



OPEN COMMUNITY  
EXPERIENCE

# Open Innovation Unleashed: Obeo's Journey in the Open-Source Ecosystem

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A watercolor illustration of a hiker standing on a rocky mountain peak. The hiker is wearing a hat and a backpack, and is holding a large red flag that is waving in the wind. The background shows a vast, hazy mountain range under a soft, blue sky. The overall style is artistic and evocative, suggesting a sense of achievement and exploration.

**Software reaches its best when shared openly and evolved by collaborative communities.**

**What if we could build a business aligned with this goals ?**



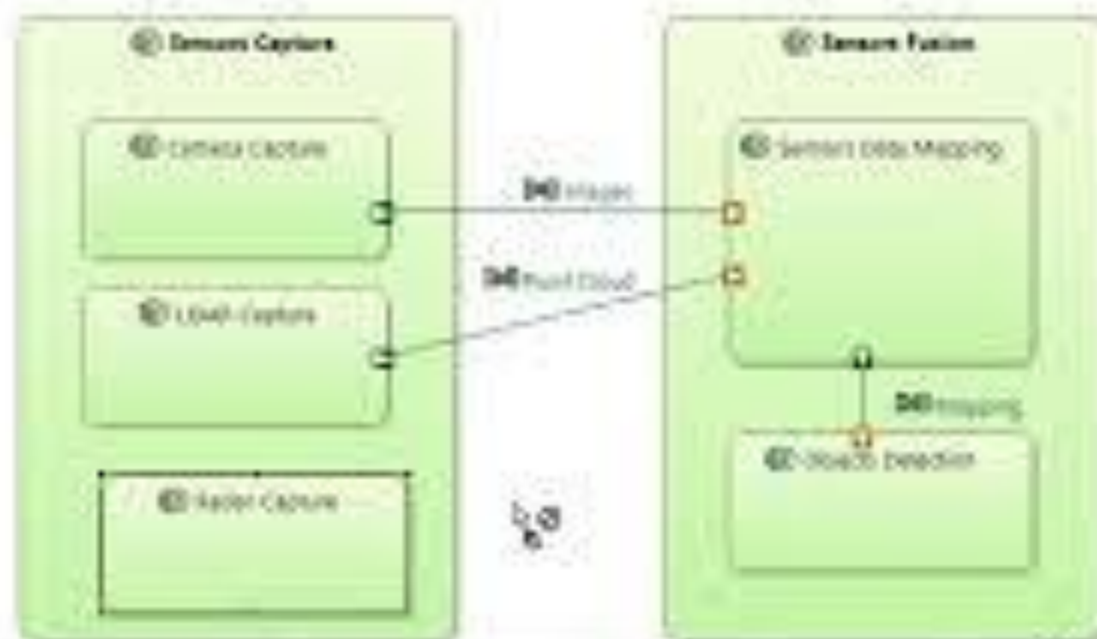


Energy | Transportation | Space & Defense  
 Manufacturing | Healthcare | Financial | Government

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#WeAreObeo



**Model Based System Engineering**  
Eclipse Capella



## Open Innovation | Millions Lines of Code Contributed in Open-Source

a **collaborative** approach where we, along with our customers and partners, work together—either directly within **open-source projects** or indirectly by adapting and extending these projects—  
**to develop innovative solutions tailored to their needs.**

# The Journey





## Early Days | Obeo's creation in 2005



*Model Driven Company*



***«Creating products that make development more efficient by pragmatically harnessing the power of models to analyze, design, generate, or migrate code.»***



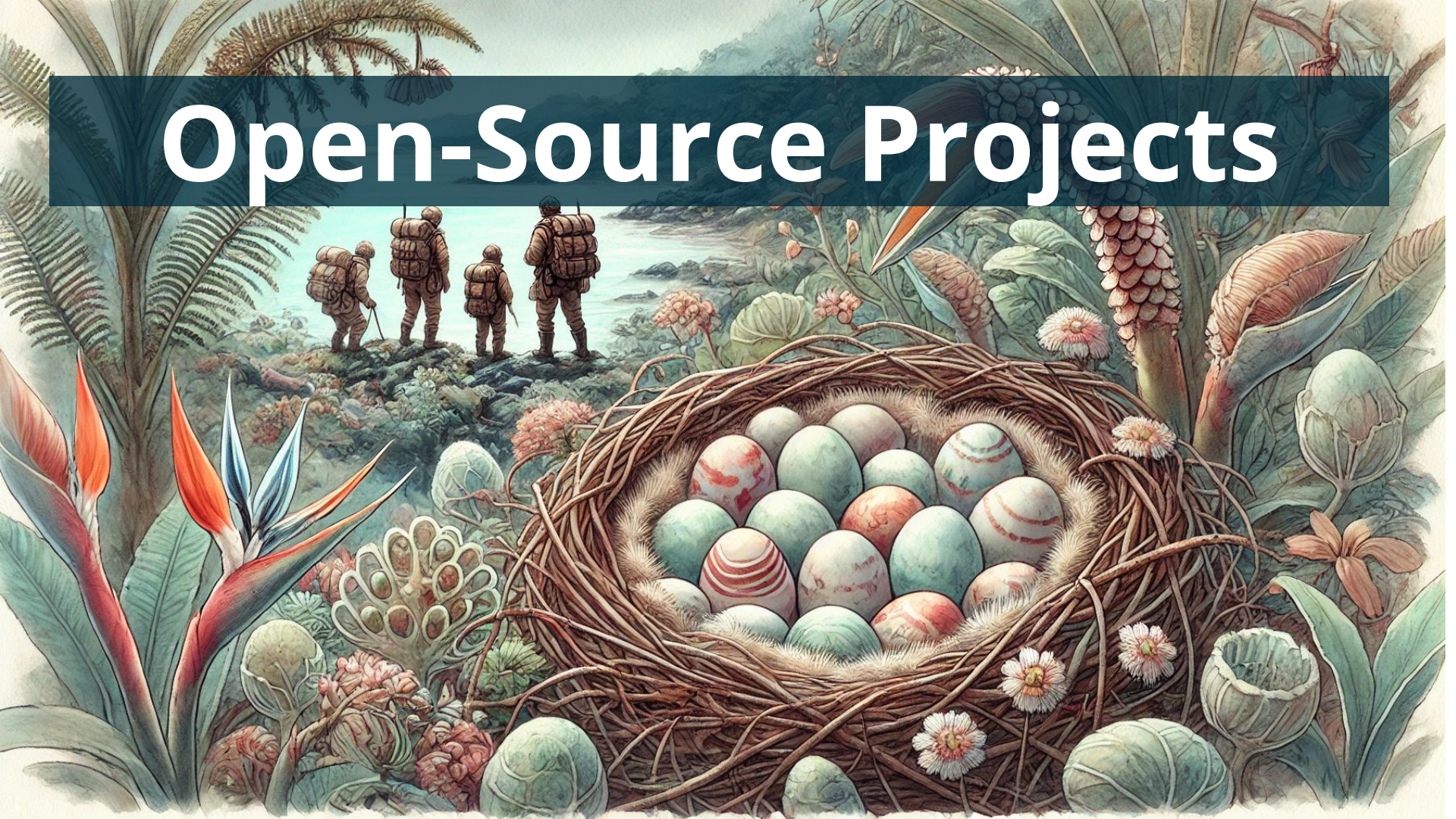
# Getting to know the Eclipse Open-Source Community

The image shows a screenshot of the Eclipse Community website overlaid on a photograph of the Santa Clara Convention Center. The website interface includes a header with the text "Eclipse Community" and a sub-header "These forums are your way of communicating with the Eclipse community. These forums are your way of communicating with the tools hosted at Eclipse.org. Please stick to technical public forums!". Below this, there is a "Show:" section with "Today's Messages" and "Unanswered Messages". The main content area is titled "Forum" and lists several categories: "Newcomers - General Newcomer discussions", "Language IDEs - IDEs and tools for specific programming languages", and "Modeling - Modeling tools and technologies - Core". Under "Modeling", there are several sub-groups: "Amalgam Amalgamation Group", "ATL ATL discussions", "Compare EMF Newsgroup [project home]", "Ecore Tools EMFT Forum [project home]", "EMF Eclipse Modeling Framework (Core)", and "EMF Technology (Ecore Tools, EMFT Newsgroup [project home])". The photograph in the background shows the Santa Clara Convention Center sign, which reads "SANTA CLARA CONVENTION CENTER EclipseCon 2008 March 16 - 20". The building is a large, modern structure with a glass facade and a red-tiled roof. The sky is clear and blue, and there are palm trees and other vegetation in the foreground.

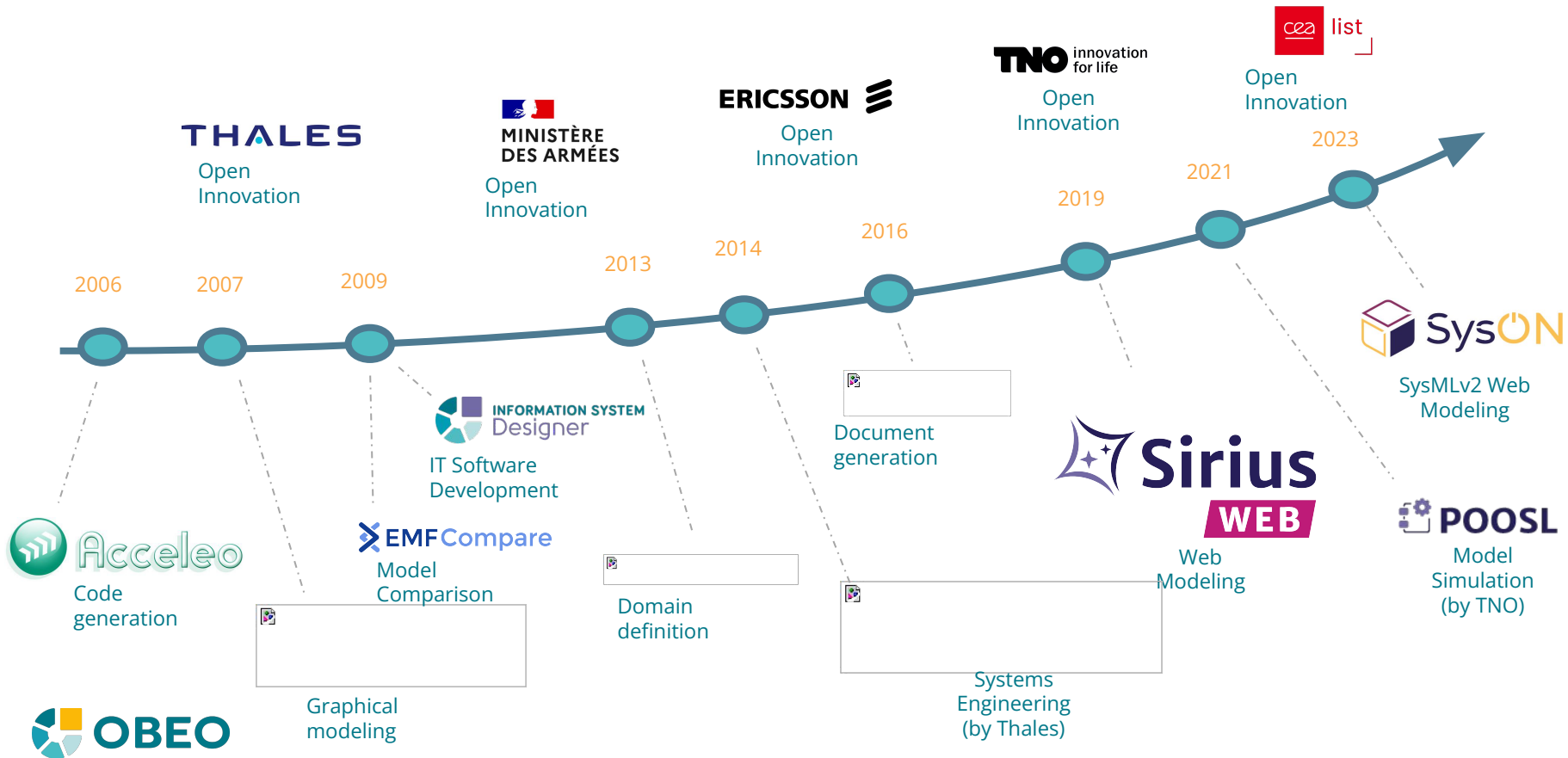
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# Open-Source Projects



# Open Innovation | Millions Lines of Code Contributed in Open-Source







## • Main challenge

- Our very first successful Open-Source project
- An enabling technology: needs generation modules for specific technologies to be useful to the end user
- Acceleo 3 : keep it pragmatic yet OMG standard compliant

## • History

- Started as a autonomous project
- Joined ObjectWeb then later Eclipse Foundation
- 3 major rewrites, the latest one currently undergoing

### Official Modules

The official modules are stable and polished enough to be used for a project and setup in a software development cycle.

The target technologies are stable and well-known.



Name	Target	Metamodel	License
C# - NHibernate	.Net	UML 1.4	GPL V2.0
JEE Hibernate/Struts	Java/Hibernate	UML 2.1	EPL
Leonardi	GUI models	UML 2.1	GPL V2.0
Topcased Java module	Java	UML 2.1	EPL V1.0
UML 2.1 to Java module	Java	UML 2.1	EPL V1.0

```
[comment encoding = UTF-8 /]
/**
 * The documentation of the module generateBuilderAPI.
 * @author cedric
 * @version 1.0.0
 * @since 1.0.0
 */

[module ecoreBuilderJavaAPI('http://www.eclipse.org/emf/2002/Ecore', 'http://www.eclipse.org/emf/20
[import fr:obeo::dsl::playground::genmodel::gen::emfbuilder::GenModelServices/]

[comment @main/]
[template public generateAPI(genModel : genmodel::GenModel)]

[for (genPackage | genModel.genPackages)]
[file (genPackage.folderPath() + 'builder/' + genPackage.builderFactoryName() + '.java', overwrite,
package [genPackage.basePackage/] builder;

public class [genPackage.builderFactoryName()] {

[for (clazz | genPackage.genClasses->select(i | not(i.ecoreClass.abstract) and not(i.ecoreClass.int
/**
 * Create a new builder for the type [clazz.name()]/.
 * [clazz.documentation/]
 * @see [clazz.qualifiedInterfaceName()]
 * @return the newly created builder for the type [clazz.name()]/.
 */
public [clazz.builderClassName()] new[clazz.name()]/() {
return new [clazz.builderClassName()]/();
}
[/for]
}
[/file]
[/for]
[for (genClass | genModel.genPackages.genClasses)]
[file (genClass.genPackage.folderPath() + 'builder/' + genClass.builderClassName() + '.java', ov
[genClass.generateBuilderInterface()]/]
[/file]
[/for]

[/template]

[query public builderFactoryName(pak : genmodel::GenPackage) : String = pak.prefix + 'Builders'/]

[query public builderClassName(clazz : genmodel::GenClass) : String = clazz.name() + 'Builder'/]
```

## • Main challenge

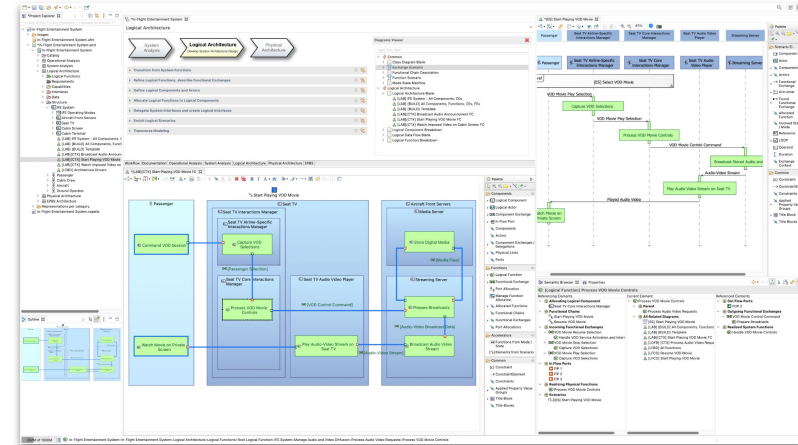
- Develop a new MBSE tooling supporting ARCADIA method
- Deploy the tool on mission-critical projects
- Contribute in open-source and build an ecosystem for a worldwide adoption

## • Solution

- A long-term Open Innovation collaboration with aligned strategic goals

## • How ?

- Open-source projects: Eclipse Sirius, Capella, Python4Capella
- Commercial add-ons: Team for Capella
- Specific developments



**«We have established a lasting relationship of trust in innovation»**

Daniel Exertier

# Sponsored work in an existing project | EMF Compare



- **Main challenge**

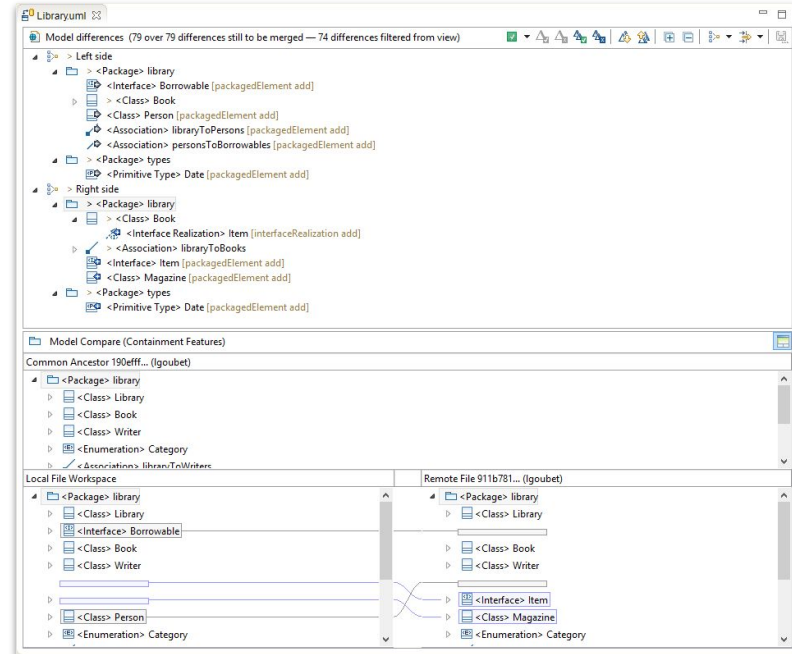
- Strong OSS alternative to commercial modeling products requires state-of-the-art support for model comparison, merge, and VCS integration

- **Solution**

- Develop EMF Compare 2.0 in Eclipse
  - Reliability for complex interdependent models
  - Speed and scalability
  - Graphical comparison
  - EGit Integration

- **How ?**

- A set of development projects.
- Research and innovation on model comparison
- Implemented and evolved EMF Compare over the years
- 





# Multiple customers contributing to a common | M2doc

- **Main challenge**

- to get Office compatible documents from the models
- document has to conform to corporate templates
- document has to integrate diagrams, tables...

- **Solution**

- extends M2doc to add missing features

- **How ?**

- Several distinct projects contributing to M2doc



# Community and Evangelization | Eclipse Capella

- **Main challenge**

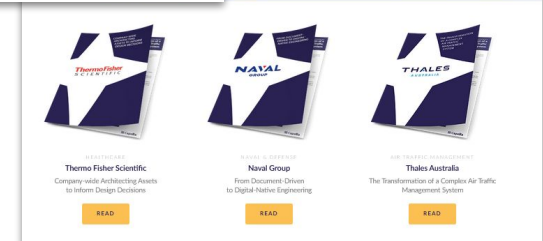
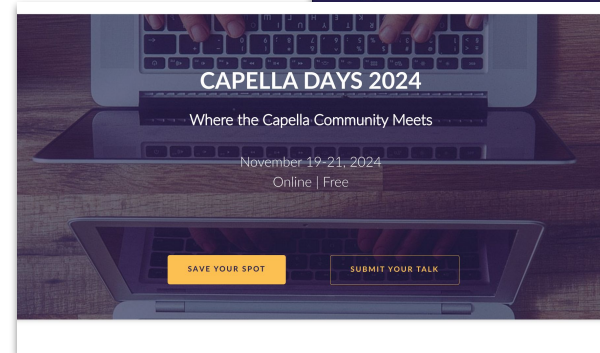
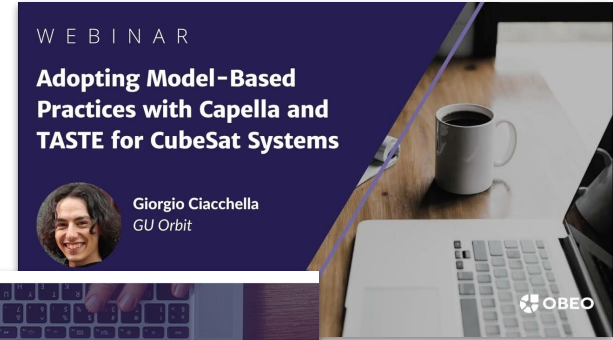
- Make Capella widely used in the industry
- Publishing as OSS is not enough
- Engineering practices are set for the long term

- **Solution**

- Grow the user community

- **How ?**

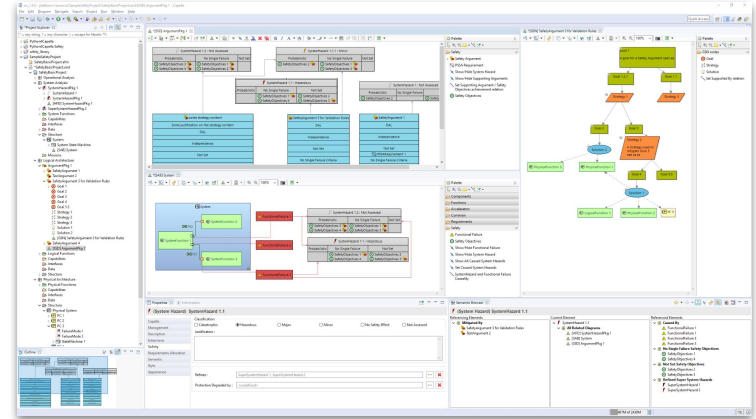
- Amplify the voice of the community
  - 10+ webinars a year
  - case studies
  - 1 major yearly event : Capella Days
  - on the field events
  - and much more...
- Nurture the emergence of an eco-system
  - Training, coaching and services
  - Add-ons



# The “in-house” Add-on | Rolls Royce



- **Main challenge**
  - Industrializing a specific Safety add-on for Capella
  - Initially developed by Rolls-Royce as a prototype
  - Rolls-Royce needed a production-ready solution
- **Solution**
  - Development of a Capella extension
    - new diagrams for representing safety-related concepts
    - link between system hazards and design elements
    - model failure modes within the system design
- **How ?**
  - Development project with an agile approach: successive sprints to implement new features, with a usable result delivered regularly
  - Capability to develop unplanned features identified during the development
  - Directly work with the consultant who was leading the project



- <https://blog.obeo.com/industrializing-a-capella-add-on-for-rolls-royce>
- [https://youtu.be/njW\\_zdE\\_Fzl](https://youtu.be/njW_zdE_Fzl)

**«Our experience with Obeo was positive from start to finish»**

*Paul Thornton*







# Hybrid Business Model | Development Services + Add-ons and products



## Development Services

- ✓ Custom Workbenches
- ✓ Development
- ✓ Open-Source Core Development
- ✓ Integration
- ✓ Add-on Development
- ✓ Support & Expertise
- ✓ Training



## Commercial Software

- ✓ Add-ons to open-source products
  - Team and collaboration support
  - Enterprise features
  - Specific domains (Eco-Design...)
  
- ✓ Off the shelf product

# Open-source product + Commercial Add-ons = Open Core



The open-source product is great in itself, the add-ons are providing additional level of services or features of interest to paying customers.

Obeo  
Designer

Team  
for Capella

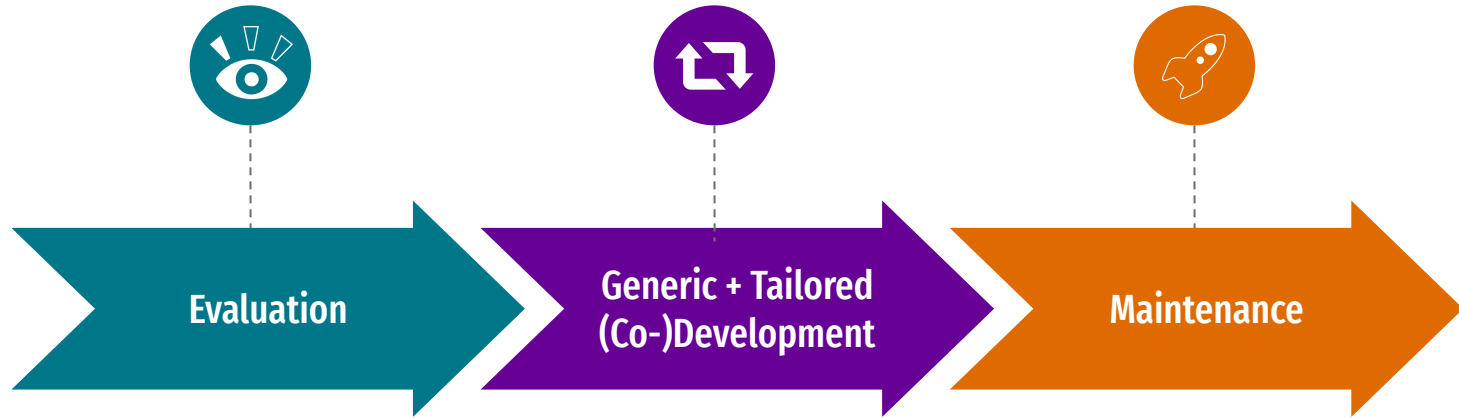
Enterprise  
for POOSL

Publication  
for Capella

Cloud  
for Capella

Obeo  
Cloud Platform

# Open-source product + **Projects** + Commercial Add-ons



## **Bootstrap** (5-15 days)

- Discover the technologies
- Co-create a demonstrator
- Evaluate the gap to your needs
- Co-define a roadmap

## **Iterative sprints** (2 weeks)

- Specification
- Development
- Integration
- Feedback

## **Subscription** (yearly)

- Generic (Software Assurance)
- Specific (Maintenance Agreement)



# Collective Advantages | Positive Feedback Loop

An expert partner to support his projects  
Needed features, integrated and **maintained upstream**  
Mitigate vendor lock-in



Long term availability of the technology  
A supportive environment for industrial  
collaboration and co-investment

A stream of paid effort supporting the  
project activities  
Larger adoption footprint

Get to project  
+ addons  
providing  
business  
added value



Able to learn using the same  
software as the industry



Easier access to education,  
academia, and experimentation

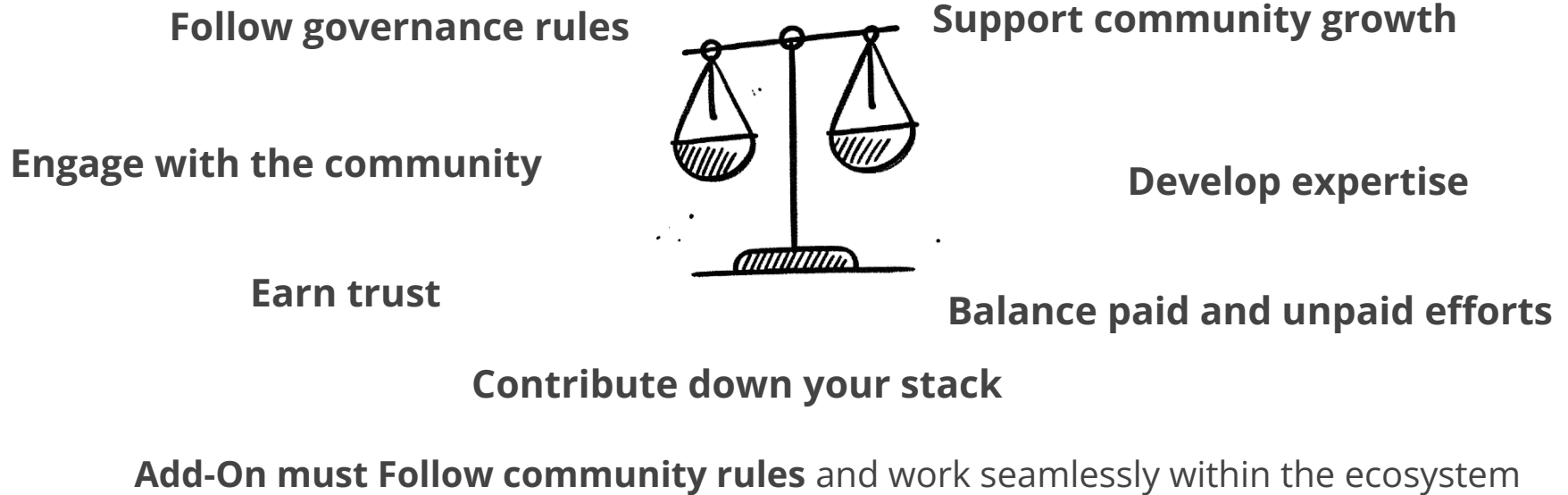


Trained  
candidates





# It's all about balance | [Overview](#)



## Research and Academia | Collaboration and Innovation

**Academia ❤️ Open Source:** Our OSS projects are widely used in academic and research environments, with academics pushing the boundaries of our technologies and advocating for them globally.

**Collaborative Projects 🚧:** We actively contribute to projects through expertise, sub-contracting, or as full partners.

**Funding and Innovation 💰:** A leverage for SMEs like us to explore new areas, reduce risks, and deliver faster, more relevant outcomes by building on established open-source projects.



# Alignment of Goals | Hybrid Business Model



## Development Services

- ✓ Custom Workbenches
- ✓ Development
- ✓ Open-Source Core Development
- ✓ Integration
- ✓ Add-on Development
- ✓ Support & Expertise
- ✓ Training

**Staying in contact with users' needs and funding some of the developments**



## Commercial Software

- ✓ Add-ons to open-source products
  - Team and collaboration support
  - Enterprise features
  - Specific domains (Eco-Design...)

**To sell add-ons effectively, we must first ensure our products are widely adopted.**

- ✓ Off the shelf product

**This diversifies our revenue streams and allows us to step into our users' shoes.**

## Is that so easy ? | Actually, no

We are in a specialized niche, and many initiatives didn't work as expected. While projects were created, sometime interest didn't grow enough to expand them.

**Open Source Interest  $\neq$  Business Viability** : Adoption is necessary, but it's not enough to guarantee a sustainable business.

### **Your commercial product(s) must:**

- Solve a painful problem that users (willing to pay) need fixed.
- Be difficult to substitute or replicate.

you also must excel in communication, marketing, and distribution...

# The "Project", the "Product" | Transforming our organization



Join at [menti.com](https://www.menti.com) use code 2593 464

## SHAPE ME UP BEFORE YOU GO GO!

A journey of transforming how we build products

Mélanie BATS  
CTO @ Obeo

[melanie\\_bats@obeosoft.com](mailto:melanie_bats@obeosoft.com)

@melaniebats



 ECLIPSE  
CON2023

 OBEO

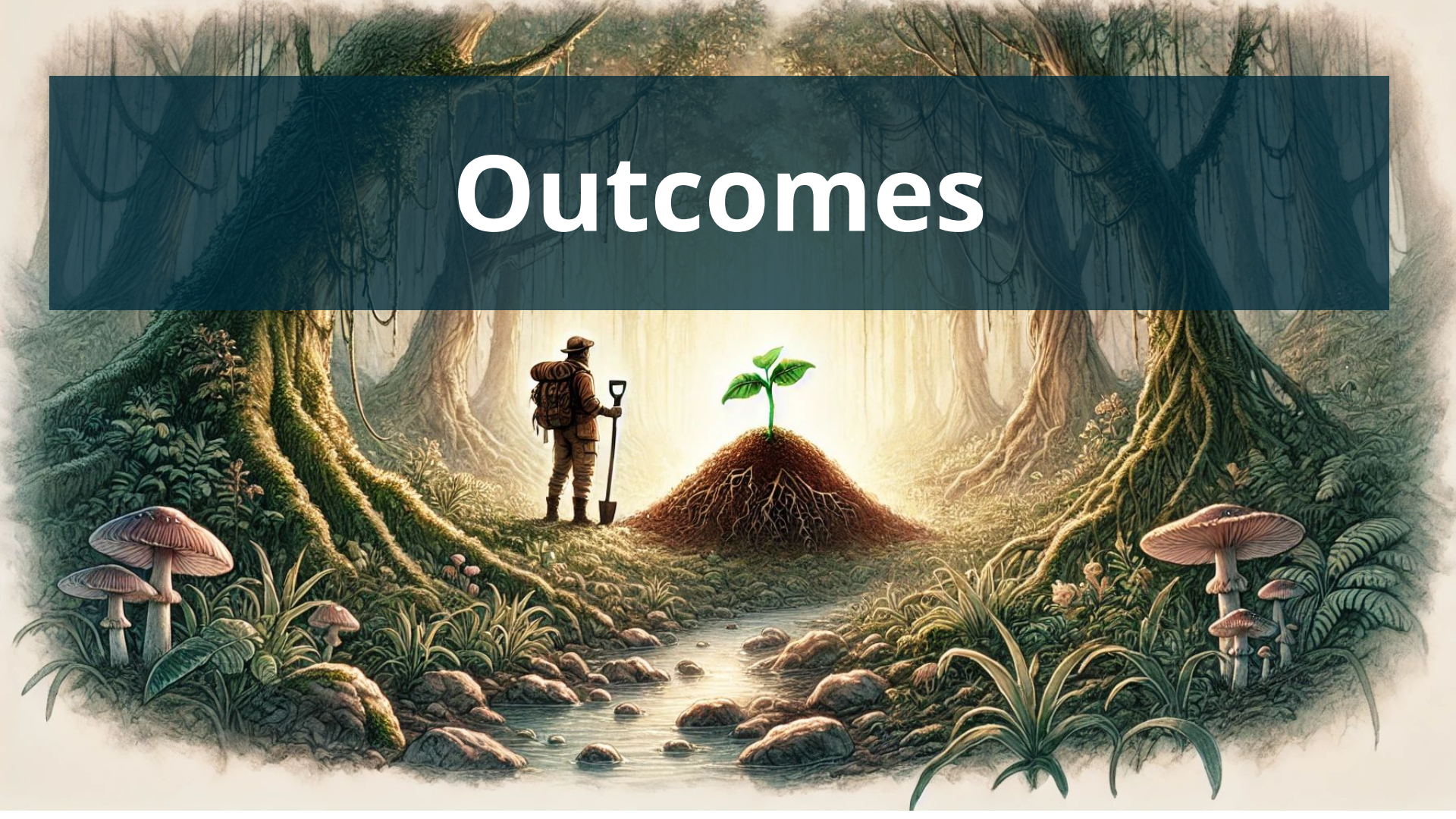
 ECLIPSE  
CON2023

[https://www.youtube.com/watch?v=jWjfDKof\\_vs](https://www.youtube.com/watch?v=jWjfDKof_vs)



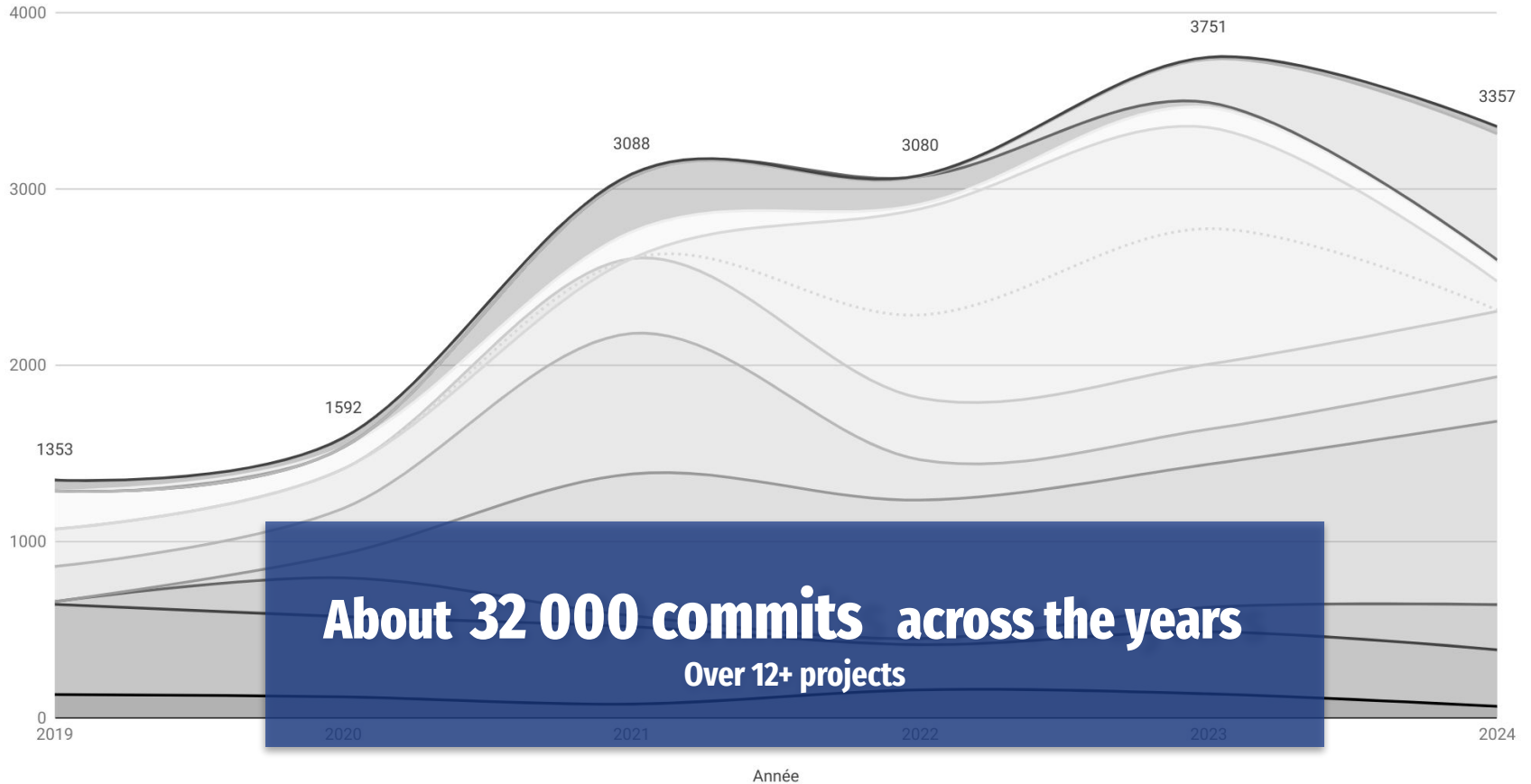


# Outcomes



# Commits authored by Obeo in Open-source projects

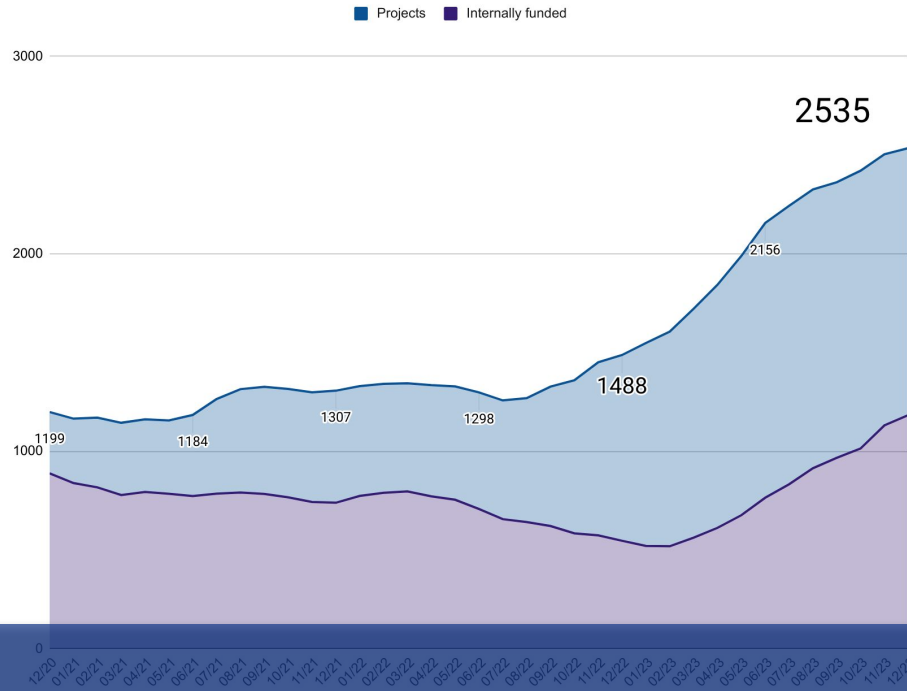
Per year



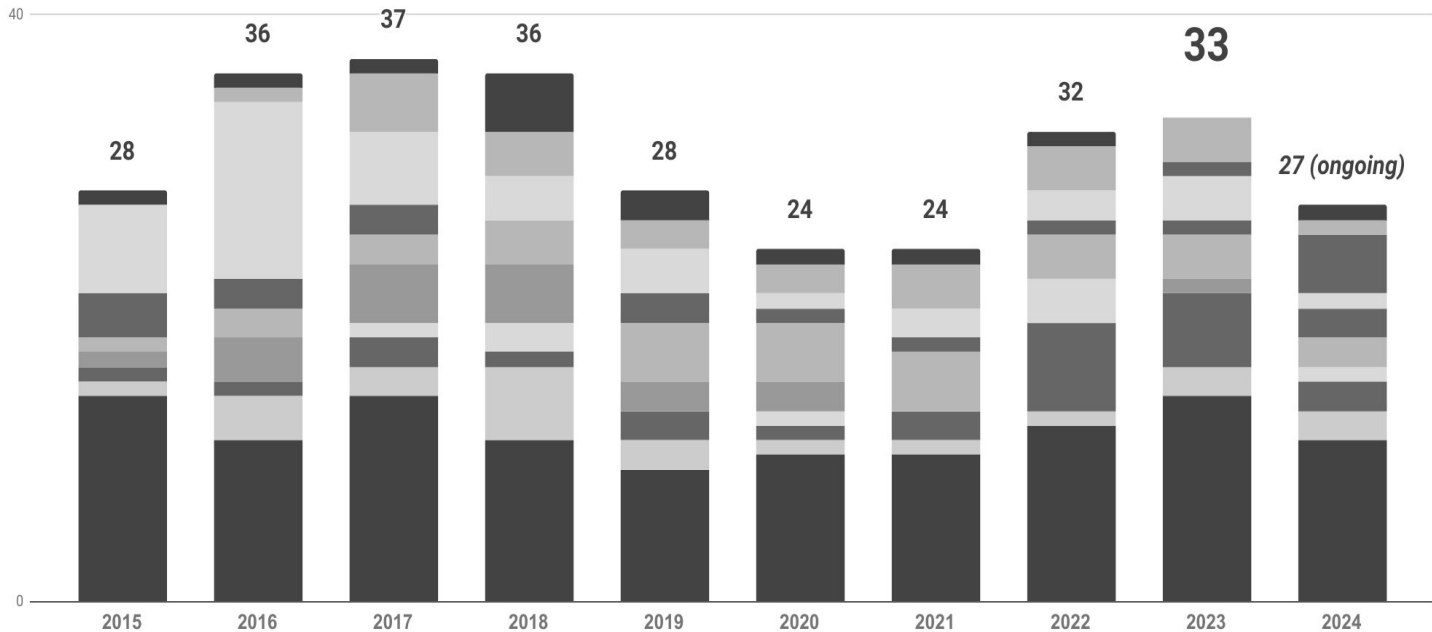
**About 32 000 commits across the years**  
Over 12+ projects

## Days of development toward Open-Source

The last 12 months



**New record in : 2535 days of efforts toward OSS**  
by Obeo or through customer projects



**+350 open-source releases** over 15  
**years**  
 (only from projects Obeo is leading)



**Sirius**

OVERVIEW FEATURES **GALLERY** GET STARTED COMMUNITY DOWNLOAD

## GALLERY

What Can You Do with Sirius?

Discover concrete examples of modeling tools created with Sirius for various use-cases: Systems Engineering, Software Development, Business Configuration, etc.

### Capella

By Thales

**Systems Engineering**

Capella is a full-power model driven engineering solution based on a graphical modeling workbench for engineers developing systems, software and hardware architectures.

It provides a domain-specific language (DSL) implementing Arch42, both as a specification and a semantic extension of the UML and SysML standards.

**Related links**

- Project page
- Strategy for building custom modeling workbenches

### P&C Insurance Products

By MAIP

**Business Analysis**

**Domain Object Development**

The MAIP insurance company has developed a graphical tool to manage the P&C products (property and casualty, AIGV in French for Insecte, Accident et Risques Usages).

It provides graphical representations to create, modify, consult, version and validate the products.

**Related links**

- Fredrik's Market's blog

### UML Designer

By Clow

**Software Development**

UML Designer is an open source modeling tool to edit and visualize UML 2.3 models.

It provides the following generic UML diagrams: Package, Class, Component, Composite Structure, Deployment, Use Case, Activity, State Machine, Sequence, Profile.

**Related links**

- Product web site

### Ecore Tools

By INEP

**Software Development**

### Plastic Manufacturing

By INEP

**Business Analysis**

This module shows the collaborative design and development of complex plastic products.

It provides views dedicated to the several different business experts involved in the creation of such plastic: project/realization, resources, costs, process, sequence.

### MIMC (Mobile Multimodality Creator)

By UPL University of Lille

**Software Development**

MIMC is a model-based framework that enables the modeling and generation of multimodal mobile applications (Android and iOS).

It allows multimodal mobile interfaces to be created more quickly, enabling rapid prototyping based on its designed models.

**Related links**

- Leveraging Service-based Interactions in Multimodal Mobile Applications
- Fredrik's Market's blog

### Dart Designer

By Clow

**Software Development**

Dart Designer is an open source tool to build diagrams of your Dart applications.

It is based on a DSL defining concepts like StyleSheet, Package, Class, Mixin or even HTML.

Dart Designer also offers styling from the user programming language, allowing you to reuse code and applications development.

**Related links**

- Clow's
- Stephane's Designers Blog

### UML2

By Clow

**Software Development**

UML2 is an UML2 standard compliant, yet extensible framework: user interaction and control through the development of software applications.

An UML2 model supports the following design perspectives: use case/sequence diagram, state machine, resource, parameter binding, actions, response to the user's events.

**Related links**

- Clow's

### Arduino Designer

By INEP

### Telecom Reference Architecture

By Orange

**Business Analysis**

The modeling tool implements Orange Logic internal approach (DALM) to describe the architecture of IT solutions and services platforms.

It supports 4 viewpoints (usage, functional, software and infrastructural) and integrates with UML Designer.

### Satellite Software Modeling

By ESA (European Space Agency)

**Systems Engineering**

**Tool Link**

**Software Development**

This tool is dedicated to the creation of satellite applications.

It supports several views (Data Component, Behavioral, Hardware/Deployment, Non Functional, Implementation/Analysis and Thematic Utilization Standard) via 10 kinds of diagrams and 8 kinds of tables.

**Related links**

- Fredrik's Market's blog
- Conrad's Project

### Timing Constraints

By Clow

**Tool Link**

**Software Development**

This modeling tool provides additional layers over UML models to handle timing constraints: synchronous, asynchronous, signal flow, physical layer.

**Related links**

- Clow's
- Clow's
- Clow's
- Clow's

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**Related links**

- Clow's
- Fredrik's Designers Blog

### Citrus

By Incees

**Systems Engineering**

### Safety Architect

By AMTC

**Systems Engineering**

**Safety**

Safety Architect is a tool addressing risk analysis of complex systems using functional or physical architectures from usual modeling tools (for example SysML or UML).

It provides support to the implementation of FMEA and automatically deduce the FTA corresponding to the identified hazard events.

**Related links**

- Eclipse Marketplace

### BPMN Designer

By Clow

**Business Process**

BPVN Designer is based on the BPVN domain Model of Eclipse Modeling MDT project.

It supports Flow Objects (Events, Activities, Gateways), Connecting Objects (Sequence Flow, Message Flow, Association), Swim lanes (Pool, Lane) and Artifacts (Data Object, Group, Annotation).

**Related links**

- Clow's Marketplace

### IntelHome Designer

By University of South Brittany

**Domain Object Development**

IntelHome Designer is a graphical tool to configure home automation systems for electrical persons.

It provides a graphical environment for automated configuration. The user is able to generate configuration files to control a remote technology system. The user can also create a remote or medical solution.

**Related links**

- UML2 Marketplace
- Fredrik's Market's Blog

### LAN Map Designer

By Clow

**Software Development**

This module enables anyone of users using an Eclipse IDE to create a LAN map.

### LOA Graphical Editor

# +68 Modeling Tools publicly listed

<https://www.eclipse.org/sirius/gallery.html>





**+1750 mentions in Research  
Papers**  
from 2008 to 2024







# Pioneering Web-Based Modeling Tools

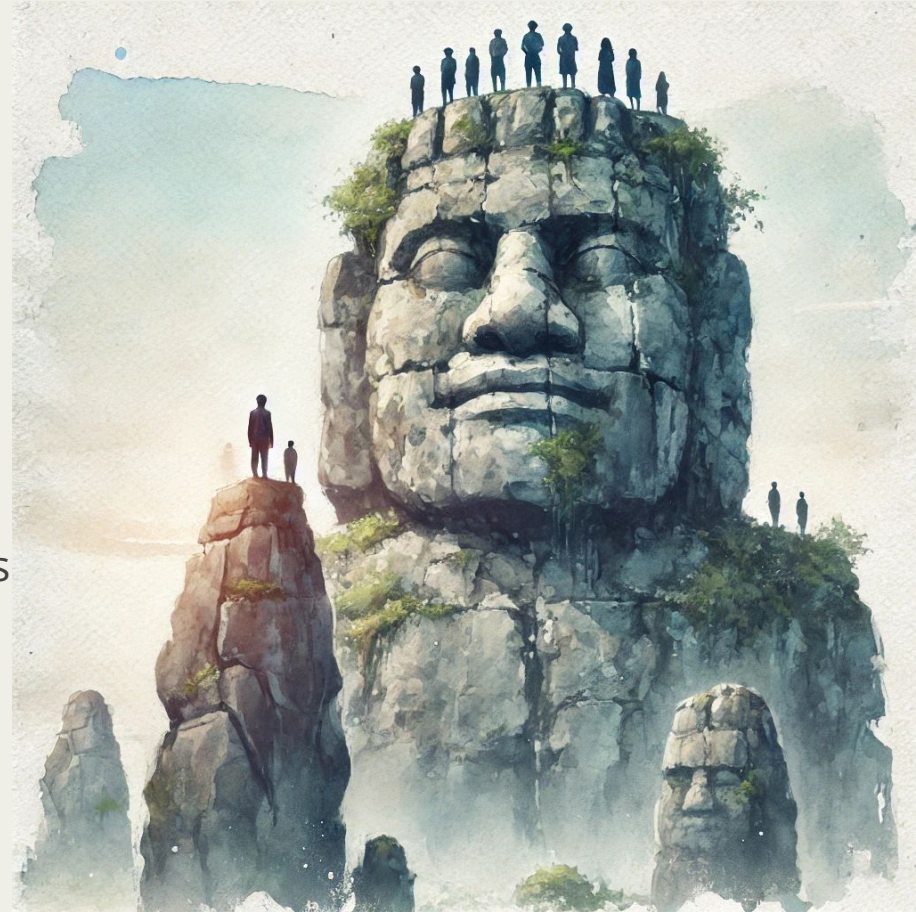
# A platform for web based modeling

The Challenge :

- Addressing the Development Effort
- Engaging the Desktop Community
- Convincing It's Achievable

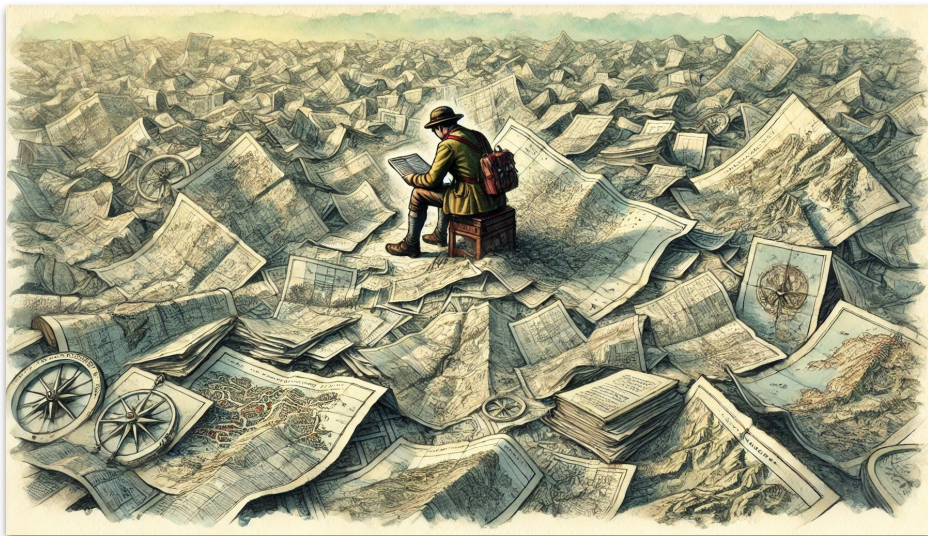
The reward in sight :

Seamless onboarding in tools, better user experience, efficient collaboration among users and among softwares





## Bootstrapping | Sirius Web Initiative



Several internal initiatives from 2012, our goal was to strike **the right balance** in term of sharing existing technologies, opening to new one where it matters.

**2019** : clearer roadmap and ramping up effort to achieve a MVP

**2021** : we make this work OSS - start with working code!

**2022** : keep working, keep showing...



# Bootstrap and long term relationship



## • Main challenge

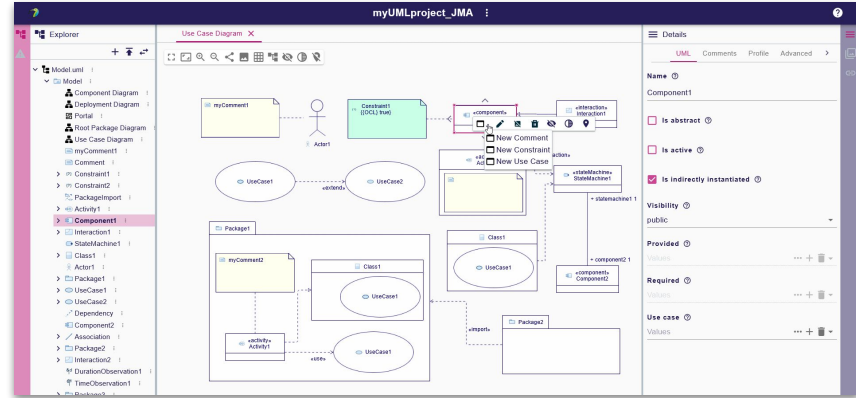
- Modernize **Papyrus** and ease the maintenance
- Get a partner able to support such deployments
- Get ready for experimenting and contributing to the next generation of modeling tools:
  - Augmented Engineering
  - Digital Thread
  - Secured collaboration at scale
  - Green Tech
- a brand new standard : SysML v2

## • Solution

- a multi-level collaboration : technological, research and strategic to work toward a shared vision.

## • How ?

- Development projects to migrate UML editors to Sirius Desktop and Sirius Web
- Contributes on Sirius Web
- Work together on a new project for SysMLv2 : SysON



- <https://blog.obeosoft.com/sirius-papyrus-web-a-new-era-for-collaborative-engineering-tools>
- <https://www.youtube.com/watch?v=18MuxEVm6y0>
- <https://www.youtube.com/watch?v=GcRFW0YfFEI>



## SysMLv2 | The SysON project

SysML v2 is a significant improvement to SysML v1 and a very promising piece of technology:

- Better **Interoperability**
- Enabler for **formal verification** and AI interactions
- Foundation for building libraries of **domain specific ontologies**
- **Foundation** for supporting MBSE processes



Viewing or authoring a SysML v2 model should be easily available to every Systems Engineers and beyond.





# Software reaches its best when shared openly and evolved by collaborative communities.

Continuous Improvement and Wide Adoption

Reinvesting in Innovation

Collaborative Partnerships

We started a new chapter with Sirius Web and Eclipse SysON for SysMLv2.

Let's shape the future—**collaboratively!**





Thank you