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# **CAPE-OPEN Certification Workshop**

**CAPE-OPEN 2016 Annual Meeting  
Linde Engineering, Pullach, October 5, 2016**

# CAPE-OPEN: What's the problem?

***“I do recognize the advantages and possibilities of using CAPE-OPEN for developing extensions and process modelling. However, my interest of developing the native unit-operation in the simulation platform, is due to recurring issues being faced by users ... I understand that these are primarily CAPE-OPEN socket related issues which would essentially be resolved in the later version. Considering the overhead costs, delays associated with resolving & deploying the fix, the CAPE-OPEN needs much wider acceptance, momentum through larger, unified efforts from the community to allow for mainstream deployment and usage”***

***“... We are not perfect ... but on balance we have had far fewer problems with the CAPE-OPEN side of our implementation than have existed with the CAPE-OPEN side of things with which our software is supposed to work. ...”***

*Company B*

***“Big projects do not accept risks due to bugs in software. This would create immense financial losses in plant project... ”***

*Oliver Koch, Linde Engineering quote still needed*

# What's the problem?

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- From the end-user point of view, 100% interoperability between software from different vendors is not a reality.
- Resolution of defects depends on the commitment of software vendors: many bugs remain open for a long time.
- In the past the quality assurance of the CAPE-OPEN interoperability has been neglected by some software vendors.
- All of this has limited the delivery of CAPE-OPEN benefits.

# CAPE-OPEN compliancy certificate

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- The certificate will provide assurance that the CAPE-OPEN interfaces
  - have been tested thoroughly
  - are efficiently supported.
- The certificate will be published on the website, so that users can see which PMCs and PME's are expected to interoperate.
- Compliancy will provide promotion for certified software.

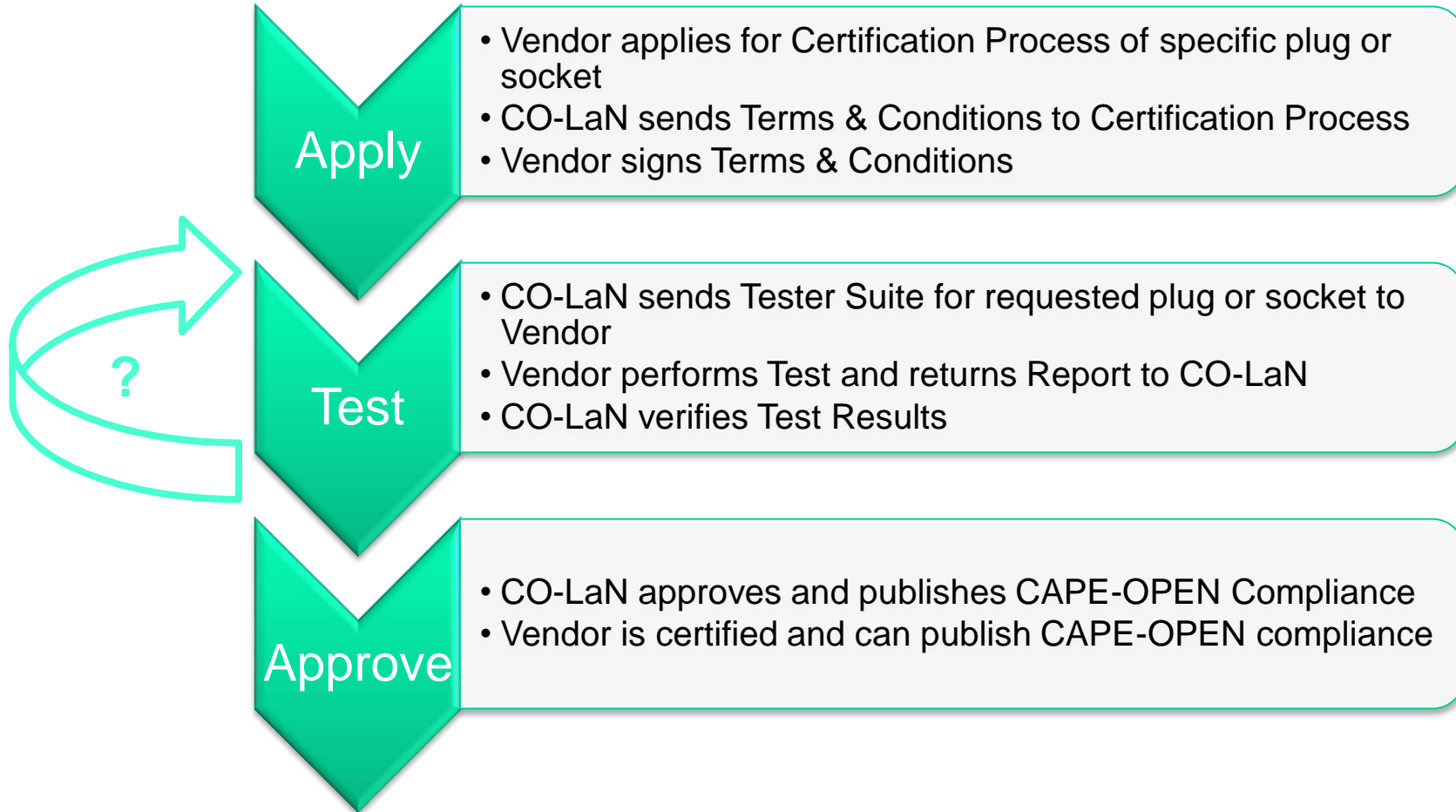
# Why to be certified?

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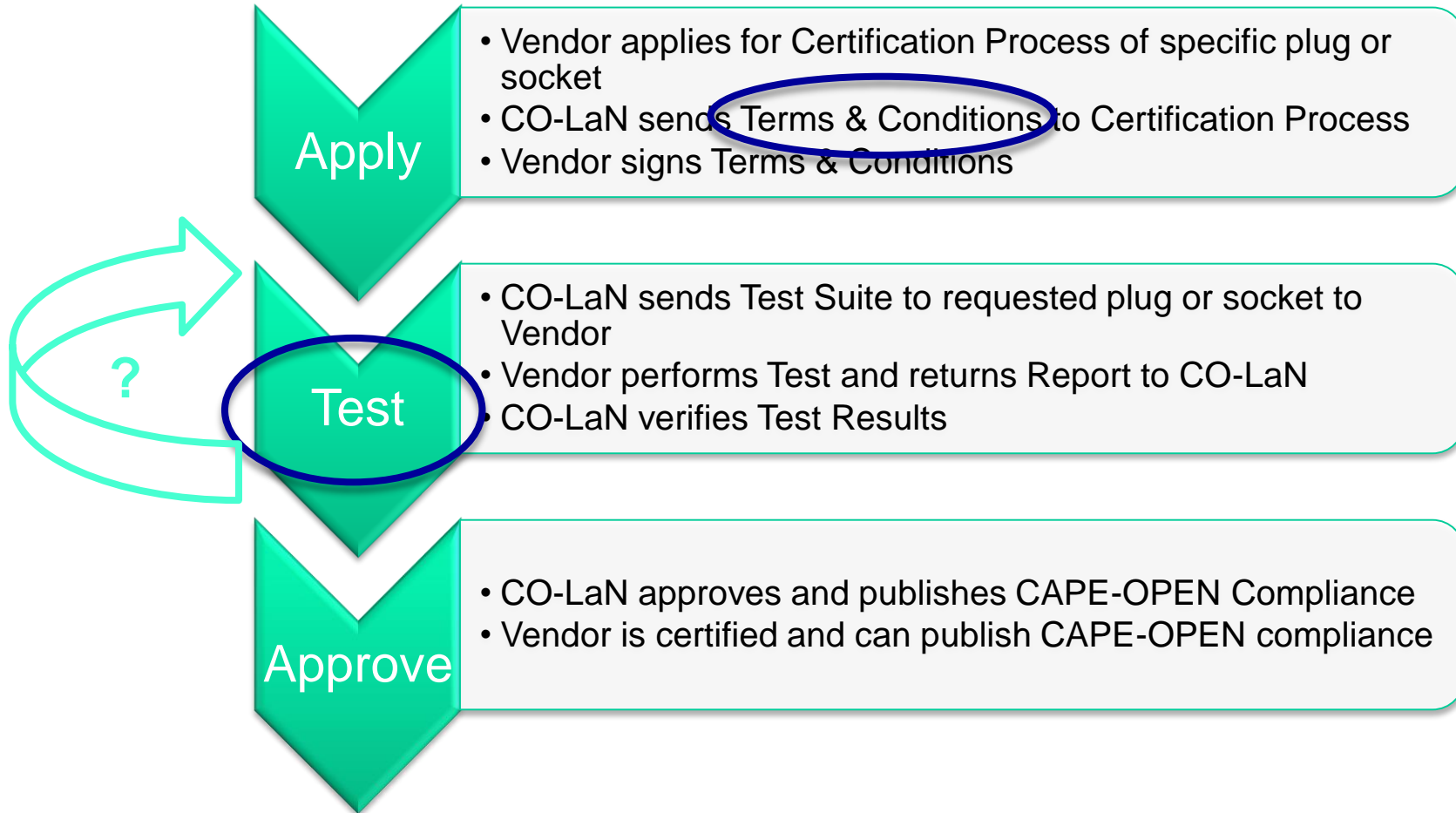


- Facilitates quality assurance of your CAPE-OPEN socket/plug by using CO-LaN Tester Suite free of charge.
- Support with identifying defects. CO-LaN can be used as neutral ground for testing without compromising confidentiality.
- Consultancy service scheme can be used to get support with testing and/or setting up test procedures.
- Enhanced software vendor reputation with visible certificate.

# Proposed certification process



# Open for discussions



# For discussion: terms & conditions

- Accept that CO-LaN is not liable
- Allow CO-LaN to use the software licence(s) for conflict mediation. CO-LaN ensures confidentiality. Findings will exclusively be reported to the software owner.
- Certificates need to be applied per standard version, plug (PMC) or socket (PME) (for Thermo, unit operation, ...)





# For discussion: terms & conditions

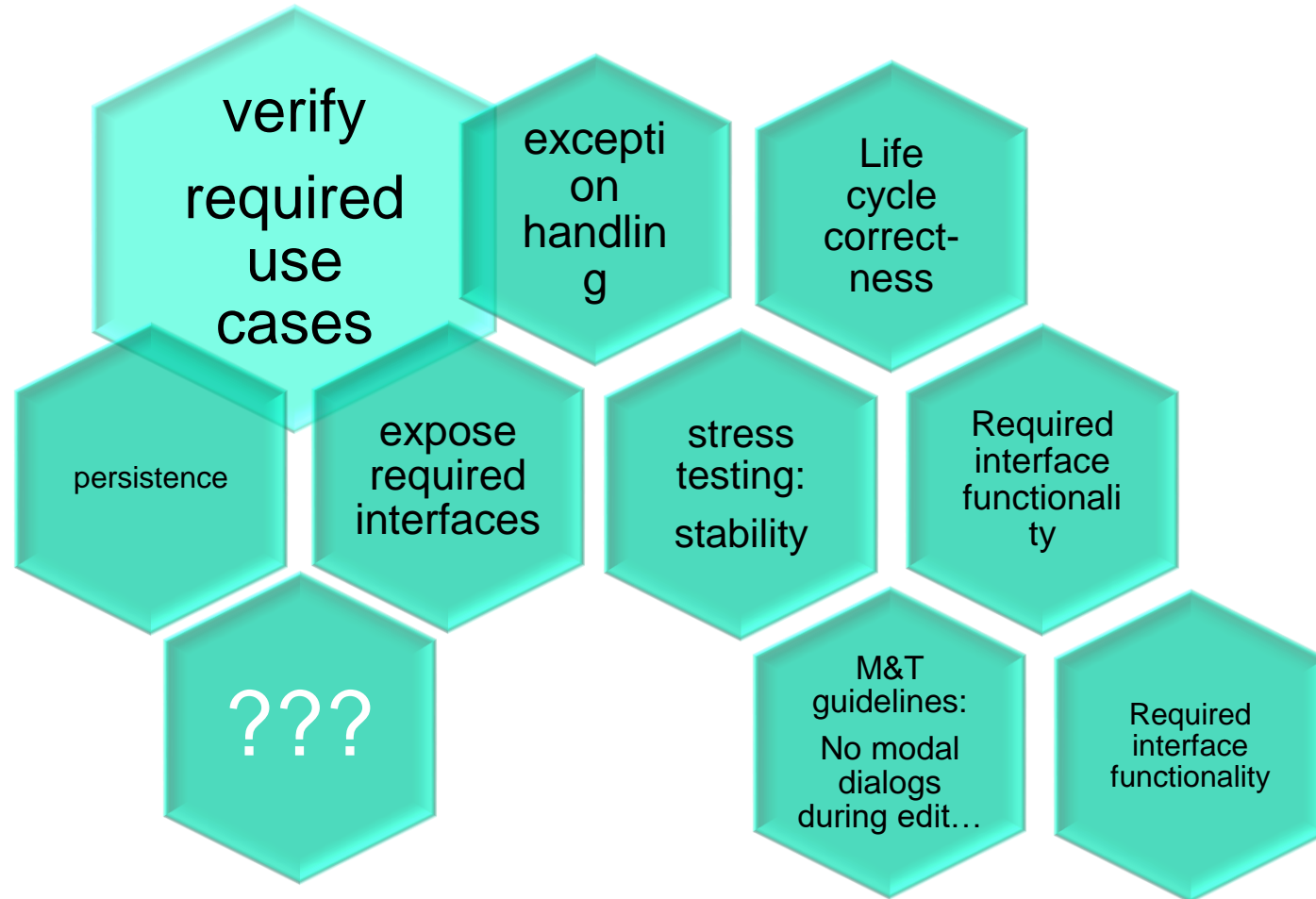
- Software Vendors to guarantee level of support to provide:
  - CAPE-OPEN experienced support
  - Agreed incident resolution timeline

Severity	Description	Response Time	Work Around	Fix	Report
1 - critical	production/quality is compromised	2 h	2 days	1 week	Daily
2 - high	loss of productivity	1 day	3 days	2 weeks	Once a week
3 - medium	information required	2 days	1 week	4 weeks	Once a week
4 - low	enhancement request	3 days	Next Release	Next Release	Not needed

- CO-LaN can withdraw CAPE-OPEN compliance label, if compatibility is verifiably no longer fulfilled.

# For discussion: test suite

- What is subject for testing?



# For discussion: Tester Suite

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- Test criteria
  - ✓ Execution OK and results correct
  - ✓ Execution fails but failure is a valid outcome (error handled correctly)
  - ? Execution OK but results incorrect OR inconsistent (e.g. bug in model predictions)
  - ✗ Execution fails, but failure is not an expected outcome (bug in model)
  - ✗ A software crash
- To what extent can the testing be automated?
- Should we standardize on a CAPE-OPEN test platform for PMC (e.g. COCO)? Or develop dedicated implementations?