



# Mastering Low Code and No Code: A Comprehensive Business Guide

White paper  
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## PART 1: CONCEPTS AND ADVANTAGES

# INTRODUCTION

This white paper is aimed at both corporate IT managers, as well as developers, citizen developers, web agencies, entrepreneurs or startups.

IT teams constantly face new challenges in designing, developing, deploying, and managing a growing portfolio of web and mobile applications, whether for internal or customer facing processes.

To maintain the overall security of the information systems architecture, the IT department can opt for shared developments using pre-established components, processes, tests, and models, ensuring robust and customizable solutions. The goal, of course, is to reduce the Time to Market for new mobile applications.

A comprehensive guide to the challenges addressed by no-code/low-code platforms and best practices to adopt.

Low code platforms industrialize new mobile & web applications production or transforms existing enterprise business applications. It ensures that customers have

the appropriate Enterprise grade security, governance and performances to delivers standardized rich user experience..

**- 60 %**

The development of applications using low code can reduce development time by 60% compared to traditional development.



## PART 1: CONCEPTS AND ADVANTAGES

# UNDERSTANDING LOW CODE AND NO CODE

Quite unknown a few years ago in the world of web and mobile development, Low code and No code technologies are gaining ground and aims to be a major player in the development world in the coming years.

### A - LOW CODE

## LOW CODE : What is it exactly ?

It is a way to develop and design software applications faster and simpler, significantly reducing the amount of code to write yourself. Several positive points about this new system: It allows experienced developers to increase their performance by not neglecting the quality of their productions and allows "Citizen developers" to create applications more simply and intuitively.

Indeed, by using visual modeling through a graphical interface, configuring and building applications have never been more accessible.

To take a slightly more explicit example, let's make a parallel with the construction case. We can either build brick by brick or in a more efficient way using standard components, but nevertheless customizable. All within automated processes, allowing a

shorter delivery time for the products, without altering their quality.

Low code platforms allow developers to avoid repetitive tasks and focus on the key parts of your application to increase their productivity. In addition, they rely on standard market technologies, which has two advantages. On the one hand, it allows you to rely on standard components, on the other hand, it allows you to create components for specific needs tailored to your business.







A - LOW CODE

# Why such enthusiasm for Low Code ?

FAST ADOPTION

**+70 %**

of companies have already adopted LCNC solutions or have ongoing pilot projects.



Many developers in the software world rely on different libraries, Api's that will allow them to focus on THE added value they can bring to the application.

Low code will allow developers to offer tools that help them visually build complete applications, using the "drag and drop" method. It will allow a better overall vision of the application's construction and a time's optimization, thus reducing considerably the number of lines of code to be written. That means being more productive while having an equally optimal quality.

Low code development platforms can be divided into 3 main areas:

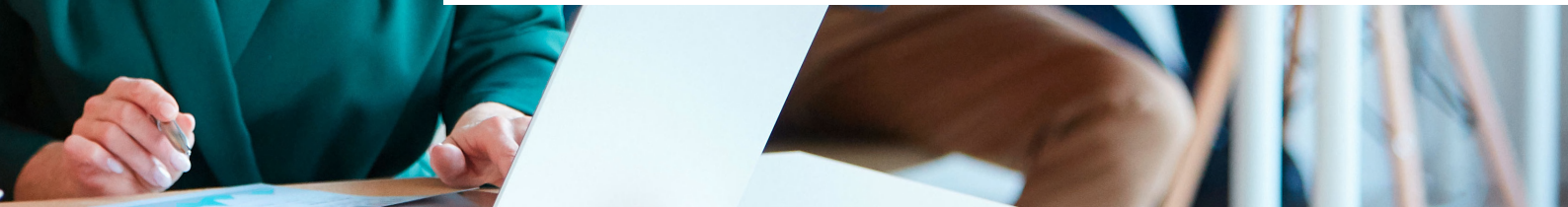
» A visual development environment,

where we will be able to define the user interface thanks to drag and drop, add actions and animations. This is what will create the base of the application, both visually and functionally. It is even possible to add your own hand-code to add custom features

- » The connectors that allow us to extract data from scattered sources. For example: SAP, web services, NoSQL, Salesforce, Twitter, LinkedIn, Office 365, and others.
- » Automated tools that will build the application, maintain his organization, and test the final version for the user.

## The Low Code/No Code Revolution: Empowering Everyone

	Citizen Developer (End-User)	Business-Led (Pro Developer)	Enterprise IT (Pro Developer)
Full-time Developer	No	Yes	Yes
Preferred Tools	«No code» (configuration)	Low code and Pro code	Pro code
Typical Apps	Individual and Workgroup	Departemental	Enterprise





A - LOW CODE

# Classic code vs Low code

## Up to 2 times fewer steps with Low code

Above the steps required to build an application using Pro code (on the left) and Low code (on the right). As you can see, Low code requires half the number of steps compared to Pro code and so on significantly speed up the development process.

Also, applications developed with low code are usually easier to maintain and update due to the platform's standardized approach. Classic code applications require ongoing attention from developers. By providing visual interface and pre-built components, low code platforms are a blessing for front end developers. On the back-end side, Low code platforms emphasize ease of integration

with existing systems, databases, and external services.

When you think about low code, you must think about ecosystem. Low code platforms are building extensive marketplaces, plugins, and integrations to encourage reusability and further accelerate development from a project to another. Many software development projects need the same requirements and that's where low code brings high value. Finally, these platforms work seamlessly with DevOps practices, especially continuous integration/continuous delivery (CI/CD).





## PART 1: CONCEPTS AND ADVANTAGES

# WHY CHOOSE LOW CODE ?

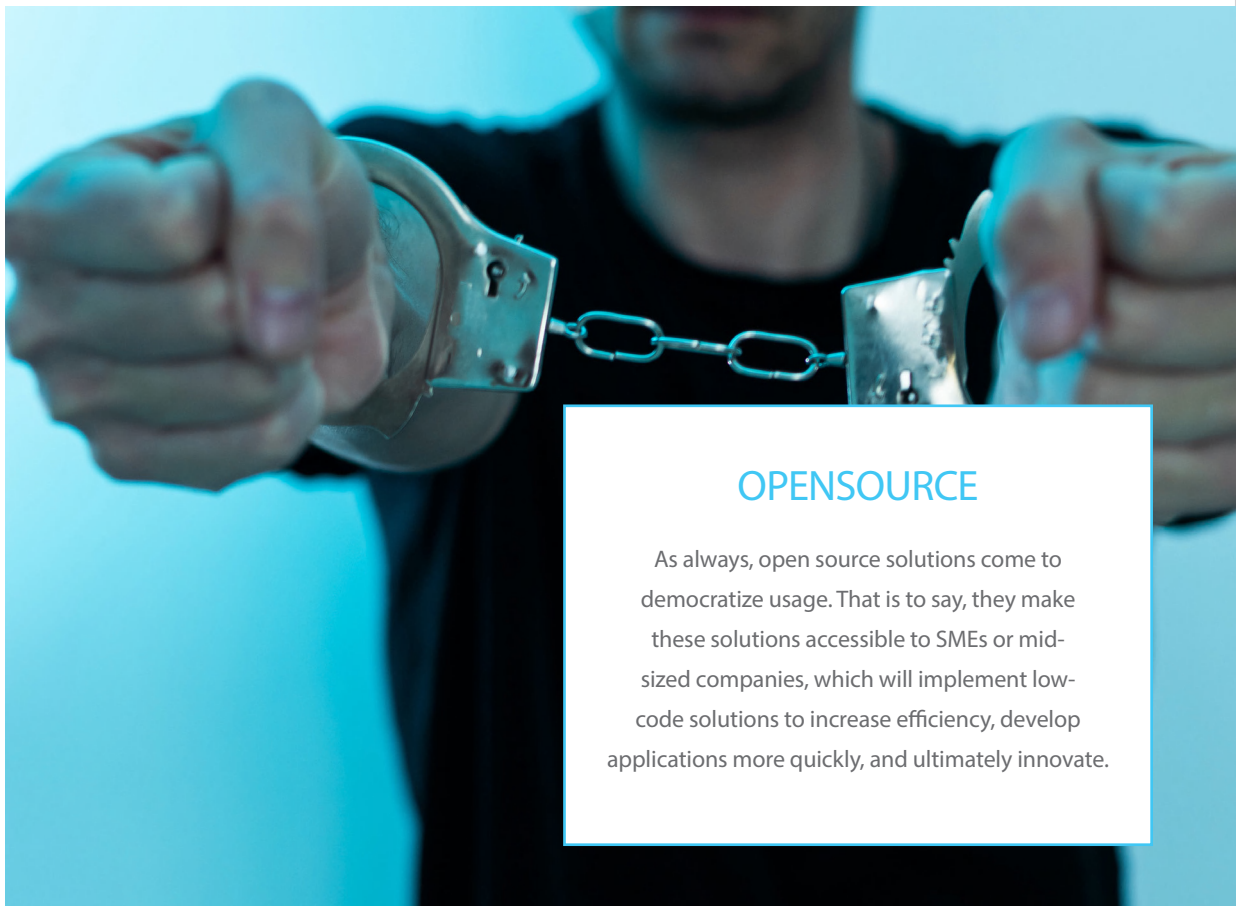
To accelerate customizable developments and cost efficiency.

### Vendor Lock-in: An underrated criteria of choice

When choosing a platform, several factors have an impact on the decision process. Is the platform user-friendly? Does it have the features I need? Can the platform integrate with my existing information systems? What level of customization can it bring to my applications? Does the platform meet my company's security constraints?

Many criteria which are platform-related in a technical way but there is another underrated factor: vendor lock-in. It implies that companies don't have to be dependent on a software vendor.

There is only one way to be totally independent from the provider: Open Source.



## OPENSOURCE

As always, open source solutions come to democratize usage. That is to say, they make these solutions accessible to SMEs or mid-sized companies, which will implement low-code solutions to increase efficiency, develop applications more quickly, and ultimately innovate.



# The most common objections

Many misconceptions persist about low code technologies.

## Companies can't build any robust and complex applications with low code platforms

Many think that Low Code development is not as powerful as traditional development.

Low code is just an abstraction of code. It includes everything a developer needs to build an application but packaged. When you build an application with a low code platform, you don't write as much code as usual (90% less in most cases) but code is still written or executed by the platform itself.

Many low code platforms have been market-tested through the years and there are some Enterprise grade platforms that are able to produce high quality software applications, with no constraints on functional or graphic matters.

Even though the visual interfaces may differ from a platform to another, the overall approach is the same.

These platforms meet the requirements you may have when starting a traditional development project by providing high level of customization, security (SSO, data encryption, versioning, backup management, On Premises hosting) and data management systems.

## Companies can't connect my low code applications with my existing systems

Low code platforms wouldn't have any value if companies were unable to connect to their existing systems. Most of the Enterprise grade platforms provides a set of connectors to seamlessly integrate and connect your new low code application to existing ERPs, CRMs, or existing databases. These connectors can technical like SQL or REST API connectors or even functional like "out of the box" SAP, Salesforce, Oracle applications or any other standard package..

## Low code replaces the developer

"I am a developer. Why should I use something that aims to replace my job and expertise?"

Low code platforms are made for IT department and especially professional developers so the concept of "Citizen developer" doesn't apply when talking about low code.

The platform is just a new way for the developer to express himself and it highlights his expertise. The platform cannot replace the developer, both need each other.

One of the fears of developers and sometimes a reluctance to use this type of platform is precisely related to the fact that the latter would devalue their work. In reality, the purpose of these platforms is to make developers more productive, allow them to deliver projects faster, focus on the added value of their productions while never being constrained or limited by the platform. This is a benefit for the developer himself!

Furthermore, a few platforms (professional and enterprise grade ones) allow you to add your own custom code if needed. You will never be limited by such a platform.

## This is new technology, so it requires lot of training time

The learning curve still exists, and training is mandatory to be able to develop on a low code platform environment.

However, it only takes a few days to understand how it works and develop a first simple project without going into specific tasks. Some platforms use existing standards frameworks already used by most of developers in the world. For example, Angular for the front-end part, which is a well-known framework, facilitating the platform onboarding.



B - NO CODE

# AND WHAT ABOUT NO CODE ?

Nowadays, enterprises are seeking to digitalize their processes easily and quickly, but they don't necessarily have enough or qualified employees to achieve that.

code platform has limited capabilities compared to a Low code platform or classic development, even if more and more complete.

Based on these observations, a new app development model has been built, No code applications development platforms.

### No code platforms are emerging

Moreover, these platforms simplify the digitalization process of an enterprise due to the simple and intuitive understanding of the tools, that permit to a "citizen developer" to use it.

We count hundreds of them, with different users personas and strategic positioning. It can be difficult to understand all offers and choose the one adapted with our needs. Still, these platforms rely on one concept

But what can we do with these platforms?

No-code platforms principally provide:

- » Forms
- » Web applications
- » Mobile applications

They are useful to create, usually small and simple apps, without coding even one line. That means that no technical skills are required to use it. Obviously, a No



TIME TO MARKET

## +40 %

Companies report a reduction of 50% to 80% in application development time with LCNC, allowing them to launch their products more quickly.

## A digital transformation slowed down by the shortage of developers

No code platforms principally use drag & drop components to build the application through an easy UI creation. No Code tool's purpose is to increase companies productivity by opening the technology to

a new population of non-technical users. However, No Code platforms must be able to integrate into enterprise data security standards.





## PART 1: CONCEPTS AND ADVANTAGES

# WHY COMBINE NO CODE AND LOW CODE?

More and more companies see the value this new development method brings to their processes. These platforms are not magic, but they help the teams in several ways if you use both of them together.

### Reduce IT backlog

Business teams have needs and often, IT teams can't deliver the solutions at the right moment. Sometimes, IT department delivers an app that when the need of it is already obsolete!

By allowing business users/non-developers to participate in the app development process, No code and Low code platforms democratizes technology and thus, reduces the IT backlog of the company.

Nobody knows the business needs better than the business users themselves. Imagine if we can give them access and training on a No code platform. They will be able to easily develop the software solutions they need, or at least, test an idea in a very short time, freeing the IT team from these projects, allowing them to focus on companies high-value projects.

Additionally, IT teams can use a low code platform to accelerate their software developments. Even though low code platforms don't require highly specialized coding skills, a professional developer is still mandatory.

Someone with no developer background would be hardly efficient using a low code platform.

Low code doesn't replace the developer or devalue his work, but it allows experienced developers to reduce the time to market of their applications, it allows junior

full stack developers to develop robust solutions faster, alike they do with traditional development and finally, it allows front-end developers to develop back-end expertise, with low code focusing on integration.

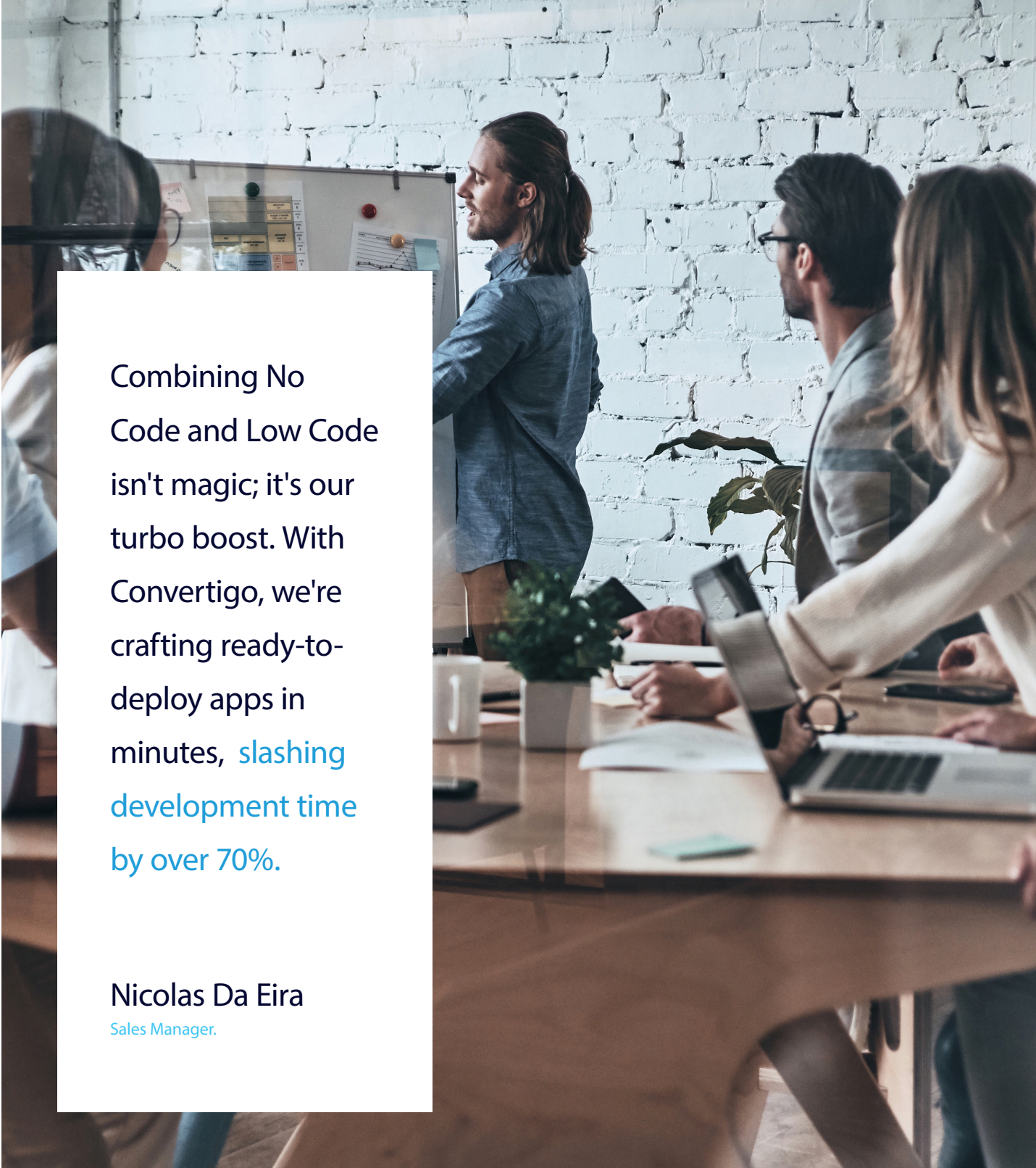
Indeed, No Code and Low code solutions often come with built-in connectors. This simplifies integration with existing systems. Depending on the platform, it can be anything from Office 365 to complex information systems such as SAP ERP

### Take control of shadow IT

Giving a tool to business teams is not enough in itself. Business application means using company data. When we talk about data in business, we often deal with a recurring problem: shadow IT.

Using No Code technologies mean getting rid of these Excel Sheets and Access databases, including sometimes sensitive data, created by business users who did not have time to wait for the IT department's delivery and scattered in Google Workspace or Office environments, over the years.

When using a No Code platform, all data (for example, the list of employees in the current year) is controlled and packaged by IT department. IT knows where the data is, how it is used for and when. Business teams may have controlled access to this data so no need for them to ask the IT department before using it.



Combining No Code and Low Code isn't magic; it's our turbo boost. With Convertigo, we're crafting ready-to-deploy apps in minutes, **slashing development time by over 70%**.

**Nicolas Da Eira**  
Sales Manager.



### Meet the security constraints

Many No Code/Low Code platforms have compliance and security features built-in, making it easier to meet regulatory requirements.

### Create Agile teams and cooperation between Business and IT

No code and Low code platforms revolutionize the development landscape by fostering agility within teams and enhancing collaboration between business and IT. These innovative platforms empower individuals with diverse backgrounds, including those without extensive coding expertise, to actively contribute to application development. This democratization of the development process accelerates the pace of project delivery, enabling organizations to quickly adapt to changing market demands. The result is a more responsive and collaborative development environment, where cross-functional teams collaborate seamlessly, driving innovation across the organization.

- » 1. Solutions that meet business requirements.
- » 2. IT department is involved in the making process but not in the front line. Business teams needs IT to :
  - implement the tool/platform
  - be part of the training process
  - support them when needed
  - lead the use of company data within the applications made by business teams.

### Have a visual demo from the 1st sprint and the opportunity to evolves it quickly

As said previously, No code and Low code approach encourage experimentation and innovation as it allows you to test new ideas and concepts with minimal investment.

The purpose, when starting a project, is to have solutions that entirely meet business needs and it takes time and iterations. With these platforms, you can get users feedback and then evolves the application faster. To do that, you need a visual demo so users can use the demo directly on a device and give adjustments for the next iteration.

### Reduced maintenance

Many No code and Low code platforms handle backend maintenance, security, and updates, reducing the burden on IT teams. It brings high value to use both platforms because they can interact together, so as the different teams.



## PART 1: CONCEPTS AND ADVANTAGES

# IMPLEMENTING LCNC

Planning, training, and tool selection.  
Training and resources for skill development.

500M

applications will be created  
with LCNC in 2025

### Understand business needs is the most important thing

Before thinking of a tool, think business processes. That's why the collaboration between IT and business teams is primordial. Once you get the needs, it is way easier to evaluate potential platforms.

### Choose a first use case that brings value

To implement a business process with no code/low code, you need to choose a use case which is understandable for every stakeholder and brings visible value to the final users of the applications. Also, these final users can/must be the ones creating the application and nobody knows the process better than the final user itself.

Showing, in a short amount of time, that an important use case can be create using no code and low code makes the project more credible, relatable and it's easier to convince IT to implement the solution in a larger scale.

### Have a first visual demo and get users feedback

When creating something in no code/low code, it is necessary to think of the project in iterations and not define an upstream deliverable. By doing this, you reduce Agility within the different teams and are less open to new ideas. Indeed, the purpose of these platforms is to have something visual, even if the design is simple at the beginning, in order to get final user's feedback on the functional part: the features that work, the ones that is missing and the ones that could be improved.

### Low code does not exempt the implementation of a project method

While Low code platforms significantly accelerate the application development process by minimizing manual coding, they should be seamlessly integrated into established project management frameworks. SCRUM, known for its iterative and collaborative nature, can complement Low code development by providing a systematic structure for planning, executing, and reviewing each phase of the project. That's very important to understand: no code and low code platforms acceleration factor is only software development oriented.

### Having a strong digital culture on the business side is essential

Having a digital culture is a prerequisite to be able to take charge effectively of a no code platform. These persons are generally active profiles, who have ideas, who like to experiment and are often drivers within innovation cells. It's not just about technology since you need people with a mindset that embraces innovation, agility, and adaptability.

This cultural shift ensures that everyone, from leadership to frontline employees, is aligned with digital goals. A strong digital culture promotes collaboration, continuous learning, and the proactive integration of technology into all facets of the business. Companies need sponsors within the teams that spread this culture and it is even more relevant in the no code ecosystem.





## PART 2 : TECHNICAL IN-DEPTH

# KEY FEATURES AND ARCHITECTURE

## Features that evolve every day.

300

Number of connectors included "out of the box" in the Convertigo Low code platform.

4 to 10

Acceleration factor on the development part when using Convertigo Low code platform.

A low code application platform (LCAP) differs from a classic application development tool by providing all the components needed to build, run, manage and connect applications to the existing Enterprise Information system.

A LCAP should include the following capabilities:

- » Back-end connectors to enable mobile apps to connect to the enterprise databases and business applications.
- » Back-end flows to enable back-end data to be aggregated, filtered and combined to provide a friendly service API to front ends. The flow can also augment existing backend application with business specific capabilities such as push notifications or locator services.
- » Cross platform UI development tools to build front end user interfaces able to run on multiple devices operating systems such as Apple iOS, Google Android or PWAs (Progressive Web Apps) and of course web desktop.

More advanced Mobile application development platforms provide additional features such as :

- » Cache Manager to cache on the server side some data avoiding getting it each time from the

backend connectors.

- » Identity manager to be able to authenticate mobile users and to check their rights from an Enterprise user management system or from an identity federation.
- » Offline data synchronization enabling mobile users work on local data when the network is not available and still be able to sync back this data to the backend systems when the network is restored.
- » Security managers to encrypt sensible data on the network or on the mobile device.
- » Integration with Analytics engines to provide insights for line of businesses, system administrators and mobile developers.
- » Audit management to provide security officers to track back any mobile transaction made on the enterprise information system.

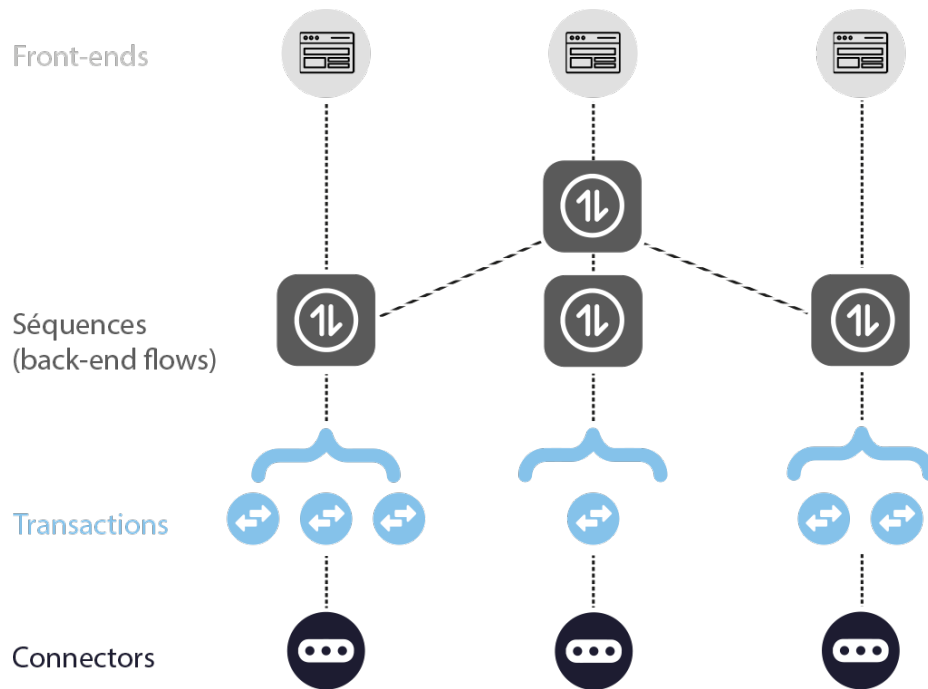
Convertigo Platform is the first Open Source platform to provide a complete "FullStack" combined end to end from backend enablement to front end mobile and web UI development tools.

The platform is composed of several components : the Convertigo Server, the Low Code Studio and the No Code Studio.





# A robust architecture.



Any enterprise application needs services to interact with the enterprise data. Services are usually built on top of existing backend services provided by ESBs or other SOA based architecture or can be developed from scratch using the Convertigo NoSQL backend storage engine.

A mobile application running on a browser or a device will interact with back end services using standard protocols based on HTTP/HTTPS JSON or XML format.

Services can be defined from a bottom-up approach (where the service model is defined by the service developer) or from a top/down approach where the service model is defined by the front end UI developer.

A very common situation is that existing Enterprise services are not designed for mobility or web design, or even not designed for the front-end business rules.

Convertigo Platform components addresses these requirements with:

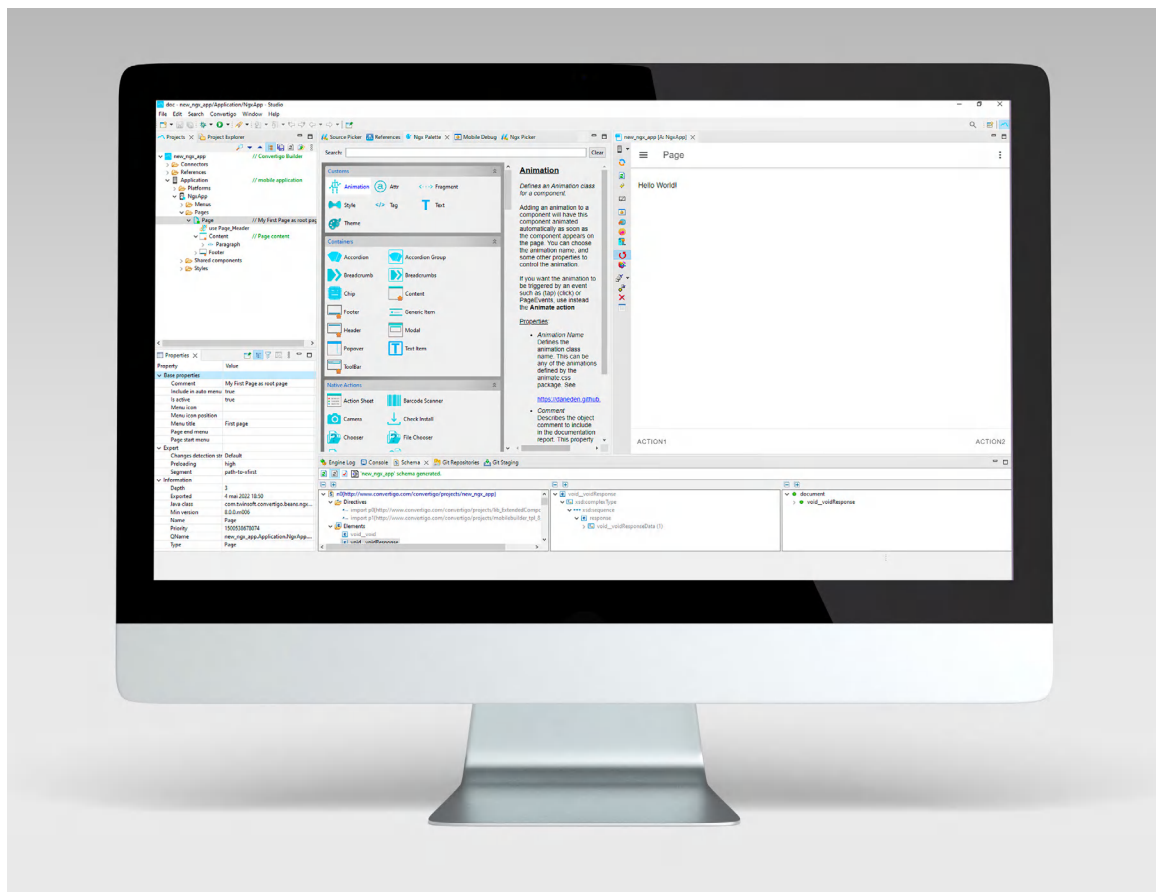
- » Protocol transformation enabling transformation of existing internal services including SOAP, SAP BAPIs, REST/XML, SQL, NoSQL to front end friendly REST/JSON mobile services
- » Data filtering to expose only needed data model to front ends from existing "heavy" internal services
- » Business logic augmentation to enhance existing internal services for front ends, or to build from scratch new mobile services directly from a SQL or NoSQL data repository

Convertigo back-end services are built using a very powerful concept called "Sequences", basically defining all the "Steps" needed to get the data, transform it, handle it with business rules and return it to the front end.



## What to remember ?

- » Building Sequences does not require programming in a specific language and is simply based on Low Code object configuration using the Convertigo Studio GUI.
- » Convertigo uses a library of predefined Steps to handle most of the requirements for backend service programming.
- » Sequences can also be enhanced by using Special "Javascript" Steps able to perform complex business logic. These steps can even call some custom Java classes.
- » With all these capabilities, the mobile service developer using Sequences, will develop the services significantly faster and will reduce maintenance costs compared to classic programming using PHP, Java or C#.
- » Implementing a centralized, secure, and universally accessible solution to allow business units to create their own applications will help reduce the company's shadow IT.
- » Open source solutions provide a foundation upon which one can develop their own components or connectors, apply their security constraints, for the entire company.

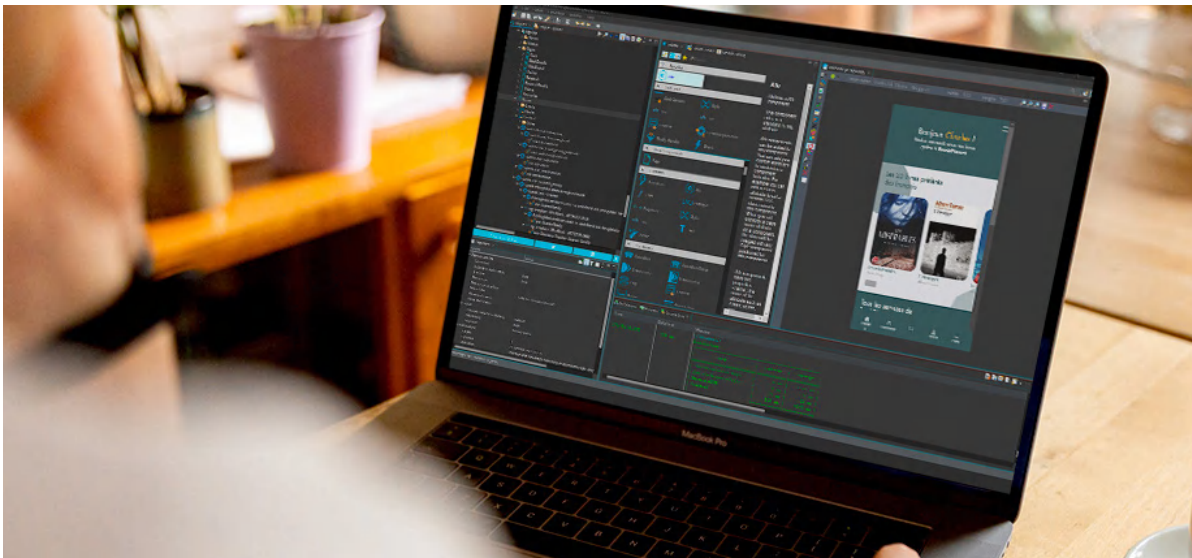




## PART 2 : TECHNICAL IN-DEPTH

# FRONT-END DEVELOPMENT

Convertigo Low Code studio features a low code front End builder.



# 70%

Convertigo Low Code Studio enables the development of ready-to-deploy applications in a matter of minutes, representing a remarkable acceleration compared to traditional development methods, reducing application creation time by over 70%

In an era defined by digital transformation, having tools that prioritize efficiency and precision in app development is invaluable. Convertigo Low Code Studio emerges as the game-changer in this landscape. This platform brings forth a new NGX app object under the "Application" module, making it incredibly intuitive for users to craft applications by simply dragging and dropping mobile components from the mobile palette.

But it's not just about building. The studio offers a graphical user interface builder that empowers developers to craft ready-to-deploy applications in mere minutes, truly

leveraging the robust capabilities of the Convertigo backend. And when it comes to monitoring and refining those applications, Convertigo shines yet again with its 100% visual debugger. Equipped with functionalities reminiscent of the esteemed Google Chrome debugger, it allows developers to make precise adjustments, from styles and margins to component placements.

### The result ?

Pixel-perfect applications that stand out, making Convertigo a cut above the rest in the realm of Low Code platforms.



# Join us in exploring the seven key features that make Convertigo Low Code Studio the epitome of modern app development.

## 1. Intuitive Creation with the Front End Builder

With Convertigo, craft user interfaces in the blink of an eye. Our studio offers a drag-and-drop system for mobile components, turning your vision into a digital reality. See modifications instantly with a real-time preview.

## 2. Power & Speed

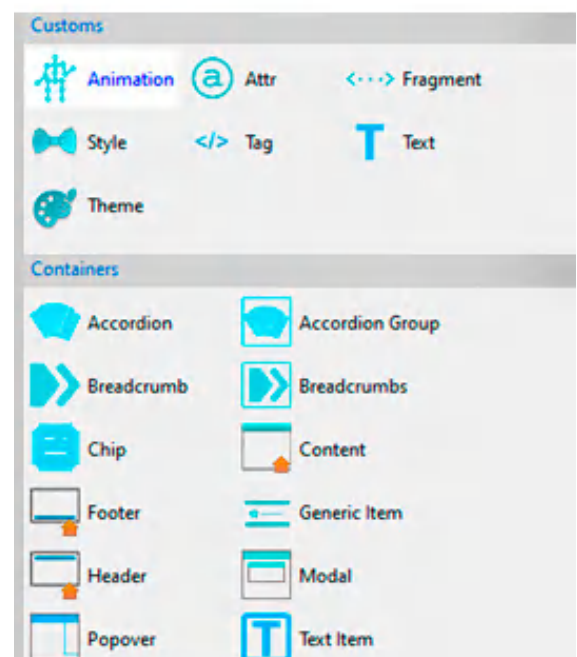
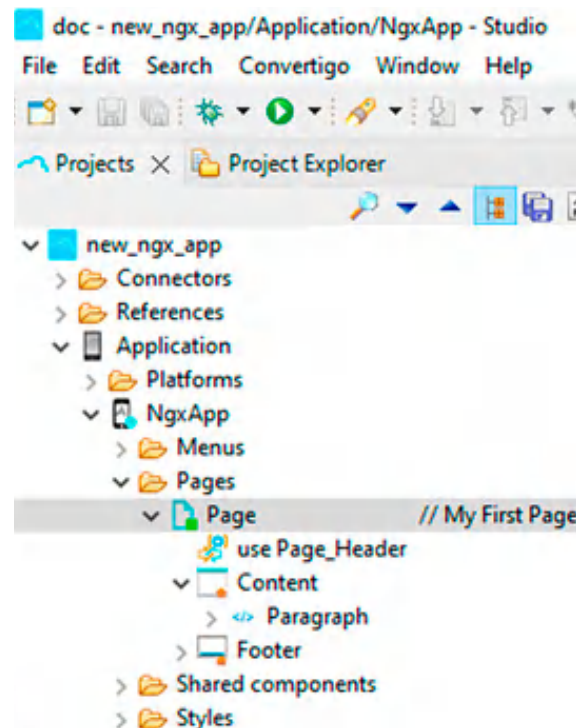
Through our graphical interface, build ready-to-deploy applications in minutes. Harness the full backend strength of Convertigo without compromise.

## 3. Comprehensive Visual Debugging

Our visual debugger, as intuitive as the Google Chrome debugger, gives you total control. Adjust styles, margins, and component placements with unmatched precision. Craft pixel-perfect applications, a distinctive advantage of Convertigo.

## 4. Simplified Data Binding

Easily connect your user interface to backend services. With our "Source Picker" tool, associate data without writing a single line of code. Display lists of items with our collection binding feature.





### 5. Style Customization

Benefit from the power of the Ionic framework. Style your applications easily at various levels, whether it's a specific component, an entire page, or the whole application. Our style editor supports CSS auto-completion, making styling even more straightforward.

### 6. Theming & Event Management

Apply colorful themes to your application and manage interactions with a range of events, such as "onClick" and "onSwipe", through our drag-and-drop system.

### 7. Custom Code

Even though Convertigo simplifies app creation, we understand the importance of flexibility. Write custom TypeScript code at the application level or for a specific page. Our TypeScript editor is equipped with syntax coloring and code assist, ensuring a smooth coding experience.





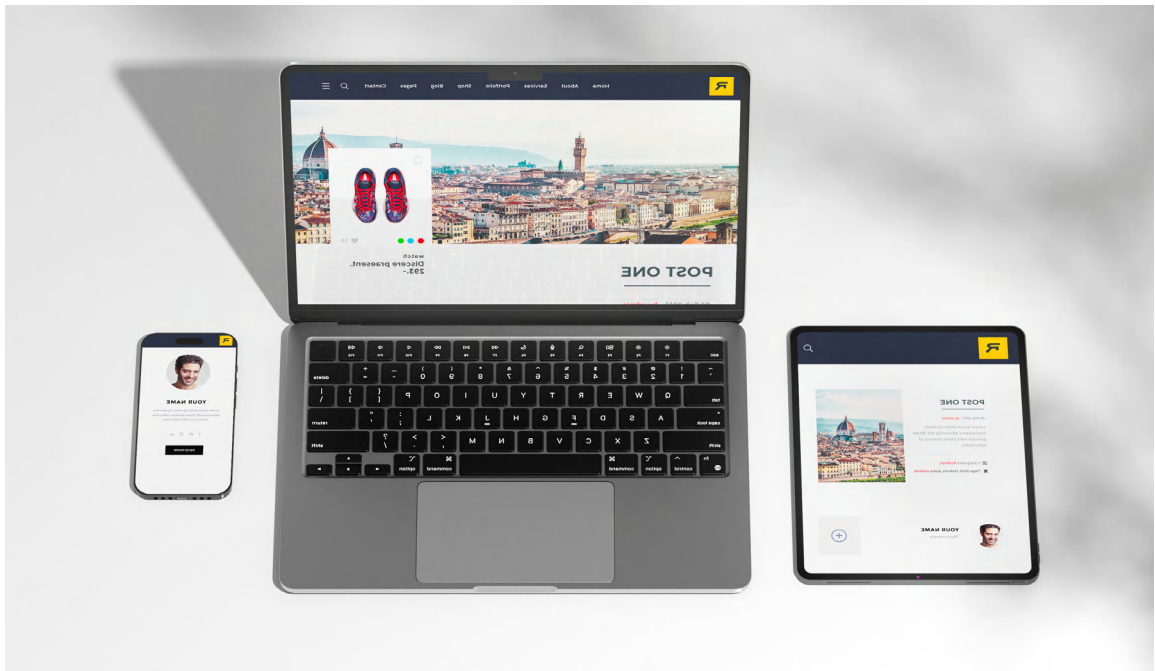


## PART 2 : TECHNICAL IN-DEPTH

# PUBLISHING AND CONNECTING

## Publishing your applications

It has never been that simple.



Once the services are developed, they can be deployed on Q&A or Production servers in a simple click. All the service definitions will be packaged as a .CAR file and deployed on the server.

Front end developers and testers will be able to access the services through the Convertigo test platform portal.

This portal enables users to browse the different projects and services, read documentation about them, and test a back end service using the built-in Convertigo test cases. The portal will show a service result in JSON or

XML format. A back end service can be published in 3 modes:

- » Private will make this service only available to other services running on the platform. Mobile applications will not be able to call this service.
- » Hidden will make this available to the mobile apps but not visible in the test platform portal.
- » Public will make the service available for mobile apps and visible in the test platform portal



# Connecting to **back end data**

Where back-end data can be databases, APIs or event flat files.

The goal of a platform is to be able to access data via the standard protocols so that mobile users can work on it, display it and modifying it.

One gold rule in system architecture is that data should never be modified directly on databases but always through the service layer (when they are available) executing business rules.

Convertigo Low Code platform can create back-ends or connect to any existing Enterprise backend through its large set of connectors. Most of these connectors will access the services layer of backend applications but the platform can also access data layers directly if needed.

Service layer connectors are :

- » SOAP 1.1/1.2 connector to connect to any existing SOAP web service provided by an ESB or any other Web Service provider. Convertigo SOAP supports WSDL import and will generate automatically in the Studio all the transactions and schemas for a given web service. Convertigo SOAP connector also supports MTOM attachments to exchange data with ECMs.
- » REST JSON/XML connector to connect and exchange data with any REST web service in JSON or XML format. Convertigo REST connectors supports OAuth authentication and can import a REST web service definition in YAML format to generate automatically in the Studio all the transactions and schemas for a given web service.
- » SAP BAPI connector will allow Convertigo to exchange data directly with any SAP NetWeaver system including SAP ERPs (ECC 6.x). Convertigo features a BAPI browser able to search in an SAP system the needed BAPIs and to import them in one click in Convertigo Studio. When imported, it will create automatically SAP transactions with all the needed schema data models.





## Data connectors are :

- » SQL data sources to connect to any SQL based database. Convertigo supports any database as long as they provide a JDBC driver. By default, the platform is shipped with MariaDB (MySQL), DB2, DB2/400, and SQL server drivers, but any other JDBC driver can be also configured
- » Data access can be done directly through JDBC or by using the application server's JNDI data sources. Of course, Convertigo may access SQL stored procedures to execute business logic in the databases.
- » NoSQL databases connector can be used to read and write data from these BigData document-oriented databases. Convertigo supports Apache CouchDB NoSQL databases.
- » Plain Files can be also used as data sources. Convertigo supports CSV, XML and Excel files
- » RSS/ATOM/OData feeds can also be accessed through Convertigo HTTP connector.





# RPA connectors

## Where back-end data resides in API less legacy systems.

Enterprises are still using legacy systems to run some precious business applications. Even if system architects plan to get rid of them, these applications are still in the landscape and must take part to of the digital Enterprise.

Rewriting these applications in modern languages to have them exchange data in today's standard protocols would be overpriced and time-consuming.

Convertigo Low Code Studio addresses this need by providing two exclusive connectors:

» Javelin connector enables the platform to connect to any legacy IBM AS/400, iSeries system and exchange data using the TN5250 protocols through the application's user interface. This way, all the data read or modified in the legacy

» Javelin connector also supports in the same way IBM z/OS Mainframe systems accessing apps using the TN3270E protocols.

This connector is completely integrated in Convertigo Studio and can be programmed by using a visual point and click interface.

This way, the platform can "mobilize" any existing legacy or web UI application seamlessly without changing one line of code.



# 71%

Of fortune 500 companies in 2023 are still using Mainframes



# 92%

World's top banks are using Mainframes

## Low code & back-end data empowers Enterprise's business processes.

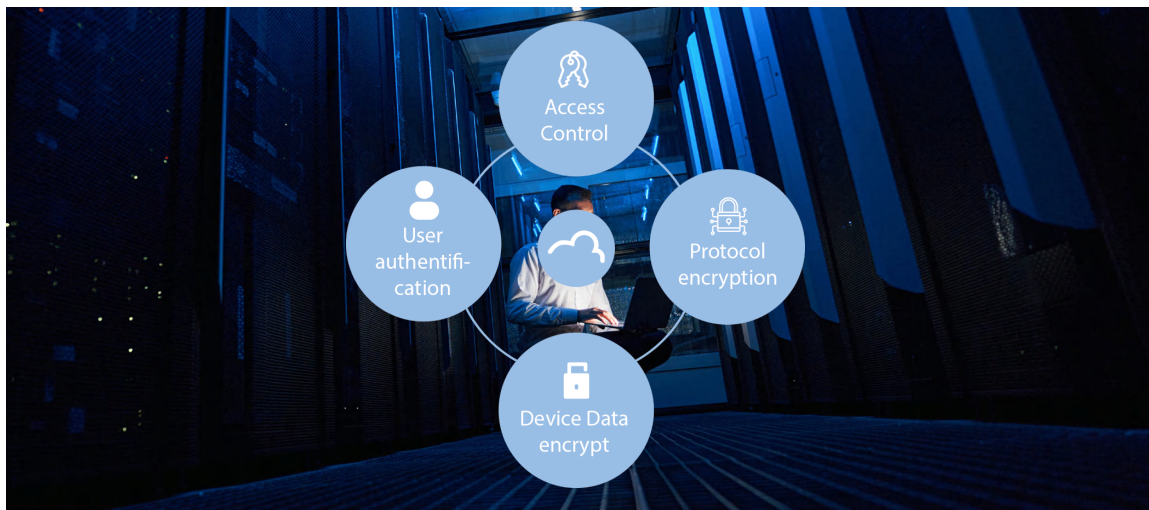


## PART 2 : TECHNICAL IN-DEPTH

# SECURITY AND DATA MANAGEMENT

## Application security

As by definition, mobility or web portals imply that some enterprise data will be brought out of the Enterprises. An Enterprise Platform must have security capabilities to secure data and processes.



These capabilities are:

- » User authentication to be sure to know who the user is accessing the enterprise data
- » Access control to control what part of the data should be seen for this particular mobile user
- » Protocol encryption to prevent network spies to read data coming or going to the mobile devices
- » Mobile device data encryption to prevent attackers to read data on devices if they are lost or stolen

Convertigo Low Code Studio brings to developers out of the box components to handle these capabilities:

- » User authentication is supported by using a local user database or LDAP as most Enterprises will prefer

to use their own identity servers such as Active Directory or any LDAP based server. Convertigo can also use federated identity frameworks providing SSO services such as SAML or oAuth

- » Access control is done by creating a security context before any other mobile service can be used. This security context will be established with a “login” service checking the mobile user identity and deciding if or not he is entitled to open the security context
- » Protocol encryption is based on TLS 1.2 encryption and supports client and server certificates
- » Identity manager to handle for one unique mobile identity several different credentials to access back end system





# Offline Data capabilities

One of the greatest challenges for mobile apps is that they must be able to work with data even if there is no network. We call this offline data.

Platforms must provide mechanisms to provide out of the box offline data capabilities to applications developed with the platform. This way any mobile app will inherit these capabilities without requiring a strong development effort.

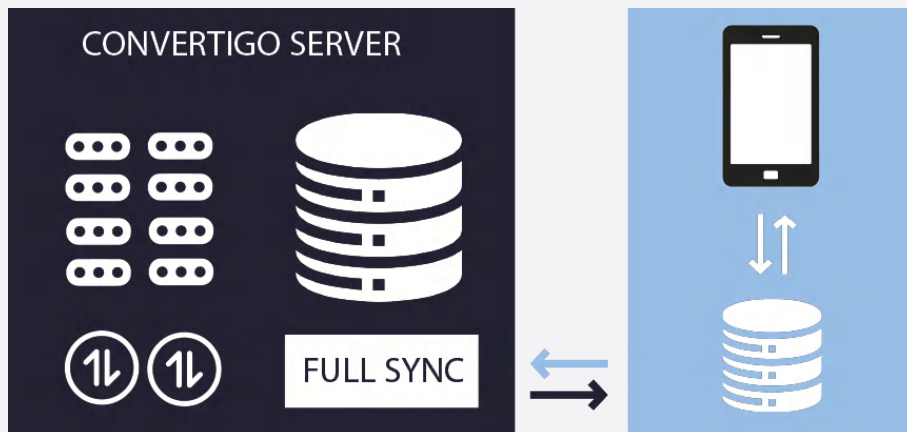
Convertigo Platform provides powerful offline capabilities with two features:

- » Local cache is automatically caching server data in a local mobile database. The programmer can define the time to live and the cache policy (Server first or Local database first)

- » FullSync provides a complete synchronization process between data on the mobile device and data in the back-end services. FullSync enables scenarios where the mobile user can read and write business data even when the network is not available. As soon as the network is brought back the data sync process will occur and the local modified data will be updated on the backend side seamlessly

FullSync technology is based on NoSQL databases on the mobile client side and on the server side. The databases can sync differentially by transferring only changed data since a previous sync.

They can also have a continuous sync mode so that data is synced in real time as long as the network is available.



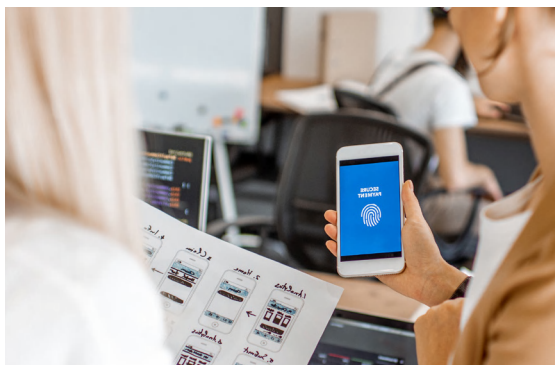
- » Sequence pulls data out from a back-end connector, and pushes it to a Full Sync database tagged with a target UserID
- » Data gets replicated to the mobile devices only for this UserID
- » User Interacts locally with the mobile NoSQL database
- » Access control to control what part of the data should be seen for this particular mobile user
- » Any modifications are replicated back to the Full Sync database
- » Data modifications in Full Sync database triggers update sequences to the backend



## PART 2 : TECHNICAL IN-DEPTH

# CONTINUOUS INTEGRATION AND MONITORING

## Deploying mobile application



Having mobile applications developed is fine, but how can Enterprises deploy them to users?

They may be several categories of users described here:

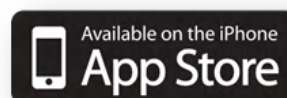
- » B2C users are the company consumer users, for example people using a mobile m-Commerce application or mobile travel application. These users will use the application from a public app store such as Apple's App Store, Google Play on their own devices
- » B2B users are the company partners. For example, insurance brokers or car dealers. This population will use the company apps on their own devices or on devices controlled by the company. They will install them from a public store as seen above or from the company private store.
- » B2E users are the company employees. They can be blue collars such as warehouse managers or white collars such as any employee using an Enterprise HR

mobile application. B2E users can use the company mobile apps on their own devices (BYOD) or use them on some special heavy-duty device. In most cases, apps will be installed from private stores

- » Testing panel users are using the apps in development phase before they are officially published to a store

Convertigo Low Code Platform addresses these needs in several ways:

- » Public Store compatibility enables all applications developed with the platform to be deployed on such app stores. Hybrid Cloud builds and local builds supports App signing for distribution or AdHoc deployments. The same with native builds.
- » Private Store compatibility enables all Application developed to be deployed to most of the existing third-party private stores and MDMs (Mobile Device Management)
- » PWAs. The Low Code platform supports Progressive Web apps, and these are the best way to deploy apps to enterprise users as no MDM or Store are required!





# Continuous Integration

Modern software development should be based on agile methods and continuous integration (CI). CI makes it possible to develop software and having tests executed in continuous mode each time a developer commits code in the source repository. This is often called TDD (Test Driven Development)

An Enterprise mobile platform should provide CI capabilities and be integrated with SCM (Source Control Management). Convertigo Platform is designed to be integrated in such environments by providing the following capabilities:

- » SCM integration with most of standard SCM systems such as GIT, SVN, TFS and many others. SCM integration is done through Eclipse Studio plugins. By default, Convertigo Studio is shipped with a pre-installed GIT support but any other SCM plugins can be installed.

Convertigo projects are based on standard YAML files and other text-based resources so they can be easily committed to SCM repositories. There are no binary files required for Convertigo projects.

- » Test cases provide for each mobile service a set of request input variables so that a service can be executed in a particular test case. Test cases are very useful for developers as they can easily test their Sequences. Test cases are also very useful for continuous integration as seen further on
- » Circle CI integration enables Convertigo projects to be completely integrated in continuous integration processes



GitHub Actions

# Analysing data

As the platform is the only entry point for all mobile applications, its obvious analytics could be handled by it automatically. Analytics can help lines of business to understand how applications are used. Analytics can also help Enterprise central IT departments to allocate operating costs among several business units.

Convertigo Platform supports two analytics systems. The both systems can be configured to work at the same time:

- » Google Analytics (GA) is supported by having (if configured) the platform reporting to GA automatically any executed Sequence (Mobile Service) or Transaction (Call to a backend server) as an Analytics Event. This will have GA be able to display all these events in the graphical Analytics console.
- » Analytics databases can be (if configured) any type of SQL database (MySQL, PostgreSQL, SQL Server, Oracle, IBM DB2..) receiving for each Sequence or Transaction execution a new line in the "Ticket" table.



# Configuration and monitoring



An Enterprise platform is not just a framework. Platforms must have configuration consoles, monitoring tools, log management and can be integrated in Enterprise's management systems.

This is why Convertigo Platform comes with a complete set of administration tools and interfaces to provide the best manageability to system operators.

Convertigo console is a web -based application **providing these capabilities:**

## Server Health & Monitoring

The Convertigo console's real-time server activity monitoring displays the number of open contexts, simultaneous requests, and average request durations. This provides a comprehensive glance at the server's health.

## Configuration Management

System operators can adjust platform components such as logs, proxies, and cache in real-time. Symbols management allows for flexible environment-specific deployment like Q&A or Production.

## Log Management

Developers and system operators can utilize the log manager to browse, archive, and view logs in real time. Enhanced filtering capabilities allow targeted traffic monitoring, such as isolating traffic from a specific device.

## Certificate Management

Sysops can oversee all SSL certificates utilized in Web Services and connectors through the certificate manager. Convertigo server is compatible with both client and server certificates.

## Convertigo Scheduling

Convertigo Scheduler, a built-in feature, permits the triggering of any Sequence at specified times, proving invaluable for mobile processes, especially when populating the FullSync database from backend data.



## PART 2 : TECHNICAL IN-DEPTH

# HOSTING

When it comes to server installation, Enterprises have the choice of using their own infrastructure “On premises” or using cloud service to run a platform.

Convertigo Platform can be used in 3 different configurations:



### » On Premises

Companies can install the platform and their applications directly on their own data centers. This ensures data sovereignty and governance.



### » Convertigo managed Cloud

Convertigo Cloud is based on European data sovereignty requirements Cloud technology.



### » Convertigo Client Cloud

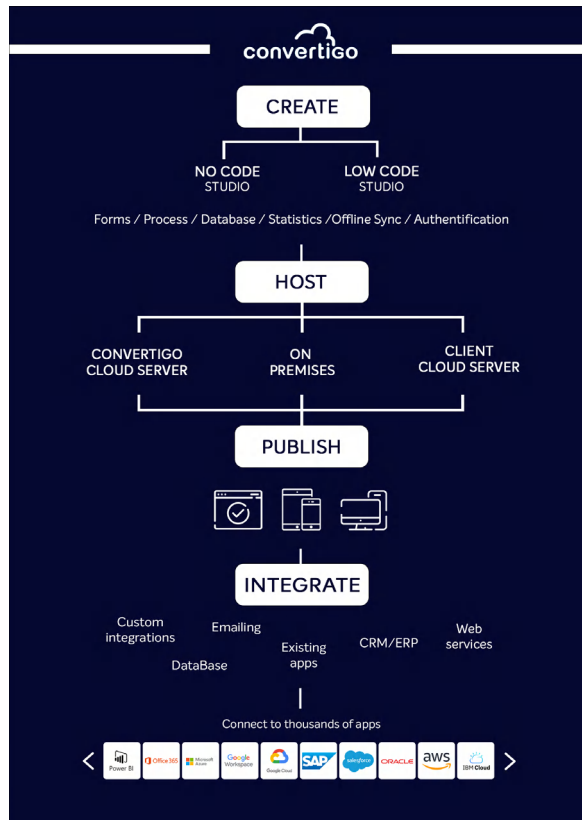
Convertigo platform can be integrated with any Cloud chosen by the company. Our container based technology can run on any Docker / Kubernetes based cloud farm.





## PART 2 : TECHNICAL IN-DEPTH

# WHY CONVERTIGO IS DIFFERENT ?



Open Source is the only solution guaranteeing non-dependence on a software vendor. This is commonly called "Vendor Lock-in". Using open source, you protect yourself against the following risks :

- » Takeover of the software vendor and therefore licence policy changes
- » Evolution of prices
- » Degradation of the relationship with the software vendor
- » Changes to the standards of use (hosting conditions, non-support for certain integrations)
- » Changes to security standards or hidden backdoors other cloud technology.

1 unique platform, 2 studios that can interact together :

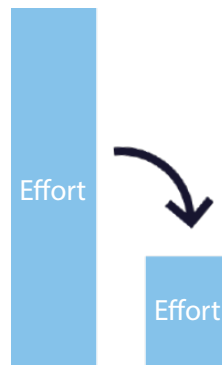
- » Low Code Studio : 100% customizable / For professional developers / Strategic and complex apps
- » No Code Studio : Built with Low Code studio components / For Business teams / Forms-based applications

Some uses cases :

- » FNAC DARTY
- » BANQUE ET ASSURANCE
- » CHANTIERS DE L'ATLANTIQUE
- » BNP PARIBAS



## PART 2 : TECHNICAL IN-DEPTH CONCLUSION



The  
smart  
way **we**  
**work.**

Thank you very  
much for audience.

Low Code platforms are key components of the Digital Enterprise. These platforms enable companies to gain in agility, to reduce development and maintenance costs, to preserve system integrity and to gain in security.

With the new requirements of the digital world, Enterprises will be facing numerous applications developments and will widen the gap between the needs and their development and integrations capabilities.

Convertigo offers with its Low Code platform all the required components to make Enterprises access the Digital

world for their customers, their employees and their partners with controlled costs and project timings.

Using Convertigo Low Code Platform will avoid having the same services to be redeveloped each time Enterprises need a new mobile or web application, thus reducing development costs and technical debt.

Convertigo Open Source technology provides Enterprises flexibility, openness, auditability, security and avoids vendor locking for a reasonable cost compared to "Do It Yourself" solutions.



## A WORD FROM THE MANAGEMENT

Low Code and No Code are disruptive forces reshaping how businesses innovate and grow. At Convertigo, we believe in their potential to **accelerate digital transformation** and **unleash team creativity**.

Our mission is to deliver cutting-edge LCNC solutions to help our clients achieve their goals faster than ever before.



Olivier Picciotto  
Company President



# ABOUT CONVERTIGO

Bring all your ideas to life,  
without or with a hint of code.

Convertigo is a privately held company recognized as a “pure player” in the enterprise Mobility market and the first software vendor to distribute its cloud based or On Premises Low Code Development Platform (LCAP) as Open Source.

Convertigo is delivering a secured and scalable disruptive all-in-one solution integrating rapid cross platform mobile development tools and a powerful back end technology covering challenging backend enablement, featuring a middleware optimized for mobility.

With more than 150.000 installations of its community edition, Convertigo technologies have a proven track record with secured and scalable implementations deployed in global fortune 500 companies in EMEA and North America.



**x10**

Average productivity  
gain

**45**

Key accounts

**1M**

Daily end users of  
the applications





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