

INTRODUCTION

BASIC INFORMATION

Title of proposal: New standard for developing universal and powerful conversational agents (chatbots)

Acronym of proposal: ATLAS

Details of applicant:

Name of the entity	Clevy
Country	France
Creation date (if applicable)	11 th April, 2017
Type of entity	SME

Company description: Clevy believes human-computer interactions should feel simple and intuitive, not clunky and infuriating. So, to help businesses rekindle with their computers and information ecosystems, we have developed conversational solutions that optimize costs while enhancing employee/user experience. Over the past 2 years, Clevy has received several distinctions (Grand Prix de l'Innovation Digitale, ID17; AWS Summit start-up award). Behind those results, a team of experts in computer science, business and innovation, has been developing both the underlying proprietary algorithms and the commercial products: Q&A assistants for automated answers; and Augmented Assistants for processes' automation.

Today, Clevy is a leader on the conversational market dedicated to employees and on many use cases (HR, IT, Change Management). Clevy's customers, which collectively manage +1M employees and include high-profile businesses in different sectors (e.g. SNCF, Danone, AXA, Capgemini, French Ministry of the Armies), are already enjoying the outstanding benefits of Clevy's technology, including >70% answers' automatization.

Clevy's mission is to establish a new standard that can reduce by 90% the time it takes to develop and deploy rich conversational agents. As one key step towards this goal, Clevy has recently released a new high-level programming language – the CSML (Conversation Standard Meta Language).



Some of Clevy's large customers

"Clevy has found the right way to tackle the issues regarding conversational development"



Luc Julia, Co-creator of Siri



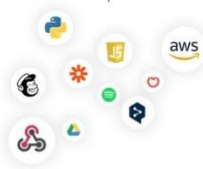
csml

All conversations start with a common language



Create and deploy chatbots within minutes

- Reduce costs, save energy and time working on your chatbot project with CSML
- All-in-one solution to setup powerful conversational agents in a full-featured development ecosystem



Fully interoperable

- Can be plugged with any external system by custom APIs and standard integrations
- Can be integrated into any other programming language (JavaScript, Python, Go...)



Built for conversations

- No complexity in building chatbots and connecting them to favourite channels
- Easy way to build great cross-platform conversations



Easy to write and maintain

- CSML syntax is self-explanatory, made for any chatbot developer and providing a solid architecture based on steps

<https://www.csml.dev/>

Clevy Innovation: Aiming to revolutionise the way chatbots are programmed, Clevy has recently released the **Conversational Standard Meta Language (CSML): the first open-source programming language dedicated to developing conversational agents**. As opposed to all other chatbot building solutions existing today, which either require to write enormous amounts of code or are restricted to graphical-only interfaces with a limited set of features, CSML is an abstraction layer to easily create chatbots built on intuitive linguistic concepts. The language mimics the very principles of a human language to make it as natural as possible to use, and frictionless to learn, without limiting its possibilities.

To democratize the use of CSML, Clevy has developed a pilot version of an on-prem platform to create chatbots, connect them with any third-party APIs or functions developed in any language, and deploy them on any channel (webapp, Facebook Messenger, Slack, Workplace). This online ecosystem for building and monitoring chatbots is branded as **CSML Atlas Platform**. The CSML Atlas Platform abstracts away the complexity of creating world-class conversational experiences between humans and any computer, with ready-made modules and integrations that **reduce by up to 90% the time, effort and cost over current solutions, while being production and enterprise-ready (secure, scalable, maintainable)**.

Clevy Strategy: **Conversational technologies** are a game changer in making business information more accessible, automating processes, and going mobile, representing a **significant business opportunity for Clevy (with a total market potential exceeding €7Bn only in the EU and US)**.

The high value of the CSML has already been proven: 10% monthly growth of users; used to deploy the French government's coronavirus information bot (with 400k users and millions of messages sent with high stability and security). Clevy objective is now to **drive on the innovation of its proprietary technology to mature and scale-up the CSML Atlas Platform in international markets** – unlocking a new segment targeting software developers. With the ATLAS project Clevy will address specific technical issues that may hamper market scalability of the platform, in full alignment with requirements of end-users.

In specific, Clevy will expand the CSML tooling/framework with additional features and provide a very complete platform on top of it, to make it accessible to any developer aiming to program highly advanced chatbots in an easy way, without any complex installation and deployable to any target channel. **Market introduction of this innovation is expected to place Clevy in a strong position to exploit a market potential over 5 years exceeding €70 M.**

1. EXCELLENCE

1.1. IDEA AND SOLUTION

1.1.1 Background and Technical Bottlenecks

The digital transformation of EU businesses and society presents enormous growth potential for Europe¹. **Conversational agents (chatbots) simplify and are a key part of a digital transformation initiative**, by being the easiest and fastest way to transform operations. Chatbots unify fragmented tools, facilitate multi-step processes, are mobile-friendly, having the overall potential of making employees more autonomous, productive and fulfilled. Chatbots can be trained exponentially faster than humans can, they are 24/7 available and react instantly to user queries. On top of that, companies and public administrations can save a huge amount of resources by the decrease in user queries to human operators. For this reason, global interest in chatbots is booming with the **global conversational AI platform market expected to reach €13 billion by 2024**^{2,3,4}.

Despite its huge potential, creating a scalable, enterprise-ready chatbot today is still unnecessarily complex, involving large teams of developers and specialists (data scientists, business experts, etc.), and cumbersome, poorly interoperable and mostly unadapted tools, very similarly to the state of web development in the late 1990s or mobile app development in the late 2000s. **With available tools and traditional development methods it usually takes too long (between 6-18 months⁵) to program a corporate chatbot at scale, and, not uncommonly, this requires budgets of over €1 M just in development costs.** As of today, before starting to create any conversational experience, chatbot developers must recreate a lot of redundant tooling that they cannot easily reuse between projects. They must learn about several unrelated technologies (e.g. Natural Language Processing (NLP), conversational design, various chat channel APIs, etc.), and deploying the finished product requires learning about hosting, networking, security, and resilience.

Current tooling is thus simply not satisfying, and induces a lot of unnecessary costs, slowing down the normalization of chatbots as a way to interact with machines in a natural way.

1.1.2 Opportunity

Chatbots, like apps and websites, are an interface for human beings to interact with systems in a simple, naturally understandable way. While websites are available inside a browser, and apps on mobile phones, chatbots are available inside chat applications, which have seen a massively growing trend in the past few years. As an example, Facebook says they have 1.3 billion active users on Messenger, and an estimated 1.5 billion people actively use Whatsapp in the world, while professional tools Slack and Microsoft Teams both claim over 10 million active users. Other platforms such as WeChat, Workplace, Telegram, etc., experience similar growth. It is thus expected that chatbot's development platforms follow the same pattern as web and mobile technologies as they become more and more popular.

Indeed, with only 4% of enterprises having deployed conversational interfaces but 38% planning to or actively experimenting, the **market for conversational platforms is set for large growth**⁶. Several companies are currently rolling out conversational platforms (e.g. Botpress, Meaya, Rasa, Botkit) but, **as of today, no vendor can claim to cover all conversational needs.** Most of currently marketed bot platforms focus on NLP only, lacking ways to tackle more complex conversational designs – and those who offer conversational design tooling are typically limited by their own complexity and suffer from a high technical debt, lacking language abstraction around conversational concepts and lacking modularity; focus on specific technological issues without thinking on the value for their customer; do not adapt to specific businesses' logic, missing a 360° enterprise vision (with companies needing to multiply the providers, which leads to high complexity and high costs); and are difficult to integrate with external systems.

Users (companies and developers) are thus eager to have programming interfaces that are easier and more natural to use, rather than dozens of different software, all with different user interfaces and ways to be employed. **By launching a unique bot development platform in the global market, Clevy intends to grasp a significant and growing business opportunity**, mastering the entire cycle of creation, production and maintenance of chatbots systems, no matter the type of company.

¹ https://ec.europa.eu/growth/industry/policy/digital-transformation_en

² <https://www.grandviewresearch.com/press-release/global-chatbot-market>

³ <https://www.statista.com/statistics/656596/worldwide-chatbot-market/>

⁴ “Conversational AI Market”, Markets and Markets report, March 2019.

⁵ For the full project: design, development, test, release.

⁶ “Market Guide for Conversational Platforms”, Gartner, Inc., June 2018

1.1.3 Clevy' solution

The CSML Atlas Platform is aimed at democratising the use of Clevy's programming language for conversational design – the Conversational Standard Meta Language (CSML). By releasing a high-level common language for all chatbots, Clevy is ultimately proposing **a new standard for developing universal and powerful chatbots**, just like what other languages (Javascript, Objective-C) and frameworks (jQuery, Xcode) did to web and mobile development in the previous decades.

1. Defining the technological problem: an outdated development model

Today, all chatbots are created with one of only two methods: (1) either by using any of the available free or inexpensive “drag-and-drop” graphical tools, which enable non-technical people to get started quickly, but scales very poorly, cannot be versioned using standard tooling, and do not easily allow for exportation (strong vendor lock-in); (2) or by using a generic programming language (javascript, PHP, python, etc.), which lacks a common standard, requires a lot of unnecessary and repeated boilerplate to achieve even basic features like memory handling, and often induces high development costs and slow go to market.

Market consolidation has already proven that Javascript has won the battle for the web, and iOS applications can only be written in Swift (or Java for Android applications). The same consolidation is due for chatbots. As most large companies worldwide are now involved in at least one conversational program, **the underlying technology and tooling is outdated and due for a global standardisation. This is the problem that Clevy aims to solve with its technology.**

2. The CSML: all conversations start with a common language

The first step in solving that problem is to create a common language for all chatbots. To that effect, Clevy has been continuously developing its own domain-specific programming language, the CSML. **CSML's objective is to make designing conversational experiences as intuitive as possible, reducing by 90% the time and costs to create and deploy any chatbot at scale compared to all existing platforms, and make it as easy as possible to connect any human with any machine.**

Written itself in Rust (a low-level, fast, memory-efficient and safe programming language), and fully Turing-complete, the CSML acts as a linguistic/syntactic abstraction layer, designed for humans who want to let other humans interact with any machine, in any setting. The syntax is designed to be learned in a matter of minutes, which has been confirmed by Clevy with both technical and non-technical developers. Clevy has been performing training sessions both in person and online where developers and non-developers alike were able to develop and deploy a full chatbot performing a certain task (searching through Netflix' movie catalogue, creating custom profile picture frames, etc.) in less than one hour. Early adopters who weren't onboarded through one of these training sessions also found the language to be intuitive and useful, as well as excelling where other frameworks or libraries fell short. For example, one user commented that competitor framework Dialogflow, by Google, “lacks the capabilities which you guys are providing using CSML”. The documentation of the language is publicly available on <https://docs.csml.dev>.

CSML is modular by design: one of the main ways to speed up development is to **ensure that everything is reusable**. Developers can easily create generic snippets and use them at various places in their code or import parts of other bots in their creation. By enforcing good development practices (DRY: Don't Repeat Yourself) and letting developers collaborate with reusable chatbot modules, CSML ensures cost-effectiveness and short development cycles.

CSML is secure: all CSML-defined interactions are encrypted to ensure the security and safety of the data. Upcoming features also include developer-defined expiration dates for saved data, which will be wiped automatically by the engine, or private scopes for inputs that contain sensitive data (personal data, financial or health information). As the CSML interpreter is written on Rust, a low-level, memory-safe systems programming language, Clevy ensures a high level of security.

CSML is interoperable: to further speed up development and scalability, a CSML flow can be plugged in with any external system by means of standard integrations or custom APIs, as well as integrated into other languages with parallelized runtimes.

CSML is open-source: Clevy is opening their CSML roadmap to the world, to build a strong community around it and leverage world-class developers. This is key to ensure a rapid adoption of the project outcomes. Special actions intended to present, train and engage a community of stakeholders will be carried out (with the potential to target over 5 million software architects, developers and students). As part of these actions, Clevy will make available assets such as technical documentation, wiki or even organise hackathons. By making this game-changing language open-source, Clevy enables **CSML to attain the status of a de facto global standard for building chatbots**, usable at scale across entire organisations, with the guarantees that open source projects present: better security, larger community, sustainability, no vendor lock-in.

CSML is scalable: Clevy wants to empower developers to create what they want without technical barriers; to make sure that CSML chatbots can accept any number of conversations (from a few to a few millions, without any restriction); to make CSML available in the cloud, on-premises, or even offline. With CSML, developers are in control of their chatbot development project with very little boilerplate and a standardized lifecycle and development process, maximizing return on investment.

3. The CSML tooling/framework: from development to world-scale deployment

Deploying and managing chatbots at an enterprise-scale is needlessly complicated. Beyond the very language and in order to facilitate deployment and collaboration between developers, the CSML relies on a set of highly specialised tools to make chatbots as simple and customisable as possible, while enabling enterprise-scale levels of availability, performance and scalability. This set of tools is known as the **CSML framework**.

Clevy CSML core/basic framework has been successfully developed and initial sales' agreements have been reached with SNCF, Orléans city, Danone, Capgemini, AXA, and Sodexo. This framework comprises the language itself, the architecture for the engine, the architecture for the “function runtime”, and general architecture for interoperability with other systems. Core modules include: a web server to easily run the CSML Engine on-premise; the first communication channel; built-in contents (library of flows or functions or bots); an easy-to-deploy Javascript/Node.js runtime; a livechat connector to make it possible for a human agent to take over the conversation and replace the bot for a period of time; a Command-Line tool to help with local testing of the chatbot; NLP/NER API modules that come as satellites to the core framework, and which are not necessary for every bot to function, but are additional pieces of functionality that make Clevy's technology much more powerful, valuable and easy to use.

4. The CSML Atlas Platform

The main objective for Clevy is to scale up its innovation in international markets and make CSML a standard tool in every chatbot developer's toolset for building the most powerful bots. This is why Clevy has started the development of the CSML Atlas Platform – an online, ready-to-use, full-featured and state-of-the-art implementation of the CSML framework, that includes all its core modules and deployment channels without requiring any installation or setup from the developer. The CSML Atlas Platform is both the perfect Proof-of-Concept for the CSML framework and also the easiest way to develop and deploy chatbots securely and at scale for any enterprise use case, covering the entirety of the chatbot's lifecycle.

Using the Atlas Platform, which runs in the cloud in SaaS mode (i.e. the platform runs on Clevy servers and is operated by Clevy, and does not require any installation by the customer in their environment beyond simply logging into the platform), developers can test the language freely without going through the complexity of having to install anything on their machine, import existing bots and functions or author their own code, connect it to their NLP-enabled agent on other platforms or bring their own NLP service, invite their team to collaborate, deploy the chatbot on any channel and monitor it, make changes in real time to in reaction to their users' behaviour, scale the chatbot up to millions of conversations per month with no additional DevOps cost.

Using the CSML Atlas Platform also makes it possible for developers to access more specialized features that target specific use-cases, such as marketing automation (by using chatbot-initiated “broadcasts” and automatic reminders that can help reaching out to users that have stopped using the chatbot) or e-commerce modules (such as a module that can automatically build a chatbot from an existing online shop, adding one more sales channel at little additional cost). These specialized features can be added in the CSML Atlas Platform and enabled with one-click, making it that much more attractive to other typologies of developers and customers, instead of needing additional development as is the case in traditional self-managed software.

For enterprise customers with additional networking or security requirements, the entire solution is also designed to be deployed on-premise (i.e. the entire structure is configurable and replicable on the private servers of a customer, allowing the integration of agents created within the CSML Atlas Platform software directly with other systems on a customer's servers, physically separated from any other customer).

1.2. INNOVATIVENESS

Clevy innovation relies on the CSML – the basis for the development of the CSML Atlas Platform, which represents **a new way of thinking when creating conversational agents**. Clevy expects **reductions of up to 90% in time, effort and cost to deploy conversational bots over current solutions**, while being production and enterprise-ready (secure, scalable, maintainable). The initial months of deployment have shown that with CSML it is possible to do in a few hours what takes a few days/weeks with other frameworks.

From a business perspective, Clevy delivers the **first solution** overcoming the key challenges faced by bot developers and detailed in section 1.1.1, with several key advantages over competing solutions (cf. section

1.2.1) and user benefits (cf. section 2.1.2). Technologically, Clevy breakthrough research has resulted in the release of the CSML in Nov'19. Since then, and without any kind of advertisement, Clevy has already close to 1000 developers using it / +11 million messages exchanged with the chatbots developed by those developers and their chatbots' users.

CSML's most distinctive innovation is that it can make any computer program or server easily accessible to any user by means of a programmable conversation that even non-expert developers can design, develop, and deploy. The programming language itself is very easy to learn (full training sessions for complete beginners are usually achieved in 1-2 hours) and the framework's architecture makes it interoperable with virtually any other API on the planet. The CSML framework is a **unique design in the world of chatbots** that is focused not only on one specific use case or part of the problem, but instead tackles the full conversation development lifecycle, both vertically (in terms of raw individual features: conversational experience design, decision tree, integration with other APIs, NLP, human agent handover) and horizontally (covering every step of the life of a chatbot from the design phase, the development, the deployment, scaling, archiving, maintenance and monitoring).

1.2.1 Benchmarking against competing technologies/solutions

The market for conversational platforms is crowded, with many different players offering specific platform solutions. Still, there are very few players offering conversational frameworks (cf. section 2.1.5 for a detailed competitors' analysis). **And no company has yet created a language.** In a scenario where the conversational market is predicted to be huge in 5 years (over €13Bn), **there is an obvious market potential to be tapped, and Clevy has the right technology to take it as soon as CSML becomes the *de facto* standard.**

Botpress is, among the companies offering conversational frameworks, the competitor with a vision closest to Clevy: it is a fast and flexible on-premise bot building platform; it makes it technically possible to create any type of bot; it is open-source, multi-channel, and includes packages for several core functionalities inside the same development platform. Still, and when comparing with the CSML Atlas Platform, *Botpress* presents several disadvantages that are common with most of Clevy's competitors. These can be used to demonstrate **Clevy's innovation most important competitive advantages:**

- Like many of the existing solutions, *Botpress* chose to offer their users a graphical interface to create their chatbots (cf. limitations raised above), which is neither practical for building bots beyond the proof of concept stage, nor does it enable large teams to collaborate. In addition, it is not the simplest and most user-friendly graphical interface available: it is too complicated for non-technical users, while developers traditionally stay away from graphical-only tools.
 - The CSML Atlas Platform is built with collaboration in mind by allowing teams to create reusable bits of code at every level: full bots, flows, parts of flows, functions, integrations.
 - With its textual and expressive design, the CSML is the easiest way to share chatbot designs, including code comments commonly used by developers to make their creation more readable. By using the same standards as developers are used to, CSML reduces friction and enhances its chances for a greater adoption.
- By providing a graphical chatbot design tool, *Botpress* also does not allow to export bots for backup, versioning or archiving, and does not address the "vendor lock-in" that most enterprise customers will avoid: bots built graphically can never be used other than with the very software they were built on.
 - Clevy's Platform addresses these issues at its very core: chatbot code is defined as simple text that can be exported anytime. As for the vendor lock-in issue, since the code is defined in text and the language is open-source, any software vendor can provide compatible software: this makes CSML future-proof by design.
- *Botpress* allows for custom code to be executed, but only in javascript. If the company only employs Java or PHP developers, or uses existing libraries in a language other than javascript, they need to rewrite it for compatibility with their bot.
 - The CSML Atlas Platform makes it possible to use code in virtually any language (currently, runtimes are available for NodeJS, Javascript, Python, Ruby, Java, Go, C#, .NET or Rust and others can be added on demand).
 - It is a better architecture design and developer experience to have the bot framework consume any existing code than needing to write or rewrite code specifically to fit the chatbot.
- *Botpress*, as most existing bot platforms, is built on older paradigms for chatbot architecture and design. They are typically limited by their own complexity and suffer from a high technical debt.

- With its language abstraction and modularity, the CSML framework can grow infinitely without adding any additional complexity to the end-user. At some point, competing technologies will have to rewrite their whole stack to continue growing, but this will cause all existing users to engage in a costly rewrite of all their bots.
 - Since Clevy controls the programming language itself, it controls its own technical debt as well, and can add as many features as needed without requiring developers to change their code to comply with external dependencies or requirements.
- *Botpress*, although one of the only solutions that can be fully deployed on-premise, is built as a single monolithic package, which is hard to grow past a certain scale. For instance, the default database engine is file system-based Sqlite, which cannot be easily shared between multiple servers. This creates architecture, speed and stability issues at scale, and does not allow for redundancy and resilience.
 - Clevy's technology is designed for a cloud-first, cost-effective and scalable experience, using standard NoSQL database engines and very common file-system bindings, which makes it easy to use on premise as well (while the other way around is not necessarily true). This competitive advantage is especially sensitive for large customers who do not want to invest in a system that cannot scale to production, beyond the proof of concept or pilot phase.

Furthermore, today, **most of Clevy's competing solutions are partial frameworks**, focused only on parts of the full chatbot lifecycle:

- Some solutions offer only a strong NLP engine (Facebook wit.ai, Amazon Lex, Google Dialogflow, etc.), with very little or difficult to use conversation logic design tooling. **Clevy doesn't expect these big players to threaten its chances of succeeding in the market for two main reasons: open source and agnosticity.** Clevy can plug on any of their services, they don't. CSML is open source and is a language, dragging a whole category of users (developers) that wouldn't use anything else than a programming language to develop a conversational program.
- Other solutions offer no NLP at all (or rely on external services by means of integrations) but focus on the conversation design part with a graphical-only interface (e.g. The Bot Platform, Chatfuel). Some platforms are also extremely well-integrated with only one communication channel (most often, either Slack or Messenger), but cannot be used on any other channel (Chatfuel).

All these competitors with one or two strong suits are easily tackled by Clevy as it can demonstrate a 360° vision of the full chatbot lifecycle, from design to deployment, to maintenance and monitoring, and also remain as good or better at the feature in question. Thanks to its highly modular design, **Clevy's CSML Atlas Platform provides on top of the CSML framework:**

- **A strong proprietary NLP engine**, installable on-premise if needed, available in 16 languages, with strong secondary features like sentiment analysis, named-entity recognition, and a proven 2-year track record of enterprise customers with high levels of performance (up to 88% of direct match, <5% of error rate, at the higher-end of market standards, but with usually quicker time-to-deploy);
- **Integration with third-party solutions**, e.g. Google Dialogflow, Amazon Lex or Microsoft Luis, or other open-source or custom alternatives (Rasa, custom/on-premise engines) for customers who prefer to bring their own NLP engine for some reason (reusability of previous work, technical or regulatory reasons);
- **Rich conversational experiences** even when no NLP is required – some platforms rely so heavily on NLP that it can hardly be disabled (e.g. wit.ai)

Moreover, **by owning 100% of its technology, Clevy guarantees increased data security and stability for its clients**, as the data is not split between many interconnected systems. Finally, customer data is hosted on Clevy's secure AWS (Amazon Web Services) servers in Paris, France, helping comply with European regulations (GDPR) and is operated by domain experts from Clevy team to ensure proficient customer support.

Overall, this level of offering is currently unmatched among all other solutions and explains the strong initial interest by many companies to use the CSML Atlas Platform as their global conversational platform of choice for all their chatbot needs.

1.2.2 Why now?

Chatbot technologies are now reaching their maturity thresholds⁷. Based on the results of a 2018 Gartner CIO Survey, only 4% of enterprises have currently deployed a conversational interface such as a chatbot or virtual assistant. 17% are actively experimenting or planning to do so in the short term, and 21% have it in their medium- or long-term planning. This evolution will coincide with a tremendous growth of technologies to

⁷ "Market Guide for Conversational Platforms", Gartner, Inc., June 2018

build conversational agents. Clevy has timely taken these **market readiness** findings into account and is now maturing a unique offer for the creation and implementation of chatbots. For the past 2 years, the company has demonstrated a strong leadership on this front with its automated Q&A answering service for large enterprises, which is easy to deploy, scalable and secure. This service is currently in use in production in multiple large-scale use cases: **over 1M employees worldwide have 24/7 access to a Clevy chatbot deployed by their company, in up to 15 languages, including in high-security environments** such as the French Ministry of Armies, or world-renowned insurance, banking as well as pharmaceutical companies. The company is thus ideally positioned as a technological player to meet an upcoming huge market demand.

1.3. STAGE OF DEVELOPMENT

1.3.1 Technological roadmap and current stage of development

Clevy was founded in 2017 and the team efforts in the first year focused on the development of innovative solutions to automate answers to frequent processes and questions from employees on any internal topic (Human Resources, Legal, IT, Events, etc.). The development of a new programming language for conversational agents started being discussed in mid-2018, with the very first basic version of the framework (without even considering the CSML, just the basic idea behind the framework) developed in November 2018 as part of a project for Danone. In December 2018, Clevy has started working on the language syntax and theoretical architecture, with the development work on the CSML reaching full speed in March 2019. Since then, the CSML Atlas Platform concept and underlying technological elements have matured, building on the technical and R&D knowledge available at Clevy and complemented by the business insight given from both the core team and lead experts integrated in the company Board. **In Nov'2019, the CSML was officially released in an open beta program. In January 2020, the first version was publicly open, while in March the first CSML chatbot – the Covidbot – reached more than 1 million messages exchanged per month.**

Since its creation, the company received two grants, an honorary loan and two innovation loans sponsored by the French State (totalling €620 k) that allowed the development of both the CSML and of the engine behind the CSML framework, as well as of their first commercial product: the Q&A bot platform. These also enabled the engagement with large businesses (paying customers of Clevy conversational agents) and strategic technology partners (Capgemini, AWS, Workplace by Facebook). The enthusiastic feedback received so far from the IT community about Clevy disruptive CSML technology have now accentuated the urgency of bringing a mature version of the CSML Atlas Platform to the market.

The key development milestones that brought Clevy technology to its current development stage are summarized in the roadmap of Figure 1.1, while detailed below.

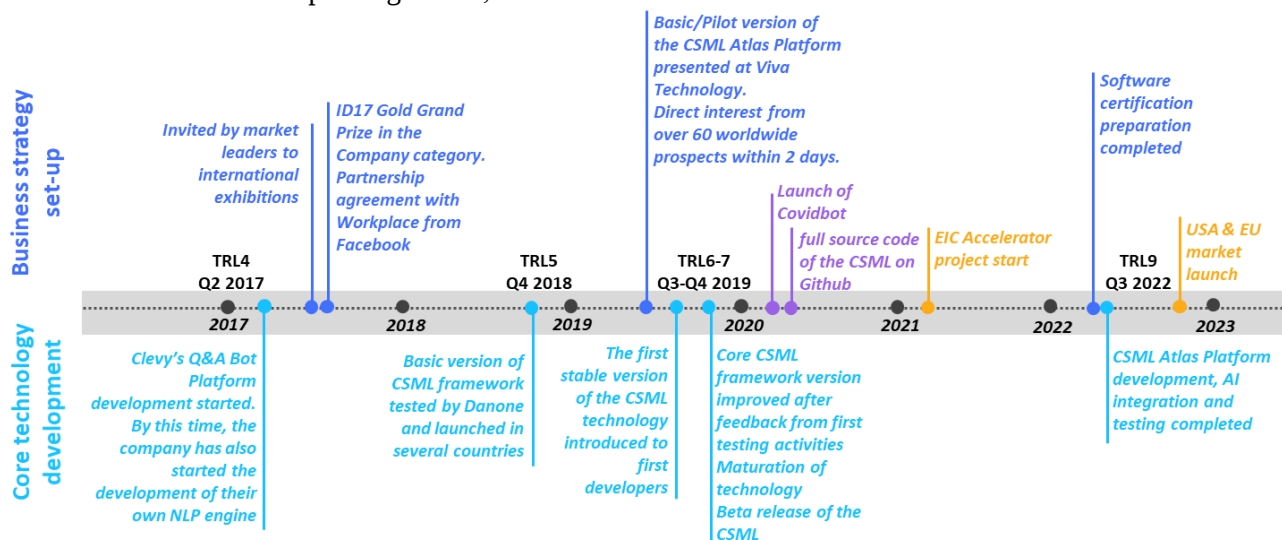


Figure 1.1: Key development technology- and market-related activities and results.

- (April 2017) Clevy's Q&A bot platform development started, a SaaS solution that allows companies to create simple and efficient chatbots. By this time, the company has also started the development of their own NLP engine.
- (June 2017) Invited by market leaders to international exhibitions: by Sanofi Group to Viva Technology, Crédit Agricole at the 48h of Techno, and by Amazon to the AWS Summit Paris.
- (July 2017) With its core technology (NLP engine for Q&A purposes), Clevy won the ID17 Gold Grand Prize in the Company category, which brought visibility to Clevy, and enabled the company to talk to

investors and potential clients about its concept (by then at a Technology Readiness Level 4, **TRL 4**). Clevy has also signed a partnership agreement with Workplace from Facebook (to build internal chatbots on Workplace for Workplace's customers via Clevy technology).

- (November 2018) **A basic version of the CSML framework** was tested by Danone and launched in production in early 2019 across several countries, with the following features: handle multiple-step conversation, display content in multiple (5) languages, recognise the user, remember input data and reuse it for further treatment, integrate with external services. (**TRL5**).
- (May 2019) **Along with the framework, a pilot version of the CSML Atlas Platform** (initial prototype), including the CSML itself, was presented at Viva Technology, on the booth of Clevy's principal cloud partner – AWS – having received direct interest from over 60 worldwide prospects within 2 days. Although incomplete, several users have started using this first version of the CSML Atlas Platform, providing feedback to Clevy that, based on this, is adding features continuously.
- (July 2019) The **first stable version of the CSML framework** was introduced to some of Clevy current customers/first developers. (**TRL6**)
- (September/October 2019) The **core framework version was improved** considering the feedback of the first testing activities – done by 26 developers in the first beta-test phase (excluding Clevy own developers). Clevy has matured the technology with new keywords and refinements in the core language, a first set of modules in the library, integration with new communication channels (Facebook Messenger, Alexa and Google Home voice interfaces), and a standalone NLP module including named entity recognition (NER) with first-class support for 8 languages, secondary support for an additional set of 8 languages (based only on the English algorithms instead of being fully localised), and mathematical-only classification support for a diverse set of other languages (including non-European alphabets such as Chinese, Japanese). Additionally, sentiment analysis is only available for English for now. (**TRL6**)
- (November 2019) **Beta release of the new programming language: CSML.**
- (March 2020) **Launch of covidbot.fr**⁸ as part of a partnership with AP-HP (Paris Hospitals network at the forefront of the Covid outbreak) and Institut Pasteur (France's main public research center on Covid). The chatbot is released in open source, leading to developers in several countries replicating its contents in their own language (e.g. Philippines, Czech Republic, Senegal). The chatbot was installed in France by over 50 institutions (major cities, regions, enterprises) on their own public or internal pages, to help their users access the latest official information and assess their symptoms using the algorithm developed by the French Health Ministry. The data gathered by the chatbot contributed to research on the virus' spreading. Over 20k users assessed their symptoms with the chatbot, and over 400k used the chatbot to access official information, exchanging over 4 million messages on Covidbot or localized variants.
- (April 2020) The **full source code of the CSML language is made publicly available on Github**. All further development is fully public, accessible and auditable by any developer, making it safer for everyone to use, who can also propose their own features or bugfixes (which have to be approved before being added to the official codebase to avoid compromising on security).
- (June 2020) CSML 1.0 is released covering an initial first batch of stable features. CSML is now out of beta and can now be installed by any developer in any environment, even entirely offline. (**TRL7**)
- (August 2020) Added connectors to all major NLP providers as a 1-click installation option: Dialogflow (Google), Lex (Amazon), Luis (Microsoft), RASA, SAP Conversational AI. This allows full compatibility of the framework with other NLP systems.

1.3.2 Remaining steps to market and ATLAS project objectives

The overall objective of the ATLAS project is to position Clevy for high growth by overcoming the remaining barriers and challenges associated with the broad introduction of our unique technology in international markets. With the ATLAS project, Clevy will be able to fully mature the development of its end-to-end conversational tool – the CSML Atlas Platform – in full alignment with requirements and specifications of the group of end-users (software developers), and demonstrate it in operational settings (TRL7) to iteratively finalise and qualify the system (TRL8). Clevy expects the ATLAS project users to be lead customers in proving the full system (TRL9). Clevy has already received strong interest from several companies – including Danone and LETTRIA (cf. Letters in Annex 3), which have shown their support to ATLAS project and willingness to

⁸ Installation instructions available on: <https://www.covidbot.fr/embed>

Source code available on: <https://github.com/CSML-by-Clevy/covidbot-autodiagnostic>

be a part of the planned demonstration activities. As such, at the end of this project, we expect to have a fully validated product, thoroughly demonstrated, and documented on its performance, mainly in terms of system's operability/incidences history (bugs and engine's failure).

In sum, the **ATLAS project will mainly focus on all major technological and commercial challenges regarding the introduction of a highly competitive and matured platform, primarily, into the EU & USA markets. This will be vital to unlock the significant global market potential for Clevy and to scale-up our business.** To achieve this main objective, several challenges with specific outcomes – closely aligned with Clevy business strategy – have been defined, as presented in Table 1.1.

Table 1.1: Challenges, specific objectives and expected outcomes of the ATLAS project.

Challenges	Objectives' description Work Package (WP)	Expected outcomes & <i>Indicators</i>
- Creation of a highly/infininitely extensible architecture may require building separate middleware tooling/infrastructure (package repositories like npm, versioning solutions like github, etc.). - Adapting the platform to multiple architectures/infrastructures (including standalone/on-premise/offline/embedded deployment packages) requires a different set of competences compared to hosting a single SaaS product on Clevy's own chosen infrastructure.	O1: Maturation of the CSML framework WP2, WP3	Clevy CSML framework with expanded conversational capabilities (other modules and external plugins, as described in WP2). Standalone / on-prem / offline packages to run the framework offline or on other servers (WP2). Improved AI (e.g. automated analysis and decision-making tools) to increase the value of the framework (WP3) <i>Clevy's refined framework ready to be integrated in the new platform.</i>
- Real-world scalability tests require a critical mass (number of users, interactions with chatbots, etc.). Some hypotheses can be tested or theorised, but some issues will only appear at scale. - Proving security is achieved by continuously testing the platform for points of failure and weaknesses, but no system is 100% secure. Only time and past performance records can reassure future customers about true scalability/security.	O2: Demonstration of secure platform WP4	CSML Atlas Platform ready for demonstration. End-to-end, fully integrated, low-code, secure platform for designing, building, deploying, running and analysing chatbots, released for test users / developers. <i>CSML Atlas Platform ready for demonstration/testing round with 200 users/developers.</i> Demonstrations at 200 users. Conclusions on what to improve in the CSML Atlas Platform in terms of operation and performance. <i>CSML Atlas Platform benefits and performance fully demonstrated and meeting users' requirements.</i>
Long and expensive initial certification process, with continuous/yearly recertification requirements.	O3: Achieve regulatory compliance WP5	Regulatory documentation. <i>CSML framework and platform compliance with ISO27001, SOC2, GDPR, and HIPAA regulatory framework documented.</i>
- Marketing and sheer product quality are not enough. A certain amount of "buzz" must be reached to achieve a sizeable community. Succeeding on platforms such as Github helps a lot with building strong communities but cannot be controlled with certainty in advance. - Industrial partners are often not keen to actively participate in open-source development, and open-source developers are generally not paying for the use of products at the enterprise level. A sweet spot between both populations needs to be found.	O4: Increase awareness and confidence about the CSML Atlas Platform & Build a Community of key stakeholders WP6	Increased awareness about Clevy technology benefits, encouraging its uptake on a broad scale. Active and supportive Community of key stakeholders. <i>Strong market dissemination and communication plan implemented.</i> <i>Engagement of stakeholders' community (> 500 people)</i>

1.3.3 Technical, Practical and Economic feasibility

As described in section 1.3.1, the core framework has been successfully validated. The 5 core features of any chatbot were correctly addressed, in a developer-friendly way: using the easy CSML syntax and the framework, tests have proven that developers could create chatbots that are already able to handle user input and respond accordingly (“Orchestrate”) with rich interactions such as buttons, images, videos, etc., on several communication channels (“Message”), integrate them with other APIs or systems (“Integrate”), remember information from the user gathered along the conversation or injected from the user’s context (“Memorize”), and understand natural language constructs either through external NLU libraries or through integrated processing functionalities. Overall, this clearly shows the **technical feasibility** of Clevy’s CSML technology.

Regarding **practical feasibility**, the past experiences with Clevy customers (among them Danone with 2 projects lead in parallel with the CSML framework development at the end of 2018 and early 2019) have shown us that there is strong appetite for a solution that allows fast-paced and high agility development of chatbots that are easily integrated with other systems. Moreover, many of Clevy’s customers (e.g. SNCF, Orléans) have already shown interest in features made possible by adding CSML-driven chatbots for specific, verticalized needs into their current NLP-driven usage of chatbots.

Technical and practical feasibility is also proven by the success achieved so far with the release of the CovidBot, which has shown that: CSML is quite scalable; there is an enthusiasm for chatbots from end-users, as a natural way to get information.

CovidBot | The government's information chatbot to answer questions about the Covid-19

CSML allows for immediate action in case of crisis, providing reliable information faster in a way that the public demands.

Scalable & Open source

CovidBot was opensource and has been adapted and deployed in +15 countries in the world (after its release in France)

+20 articles on the initiative including on the World economic forum website

+4 million messages sent

10% monthly growth of users

Thanks to CSML CovidBot was built and deployed in a record time (few hours) and with full scalability, immediately available on Browser (Desktop and Mobile) and Messenger

Source code has been released on github with several organizations installing it immediately as part of their internal comms on this crisis.

The company also gets invited to 1-2 workshops/conferences per week to present the CSML and was already asked for training by Danone (having organized a CSML day with different innovation teams across BU) and a training for consultant in two companies (Smile and One point) willing to use it with their customers.

To confirm the **economic feasibility** of the product, Clevy has conducted extensive market research activities, which resulted in a detailed report (published in May, 2019) with recommendations for both Clevy’s pricing strategy and market size potential in France and the US (cf. section 2.1.4 for market potential analysis). The report highly recommends Clevy to advertise the amount of benefits in relation to cost of the product to obtain more visibility and attract new customers. Furthermore, a VRIO model was applied to analyse the internal resources and capabilities of Clevy, which highlighted ‘security’ as a key factor to obtain sustainable competitive advantage and capture value. Finally, the study suggested that Clevy should provide free trials to ensure broader understanding of the product and thus value to clients. This is done by open sourcing the CSML.

Based on Clevy **economic feasibility estimates** (detailed in section 2.5), a total sales revenue of €71M and Gross Profit of €23M are anticipated 5 years post CSML Atlas Platform market introduction, which confirms that this project will place Clevy for high profitability and growth.

Considering that: 1) there is wide appraisal for the CSML Atlas Platform by the IT developers community, 2) the validation of the core elements’ functionality has been achieved, and that 3) a feasibility analysis, comprising both technological and market-related activities have established the exploitation potential and business roadmap of this unique technology, Clevy has decided to apply to the EIC Accelerator (with the above listed objectives), in order to ensure fast-track commercialisation and wide market adoption of its solution.

1.3.4 Risks

Market launching of the CSML Atlas Platform involves risks, mainly related with technology validation and acceptance, and market introduction. Clevy’s team and Board members are familiar with the management of those risks, given their vast and unique experience with the development of conversational technologies and commercialisation processes (cf. section 3.1). Moreover, the ATLAS project objectives and activities have been specifically designed to overcome the potential risks identified at this stage. This project is thus of high

importance for Clevy as it will provide enough financial momentum to undertake the proposed activities, significantly accelerating market uptake of its technology.

- **Risk 1:** CSML Atlas Platform not adaptable to all architectures/infrastructures, i.e., not able to be infinitely extensible. This could compromise successful sales ramp-up (**Objective 1**). Likelihood⁹: 2, Impact¹⁰: 5 (*Relatively high impact but very unlikely as the framework is running in containerized technology, which is by itself the most portable architecture possible as of today*).
- **Risk 2:** Failure to gather the critical mass needed to validate real-world scalability of the platform (**Objective 2**). Likelihood: 2, Impact: 4. (*Theoretical scalability has been validated during the development of the technology, and automated machine tests can be performed to prove actual level of scalability*).
- **Risk 3:** Low cost-to-benefit ratio perception from end-users (**Objectives 2 and 4**). Likelihood: 3, Impact: 8 (*Related to, and a possible root cause of Risk 5. However, the cost-to-benefit has already been considered during the testing activities and is rather one of Clevy's strong suits*).
- **Risk 4:** ISO27001 certification refusal (**Objective 3**). Likelihood: 5, Impact: 2 (*ISO27001 is not mandatory for Clevy, except for working with certain highly regulated markets, while being very difficult, time-consuming and expensive to obtain*).
- **Risk 5:** Weak involvement of the stakeholder community/community not growing. This may happen if dissemination measures are not taken by Clevy or are not enough to convince potential contributors that CSML code is worth spending time and resources on (**Objective 4**). Likelihood: 6, Impact: 10 (*This is the **most critical risk** anticipated at this stage. Despite high marketing efforts, Clevy cannot coerce people into using their solution*).
- **Risk 6:** New competitors moving into Clevy's target market with improved framework solutions (**Objective 4**). Likelihood: 6, Impact: 6 (*CSML is a very strong barrier to entry so it is unlikely that Clevy will be attacked exactly on that front. However, aggressive marketing by competitors is always a possibility that could impact Clevy, regardless of whether the competitor's solution is actually an improvement over Clevy's*).
- **Risk 7:** Failure to secure agreements with best technology and commercialisation partners (**Objective 4**). Likelihood: 3, Impact: 5 (*Once framework usage attains a critical mass, partners will naturally come. Impact is largely about commercialisation partners for scaling, as Clevy can provide high-value, built-in integrations with tech partners themselves*).

Contingency plans / mitigation measures are further described in section 3.4.

2. IMPACT

2.1. MARKET AND CUSTOMERS

2.1.1 Target users/customers and their needs

Today, more and more businesses are beginning to turn their attention to conversational experiences as a valuable way to differentiate from competition. Indeed, to thrive and grow in today's experience economy, companies need to become intelligent enterprises; "being digital" won't be enough. Clevy's target **customers' needs** are aligned with this vision:

- To gain competitive advantage, companies need to reduce operating costs. Organisations are aware that conversational agents can improve productivity by providing workers with quick answers and solutions. **Developing a conversational bot has the potential to reduce operational costs, manpower and time**, while helping businesses making more informed decisions, become far more efficient, and craft more personalised and relevant experiences for both customers and employees.
- Chatbots are complex and expensive to develop and maintain. **Organisations thus need a new generation of technology to let them develop and implement conversational bots at scale, faster and in a cheaper way**. They also need a technology that their own resources (developers and engineers) can use rather than being dependent on black-box technologies they don't master.

With its unique CSML Atlas Platform, **Clevy will target mid-size to large companies and public organisations (paying customers)** – with over 150 employees – that need to change disruptively the management of data and tasks by the employees, to improve the internal communication channels, and to enhance interaction with clients. Since the number of employees is directly proportional to the internal entropy

⁹ Likelihood of risk occurrence, in a scale of 1-10: 1 "not likely to occur" and 10 "very likely to occur".

¹⁰ Impact that the risk will have in the project in case it occurs, in a scale of 1-10: 1 "low impact" and 10 "high (negative) impact".

in terms of information searching and sharing, Clevy envisions that these enterprises are more willing to pay to use the CSML Atlas Platform. Moreover, these mid-to-large size organisations typically have an internal IT department (with developers or *tech savvy* employees – crucial to assist in the adoption of this solution in the company’s system). Finally, medium sized enterprises are the ones expecting higher return on investment (ROI) and cost reductions as a result of adopting conversational technologies¹¹.

In addition, **Clevy will target freelance developers** and smaller agencies with an interest in developing conversational agents as an easier acquisition vector for its services. Being a technical framework dedicated to helping developers creating rich conversational experiences, it is important to reach a high usage rate, which will increase the credibility of the offer to high-paying customers in demand of a stable, well-tested and well-supported framework mastered by a wide community, reducing their risk in selecting to work with a relatively young technology.

In terms of customer profile (or sector), the **CSML Atlas Platform will bring invaluable benefits in every business vertical** (Banking, Financial Services and Insurance sector, BFSI, Healthcare, Retail, Media & Entertainment, Travel & Tourism, Consulting, etc.). Still, Clevy anticipates having a substantial impact in more sensitive data organisations, such as government corporations, banks and financial services (where chatbots have increasingly become a preferred option), due to the use of a programming language and conversational engine that can be used on premise, which guarantees high data security for clients.

In short time, **Clevy has built a strong contact network and close relationships with various potential clients – including some of the EU’s largest consultancy companies and businesses** (cf. Figure 2.1). These organisations, such as Capgemini, Ministry of Defense or Danone (in France), Axa (in Ireland), Yves Rocher (in Portugal), and eXpRealty (in the US), are already Clevy customers for a large variety of CSML conversational agents and were already approached regarding the new CSML Atlas Platform. The contacts undertaken confirmed their enthusiasm around the technology value proposition, validating its potential and benefits, and have provided Clevy with several key insights into designing the CSML Atlas Platform to solve market needs. **Written support to the project from Danone and LETTRIA** is included in Annex 3.



Figure 2.1: Some of Clevy’s current customers.

2.1.2 Benefits for users

1. Mid-size to large businesses

According to a recent research conducted by Accenture¹², CIOs and CTOs around the world believe conversational bots will play a critical role in the enterprise architecture of the future, having the potential to make a huge impact on a company’s operations: 56% mention that these technologies are driving disruption in their industry and 57% agree that conversational agents can deliver large return on investment for minimal effort (1x to 5x within the first 12 months). In terms of costs’ savings, the potential benefits associated with the use of these technologies are clear. **Capgemini – a one thousand employees’ key customer and strategic partner of Clevy** – has reported impressive benefits derived from the use of a conversational bot. Over a **4-month period**, +5800 questions were asked, and +7,200 emails avoided, corresponding to approximately **167 man-days avoided**¹³. In a one-year period, this would correspond to **over 100k EUR saved** (considering already the costs spent on implementing the chatbot (i.e. 43k EUR/year)). More than one-third of employees used the chatbot, which answered more than 3/4 of the questions (+75% direct response rate).

By reducing both the development costs and the time-to-deploy conversational bots (when compared to existing platforms and technologies), the CSML Atlas Platform will help businesses achieve ROI quicker than what is currently possible with other technologies available on the market.

2. Developers

The CSML Atlas Platform **brings unique benefits for software developers** (that translate in time and costs savings for businesses):

- No-framework (“from scratch”) chatbot development efforts in **Python, Javascript or other generic programming languages take up to 500 times more lines of code for identical functionality**, mostly due to the amount of boilerplate required before starting to add any meaningful functionality to the chatbot itself. This means that while a CSML developer can get started with conversational-related

¹¹ “Market Guide for Conversational Platforms”, Gartner, Inc., June 2018

¹² “Chatbots are here to stay – so what are you waiting for?”, Accenture Digital, 2018.

¹³ It is estimated that it takes on average 10 minutes to process an email. One man-day corresponds to about 7h.

functionality right away, other developers must first spend days/weeks setting up their boilerplate – and often come back to modifying this setup code as their project grows and requirements change.

- When comparing to other existing code-based frameworks such as botkit (javascript, open-source), identical conversational experiences written in **CSML take at least 50% fewer lines of code**, whilst also drastically improving readability by using only natural conversation-oriented syntax and removing javascript-specific constructs that do not add any value to the conversation.
- The above numbers do not include the additional server and database configuration and security requirements, which are automatically handled by the CSML framework, thanks to its “convention over configuration” mindset.
- Previous testing with real-world use cases showed that using **CSML reduces by 90% the time it takes to create any rich chatbot** (integrated with any third-party system or API) without compromising on features or agility. Reducing both time-to-code and the final number of lines of code required to achieve any result, while keeping code readable and maintainable, contribute to **improving the general developer experience of writing a chatbot**. By keeping the codebase concise and more readable, CSML also greatly **improves the maintainability of chatbots once they are deployed**.

2.1.3 Unique selling points

The CSML Atlas Platform is the **only suite of tools capable of covering 100% of the life cycle of any business conversational agent**, thanks to a **fully modular approach, guaranteeing reusability and scalability**, enhancing collaboration between domain experts (separation of conversational design and business intelligence), facilitating global deployment (both through the **integration of multilingual conversations and serverless scalability, including on-premise**), and **simplifying maintenance** for administrators (business and developers) relying on the simplest tools on the market coming from Clevy’s appraised experience in the conversational market. The technology unique selling points are summarized in Figure 2.2.

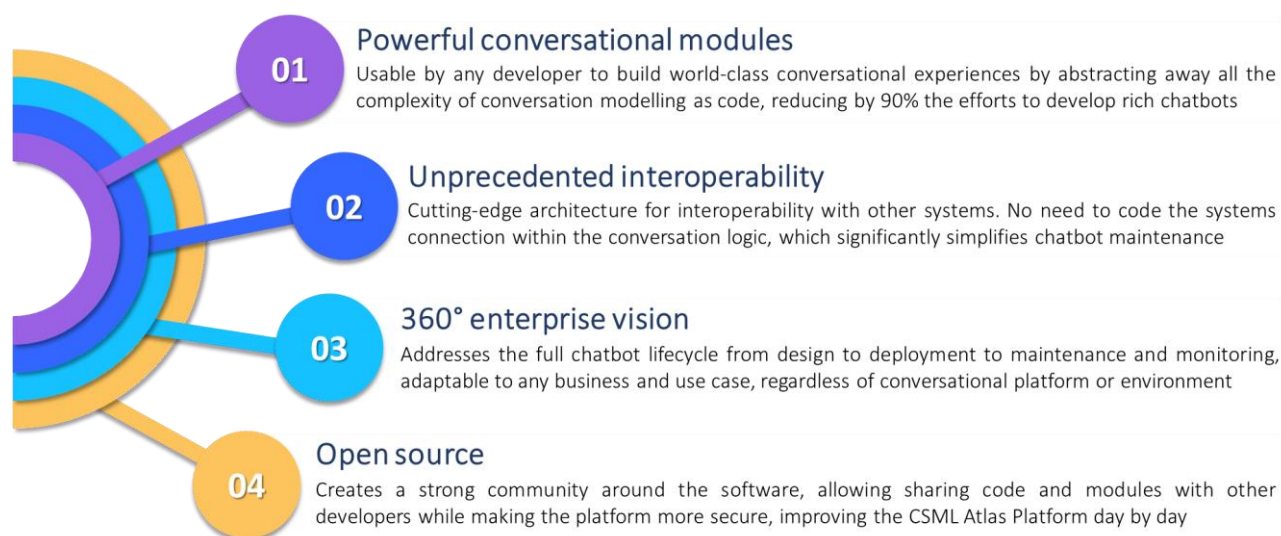


Figure 2.2: CSML Atlas Platform unique selling points.

The CSML Atlas Platform’s unique value proposition for both companies (paying customers) and software developers (final users), is likely to disrupt the current conversational paradigms and untap an enormous business opportunity, as described next below.

2.1.4 Market Potential

The chatbot market is relatively recent, but it’s clear there is considerable momentum building for bot use, with more companies expected to begin taking the plunge as early adopters’ success with this technology grows. The majority of currently available chatbots are focused towards handling customer queries, however, with the exponential growth of internal data & information, the use of chatbots to increase employees’ productivity is also expected to increase. As of today, 17% of organisations are actively experimenting or planning to deploy a conversational platform in their businesses in the short term, and 21% have it in their medium- or long-term planning.

Addressable Market: With its ground-breaking CSML Atlas Platform, Clevy targets the **global conversational AI platform market**, which follows the chatbots’ market trends: i.e. **expected to grow from**

€3.7 billion in 2019 to €13.4 billion by 2024, at a CAGR of 30.2% during the forecast period (2019–2024)¹⁴. The market growth prospects apply and are valid in all geographical areas. In specific, Clevy is targeting a **new market segment for the company i.e. conversational frameworks for developers** (to build chatbots, primarily for internal company level information finding and sharing, but also for other applications, such as social media, payments/order processing, and marketing). The targeted customer profile described in section 2.1.1 above enables Clevy to access a **total addressable market of at least 110,000 potential clients in US¹⁵ and 268,000 potential customers in the EU¹⁶ by the end of 2022**. This valuable pool scenario brings to Clevy a total market potential over **€ 7.1 billion** (for detailed business case refer to section 2.5).

Targeted geographical market segments: Clevy primary target regions will be the **US** and **EU**. Currently, US holds the largest market size of chatbot services and is the leading region in terms of adopting and usage of conversational platforms. It is also expected to hold this position for the next years, which makes it an appealing geographical market.¹⁷ Furthermore, Europe will be another regional undertaken due to the chatbots' market growth projection (a CAGR of 33.9% during the 2017-2023 period)¹⁸ and to Clevy's currently established network, particularly in France, making it a stronger way out for the CSML Atlas Platform commercialisation.

2.1.5 Competitors landscape

Although designing of chatbots is not new, the development of a **user-friendly conversational development platform to master the entire cycle of chatbots management using a proprietary, agnostic and secure language is a novel idea**.

As detailed in section 1.2.1, *Botpress* (a Canadian SME) is the competitor with a vision closest to Clevy, but still presenting several limitations that are shared with the majority of solutions: most products lack a 360° enterprise vision as Clevy has, focusing only on one technological issue without thinking of the value for their customer. Clevy competitive landscape is presented in Table 2.1.

Table 2.1: Clevy main competitors.

	Atlas Platform	Botpress	Meya	Bot Framework	Botkit	Rasa	ChatBot.com
							
Platform	Yes	Yes	Yes	Yes	No Same sort of services as a platform, but with no frontend	Yes	Yes
Type	Framework CSML	JavaScript Software development kit (SDK)	Markup language Lacking various notions like logic, arithmetic and loops	Framework JavaScript (SDK)	Framework JavaScript	Framework Python	Graphical User Interface (GUI) Can only be used to build chatbots using GUI logic. Impossible to code
NLP	Yes	Yes	Yes	Yes	No Part of Microsoft (MS) Bot Framework product. Can be integrated along with MS NLP	Yes	No Has vague match answers (e.g. hello would match hello and trigger the same chatbot answer)
Language agnostic	Yes Can integrate the majority of languages	No Only Javascript	No Only Python	No Only Javascript	No Only Javascript	No Only Python	No
Hosting (data security)	SaaS (EU servers) or on-premise	SaaS (US servers) or self-hosted	SaaS only (US servers)	SaaS only (US servers, Owned by Microsoft)	Self-hosted only	Self-hosted only	SaaS only (US servers)
Open-Source	Yes	Yes	No	No	Yes	Yes	No
Import / Export (*)	Yes	Yes	No	No	No	No	No
Business Model	Evolutive	Evolutive	Undisclosed	€0.422/1 000 messages	Free	Evolutive	\$50/month
Other Constraints	-	- for experts only - chatbots need to be developed by integrators with high entry barriers due to complexity - not easily scalable	- extremely difficult to use - language with no value to the platform (as a small side-feature)	- expensive - not user-friendly - data used by Microsoft in the US	- hard to deploy and implement - not self-sufficient, requires other services (NLP, databases...)	- for experts only - hard to setup, maintain and deploy	- limited platform - difficult to maintain a big chatbot

(*) Export is the ability to bundle the chatbot and all its dependencies (such as custom functions) in a file format that is exploitable by other platforms. On the other hand, importing gives the opportunity to a user to create a chatbot from an existing export. Import and export is an important feature to be able to: close a chatbot within an organization; move from a platform to another; edit the bot outside the platform.

¹⁴ “Conversational AI Market”, Markets and Markets report, March 2019.

¹⁵ <https://www.census.gov/data/tables/2016/econ/susb/2016-susb-annual.html>

¹⁶ <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/10100.pdf>

¹⁷ “Bot Services Market”, Markets and Markets report, 2017

¹⁸ <https://www.kbvresearch.com/news/europe-chatbots-market/>

As presented in Table 2.1, Clevy main competing solutions have several drawbacks:

- a) Create a strong NLU/NLP technology, but don't provide tools to make it easy to manage (i.e. complex solutions that suffer from a high technical debt);
- b) Provide a graphical interface to manage conversation flows (currently a big trend from most providers), which makes it easy to create small bots but very hard to manage large bots (e.g. "a personal assistant" that can do hundreds of complex actions that require a lot of different information);
- c) Not possible to "export" the graphical design and switch to another platform if needed, and very hard to maintain by someone else other than the person who created it (nobody wants to touch it: too hard for non-developers, and developers don't like graphical tools);
- d) Have a way to integrate with other tools (SAP, salesforce, etc.) by the means of connectors, but do not permit to do anything else than what the connector is meant to do, and cannot inject own business logic;
- e) Typically, inflexible software focused on one business sector or kind of organizational structure;
- f) Provide a javascript code editor, but don't allow any other language (e.g. if the company has python developers or existing code in java, re-developing in javascript is costly). Not being suited to code/develop in any programming language, constrains the acceptance of end-users using an alternative language and inhibits scalability;
- g) Non-proprietary of the language processing brings insecurity to the customers' data.

No direct competitor thus offers the same level of technology as Clevy. For this reason, Clevy strongly believe the **CSML Atlas Platform will be game-changing** and fill an important gap in the market of conversational technologies.

2.1.6 Barriers for market entry

Clevy has identified three main barriers for market uptake of the CSML Atlas Platform: **establishing trust from the market; scaling up sales and distribution; and managing bottom-up adoption of the CSML technology**. To overcome the first two, besides direct sales, Clevy will sell the technology through partners with a proven brand (cf. section 2.3) and widely disseminate the results obtained with early customers during ATLAS. This go-to-market strategy with the engagement of strategic partners will be key to efficiently scale up sales and distribution. To manage bottom-up adoption of the CSML Atlas Platform, Clevy will make sure the technology is first used by developers in companies so that it can sell the platform for companies more easily, instead of a top down approach where Clevy would try to win RFPs against large companies.

2.2. COMMERCIALISATION STRATEGY

2.2.1 Business model and commercialization plan

Clevy's business strategy is to offer the CSML technology through 3 different models/versions (as summarised in Table 2.2):

- 1) **Open-source version of the language (CSML) without the CSML Atlas Platform:** to an online Community of software developers who are expected to help improving CSML through their knowledge and constant feedback and ideas, and help disseminating it, and who will be willing to share their code, the modules and chatbots they develop to add to the general value of the language (similarly to other programming languages). It is extremely difficult nowadays to build a community of developers with proprietary technology (only very few proprietary technology products ever succeeded, most often only backed by large companies such as SAP or FileMaker (Apple)), and building an active and supportive community is vital to any open source project. By open-sourcing the code of the language, Clevy is making it possible to install the CSML toolset on the developer's environment, without any restrictions, thus reducing developer friction. For this reason, within the ATLAS project, a significant effort will be dedicated to Community building (cf. Work Package 6).
- 2) **Free version of the CSML Atlas Platform** – named **Developers Edition**: to freelance developers, where they get main features at no cost and can access the business-related functionalities by upgrading to the Enterprise Edition (e.g. service-level agreement (SLA), business support). In specific, this version includes the core Framework, the Platform itself and main functionalities such as chatbot and software connectors libraries; and 1-click deployment on public communication channels such as Facebook Messenger and Slack; assets manager (images, videos, etc.).

This approach is aligned with both the concept of Clevy's product and the competition market (in which many cheap/free options are available), posing an easy way to introduce the CSML Atlas Platform in the market. With a free version, Clevy expects: to attract more users to try the product; by giving just enough access, the user can start reaping the benefits of using the technology and might be too involved to want to stop at the stage where they need to pay; to eliminate customer obstacles in

the acquisition process; and to generate user habits, which can create loyalty. Plus, having a free version of the CSML Atlas Platform will let the community that is invested in CSML to use directly the benefits of their engagement in the community (e.g. if they push for an improvement of the language, and this suggestion is accepted and incorporated to CSML, they will be able to test it directly and pretty easily in the CSML Atlas Platform).

- 3) **Payable version** – named **Enterprise Edition**: The Payable version will be an upgrade of the Free version, dedicated for a business usage of the CSML Atlas Platform. In addition to all the core features available in the Free version, the Payable version will have all that businesses need from a software provider (SLA and dedicated support, Analytics features, rights management features).

This version targets IT developers within mid-size and large companies. For the subscription version, Clevy will set a fixed price of **€850/month per customer/company**, that includes, in addition to the free version features, the modules: 1-click deployment on corporate communication channels; Corporate software connectors library; SLA; and Custom Security and Compliance assessment; and an analytics tool. It will also include a deployment and installation support and expert assistance available 24/7. Moreover, **extra modules** can be added to the core software at a fixed cost of **€180/month**. Clevy conservative estimates point to an annual subscription of 4 extra modules per year by client.

In terms of **sales partnerships** (cf. more details in section 2.3), reseller partners will receive: 5% of first year turnover if they just bring a Sales Qualified Lead that is closed by Clevy; or 10% if Clevy and the partner co-sell (i.e. the partner brings a lead and gets involved in the sales process until closing). There is no fee for integrators as these partners get to sell man days to integrate and develop on top of Clevy technologies.

Table 2.2: Clevy business model.

Free Version - <i>Developers Edition</i>	Payable Version - <i>Enterprise Edition</i>
✓ Core Framework	✓ All the Developers Edition features
✓ Platform	✓ Deployment and installation support
✓ Community support	✓ Expert assistance available at any time
✓ Access to documentation and selfcare support	✓ Analytics feature
	✓ SLA and Business support

2.2.2 Route-to-market

The overall objective of the present project is to increase CSML Atlas Platform's market share and win a clear leading position, resulting in an increased market value for Clevy. The route-to-market for the CSML Platform includes the maturation and optimisation of the technology and **fully integration on the commercial path by Q4 2022 (when sales ramp-up starts simultaneously in the EU and the US)**. Clevy previous experience in this field is expected to significantly ease their road to market as Clevy's commercialisation strategy and knowledge are now more mature.

The route-to-market will rely on a combined approach of: i) establishing strategic **partnerships** in Clevy's addressable markets; ii) **direct sales** through Clevy's extensive commercial network (especially in France) – led by the company's staff, to remain engaged with customers/potential customers and iii) collect feedback on the technology performance; iv) recruitment of **key stakeholders**; and v) **online marketing**.

Clevy sales strategy will be executed by its Development and Marketing team, who will generate attention and interest through outbound lead generation, events and summit presentations, investors network, in addition to client referrals. Particularly, **Clevy's CEO, Salim Jernite, is an experienced sales and marketing professional with an impressive track-record in digital strategic operations and B2B sales, who has a vast network with world consulting leaders**. Clevy also envisions to do online marketing using diverse online channels (LinkedIn, Facebook, AWS Marketplace, targeted blog posts, website), targeting its potential customers, globally. During its preceding experience, Clevy has already used this strategy to reach a sizeable market, which revealed to be a successful move, generating around **200 qualified leads every year in inbound marketing alone**. This was made possible by Clevy's content strategy of creating and posting multiple articles every month around the conversational sphere on Clevy's blog: <https://blog.clevy.io>.

As previously described, Clevy anticipates the online Community to be a major contributor to increase awareness among developers and, this way, generate more leads. The process of building a CSML framework Community will start as soon as the first relevant results are obtained during the project to increase the chances to the early adopters to try the code, provide feedback and adopt it.

During the ATLAS project, Clevy will be continuously testing each approach and **with market ramp-up by the end of 2022, the company expects to have a minimum of two fully committed major distributors (such as current partners Capgemini, Bearing Point) and four fully committed major integration**

partners (e.g. DXC, Delaware, Applium, Atos), covering the US and EU markets. As mentioned, average revenues share for partners distributors will be from 95/5 if they just bring the lead to 90/10 if they engage until contract is signed, or to even more if they handle first level of support.

2.2.3 Regulatory issues and legal framework

Through its activity, Clevy collects anonymously information from its customers' databases and websites which may impose regulatory issues. However, the CSML Atlas Platform will be in conformity with legal standards for the protection of user data, including fully EU's GDPR compliance. Also, Clevy has a database declared to the National Commission of Informatic and Freedom of France, in accordance with the legislation¹⁹. Regarding international standards, Clevy products were always developed with the highest standards of quality and security. Therefore, Clevy aims to get a certified product for the most common international certifications available, such as the ISO27001, SOC2, GDPR, HIPAA and health data storage, which will also increase the reputation and trust-assurance of Clevy's solution. Thus, after the conclusion of the demonstration activities, all the documentation and data required for an approval process will be collected and compiled with specific focus on developing a guideline (with a list of certification requirements) for the ISO27001 product certification to create confidence among potential customers (WP5 - Certification preparation & final product specifications). As AI-driven technologies continue to gain traction, the regulatory system persists to either fine-tune existing laws or implement new laws to govern these technologies. Thus, Clevy will keep apace of the ever-changing legislative landscape to manage their risks.

2.3. EXTERNAL STRATEGIC PARTNERS

As market acceptance from all downstream stakeholders is critical for success, Clevy has contacted software engineers, entrepreneurs, and potential clients that endorsed its new solution as a relevant improvement for their business (cf. Letters in Annex 3).

The overall value chain and key stakeholders involved in the process are described in Figure 2.3. Clevy has already in place direct routes to sell the CSML Atlas Platform to its potential customers i.e. outbound sales and online marketing (cf. section 2.2.2). Still, to significantly scale-up sales, Clevy will dedicate major sales' efforts upon strategic selling and visibility partners, integration partners and directly to its network customers.

1. **Strategic reseller partners** (consultancy companies): Clevy has a solid network of partners that support their own customers in their digital transformation and that will also play an important role in selling the CSML Atlas Platform. These include lead consultancy firms, such as Capgemini Consulting and BearingPoint, which consolidate Clevy's project business by providing a distribution channel to their own customers, thus scaling-up potential customer base.
2. **Strategic visibility partners**: Beyond pure commercial activities, increasing the visibility of the solution also goes through partnerships, such as Workplace by Facebook or Amazon Web Services, that will increase the number of acquisition channels and customers. These are companies that have marketplaces of software in which Clevy technology will be featured – i.e. they allow Clevy to show its products on their partners catalogues or products libraries.
3. **Integration partners**: Clevy's technology will also be introduced in the market through companies specialised in integrating software in big companies' IT ecosystem (e.g. DXC, Atos, Econocom, Capgemini Application Services, Cognizant, Computacenter). Those specialised Software integrators will be able to use CSML Atlas Platform to develop custom / state of the art conversational assistants for big companies.
4. **Customers**: These are mid to large public and private organisations (as previously described in section 2.1.1). Clevy is already working with large enterprises such as Danone, Roche, and French National Railway Company (SNCF); and governmental organisations (e. g. Ministry of the Armies of France). These large account commercial actions and the positive interest in Clevy's CSML Atlas Platform (see Letters of Support from Danone and LETTRIA in Annex 3), are helping Clevy getting confidence among potential customers, very often necessary to carry out a proof of concept when responding to their needs.

Finally, Clevy has also recently engaged in **co-development partnerships** (e.g. with Bengs), in which Clevy helps the partners developing products in CSML, while they share with Clevy the value of what they sell.

¹⁹ <https://www.cnil.fr>

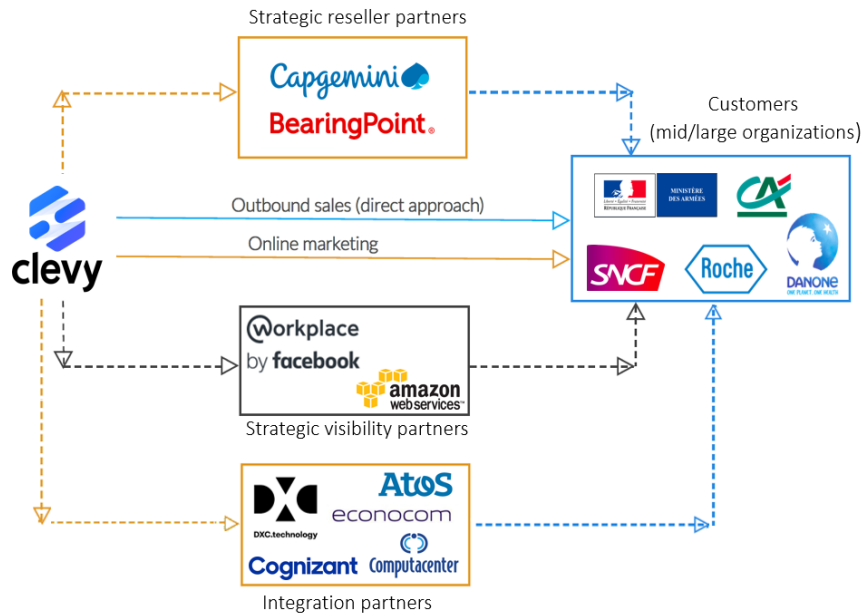


Figure 2.3: Clevy value chain and key stakeholders.

2.4. INTELLECTUAL PROPERTY

Clevy's intellectual property (IP) strategy is fine tuned for its open-sourced CSML framework. **Clevy aims to have a business-friendly open source model with open innovation and sharing results in mind.** As an open-source programming language, the CSML code will be available to any developer to modify and distribute such versions and any modifications they create (under Clevy's approval regarding modifications). This format will increase participation and create growth of the ATLAS Community. While open source, the CSML framework is copyrighted intellectual property. Ownership and open source are not contradictory. By open sourcing its code, Clevy is solely making the code visible to anyone and installable on their own machines, without forfeiting any licensing rights, for example in case of commercial usage by the licensee. An additional advantage of this model is that any developer can look at the code and find flaws, bugs or security issues, and even propose ways to fix them, making these improvements available to the whole community. The open-source model is currently on the rise, with most companies directly or indirectly using open-source software in their products and systems.

IP policy for the Community: All source code that is sent in for contribution must go through an IP approval process. This process includes analysing the selected code contributions to ascertain the provenance of the code and checking its license compatibility. Licensing issues vary, and may include incompatibilities, non-commercially friendly additions, and additions that go against Clevy's goals of using the code. The contributions that contain code not compatible with the CSML Atlas Platform licensing will be screened out through this approval process and thus not added to the Framework.

2.5. SCALE UP POTENTIAL

As mentioned above, **CSML framework is open source.** An open-source software with a thriving global Community around it, united around the improvement of the software solution, introduces new concepts and capabilities faster, better, and more effectively than internal teams working on closed solution. It also significantly **increases the scalability of our business model.** Moreover, in the eyes of the market, an open-source software is more transparent (full visibility into the code base), reliable (the output tends to be extremely robust, tried, and tested code) and more secure (much more thoroughly reviewed and vetted by the Community).

The launch of the matured version of the CSML Atlas Platform is planned for the end of 2022, when Clevy starts scaling-up its sales (cf. Figure 2.4). Activities needed for sales ramp-up (TRL 9) include: communication and marketing, establishment of a strong sales network and additional partnerships, and development activities to ensure sustainability and maintenance of the platform. Before that, and during the ATLAS project implementation, early versions of the CSML Atlas Platform will be released from which the company expects to gain some pilot customers.

Table 2.3 summarizes the estimated financials to quantify the economic impact of the present project for Clevy. Sales revenue is driven by the number of targeted customers signed to the CSML Atlas Platform, therefore, for scale-up predictions the number of enterprises in Clevy's target markets was used. The market for the CSML Atlas Platform is global, but Clevy has decided to forecast the impact of its innovation based solely on targeted customers in the EU and US, since the company expects to devote sales efforts primarily to these regions. **The first indicative sales milestone is €2M of total revenues 3 years after project start, equalling sales to approx. 70 signed customers.**

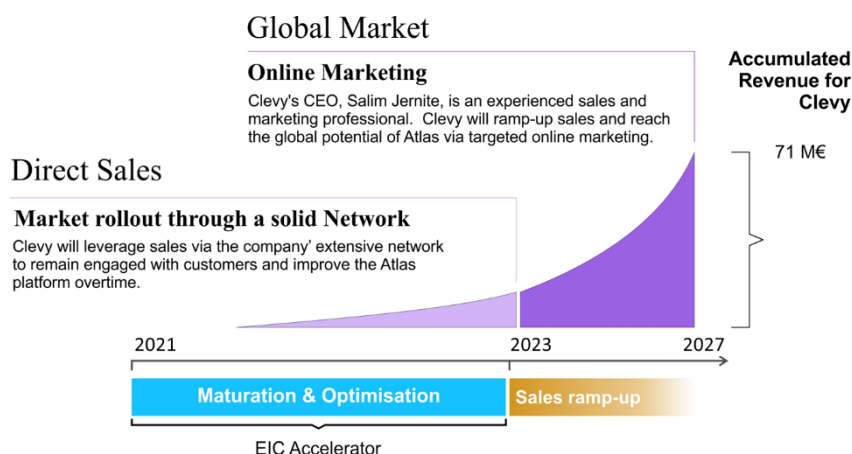


Figure 2.4: Clevy's commercialization strategy.

Table 2.3: Clevy financial projections.

	EIC-A	EIC-A	5 Years post-project					
	2021	2022	2022/2023	2024	2025	2026	2027	Total
# Total customers	10	25	70	205	475	1015	1960	
# New customers	10	15	45	135	270	540	945	1960
Market share (%) EU			0.02%	0.06%	0.15%	0.32%	0.62%	
Market share (%) US			0.01%	0.03%	0.06%	0.14%	0.27%	
Revenues (€)	€ 188,400	€ 471,000	€ 1,318,800	€ 3,862,200	€ 8,949,000	€ 19,122,600	€ 36,926,400	€ 70,838,400
SME P2 grant (€)	€ 665,000	€ 665,000						
Operational costs (€)	€ 745,000	€ 890,000	€ 1,344,000	€ 3,360,000	€ 6,720,000	€ 12,320,000	€ 23,520,000	€ 48,899,000
Gross Profit (€ excluding grants)	-€ 556,600	-€ 419,000	-€ 25,200	€ 502,200	€ 2,229,000	€ 6,802,600	€ 13,406,400	€ 22,940,200
New employees hired/year	3	1	12	18	30	50	100	214

For the conservative addressable market of 378 000 targeted companies, Clevy's ambition is to capture close to 0.6% and 0.3% of market share in the EU and US, respectively, 5 years post ending of the ATLAS project. These assumptions concerning market capture were defined according to Clevy's current experience with market introduction, uptake and roll-out of software products – combined with an evaluation of the innovative and real differentiating properties of the CSML Atlas Platform. In the same year (i.e. by 2027), **Clevy expects cumulative revenues and gross profits of €71 million and €23 million, respectively. The successful commercialisation of the CSML Atlas Platform is anticipated to generate 214 new jobs, mostly high-income positions.**

It is important to note that in **Annex 4** all revenue streams of Clevy are included, including all company products, while Table 2.3 only considers the revenue streams coming directly from the exploitation of the CSML Atlas Platform.

Expected impact of ATLAS on Clevy finances

The innovation project is of key importance for Clevy's mid-term strategy since it will **accelerate the commercialization roll-out of the CSML Atlas Platform**. Besides enabling the maturation of the platform and large-scale demonstration with test users, it allows to carry out market research and customer development activities at a faster pace rather than organically growing, while also reducing the financial risk. In specific, without the EIC accelerator support, the platform commercialization would happen at least 1.5 years later, which could erode Clevy's current first-mover advantage, potentially jeopardizing the foreseen wide uptake of the CSML technology.

2.6. KEY PERFORMANCE INDICATORS

The Clevy project is fully in-line with the focus and expected impacts of the EIC Accelerator programme. The impacts of this project can be measured through defined **Key Performance Indicators (KPIs), which reflect the project's impact on generating revenue, creating jobs and company scale-up**. Clevy has defined impact metrics/KPIs (cf. Table 2.4) in each of the main impact areas: 1) **Technological** advancement of Clevy's product, contributing to large scale deployment and scale-up, 2) **Market** expansion into the EU and US markets, with significant sales growth and ROI, and 3) **Economic** growth through substantial increase in revenues, profits and job creation.

Table 2.4: ATLAS and Clevy KPIs.

Key Performance Indicators	Current status	By the end of ATLAS project	Breakeven Point (1.5 years after commercial launch)	5 years after commercial launch
Technological				
System`s operability/incidences history (bugs and engine`s failure)	99%	99.7%	-	99.9%
Number of modules developed by Clevy	10	100	-	1000
Number of modules developed by the community	20	2000	-	100000
Number of Stars / Forks on github	10	500	-	15000
Market				
Number of customers	-	25	205	1960
YoY sales growth	-	-	193%	93%
Economic				
Yearly Revenues	-	471 000	3 862 200	36 926 400
Yearly Gross Profit	-	-419 000	502 200	13 406 400
ROI	-	-	-127%	1067%
Number of new employees	-	12	30	214

2.7. BROADER IMPACT

Over the years, the multiplication of digital tools has made it possible to improve and increase productivity in both the public and private sector. This IT revolution and digital age have also brought a paradigm shift in data growth, which has created significant opportunities for organisations to use it intelligently and to differentiate themselves in the market. Yet, it has also led to greater internal complexity for employees, which translates into two main negative impacts: an increase in support costs (loss of productivity), and the degradation of the employees' experience.

Clevy will contribute to a significant growth in the deployment and adoption of conversational technologies – namely chatbots – by offering an innovative solution that can be used in all segments of the company's information system. Its economic benefits for businesses are translated by the **efficiency and productivity of corporate workers** (i.e. time saved in decluttering, selecting and analysing data; diminishment of workers errors, 24/7 availability of chatbots to handle queries and the simultaneously management of requests by the chatbots), that will also **increase the business opportunities** and **improve the working experience**. In fact, a report provided by J. Morgan's HBR reviewing 250 companies, estimated that the companies that actively invested in a better employee experience outperform the ones that didn't by 4.2 times in average profit and 4.0 times in profit per employee. **Their average revenue was also twice as large**²⁰.

3. IMPLEMENTATION

3.1. TEAM AND CAPABILITIES

3.1.1 Team & Achievements

Clevy is a multinational team of tech entrepreneurs, data scientists, software developers and business developers, with a successful track record in software development and digital innovation (**totalling 21 employees**) and highly qualified in a wide range of relevant functions ranging from tech entrepreneurship, sales and marketing, programming development, technical support, quality assurance and administration.

Clevy was founded by two software and web developers, and one digital innovation expert – after a hackathon they won at Crédit Agricole on innovation at the service of employees. Together, the founders have +20 years of combined experience. The company is a SAS registered on April 11, 2017 with a share capital of 6,564 euros. The shareholding is as follows:

²⁰ <https://landbot.io/blog/improve-employee-experience/>

Shareholders	%
Salim Jernite	20,31
Bastien Botella	20,31
François Sechet	20,32
Other shareholders (investors etc.)	39,05

Since its creation, Clevy has shown a rare ability to execute its business strategy, building breakthrough conversational technologies, establishing key partnerships, and acquiring several large customers to whom the company is already delivering great business value. Today, Clevy is a leader on the conversational market dedicated to employees and on many use cases (HR, IT, Legal, Change Management, Sales, Finance, etc.). The company and its technology has been awarded several times, among which the Digital Innovation Award (ID17 prize) in “Digital Innovation for Business” Category, RMSconf grand prize in October 17, AWS Summit start-Up award, 1st Prize Employee Experience from Manpower group in May 2018, and the AKOYA 1st prize of best HR Tech Start-UP in 2019.

Clevy counts with at least 13 key staff members directly involved in the ATLAS project implementation. Their positions, core functions and competences, as well as commitment to the project are summarised in Table 3.1. In addition, Clevy plans to hire two additional Backend and Frontend developers during the project, one product manager and one open source manager.

Table 3.1: Key Team members (all full-time employees at Clevy). Department not applicable.

Team Member	Position	Function/ key competences	Commitment to the company	Commitment to the EIC project
Salim Jernite	CEO	Founder and CEO of Clevy. Expert in product Strategy, Sales strategy and process management	100%	70%
François Sechet	CTO	Head of the technical team. Background in DevOps, AWS, software development.	100%	90%
Bastien Botella	COO	Head of operations. Background in web development, administration and project management and HR	100%	70%
Remy Jeanjean	Technical Leader	Technical team coordinator and scrum master. Background in software architecture.	100%	100%
Damien Leprovost	Lead Data Scientist	Head of data science team. Background in software engineering and data science, machine learning and computer science	100%	100%
Alexis Merelo	Developer	Rust Engineer	100%	100%
Christophe Ribaud	Software Engineer	Developers Backend	100%	100%
Octave Laurentin	Head of Marketing	Marketing Manager, specialised in growth hacking and inbound marketing	100%	100%

In the following, the details of the Clevy key team members and their extensive expertise are provided, which are much needed to make this project a success.

François Sechet (CTO and co-founder) is leading the R&D activities in computer science. François graduated from School 42 (Best European Programming School) in only 1 year (out of three years in normal curriculum), François has wide experience: he started as a CIO at Adjavance and then became technical architect and DevOps at Danone for two years. Certified AWS Cloud Architect, he is recognised in DevOps, Serverless integration and security.

Working closely with François, **Rémy Jeanjean**, Technical Leader, has the responsibility of the developers and product team. Rémy has an MBA in software architecture from one of the best Engineer School in France (Central Paris).

Damien Leprovost, Lead Data Scientist, is leading the R&D activities in Data Science. Damien has a PhD in computer sciences and Natural Language Processing and did 2 Post-doctorates in machine learning and knowledge engineering, working in Inria and CNRS, French best research labs.

The Ops and Business/strategy related activities are led by the two other co-founders of Clevy, **Bastien Botella** and **Salim Jernite**. Also a graduate of School 42, Bastien spent eight years in various organisations as an administrator, web developer, lead developer and CTO. These experiences have enabled him to specialise in operations management in technology organisations.

As for **Salim Jernite**, he holds a Master of Science degree in Entrepreneurship, Strategy and Innovation from ESSEC Business School (2013), and began his career in strategic consulting, specialising in digital and Big

Data related issues. Salim had a huge impact, when he was working in consulting, as he co-led the creation of a whole department dedicated to lean start-up. That let him be promoted to the position of Manager in 2 years instead of 6 in average. He also acquired experience as a Strategy Director in Eun Digital (an innovation agency) before co-founding Clevy, of which he is now CEO. At Clevy, he co-led the implementation of the whole sale strategy that led the company go from 0 to €1 million turnover in 2 years.

In addition, Clevy's management team has extensive experience in staffing and leadership of software organizations.

Incentives to team members: Clevy's team is its most important asset and biggest resource; for that reason, team motivation is one of Clevy utmost management priorities. Besides offering a very competitive salary package and an extensive set of additional of hard and soft employee benefits, including complementary health insurance, partial remote work, regular team building events, participation in technical conferences, Clevy's team is incentivised with stock options (0,1% to 3%). Clevy has also a strong policy for performance recognition, with sales incentivised with bonuses (4% of what employees' sell).

Clevy's Board: In addition to the key people listed above, Clevy's Board constitutes a critical steering element of all the company's activities, providing strong business insights and complementing the team expertise. Clevy Board comprises serial Entrepreneurs with highly successful running businesses: **Philippe Veran** (CEO of Upperside); **Laurent Useldinger** (CEO of ULINVEST); **Nicolas Douay** (experienced strategy consultant and investor); **Jean-Paul Guisset** (CEO of venture capital firm SGPA).

3.1.2 ATLAS organisational structure – functions in the project

In order to achieve the overall objectives of bringing Clevy's innovative technology into a commercially ready solution, a simple but efficient project management structure at Clevy will be implemented, with specific attention to: **1)** Proper management of the demonstration, including contingency planning, so deliverables are met and with the optimal possibility for market exploitation; **2)** An adequate organisational structure for the coordination to ensure smooth running of the project, optimal use of resources and exploitation of results.

Clevy has nominated three employees responsible for the project management: **A Project Coordinator (PC; Salim Jernite, CEO at Clevy)** also responsible for innovation and exploitation management; **a Technical and Demonstration Manager (TDM, François Sechet)**, and **a Communication and Dissemination manager (CDM, Bastien Botella)**. Together they will be responsible for the actual time planning, strategic priorities, conflict resolution, exploitation, risk analysis and mitigation measurements, etc. They will meet according to need. However, at least with monthly status meetings to ensure that the progress and strategy will be reviewed as well as an agreement on the actions ahead will be elaborated.

Project management: Clevy has appointed its **CEO and Co-Founder, Salim Jernite as PC** (CV in Annex 2), who has an extensive background experience in strategic consulting, specializing in digital and Big Data related issues. Salim is also experienced in management, digital innovation strategy and sales. Salim graduated with a master's degree in entrepreneurship from ESSEC business school. A detailed description of the project management activities can be found in WP1. Salim will also lead all "go-to market" related activities within the ATLAS project, being responsible for the **innovation management**, where each relevant innovation will be discussed in progress meetings to assess possible improvements or functionalities. Salim holds an innovation-oriented perspective on all key technical developments, as well as business intelligence to prepare the market roll out of ATLAS outcomes.

Technical & Demonstration management: The technical and demonstration management component is included to secure that the development and demonstration itself and the work leading up-to the demonstration run smoothly. The specific responsibilities include supervision of technical work within the project. In addition, the TDM will oversee process management to reach project objectives and deliverables plus the exchange of results and knowledge between all people involved to enable cross-fertilization of ideas and data flow needed to support concurrent tasks. The specific activities involved are part of WP2-5. The TDM will follow up on tasks and milestones on a monthly basis – and summarise the conclusions on the project progress in a brief report for discussion among the project team and with the PC. **François Sechet** (Clevy CTO and co-founder) **was chosen to be responsible for the technical and demonstration tasks**. François has a background in Information System Development (ISD), DevOps, AWS cloud solutions and serverless integration and security (CV in Annex 2). Demonstrations of the Clevy software performance will be carried out in close cooperation with its key stakeholders.

Communication & Dissemination Management: A designated management function has been developed for the project's communication and dissemination activities, as described in WP6. The CDM will be responsible for the creation of market awareness for the project results and for the

development/update of relevant market studies and the update of the business plan that allow for the dissemination and communication of the project results. The CDM will inform the PC on the progress status of the business plan during progress meetings. **Bastien Botella will act as the communication and dissemination manager.** Bastien has a vast background in web development and administration and holds the position of COO at Clevy (CV in Annex 2).

Decision Making Mechanisms: Decisions on actions under the ATLAS project and eventual risks and mitigation actions will be taken by the PC, TDM and CDM at regular meetings (at least once a month). In cases, where decisions are of importance to or needs approval from the EC, the PC will present these to the Commission's Project Officer, ensuring a close communication.

3.1.3 Strengths and Weaknesses

The ATLAS project leverages on Clevy's team strengths (cf. Table 3.2). Nonetheless, **for scaling up, Clevy aims at further strengthening some of its capabilities/competencies:** (1) have a person solely dedicated to product management, with wide expertise in customer service (the activity is currently shared by Rémy, François and Salim); (2) increase the number of staff specialized in Rust development (currently, Clevy has one full time FTE Rust developer, who is in charge of programming the language, with the close support of François who is very aware of the CSML architecture); (3) hire a new DevOps to let François spend more time on tech strategy.

Table 3.2: Company and team strengths and weaknesses.

Strengths	Weaknesses → how to mitigate those
- A team with the right blend of business and technical experience/knowledge (both data science and software development). - A team with broad range of expertise letting them be lean and move fast - Solid customer base (French government, large consultancy firms like Capgemini and Danone) and experience scaling sales - Good track record, already achieving success with several product in the chatbots market - Large players in the market interested in partnerships, including Facebook and Amazon Web Services	- Small company and limited financial capacity, risking outpacing by a large competitor → currently undergoing fast expansion - Too much expertise shared by the same persons (e.g. François being the best developer / DevOps / security analyst) → need to diversify profiles - Fast growing market, with new competitive solutions being developed → Quick acceleration for sharp global market entry to retain first-mover advantage - Crowded market with lots of hype → CSML accessible by anyone (Open Source) leading to tangible technology (opposite of hype)

3.2. FINANCING NEEDS

Up to 2022, to cover operational and innovation activities to bring the CSML Atlas Platform into a mature solution (TRL8), with value clearly demonstrated and documented, Clevy will need a **total budget of €1.88M, of which €1.3M are requested (grant) from the EC.** This grant will cover mainly personnel costs. After the ATLAS project is finished, the company estimates a financial need of €0.26M to cover overall market preparation and key activities needed for sales ramp-up (TRL 9). These include communication and marketing activities, establishment of a strong sales network and additional partnerships to support the expected market scale-up, as well as development activities to ensure sustainability and maintenance of the platform.

The financial gap between a fully mature CSML Atlas Platform and profitability is expected to be secured by sales of Clevy's existing products and by the cash reserves available at the company. Indeed, during the ATLAS project, Clevy will continue to generate revenue from its existing customers – as well as from small pilot sales of the CSML Atlas Platform (cf. cashflow in Annex 4). The abovementioned revenues, generated from Clevy's existing customer base, will also guarantee the company's 30% co-payment for the EC funding. Therefore, during the innovation project, no further outside funding will be required. The payback period of the project will be 2-3 years.

No blended finance is requested.

Table 3.3: Equity. (The info in the table is provided for a grant-only proposal, as is the case of ATLAS)

<i>If requesting equity, describe what the requested equity component will be used for and how much equity share the company plans to give in return.</i>
The company is not requesting equity from the EIC Fund.

<i>Describe/comment how the valuation of the company has developed over time (e.g. financing rounds) and the rationale behind it - relevant metrics/milestones achieved from start to present.</i>
Since the very start of the company, Clevy has been financed by public funding and private investors (equity). In the first 2 years of the company, Clevy was financed through very selective public innovation grants and loans with a total of €590k (€90k of Honorific Loan in November 2017 – prêt d'honneur, €130k of innovation grant through BPI, the public bank for investment in March 2018, €100k of innovation loan and €300k of Recoverable advance in 2018). In terms of private investing, the company could rely early on private investors: • July 2017: Pre-seed fundraising with Business Angels for a total amount of 500 k€ bringing the post money valuation to €2,100,000.00 • November 2018: Raised €1.5M from historical investors, several renowned Business Angels, UL Invest and Uppside Capital Partners, bringing the post money valuation to €7,501,798.00
<i>Explain the company ownership and capital structure presented in Table 4 of Annex 4. If there are different classes of shares, describe why.</i>
Clevy is a privately held corporation founded in 2017. The founders hold the majority of the shares in the company (61%): Salim Jernite (founder, CEO) 20,29%, Bastien Botella (founder, COO) 20,29%, François Sechet (founder, CTO) 20,31%. The largest investor is the private equity fund SGPA (family office) with 13,9% shares, followed by on financial holding, Uppside Capital Partners holding 6,67% and one family office, UL Invest, holding 4%. The rest of the equity is hold by minority shareholders, all holding less than 3% of the company. There is only one class of shares at Clevy.
<i>What exit strategy do you expect, including the timeline and expected return on investment? Explain the assumptions.</i>
The company is not requesting equity (it is a grant-only project), thus there is no exit strategy of the EIC fund. In any case, we expect that in the future, the primary option for exit will be an acquisition by a Generalist Software Provider to build up new and extend their offers, while buying the developer community for credibility in the sector. With a strong technology and product portfolio (deploying both BtoB conversational software and developing opensource state of the art conversational technology), build-up of an initial market foothold and long list of corporate customers, the valuation of Clevy is expected to be in the order of at least €100M after the initial 5 years of market introduction (with a predicted ROI between 10 to 20x the investment).

3.3. NEED FOR EIC SUPPORT

The conversational transformation is the new digital revolution. Clevy wants to help all companies get on board. But the company can't do it alone. With the EIC Accelerator grant, Clevy will be able to overcome the financial barriers to reach critical mass commercialisation, improving the risk-return profile of the CSML Atlas Platform by mitigating risks prohibiting private sector investors from investing.

Without the EIC Accelerator grant, dilution would be too severe, decreasing the motivation of the founders (and other employees with options).

Clevy considers the present EIC Accelerator Pilot project as a high risk – high gain opportunity. One of the main barriers for private sector investment in high development impact projects is that the ticket size and risk-return profile of those opportunities are unattractive. In ATLAS, the costs associated with maturing the platform and setting up an efficient commercialisation for Clevy's technology require significant investment, indeed associated with an inherent degree of risk.

The company has already successfully closed one pre-seed round (€0,5 M, September 2017) and seed round (€1,5 M, November 2018), with private investors for building Clevy's current products and maturing the CSML technology to TRL6/7. However, raising another round quickly might be a risk for Clevy as it would dilute the company even more. **Being CSML a deep-tech related project, it is considered high risk for investors,** making investors want to invest at lower valuation to mitigate the risk, thus making a fund raising more expensive in capital for founders.

This reluctance from investors was confirmed in the past months by Clevy, which has established dialogue with few funds that got really interested by CSML but have decided to wait before investing since the investment was too risky on their sides (not enough data). These funds include Serena Partners (Marie Brayer), Indeed Ventures (Julia Qiu) and the team of MYSQL from OpenOcean, who are monitoring Clevy closely (Mike Reiner).

The total estimated budget for this project lies at €1.88 M, which will finance the foreseen activities (major costs associated with technology optimisation, upscaling and demonstration activities, as well as with dissemination activities including Community building). **With the EIC support, and the subsequent accomplishment of the project objectives, Clevy will significantly accelerate the market penetration of the CSML Atlas Platform compared to the expected pace that would be achieved through organic**

growth. Moreover, the ATLAS innovation project will enable to reach the desired quality and functionality of the software, the planned upscaling, and the implementation of Clevy's product in a broader number of companies. This will also provide Clevy with extensive information for further analysis and for continuously improvement of technical issues and R&D activities.

3.4. RISKS

Risk management and contingency planning will be implemented proactively in the project, which maximizes the probability of reaching the project objectives. In general, Clevy will apply the Risk Mitigation, Monitoring, and Management (RMMM) method, which aims at targeting and solving any potential risk before it becomes a problem. Accordingly, any potential risks are identified and listed; the likelihood and impact of each risk is prioritised according to importance through the use of a risk table, followed by a plan for the management of each potential risk. The TDM will act as the overall responsible for continuously carrying out risk management in the project, including recommendations to the PC on the implementation of effective procedures for risk identification and mitigation, to minimise any potential negative effects. The main risks identified at this stage are listed in Table 3.4, along with the corresponding actions to mitigate risk and/or a contingency plan for each identified risk. Also, after the completion of each WP, there will be a risk assessment of the results achieved to verify the way ahead or correct the action route in accordance with any alternatives identified.

Table 3.4: Identified risks and how these will be mitigated through the ATLAS project.

WP	Risk Description	Proposed Risk-Mitigation Procedure
WP2, WP3	<i>Atlas Platform</i> not adaptable to all architectures/infrastructures, i.e., not able to be infinitely extensible	Build separate middleware infrastructure (e.g. package repositories like npm, versioning solutions like github, etc.).
WP4	Failure to gather the critical mass needed to validate real-world scalability of the platform	Test hypothesis. Increase and enhance effectiveness of dissemination and communication activities to recruit more testing customers.
WP4	Low cost-to-benefit ratio perception from end-users	The foreseen demonstration activities should demonstrate the core product value. The Community to be built around the CSML should also mitigate this risk as potential users are more likely to adopt new technology if they experience it first-hand.
WP5	ISO27001 certification refusal / certification issues	Clevy already complies with specific regulatory standards for its currently marketed solutions and is, thus, well familiar with it. The successful demonstration and documentation of the ATLAS project technical objectives are expected to further simplify the certification/approvals required.
WP6	Weak involvement of the stakeholder community/community not growing.	Adjust the dissemination plan as soon as this problem arises to recruit more members to the developers' community. Use Clevy external partners' network to further reach out to the developer communities.
WP6	New competitors that move into Clevy's target market	Clevy has a unique combination of technical capability, business and domain knowledge. The company is also 100% owner of its breakthrough CSML technology. Together, these confer a unique market advantage to Clevy. Still, speeding up the CSML Platform maturation will reduce time to reach the market and should help mitigate this risk.
WP6	Failure to secure agreements with best technology and commercialisation partners	The <i>Atlas Platform</i> maturation is driven by feedback of organisation that are already technology or commercialisation partners on Clevy's other products (Capgemini, Bearing Point) and are expecting the new products to sell it as a complement to current offers. For this reason, Clevy won't expect major issues in engaging with these partners.

3.5. APPROACH

The work plan is organised into a total of 6 work packages (WPs) as schematically shown in the Pert diagram (Figure 3.1). These have been planned to ensure an effective development and deployment of the CSML Atlas Platform, as well as to minimize risks related to its commercialization. The overall project management of all activities is included in WP1. WP2 is dedicated to maturing the CSML framework and subsequent expansion with other modules. WP3 provides specialized AI modules for natural language processing that can be integrated into the CSML Atlas Platform. WP4 is dedicated to subsequent development and testing of the CSML Atlas Platform, while WP5 focus on defining the final product specifications and preparation of

certifications for the highest data security compliance. In addition, the project will include dissemination and communication activities, along with market and product intelligence (WP6).

In the following Gantt chart (Figure 3.2) and tables (Tables 3.5 and 3.6), Clevy describes in detail the plan of activities to be performed during the project and corresponding deliverables and milestones.

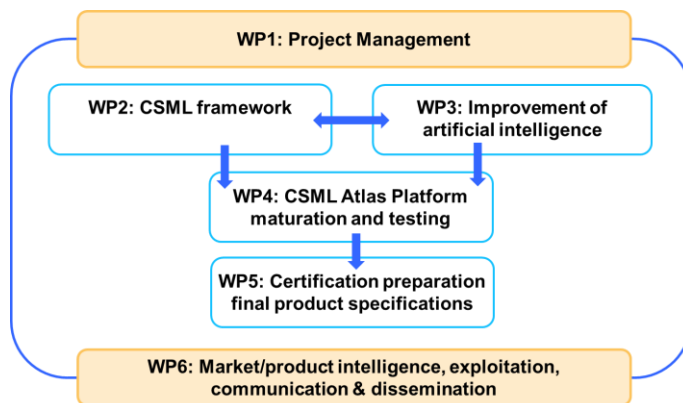


Figure 3.1: ATLAS project PERT diagram.

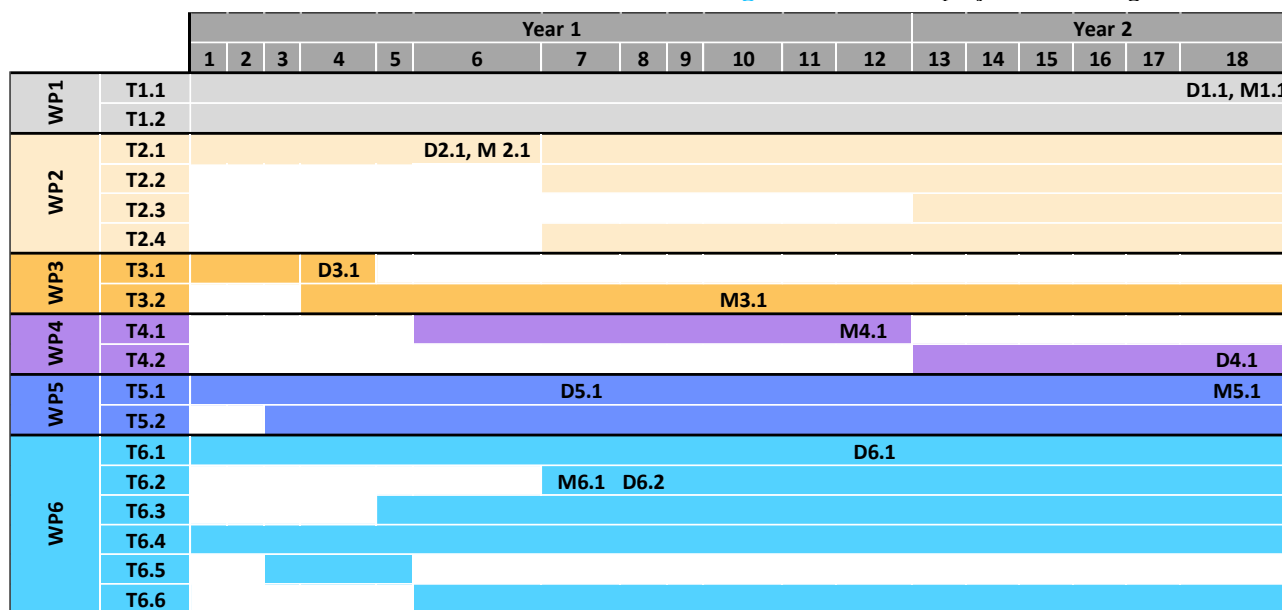


Figure 3.2: ATLAS project Gantt chart.

Table 3.5: Summary of the work plan.

Work Package (number and title)	Start month	End month	Deliverable (number and title)	Milestone (description and date) – if applicable	Person months	Indicative budget ²¹	Indicate if requesting financing by grant or equity
1 – Project Management	1	18	D1.1: Final report, including technical and financial statements	M1.1: Final report submitted (Month 18)	8	€56 000	Grant
2 – CSML framework	1	18	D2.1: Framework specification and architecture documentation V1	M2.1: CSML framework ready for testing (Month 6)	105	€618 187	Grant
3 – Improvement of artificial intelligence	1	18	D3.1: AI capabilities for CSML specification and scoping documentation	M3.1: NER/Q2Q algorithms deployment (Month 10)	42.5	€223 125	Grant
4 – CSML Atlas Platform maturation and testing	6	18	D4.1: Final report of demonstration tests	M4.1: Demonstration activities completed (Month 12)	28.5	€137 156	Grant

²¹ Grant requested

5 – Certification preparation & final product specifications	1	18	D5.1: Report on final product specifications and user manual	M5.1: Clevery's ISO27001 certification (Month 18)	10	€87 500	Grant
6 – Market / product intelligence, communication & dissemination	1	18	D6.1: Finalised business plan D6.2: Tutorial package	M6.1: CSML open sourcing (Month 7)	22	€196 875	Grant

Table 3.6: Work Packages description.

Work package number		1			
Work package title		Project Management			
Start month:1	Ending month:18	Person/months:8	Budget: 56 000 €	Financing: Grant	
Objectives: 1) Monitor the overall performance of the project; 2) Ensure an efficient administrative execution of the project, so that all results and knowledge created are managed in a coordinated and coherent manner, and that all technical activities, financial and legal aspects are managed to a high standard; 3) Overall management of the activities within the project, including risk management and contingency planning; 4) Ensure effective communication and reporting between the project Coordinator and the EC.					
Description of work: The Coordinator (Salim Jernite) will have overall responsibility for the managerial work, and all members of the team will assist the Coordinator as required. The Technical and Demonstration Manager (TDM) (François Sechet) will have the overall responsibility for the technical management of project.					
Task 1.1: Project coordination, including financial & administrative management (M1- M18): The Coordinator will be responsible for supervising the proper and timely implementation of each activity, verifying consistency with the project deliverables and milestones by: i) ensuring that the project schedule is met, including the review of all reports before transmitting to the EC; ii) reviewing project progress against the economic and operational objectives and targets; iii) solving of any administrative or contractual issues; iv) planning and organising the kick-off meetings and regular progress meetings. The Coordinator will also manage several financial and administrative tasks such as the collection of financial reports and financial resources including cost justifications; fulfilment of the EC requirements, in terms of official reports, internal and external communication, definition of procedures for official deliverables and milestones and time planning control; resolution of any administrative or contractual issues.					
Task 1.2: Risk management and contingency planning (M1-M18): The TDM, together with the Coordinator, will have concrete responsibility for the overall supervision of the project’s technical activities and will continuously review reports to verify consistency between the project tasks and deliverables before transmitting them to the EC. Any deviation from the project plan will be reported and discussed between them. When appropriate, they will make recommendations for implementing the contingency plan(s) associated with the WP(s) in question or will draft any necessary alternative contingency plans.					
N. °	Deliverable name		Type	Dissem. level	Date (M)
D1.1	Final report, including Technical and Financial statements		R	CO	18
Milestone M1.1	Final report submitted		Verification: Report		18

Work package number		2			
Work package title		CSML framework			
Start month:1	Ending month:18	Person/months:105	Budget: 618 187 €	Financing: Grant	
Objectives: 1) Mature the CSML framework based on the CSML language and other core modules; 2) Expand the framework with other modules and external plugins; 3) Ensure maximum spread via open-source activities.					
Description of work: These WP tasks will allow Clevy to further develop the conversational framework, expanding the conversational capabilities that developers will be able to use to design new chatbots.					
Task 2.1: Framework specifications and architecture (M1-M18): A modular, expandable, scalable and secure architecture is a core part of this project. Throughout the whole project, each new module, service, plug-in, integration will require a careful design process to ensure a future-proof creation. This planning will be done within this task.					
Task 2.2: Integrating external modules to the framework and making them available (M7-M18): The promise of this framework is to seamlessly enable humans to connect easily with any machine. In this task Clevy will optimise the framework design to make sure it permits the integration with any external system in a standardized way. Modules and integrations are of several types: communication channels, trigger sources (events that will start a conversation), flow hooks (external services being called during a flow to enhance its content), analytics, security, authentication, payment platforms. Furthermore, to ensure that the framework is as useful as possible, as quickly as possible, with as little effort as possible, Clevy will develop in this task a library of ready-to-use contents, and integrations must be provided and built into the Framework.					
Task 2.3: Native development of specific integrations to incorporate into external systems (M13-M18): Interoperability goes both ways, and if any external service with an accessible API should be able to consume outputs of Clevy’s conversations, the company understands that some services that their users will want to integrate into are too limited (because not built for conversational purposes from the ground up). This includes areas such as: analytics					

and monitoring, live chat (where a human takes over the bot), specialty chat channels (for websites, mobile), IoT integrations. To achieve this, Clevy will implement the necessary architecture that makes it possible to integrate the CSML Atlas Platform with other products/services, or other services/products with the CSML Atlas Platform. This includes feature planning, API design and development, security and scalability measures implementation.

Task 2.4: Creation of standalone / on-premises / offline packages (M7-M18): Many of Clevy's customers, for legal or practical reasons, require that the company's solution works offline, or on their own servers. This has a different set of requirements than building for Clevy's own cloud provider, but the framework is made to be usable on any type of server, as it uses at its core standard open-source technology (Docker, Linux, Rust, etc.). Being able to support on-premise demands also opens an additional market of highly regulated and cloud-averse companies (bank, insurance, health...), which is an additional revenue stream. For the same reason, being able to run the CSML framework offline makes it possible to run on devices that Clevy's competitors cannot as easily target (planes, cars, toys, IoT...). For this reason, in this task, Clevy will create separable and easily installable packages for their users to install on their own servers and tools, including setup guides and specific development for different architectures (Linux, Mac, Windows, IoT, etc.), as well as an adaptation of some core framework features to be able to work online or offline.

N. °	Deliverable name	Type	Dissem. level	Date (M)
D2.1	Framework Specifications and architecture documentation V1	R	CO	6
Milestone M2.1	CSML framework ready for testing	Verification: Report		6

Work package number		3		
Work package title		Improvement of artificial intelligence (AI)		
Start month:1	Ending month:18	Person/months:42.5	Budget: 223 125 €	Financing: Grant
Objectives: Provide state-of-the-art, specialised AI modules for NLU and processing, integrated into the CSML Atlas Platform as individual modules. In general, increase the value of the CSML framework by providing automated analysis and decision-making tools, usable at various stages (build, deploy, run, analyse) of the framework.				
Description of work:				
Task 3.1: Specifications and scope (M1-M3): Decide on and design a set of priority API-driven AI tools that will bring the most value to Clevy's target users based on the company's experience of the conversational market and vision for a unified, modular conversational framework. A first list is already defined but this needs to be refined and prioritised according to feedback from users and clients.				
Task 3.2: Create a set of independent AI modules for conversational use (M4-M18): Create the modules and integrate them in the Framework. The first modules identified are: 1. NER (Named Entity Recognition) API: analyse sentences and retrieve parts of speech with their associated meaning. 2. Q2Q (Question to Question) API: for a given question asked to the chatbot, find the closest matching question and provide the associated answer to the end user 3. Question answering API: find the answer to a given question in a free and arbitrarily long text 4. Classifier: find and categorise the intent of a given sentence 5. STT / TTS (Speech to text / text to speech): transcribe an audio file into a written text, and the other way around. Required for vocal interfaces 6. OCR (Optical Character Recognition): retrieve text from a given image (a photograph, a scanned document...) 7. Other: depending on Task 3.1, other modules could be identified and developed.				
N. °	Deliverable name	Type	Dissem. level	Date (M)
D3.1	AI capabilities for CSML specification and scoping documentation	R	CO	4
Milestone M3.1	NER/Q2Q algorithms deployment	Verification: Report		10

Work package number		4		
Work package title		CSML Atlas Platform maturation and testing		
Start month:6	Ending month:18	Person/months:28.5	Budget: 137 156 €	Financing: Grant
Objectives: Provide users (both developers and end users) with an end-to-end, fully integrated, low-code, secure platform for building, deploying, running and analysing chatbots using the CSML framework.				
Description of work:				
Task 4.1: CSML Atlas Platform demonstration with test-users (M6-M12): Clevy will recruit appropriate test users (developers) and launch different testing phases. This test will allow Clevy to validate the product market fit and prioritise the development roadmap of the platform and the framework alike. Since software is under constant development and improvement, continuous testing will allow Clevy to continuously prioritise their development roadmap (lean start-up methodology).				
Task 4.2: Evaluation of the demonstration results and continuous improvement (M13-M18): The evaluation of results will be an ongoing process. A report will be produced with the quantification of benefits obtained from using the CSML Atlas Platform, when compared to current practices and competing solutions. Clevy's engineers will follow up with key staff on demonstration sites to collect their views on the advantages of the CSML platform. These results will be used to produce short cases to present to new potential clients as part of the company's dissemination (WP6).				
N. °	Deliverable name	Type	Dissem. level	Date (M)
D4.1	Final report of demonstration tests	R	PU	18

Milestone M4.1	Demonstration activities completed	Verification: Report	12
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Work package number	5			
Work package title	Certifications & final product specifications			
Start month:1	Ending month:18	Person/months:10	Budget: 87 500 €	Financing: Grant
Objectives: Collection of documentation according to the Conversational Platforms' market best practices in order to demonstrate the CSML Atlas Platform compliance; 3) definition of the final product specifications.				
Description of work: In order to ease compliance process and to build trust among potential clients, a detailed report will be generated containing documentation requirements for ISO27001 certification. The results from WP4 will be used to define final product specifications and to generate user manual.				
Task 5.1: Collect and systematise all the required documentation for certification (M1–M18): Clevy always develops their products with the highest standards of quality and security. The company intends to go all the way by getting their product certified for the most common international certifications available: ISO27001, SOC2, GDPR, HIPAA, health data storage.				
Task 5.2: Definition of final product specifications and preparation of user manual (M3–M18): Relevant user manual with the functionality of the CSML Atlas Platform will be prepared with the support of all project stakeholders: internal and external developers, partners (with whom Clevy has an integration), security consultants, etc. Final product specifications will be fed by testing, demonstration and certification activities. The instruction topics to be covered include: i) how to use the framework; ii) encouragement of realistic expectations; iii) encouragement to continue with learning to use the framework; iv) troubleshooting (what to do and whom to contact when problems occur).				
N. °	Deliverable name	Type	Dissem. level	Date (M)
D5.1	Report on final product specifications and user manual	R	PU	7
Milestone M5.1	Clevy's ISO27001 certification	Verification: Certificate		18

Work package number	6			
Work package title	Market/product intelligence, communication & dissemination			
Start month:1	Ending month:18	Person/months:22	Budget: 196 875 €	Financing: Grant
Objectives: (1) identify opportunities and risks of target market segments; (2) identify and engage with customers and end-users; (3) develop a communication and dissemination strategy to enable publication and communication of the project results; (4) cost/benefit analysis and finalised business plan.				
Description of work: To further exploit Clevy's technology, the company will assess the target markets and competitors, enabling a refined value proposition and commercialisation plan for broader market penetration. Clevy will also create market awareness using various channels.				
Task 6.1: Market intelligence (M1–M18): Clevy will identify possible partners, customers, relevant stakeholders, etc. in order to settle future agreements for the CSML Atlas Platform's commercialisation in targeted markets. Clevy will identify potential local partners based on capability, agility, quality system and financial strength, allowing smooth deployment in different markets. The company will identify market barriers and improve the business plan to secure a fast and effective market awareness and subsequent broad market penetration.				
Task 6.2: Open sourcing (including maintenance) (M7–M18): Clevy will release several parts of the core framework to open source platforms (e.g. github), which is highly valued by the developer community and opens opportunities for further development. Open source users will be able to easily integrate modules into the modular core components of the framework. Clevy views open sourcing as an adoption driver rather than a risk for competitors to copy its product: by the time of framework open sourcing, the company will have a strong suite of tools so the gap to rebuild everything will be too big, and customers will always prefer the complete tool.				
Task 6.3: Training activities (M5–M18): A tutorial package will be made available for software developers' training on the use of the new CSML Atlas Platform.				
Task 6.4: Build a community of key stakeholders (M1–M18): Clevy aims to build a community of key stakeholders (starting as early as possible during the project), fostering long-term engagement – a vital component to sustainably maintain the technology developed in the project through further dissemination. By providing regular news on the project progress, delivering early open source tools, documentation, and creating getting started assets and videos, Clevy expects to attract early adopters as testers and advisors.				
Task 6.5: Cost/benefit analysis and business development (M3–M5): Cost/benefit analysis will also be carried out to test pricing based on the services provided. An updated report/presentation containing the benefits of using the CSML Atlas Platform will be produced, and the value proposition will be refined. The initial pricing model will be refined/adjusted as a result of constant market analysis and the competitive landscape. The business plan will be updated and finalised.				
Task 6.6: Communication (M6–M18): Create market awareness for the technology Clevy will i) provide workshops to end-users on the value proposition and overall offer of the CSML Platform; ii) develop a comprehensive brochure of the CSML Platform; iii) ensure an up-to-date website and participation in exhibitions, conferences and summits.				
N. °	Deliverable name	Type	Dissem. level	Date (M)
D6.1	Finalised business plan	R	CO	12
D6.2	Tutorial package	R	PU	8

Milestone M6.1	CSML open sourcing	Verification: Availability of several framework parts on open source platforms	7
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3.6. RESOURCES

Given the scope and objectives of ATLAS, the project resources have been distributed with a clear priority on WP2 – dealing with the maturation of the Conversational Platform. The project has a total budget of **€1.88M**, of which **€1.32M** is requested from the European Commission. Clevy will thus contribute with **30% (€0.56M)**, showing the company's commitment to co-invest in the *Atlas Platform* maturation. A detailed explanation on how Clevy expects to secure the remaining funding for the project is provided in section 3.2. Resource allocation has been estimated for each work package as seen in Table 3.7, following a bottom-up approach by directly estimating the staff effort, direct costs and subcontractors needed for the implementation of each task and deliverable. Clevy considers this budget allocation to be adequate, given the objectives to be accomplished and the potential of its unique CSML technology. The project will last for 18 months, and personnel costs will account for 72% of the total budget (total Person-Months (PMs) amounts to **216**, corresponding to **€1.35M** (excluding overheads)).

Table 3.7: Budget summary, including staff effort.

Work Package	WP1	WP2	WP3	WP4	WP5	WP6	Total
Person-months	8	105	42.5	28.5	10	22	216
Personnel costs (€)	€ 60 000	€ 682 500	€ 255 000	€ 156 750	€ 75 000	€ 121 000	€ 1 350 250
Other direct costs (€)	€ 4 000				€ 25 000	€ 80 000	€ 109 000
Indirect costs (€)	€ 16 000	€ 170 625	€ 63 750	€ 39 187.5	€ 25 000	€ 50 250	€ 364 812.5
Subcontracting (€)		€ 30 000				€ 30 000	€ 60 000
Total Budget (€)	€ 80 000	€ 883 125	€ 318 750	€ 195 937.5	€ 125 000	€ 281 250	€ 1 884 062.5
Requested Grant, 70% (€)	€ 56 000	€ 618 187.5	€ 223 125	€ 137 156.25	€ 87 500	€ 196 875	€ 1 318 843.75
Share of the budget (%)	4%	47%	17%	10%	7%	15%	100%

For project management (WP1) and communication and dissemination (WP6), approximately 19% of the total budget will be used. A total of 30 person-months will be dedicated to these activities, to ensure efficient coordination as well as a solid exploitation strategy and wide dissemination and communication of project results. Sub-contracting costs (detailed in the following table) amount to approx. 3.2% of the total budget.

Table 3.8: Third parties.

Do you plan to subcontract any tasks?			Yes
Subcontractors will be chosen based on best value for money. All contractual arrangements will ensure compliance with the following principles: avoid conflict of interest; maintain confidentiality; promotion of the action and visibility to the EU funding; liability for damages. Moreover, all subcontractors will provide Clevy with the right to commercially exploit the results generated during the subcontract implementation. As none of the two subcontractors have been identified, Clevy expects to ensure best value for money by initially preparing a full specification of the work to be subcontracted. With the specification as the starting point Clevy shall ask at least 3 candidates to express their interest in the task along with an offer. Clevy shall select the best subcontractor by evaluating price, delivery time, experience in Clevy's field, reputation and assurances. The candidate that best lives up to the individual criteria, and delivers the most attractive package, shall be awarded the contract. Details about the tasks to be subcontractor are provided below.			
Task(s)	Estimated amount	Measures to comply with best value for money	
2.5	€30.000	Subcontractor: to be defined. Example of potential subcontractor: Senior System Engineer / DevOps as a freelance Reason for subcontracting: The CSML Atlas Platform should be able to run in on-premise. Clevy is looking for expertise in the field of on-premise/self-packaged software installers. Task: Create of self-packaged local installer; Optimize for low-resources environments; Simplify deployment process for on-premise; Provide bindings with other database engines.	
6.4	€30.000	Subcontractor: to be defined. Example of potential subcontractor: Flying Saucer Studio (France, USA) Reason for subcontracting: Need for a strategic communication company to refine messages. Expertise lacking in Clevy team, need for external nonbiased help. Task: Produce communication material.	
Will any of your linked third parties work in the action tasks?			No
Will you use contributions in kind provided by third parties?			No