



# LOW-CODE WITHOUT LOW-CODE LIMITATIONS

**Visual**  
LANSA

# 5X



## BREAK AWAY FROM THE STATUS QUO WITH VISUAL LANSA

Gartner predicts that market demand for app development will grow at least five times faster than IT's capacity to deliver it through 2021.

Continuing to learn, implement and support all the latest and greatest development languages and open-source frameworks is no longer viable. And low-code platforms are a way to break away from the status quo.

Low-code development platforms can help your company in a variety of different ways:



### ***Faster Development***

Writing less code means you can build more apps faster than before. Stop saying "there's no time" and start attacking the backlog of apps your business needs.



### ***Cloud Computing***

Quickly move applications - or parts of applications - to the cloud for better agility and elasticity. Improve availability while cutting operational costs.



### ***Digital Transformation***

Transform your manual and paper-based processes into cloud, desktop, web and mobile applications for better efficiency, productivity and data accuracy.



### ***Skills Management***

Eliminate the need for specialized skills. Allow any developer to work on any part of any application. No more resource shortages or conflicts.



### ***Going Mobile***

Satisfy the demand for mobile applications within your organization. Build mobile apps in-house with your current developers and quickly get them into your users' hands.

**4.7**  **OUT OF 5 RATING**

## Introducing the Visual LANSA Low-Code Platform

The Visual LANSA low-code development platform enables developers to build multi-experience applications spanning mobile, web and desktop in days instead of months. In an era where development complexity is at an all-time high, Visual LANSA simplifies how developers work by minimizing hand-coding and eliminating supporting multiple development languages and frameworks.

Most low-code tools provide WYSIWYG designers and the ability to create applications by writing little or no code, but they also possess significant limitations in areas such as integration, custom enhancements, working outside their model and future maintenance. This is not the case with LANSA's low-code development platform. With Visual LANSA, you can accelerate to the speed of low-code, but without the limitations of low-code.

## Our Guiding Principles

Since day one, our guiding principles have been to simplify the development of complex applications and enable IT to deliver applications on multiple UIs and server platforms without having to deal with all the underlying technologies.

With each new release of our low-code platform, our goal is to address the following fundamental truths about application development:

- Hand-cranking source code is inefficient and a maintenance burden.
- Locking an application into a specific technology stack is restrictive.
- Most companies don't have the luxury of starting with a clean slate.
- One user interface style does not suit everyone.
- Source code changes that can't be tracked becomes impossible to maintain.
- Duplicating business logic across multiple applications is dangerous.
- Developers are constantly chasing new languages as technology evolves.

By adhering to our guiding principles, we're able to help our customers avoid the traps listed above. These are the same traps that have made many legacy systems too rigid to move forward with modern technology. Because of this, companies are now investigating low-code solutions as a new approach to application development.

# 5 FIVE PILLARS OF VISUAL LANSA

To achieve our guiding principles of simplifying application development and shielding IT from ever-changing technologies, the Visual LANSA platform is based on five key pillars:

- 1) Any-to-Any Integration
- 2) Unlimited Reach
- 3) Business Rules Engine
- 4) Data Services Layer
- 5) True Cross-Platform Support

These five pillars enable Visual LANSA to significantly reduce costs over the entire software development life cycle, especially when integration with other applications and performing ongoing maintenance and future extensions.

The Visual LANSA platform shields developers from having to worry about how their project will be deployed across various devices, interfaces and platforms, enabling them to remain focused on quickly delivering business applications.



# 1 ANY - TO - ANY INTEGRATION

On the surface, applications appear to be singular programs that serve a particular task or job function. But the reality is, under the covers, applications are a series of multiple integration points, communicating with databases, internal and external APIs and connected devices.

Certainly, you've heard the phrase "a chain is only as strong as its weakest link". Well, the same can be said about low-code development platforms - they're only as strong as their integration capabilities. The success of any low-code platform relies on its ability to integrate with anything and everything, whether the objects are located in the cloud, on-premises or on a local device, server or workstation.

Integration is a core strength of Visual LANSA – it's part of its DNA. LANSA has been in business since 1987, so there isn't much that we haven't integrated. Other low-code platforms, on the other hand, claim to integrate with your existing infrastructure, but only if your integration points are conveniently wrapped up as RESTful APIs. With Visual LANSA, you can call DLLs and .NET components, to name a few, directly from your application - both synchronously or asynchronously. Even though Visual LANSA supports RESTful APIs, you are not required to wrap your integration points as RESTful APIs in order to integrate with our solution.

Instead, you can directly integrate with any existing assets using one of many supported protocols, libraries and file formats to maximize reuse and deploy apps even faster. Also, and just as important, Visual LANSA provides data mapping and transformation capabilities. Information can be stored in many different locations and formats. LANSA enables you to visually map data between many formats and orchestrate a process to validate, access and stored data accordingly. Visual LANSA is the only low-code platform with robust data mapping and integration capabilities.

## Here are some examples of supported capabilities:

Web Services:	REST, SOAP and XML Web services
Data Formats:	XML, JSON, XLS(T), PDF, CSV, TSV, TXT, EDI (ASC X12 and UN/EDIFACT), Zip, etc
Direct Database Access:	Most relational and non-relational databases
Direct Calls To:	DLLs, EXEs, JAR, .NET components, ActiveX, etc.
Transport Protocols:	HTTP(S), FTP(S), (S)FTP, SMS, SMTP, POP3, AS2, AS3, SSH, etc.
Messaging:	ActiveMQ (Apache), WebSphere MQ (IBM), SonicMQ (Progress Software) and Tibco Rendezvous (Tibco)



# 2 UNLIMITED REACH

In today's world of highly specialized programming skills and segmented development teams, companies are interested in low-code platforms because it's nearly impossible to find full-stack developers that can quickly work on any aspect of an application. But, with most low-code platforms, developers are confined to a model-driven program design which many programmers find constraining. When developers need to go beyond the reach of their low-code solution, the last thing they want to do is drop down into Visual Studio or Eclipse and revert back to traditional application development. This negates the benefits and promise of low-code - it's what they're trying to get away from.

## What makes Visual LANSA so special?

Other low-code development platforms accelerate the application development process by auto-generating all of the source code on behalf of the developer. Developers never see what was generated until they have to drop down into that code to maintain or extend the application beyond the reach of the low-code platform capabilities. Have you ever seen this kind of generated code? It's not pretty.

Visual LANSA is different. Instead of forcing developers to maintain auto-generated HTML, JavaScript, CSS, etc., Visual LANSA's output is its own powerful language that handles the client-side, server-side and everything in between. Programmers extend their applications using this single, powerful, easy-to-learn language instead of cryptic code in a half-dozen or more different languages.

With Visual LANSA, you get a single development environment that enables every member of your team to extend any part of an application without dropping down to writing low level code outside of the platform. The Visual LANSA platform contains everything a developer needs to build, maintain and extend their low-code applications: its own language, WYSIWYG screen designer, debugger and one-click deployment.

## Visual LANSA Language and WYSIWYG Screen Designer

A big difference between Visual LANSA and the rest of the low-code offerings is that Visual LANSA doesn't confine you to model-based design. Programmers find this approach easier to adopt because it lets them build enterprise business applications faster in a way that is familiar to them.

Visual LANSA enables developers to extend their applications without coding a single line of JavaScript, CSS, HTML, PHP, .NET, Java, etc. And there are no JavaScript frameworks to learn. Instead, programmers utilize Visual LANSA's visual drag and drop environment and development language to quickly design stunning, responsive user experiences for web, mobile and desktop.



*There is an old adage, that when building systems three factors are always desired: Good, Fast and Cheap. In reality, you can pick two knowing that the third is the trade-off. For instance, it may be good and fast, but it won't be cheap. Or, fast and cheap, but it won't be any good. With LANSA, we achieved all three.*

— Joe Jurich, CTO  
DUMAC Business  
Systems



The combination of the Visual LANSA WYSIWYG Screen Designer and single development language replaces the dozen other programming languages required for building web, mobile and desktop applications for both cloud and on-premises deployment, greatly reducing your technical debt. There's just one LANSA language and screen designer, which means every developer can work on the front-end, the back-end and everything in between. It's like instantly converting your entire team into "full stack" programmers, but without the cost, time and resources of mastering a dozen different technologies.

LANSA has been perfecting its platform for 30 years and has an incredible track record of supporting wave after wave of changing technology standards and making them available without developers having to learn anything new.

### Visual LANSA Debugger

Visual LANSA has extensive interactive debugging facilities to debug applications running locally or on a remote server, interactively or in batch. You can single-step through the generated Visual LANSA source code commands, set breakpoints, and examine or change run-time values during the debugging process.

Even while debugging, Visual LANSA continues to shield developers from the underlying generated code. By stepping through the Visual LANSA source code, developers no longer have to fumble through thousands of lines of cryptic auto-generated code (not written by them) in multiple IDEs in order to debug or extend their applications. They step through the same language for the client-side, the server-side, and everything in between.

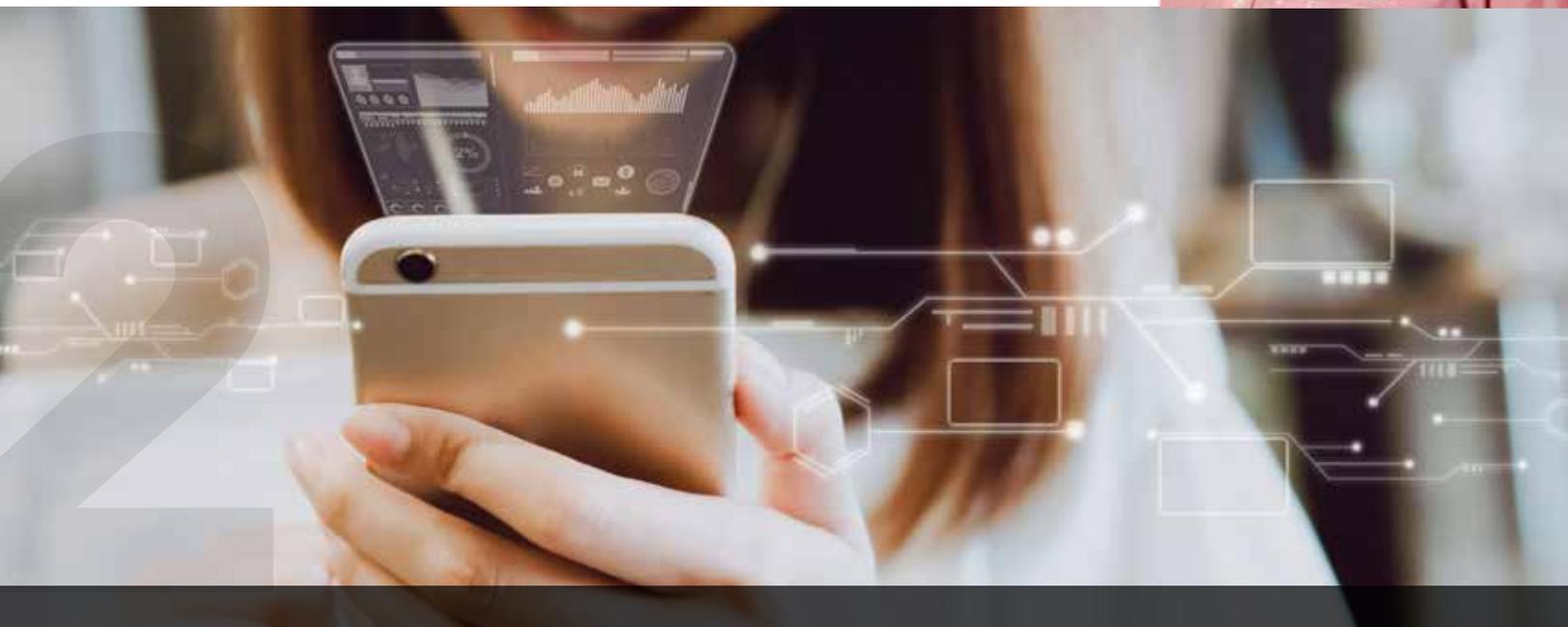
### Visual LANSA One-Click Deployment

Today's applications have a lot of moving parts, so deployment can get tricky. Since Visual LANSA has one-click deployment, application delivery is a snap. Simply choose your application and the target platform, and you're ready to deploy.

Naturally, source control is built-in to the Visual LANSA platform so you can easily manage and track all application updates.

*LANSA is a crucial part of our digital strategy, enabling us to reach new levels of efficiency and business agility.*

- Michael Hall  
Head of Digital  
Elders Rural Services

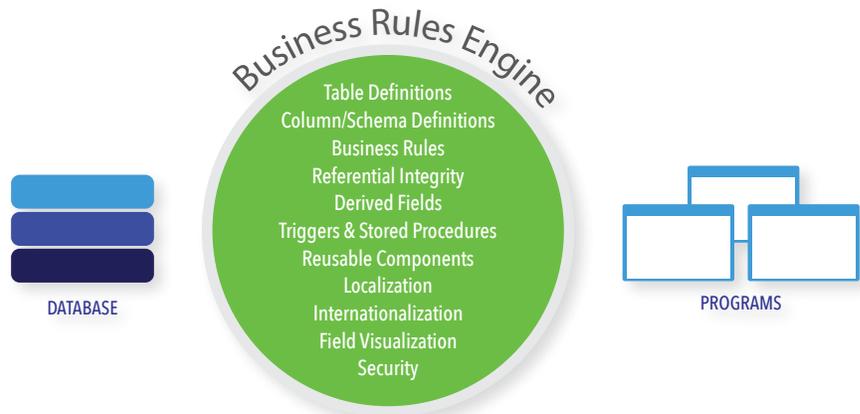


# 3 BUSINESS RULES ENGINE

## Business Rules Engine (BRE)

Defining data definitions and business rules for tables is an ongoing challenge. Hard coding these definitions and rules in every program that uses them increases the maintenance burden and leads to potential inconsistencies when they reside in multiple places. Creating a data dictionary is one way to help alleviate problem.

The data dictionary can provide a central place for data definitions and associated business rules. However, the information in a data dictionary is static and passive – a data dictionary is only a partial solution.



## More Than a Data Dictionary

Other low-code platforms intermix business rules with application and UX code, the same as traditional software development. Visual LANSAs is supplied with an integrated Business Rules Engine. There is great architectural advantage in storing definitions, rules and visualizations in a central location – external from any code – because it dramatically shrinks the maintenance burden of a system, eliminates duplication and eases testing.

The LANSAs BRE extends the role of a data dictionary by becoming an active participant in the application. It kicks into action when an application updates business data on continuously changing devices and databases.

The BRE is both the custodian of data and business rule definitions and the enforcer of the rules. The BRE works hand-in-hand with the Visual LANSAs Data Services Layer to ensure the integrity of data is managed across all databases. Visual LANSAs programs can update any database by placing requests to the data services layer.

“With LANSAs we now have our own practical and extendable platform on which to further grow ITWAL’s business.”

- Tom Mavroidis  
President of NTM Consulting  
ITWAL Consultant

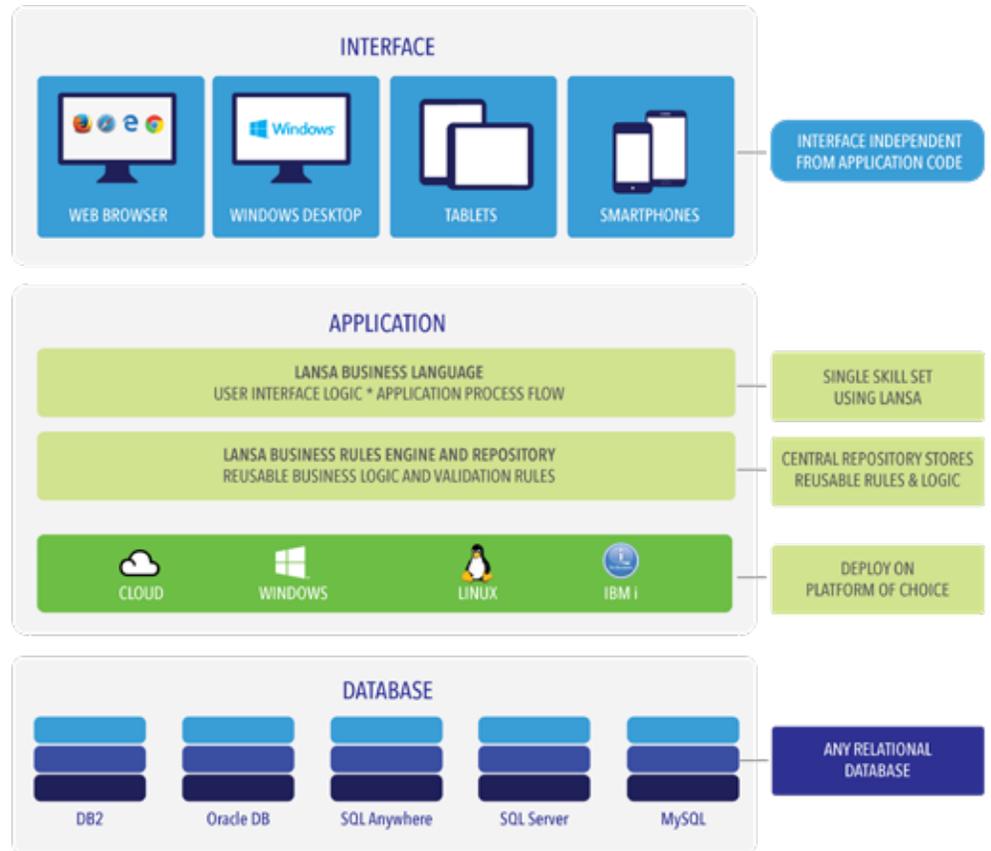


# 3 BUSINESS RULES ENGINE

## Significantly Reduce Your Maintenance Burden

When a business rule's definition and enforcement is the sole responsibility of one entity, like the Business Rules Engine, instead of a team of different front-end and back-end developers then the execution of the rule will be guaranteed. You can define a rule once knowing it will be enforced everywhere.

It's not uncommon to find LANSAs users reporting a 50%-80% reduction in their application maintenance effort and costs.



Visual LANSAs has dramatically improved my productivity to produce great software.

- Joe Young  
Sr. Applications Developer  
Express Employment Professionals



# 4 DATA SERVICES LAYER

## Data Services Layer

A fundamental tenet of the LANSAs Rules Engine architecture is to keep applications separated from the databases with which they work. This is vital for data integrity, and the Data Service Layer is the mechanism that makes it happen.

In every system, there exists a set of rules that control how applications are allowed to create, read, update and delete data from tables. These rules exist to maintain data quality and consistency in a multi-user, transactional environment. Failure to follow the rules can lead to anything from bad data to a total system crash.

## Not in the Database and Not in the Application

Typically, rules are maintained at the database level, using stored procedures, field validation, triggers or in the application programs. The obvious benefit of enforcing rules at the database level is that it eliminates duplication. The downside is that all database vendors have their own proprietary ways to implement triggers and stored procedures so enforcing rules for data integrity at this level locks you into a specific database technology. You can avoid this kind of database lock-in by coding rules at the application layer, but then every program needs to incorporate the same set of rules, leading to duplication, inconsistencies and difficult to manage code.

## A Completely Independent Data Services Layer

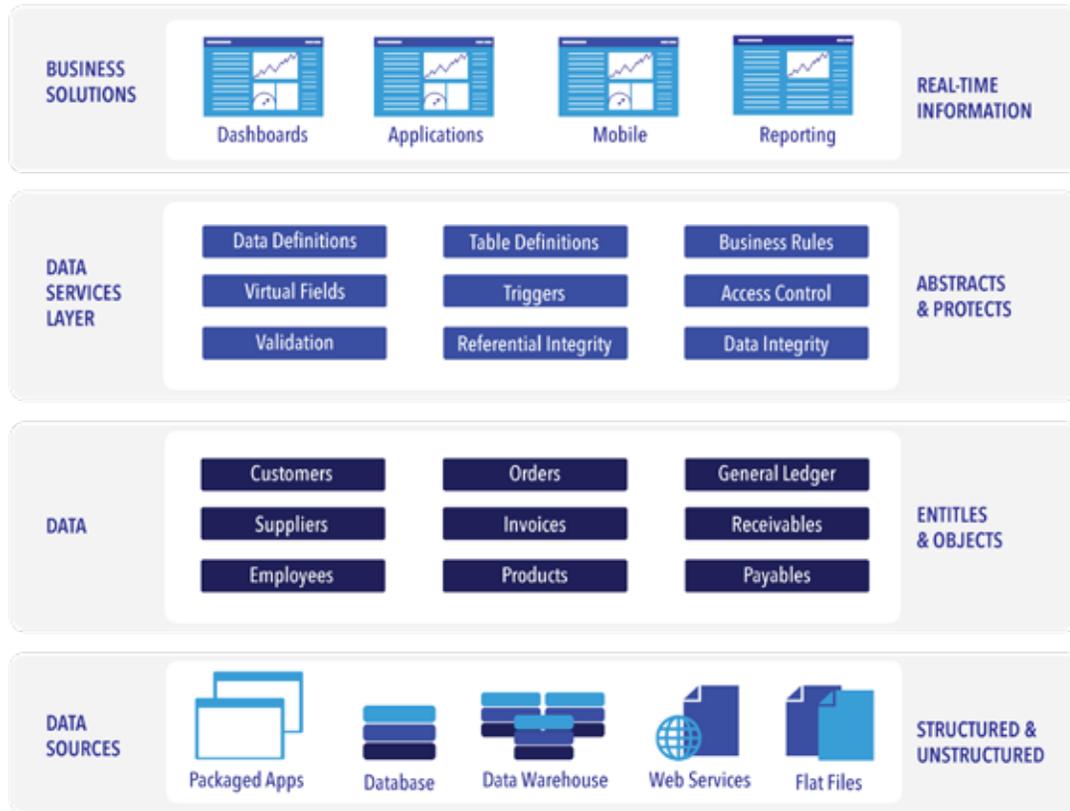
LANSAs has implemented its Data Services Layer to provide a single access point for all data, serving to abstract formats, locations and conventions. Specific data service programs are generated from meta-data held in the repository. These service programs know about the structure of the database (relationships, columns and tables) and contain the rules that govern the creation, reading, updating and deletion of records. For example, whenever any Visual LANSAs program tries to create/update/delete a record in a table called Customer, the request is directed via the Data Services Layer to the appropriate service program to confirm all the validation rules before any action is taken on the customer table.

A major time-saving benefit of the Data Services Layer occurs when changes are made in the Business Rules Engine. When the meta-data for table has changed, the service program for the table is regenerated and there is zero impact on any of the programs that access that table. For example, imagine you need to update the postal code's validation rule on the customer table to call a RESTful service instead of performing a table look-up. After making the change in the Business Rules Engine, the service program for the customer file is automatically regenerated. Immediately, every program that can insert or update data in the customer file will use the new postal code rule - without recompiling any of those programs.

Not only do service programs protect your data by applying validation rules, they can include other intelligence such as activating database independent triggers and workflow actions or on-the-fly derived fields based on calculations and other formulas.



Since all of the meta-data stored in the Business Rules Engine is enforced at the Data Services Layer instead of the database level, everything is loosely coupled and completely portable. If you need to migrate from one DBMS to another, the data services layer makes this much easier and has minimal disruption to your application stack. This dramatically eliminates technology lock-in.

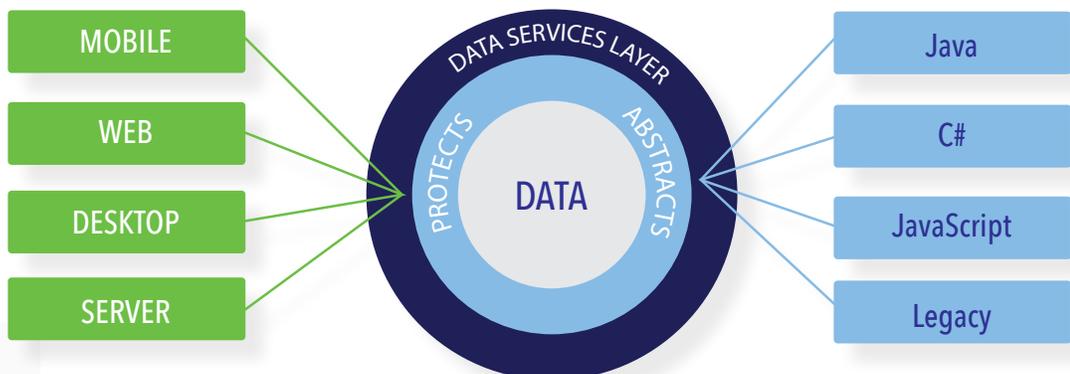


### Importing Existing Data/Schemas

When building new applications, developers define data, tables and relationships using the Visual LANSa low-code platform. But, many projects must extend existing applications with existing databases. When working with existing databases, you can import the existing database definitions (tables, schema, stored procedures) into the Visual LANSa Business Rules Engine thereby avoiding any hand-coding of validations and rules on the data and data elements.

### Accessible from Any Program on Any Platform

Data service programs can be used by any program regardless of the development language used e.g. Java, LANSa, C#, PHP, RPG, COBOL etc. The net result is that all of your applications – irrespective of their age or technology – use a common data services layer to access the underlying databases.



# 5 TRUE CROSS-PLATFORM SUPPORT

Over the last decade, application deployment options have become vast and, ultimately, complex. How can you make a sound decision when application development technologies and trends are so pervasive, yet fluid and fleeting? How can you be certain that a small decision you make today doesn't become a large, bad decision three years from now? And how can you maximize the longevity of their applications?

To answer all of these questions, use a low-code development platform that possesses many deployment and migration options.

Visual LANSA offers you true cross-platform support for building apps that are device, database and server agnostic. Better yet, there is also an easy migration path in case you need a do-over. Swapping out server platforms, databases and migrating to or from the cloud has never been easier than with Visual LANSA.

## Visual LANSA is the only low-code platform that covers ALL of these deployment options:

Web Applications:	Responsive design for phones, tablets and desktop browsers.
Mobile Applications:	Web browser for all devices. Hybrid and native for iOS, Android and Windows mobile devices on any form factor.
Windows Desktop:	Client-server, standalone and batch applications.
Databases:	Microsoft SQL Server, Oracle, IBM DB2, Sybase SQL Anywhere, MySQL, MongoDB and just about every other relational and non-relational (NoSQL) DBMS.
Server Platforms:	Windows, Linux and IBM i.
Location:	Cloud, on-premises or hybrid.

// *Our mobile-first designed LANSA website has made it easier and quicker for our dealers to research, order and sell our products.* //

- Caylee Bickmore  
Web Marketing Coordinator  
Rotary Corp.



While building your next app, it may be critical to deploy in one, very specific way. But what about your next dozen applications? Don't be constrained. With Visual LANSA, you can build it once and deploy it everywhere.

## A Complete Low-code Development Platform

Visual LANSA provides a unique application development platform that enables IT to develop applications faster than traditional development because, in most cases, you just assemble business components and write a very low amount of code. And when writing code, Visual LANSA makes it easy because developers use a single language and screen designer, with integrated Business Rules Engine and Data Services Layer to build any kind of applications with a single skillset.

**WELLS  
FARGO**

**Brunswick**

**Kawasaki**

**nationwide**

**HIGH LINER FOODS**  
INCORPORATED

**Elders**

**TRUGREEN**  
Live life outside.

**Beacon**

**nulogx**  
Transportation Management Solutions

## Our customers have discovered that our methodology is better than other development methodologies because:

*They can rapidly prototype applications.*

*They can build applications quickly.*

*Their applications can easily integrate and share data with other systems.*

*Their applications are easier to extend and maintain.*

*They are not tied to a particular technology, infrastructure or application stack.*

*Their existing investments in code, data and skills can be reused, thereby saving money and reducing technical risk.*

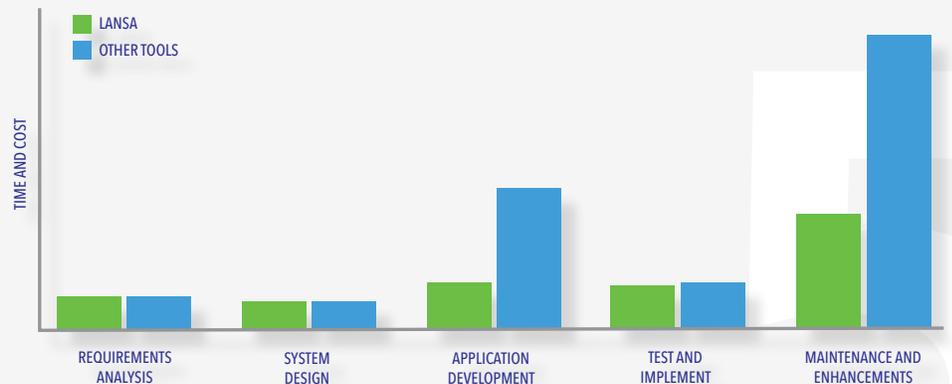
It would seem obvious that the "best" low-code development platforms are those that significantly reduce the total cost of ownership (TCO). This encompasses the initial design and development as well as the ongoing application maintenance, modernization and extension.

When you consider that application maintenance can typically consume up to 80% of an application's TCO, the part generated by the low-code solution is a relatively small portion of the TCO. Therefore, the mechanism by how you maintain and extend your Low-code application beyond what the solution can generate must be a key consideration when researching low-code platforms.

Most low-code platforms only address the initial design and development phase. With the Visual LANSA development language, business rules engine and data services layer, ongoing maintenance and extension is made just as fast and easy as the initial design, build and deploy.

No matter what development methodology you use - agile, waterfall or your own - here are the tasks that need to be performed from start to finish when developing a new business application.

Whether you are looking to develop new solutions, modernize your existing applications or integrate and extend business systems, Visual LANSA is the right product for you.





LANSA's mission is to make advanced software simple. We do this by taking care of the underlying and constantly changing technologies, enabling software developers to focus on the business problems that need solving and to rapidly produce high quality software. When businesses can effectively capitalize on IT to innovate and differentiate, they gain a competitive edge. LANSA helps to make it happen.

[www.lansa.com](http://www.lansa.com)

30 | YEARS

8000 | CUSTOMERS

65 | COUNTRIES