Application of the CFD simulation to the evaluation of natural gas replacement by syngas in burners of the ceramic sector, Energy 185 (2019) 15-27
- Poort, J.P., Ramdin, M., van Kranendonk, J., Vlugt, T.J.H., Solving vapor-liquid flash problems using artificial neural networks, Fluid Phase Equilibria 490 (2019) 39-47

... see <http://www.colan.org/category/techpapers/>

**Please make CO-LaN aware of publications
& mention CAPE-OPEN technology when using it.**

CAPE-OPEN usage and awareness

CO-LaN Repositories

□ Used for:

- ⇒ Storing working documents of SIGs & MB
- ⇒ Delivering software and documentation
 - Tools such as COLTT or TLB/PIA installers
 - Project deliverables: COBIA
 - Examples, complete documentation sets
- ⇒ Managing software development
 - COLTT, COBIA, TLB/PIA installers



The screenshot shows the CO-LaN website interface. At the top, there is a logo for CO-LaN. Below the logo, a message states: "This set of repositories is dedicated to the CAPE-OPEN industry standard for process simulated user of any of the public projects contained in this set." Underneath, there is a section titled "Projects (4)" with a filter input field. The list includes:

- CAPE-OPEN IDL**
coldi / svn / 94.2 MB / Last Commit: 05 Jul 2016 21:35
Project related to managing and delivering the CAPE-OPEN IDL and Type Libraries
- CAPE-OPEN Logging and Testing Tool**
coltt / svn / 61.4 MB / Last Commit: 18 Jul 2016 22:35
Project to maintain and distribute the CAPE-OPEN Logging and Testing Tool.
- CAPE-OPEN Tester Suite**
cotester / svn / 8.6 MB / Last Commit: 14 Aug 2016 20:49
The CAPE-OPEN Tester Suite permits the test of COM software components implementing interface specifications of the CAPE-OPEN standard.
- Examples**
examples / svn / 23.1 MB / Last Commit: 08 Mar 2016 21:20
Project for the source and distribution of CAPE-OPEN example software developed by CO-LaN.

Members, please **check you have access to the repositories**



The screenshot shows the navigation bar of the CO-LaN website. It features the CO-LaN logo on the left. To the right of the logo are two buttons: "MEMBER LOGIN" and "FORUM". Further right is a search input field with a search icon and an RSS feed icon. Below the navigation bar, there is a horizontal menu with the following items: HOME | CAPE-OPEN STANDARD | PARTICIPATE | ACTIVITIES | RESOURCES | NEWS & EVENTS | ABOUT US. An orange arrow points from the text above to the "MEMBER LOGIN" button.

CAPE-OPEN usage and awareness

☐ CO-LaN Website

- ⇒ HTTPS certificate obtained from GeoTrust
- ⇒ Over 1300 Posts
- ⇒ Subscribe via RSS
- ⇒ Sign up for the CAPE-OPEN Newsletter for news and updates once per month
- ⇒ Get continuous updates on SIG activities
- ⇒ Check posts/entries about your PMEs and PMCs and contact CTO for up-dates

☐ CAPE-OPEN Wikipedia

















- ⇒ Last updates May 2020



CAPE-OPEN usage and awareness

CAPE-OPEN Forum

- ❑ **Objective: To allow CAPE-OPEN experts to answer queries**
 - ⇒ Use of COCO, development of PMCs such as Unit Operations and Property Packages.
 - ⇒ Target audience: mainly developers
 - ⇒ In active use for support queries
 - Number of users: 254 (201 last October)
 - Number of topics: 423 (363)
 - Number of posts: 2137 (1858), approx. one post per business day

GENERAL		TOPICS	POSTS	LAST POST
 Howto BEST WISHES FOR 2020!	7	12	by colancto  12 June 2018, 17:20	
FORUM		TOPICS	POSTS	LAST POST
 Process Modelling Components Discusses use of CAPE-OPEN compliant Process Modeling Components Moderator: Jasper	56	257	by Jasper  07 October 2020, 13:05	
 Process Modelling Environments Discusses use of CAPE-OPEN compliant Process Modeling Environments	291	1688	by Stephan  21 September 2020, 07:58	
 Implementation and development	19	102	by Jasper  21 July 2018, 16:40	
 CAPE-OPEN Interface specifications	5	19	by Ralf  12 August 2020, 12:54	
 Activities of Special Interest Groups Contains discussion threads managed within each Special Interest Group at CO-LaN	24	29	by colancto  12 June 2018, 08:00	
 Dissemination actions Discusses opportunities to communicate about use and implementation of CAPE-OPEN interfaces in PHCs and PHEs Moderator: Jasper	16	18	by colancto  07 January 2020, 09:35	
 News CAPE-OPEN related news	2	9	by Jasper  28 September 2017, 07:21	

Special Interest Groups (SIGs)

Overview

- ❑ **Responsible for maintenance and development of the CAPE-OPEN interface standards**
- ❑ **Representatives of both Full and Associate Members**
 - ⇒ Interoperability
 - Leader: Malcolm Woodman
 - ⇒ Methods & Tools
 - Leader: Bill Barrett (USA EPA)
 - ⇒ Thermodynamics
 - Leader: Sergej Blagov (BASF), Jasper van Baten (AmsterCHEM)
 - ⇒ Unit
 - Leader: Krishna Murthy Penukonda (AVEVA)

Special Interest Groups (SIGs)

Overview (continued)

Involvement in SIG meetings represents:

- ⇒ Thermo SIG: 8 man-hours per month
- ⇒ Unit SIG: ½ man-hour per month (limited progress since Q2)
- ⇒ Methods & Tools SIG: 6 man-hours per month
- ⇒ Interoperability SIG: 1 man-hour per month

Plus whatever is done outside meetings...

Tendency is to do more outside online meetings

Thermo SIG progress report

Activities 2019-2020

- RFC on dielectric constant/refractive index
- Chemical Reactions interface specification v1.1
 - ⇒ Use Cases revised / completed
 - ⇒ Ready for RFC w/o integration of Manager Common Interface

Outlook 2020-2021

- Respond to RFC, Chemical Reactions interface specification
- Develop Manager Common interface
- Documentation of modifications incorporated in CAPE-OPEN 1.2 (COBIA)

UNIT SIG progress report

- **Update on Petroleum Fractions specification**

RFC ready to be issued (minor textual edits being made).

Special Interest Groups – Methods and Tools

Activities 2019/2020

- Advised MB about licensing
- Released COBIA Runtime and SDK (Phase II)
- Designed COM to COBIA transitioning of persisted objects
- With Interop SIG: proposed versioning scheme
- Progressed on design of new interface specifications

Activities 2020/2021

- Scoping of COBIA Phase III
- Launching of COBIA Phase III?
- Delivering of new textual interface specifications

Special Interest Groups - Interoperability

2019-2020 Activities

Software development services secured

- ⇒ 1st work order successfully executed: knowledge transfer to contractors

TLB/PIA

- ⇒ Polished process of creating CAPE-OPEN TLB/PIA
- ⇒ Custom data and flowsheet monitoring included
- ⇒ Moved to Visual Studio 2019

COLTT

- ⇒ Moved to Visual Studio 2019
- ⇒ Upgrade to the 3rd party logging tool used by COLTT

2020-2021 Activities

Software development services to be continued resulting in:

- ⇒ TLB/PIA 1.1.1 release: flowsheet monitoring and custom data included
- ⇒ COLTT 2.5 release
 - logging on energy/info streams and ports, flowsheet monitoring

Strategic Activities

Consultancy Service Scheme

- ❑ **AspenTech consultancy delivered December 2019;**
 - ❑ Reviewing and resolving reported defects

- ❑ **Open consultancy schemes promoting COBIA:**
 - ❑ **KBC:** Wrapping of Multiflash as a CAPE-OPEN thermodynamic server using COBIA
 - ❑ **HTRI:** Wrapping of Xfh Ultra (detailed fired heater simulation) as a CAPE-OPEN Unit Operation using COBIA

- ❑ **Scheme on hold currently due to budget restrictions - no new projects sanctioned in 2020**

Strategic Activities

Intellectual Property Policy

❑ Purpose:

To specify and protect the interests of CO-LaN's intellectual property rights & refine the licensing scheme

- ❑ Textual specifications remain public.
- ❑ Policy ensures specifications are not modified
- ❑ Only CO-LaN members will have full access to all CO-LAN resources
- ❑ Applies to new software implementations
 - Does not apply retroactively

❑ **New licencing scheme explicitly allows the commercial use of CAPE-OPEN implementations**

⇒ No restrictions to implementation.

Copy of policy available on [CO-LaN website](http://www.colan.org)

Strategic Activities

CAPE-OPEN Middleware – COBIA

❑ COBIA Phase II completed

- ⇒ KBC & HTRI have successfully implemented their software with COBIA interfaces
 - Some bugs and corrections fixed as part of this work

❑ COBIA runtime and software development kit distribution packages created

- ⇒ Publicly available
- ⇒ Usable for commercial software implementations
- ⇒ COBIA symbol server available for developers

❑ COBIA Phase III planned to start 2021

Strategic Activities

CAPE-OPEN Certification

- ❑ **Malcolm Woodman has assembled the development team for the test-suite**
 - ⇒ Jasper Van Baten
 - ⇒ Loic d'Anterroches
 - ⇒ Marcus Bruno
 - ⇒ Michael Halloran

- ❑ **Work on commercial aspects of certification**
 - ⇒ Test-suite free to members
 - ⇒ Reduced certification fee for members

Strategic Activities

❑ CAPE-OPEN standard version 1.2 published (23/9/2020)

- ⇒ Is implemented only in COBIA
- ⇒ Interoperability achieved with CAPE-OPEN 1.1 through COMBIA

❑ Outlook CAPE-OPEN version 2.0

- ⇒ CAPE-OPEN IDL written for COBIA
 - COM IDL derived from this
- ⇒ Remaining scope still being defined
 - With learnings from 1.2 implementations
 - Numerical interfaces, within CAPE-OPEN or not?
 - Upgrades to Thermo, Unit
 -

Review of Milestones from AGM 2019

❑ **Decision on extension of CO-LaN for 2021-2026**

- ✓ Modifications to the bylaws to support new funding model

❑ **CAPE-OPEN certification**

- ✓ Continue to develop a business model
 - ⇒ Start to develop test suite

❑ **COBIA**

- ✓ Gather feedback from prototype implementations
- ✓ Completion of Phase II
 - ⇒ Start with COBIA Phase III

Additional achievements

✓ **Issued IP Policy**

✓ **CAPE-OPEN 1.2**

Goals for 2020-2021

- ❑ **Establish new funding model**
 - ⇒ Retain current and attract new Members

- ❑ **CAPE-OPEN certification**
 - ⇒ Start to develop test suite

- ❑ **COBIA**
 - ⇒ Scoping of Phase III
 - ⇒ Start Phase III

- ❑ **Towards CAPE-OPEN 2.0 and beyond**
 - ⇒ Finalise and publish versioning scheme
 - ⇒ Develop roadmap

How you can help

- Contribute to the CAPE-OPEN certification process**
- Contribute solutions for CAPE-OPEN self-test suite**
- Evaluate and feedback on COBIA**
- Participate in SIGs**
- Feedback on website and CAPE-OPEN wiki page**
- Promote CAPE-OPEN to your colleagues & customers**

Comments, Questions?