

IT Challenges organizations face and how LANSA can help

Every year Gartner and other IT research and advisory companies produce their Top-10 list of IT challenges. Let's have a look specifically at the challenges related to application architecture and application development and also at how LANSA addresses them.

Technology Change

Staying up-to-date with constant change and new technologies is one of the biggest IT challenges that businesses face. Organizations 'bet their business' on technology and getting it wrong can be disastrous. Falling behind is not an option either. But should businesses, other than high tech companies, really need to delve deep into technology in order to benefit from it?

At LANSA, we don't believe so. A 26-year old core principle of LANSA is to simplify information technology. We do this by taking care of the low level technical details, such as operating system, database, integration protocol and other specifics. This has several advantages.

Firstly, as successive waves of new technology have been introduced over the years, our customers have been relatively **protected from having to rework their solutions**. They have moved their applications between IBM i and Windows servers, they have adapted when an interface changed from SOAP to JSON or from CSV to XML, and they didn't have to worry about Apple iOS or Android specifics.

Secondly, by not having to do the low level 'plumbing work', developers can more productively **focus on the business issues** they need to solve. For some developers, removing the technical complexity means removing the fun. Those developers are unlikely to become LANSA fans.

Thirdly, LANSA customers can **take their skills with them** to their next technology platform. This is especially useful for solution providers who need to support customers on multiple platforms. But it is also beneficial for end-user companies. LANSA customers don't get stuck in indecisive maintenance mode when they plan to leave their current technology platform, because they can take their applications and skills with them. No one can afford to put innovation on hold!

In short, the closer developers align their coding to a specific technology, the harder it will be for their company to move. To keep gambling on technology trends is to be certain of 'losing big' at least once. When developers can rely on a high-level tool to take care of the low-level coding and can rely on that tool



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to stay up-to-date with changing technologies, their companies benefit.

Our customers describe LANSA as their insurance against technology change, because it protects them from dependency on a particular combination of hardware, operating system, database or user interface technology. By choosing LANSA, organizations avoid the associated risk and can stay focused on achieving their business outcomes.

Providing Mobile Access

Mobile has passed the top of the curve in the hype cycle. By now everyone accepts that mobile has become an integral part of corporate IT. Mobile apps bring with them a number of challenges, such as development skills, management of devices and apps, online/offline access and security. Let's explore how these challenges are addressed by LANSA:

If you are running your IT department with a small team, and you plan to keep it that way, you will want the same developers who look after your business systems to also deliver mobile access. LANSA offers three practical options for that, depending on whether you prefer native, hybrid or Web apps.

If you need to guarantee that your mobile business apps will always function, **both online and offline, regardless of a network connection**, then native mobile is your best choice. **LongRange** is a native mobile App development environment that allows users to store data locally, synchronize data between their device and the server when convenient, and access server data in real-time when connected.

LongRange consists of a server-based component and a native mobile app. Developers can use their existing **RPG or COBOL skills** if the server runs the IBM i operating system, or they can use LANSA's 4GL (which is a **realistic skill** to learn compared with alternative options) if the server is Windows, Linux or IBM i. The server program handles the business



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logic and exchanges data, together with specific instructions defined in LongRange studio, with the mobile app. The app has direct access to device features, allowing for signature capture, barcode reading, video/photo/audio capture, GPS and more.

Since the business logic is **centrally managed** on the server, users are automatically accessing the most recent functionality, without having to update the app on their mobile. Both Apple iOS and Android apps are driven from the same server source code. This central definition of logic and single source concept take the headache out of mobile app management.

If your staff needs **mobile access to existing line-of-business 5250 applications**, then **aXes** is the fastest way to achieve that. aXes lets you Web enable or Mobile enable (re-face) RPG and COBOL applications out-of-the-box and then, optionally, graphically enhance them. This allows you to provide mobile Web access to existing business systems very rapidly (within hours) with your staff being able to access them from tablets. It will not provide the same user experience as a purpose built native app, but it will work extremely well and the solution can be up and running in a day or two. aXes also offers a hybrid App (aXes Mobile) providing RPG and COBOL programs with similar access to device features as LongRange apps have.

If you want a more sophisticated purpose built mobile Web solution, rather than Web enabling an existing legacy application, **Visual LANSA** is a better way. More about that in the section the *Pervasiveness of the Web Browser*.

Security is such an important topic that it is covered in a separate article in the Architects Corner.

Case studies about Mobile can be found at www.lansa.com/builtwithlansalmobile.htm. Read about how a leading UK building company uses LongRange to provide its health and safety inspectors with online and offline access, guaranteeing that the mobile solution works even at remote building sites. Read how J-Oil Mills used aXes to provide its sales staff with mobile Web access in a matter of hours. Read how Trecenti used Visual LANSA to provide customers with an in-store iPad solution to find the perfect diamond for their wedding rings.

If you want to keep your IT team small, you will want the same developers who look after your business systems to also deliver mobile access.

Exposing Server Functionality and Data via a Standard Interface

Many organizations are struggling to integrate applications, especially when different technologies, vendors and skills are involved. Integration with cloud platforms and partner applications can also be challenging. There are a multitude of methods for integration, of which Web services, XML and EDI-INT have emerged as industry standards. Still, some of your partners may send you spreadsheets and text files.

At LANSA, we understand that organizations want to standardize on a single framework to solve all common integration challenges. The framework needs to deal with the details of all the different formats, transport mechanisms and platforms, so that the developer doesn't have to.

LANSA Integrator includes services for data transformation, communications, email, messaging and Web services, complemented by interface tools and utilities. It's the ideal Integration Toolkit. Developers can use these services in their integration projects. It supports multiple data formats, including XML, EDI, text, MS Excel, PDF, relational databases and more. It also supports multiple data transport methods including HTTP, FTP, SFTP, Email and message queue software. Plus it offers wizard-based Web service development (SOAP and REST) to **consume Web services and to expose existing functionality as a Web service**.

Any application can call LANSA Integrator

services programs, including .NET, C#, RPG, COBOL and LANSA programs. This allows companies to **re-use their existing programs in a Service Oriented Architecture**.

LANSA Composer is built on the same technology as LANSA Integrator, but also comes with a visual and code-free development environment (for business analysts), a library of activities to orchestrate process flows (sequential and conditional execution) and with administrative capabilities (auditing, error recovery, etcetera).

Integration case studies can be found at www.lansa.com/builtwithlansalintegration.htm and www.lansa.com/builtwithlansalprocess-integration.htm. Read how LANSA customers benefit from efficient integration with new applications and technologies, such as electronic banking, CRM, document management, warehouse management, routing services and so on. It also allows organizations to provide additional delivery channels and more flexibility to business partners. Common integration requirements include:

- **Integration with SAP**, for example by the Government of Andorra, CBH Group, REHAU, Promese and Apria.
- **Integration with Ariba and Broadvision WebMethods**, for example by Rawlings Sporting Goods and Becton Dickinson.
- **Integration with CRM systems**, for example with Salesforce by Frontline Consultancy and Honda Australia, and with Sugar CRM by TP Orthodontics. →

Cloud and SaaS

More and more companies are turning to SaaS (Software as a Service) and other cloud solutions to respond to business needs faster and more economically.

For organizations that want to **move a legacy 5250 application to the cloud** or a hosted environment, aXes Cloud provides a solution. The **aXes Cloud** software is installed on a single IBM i server, called the Cloud Gateway. Then, using any device that runs a browser (e.g. desktops, laptops, mobile devices), authorized users can access applications and other facilities on any IBM i server that is connected to the Cloud Gateway.

aXes Cloud automatically connects incoming users to their assigned applications that can be spread across multiple IBM i servers. Hosting service providers use aXes Cloud to route users from multiple companies to the correct IBM i server. Software vendors use aXes Cloud to offer their solution in a SaaS model.

For organizations that need to **exchange data between their on-premise and cloud solutions**, **LANSA Integrator** offers wizard-based Web service development to consume Web services and to expose existing code as a Web service.

Preparing applications for SaaS readiness is not as simple as Web enabling a solution. A true SaaS application has a multi-tenant architecture. The ability to have multiple organizations (called tenants in the Cloud nomenclature) co-existing on the same application instance, without compromising the security of data for those organizations, defines the application as multi-tenanted. ISVs (Independent Software

Vendors) who want to **offer a truly modern multi-tenancy SaaS solution**, can do so by redeveloping customer facing programs with **Visual LANSA**. On the server side, LANSA automatically handles multi-user access and makes it straightforward to create secure multi-tenancy solutions. On the client side, Visual LANSA enables a rich, Windows-like user interface to be run inside a standard browser.

Thousands of companies, and many more individuals, use LANSA-developed SaaS solutions, usually unaware that their solution is based on LANSA technology. For example, thousands of employers and employees access their LANSA-based HR and payroll solution in the cloud, some of the world's largest banks manage their syndicated loans in a LANSA-developed hosted environment, and thousands of students have their exams marked with a LANSA-based SaaS on-screen marking solution. Read the SaaS showcase at www.lansa.com/casestudies/saas.htm.

Pervasiveness of the Web Browser

The Web browser is now the most common user interface for commercial applications. Its zero install nature on the client makes it easy to support users with a variety of desktops, tablets and smartphones. Web applications are available to existing and potential customers, remote staff and mobile sales staff. The browser interface also suits the growing SaaS and Cloud trends.

Web applications use an architecture that breaks applications into discrete parts, using multiple programming languages and several layers of technology. For example, HTML and

JavaScript in the browser, C# on the Web server, C# or Java on the application server and SQL for the database. This makes Web application development complex, especially for developers with little experience.

LANSA provides a **productive Web development environment** that insulates developers from these complexities. It does so by automating common application development tasks, such as automated user interface design and build, high level and central definition of business rules and logic, built-in database interfaces and connections and automatic deployment of the centrally defined business rules and logic.

This helps developers with little or no experience to become proficient in building Web applications more quickly. The flexibility built into our development tools also caters for experienced developers who want greater control over development artefacts. Developers can choose from:

Visual LANSA, to build new **Web applications with complete control** over page content and layout. Suitable for the more experienced web developers, while still simplifying database and business functionality on the server.

Visual LANSA Framework, to assemble **Web applications rapidly and with minimal coding**. The application and user interface design are prototyped and use the same design for both desktop and Web applications. Our customers refer to the Framework as 'having a mentor on site'.

LANSA Integrator, to **simplify the integration between your line-of-business application and any Web platform**, by consuming or exposing Web services. For example, between your IBM i ERP system and eCommerce systems like Ariba or Magento, or CRM systems like Salesforce and Sugar CRM.

LANSA Open for .NET, to **make it easy for .NET developers to invoke IBM i services from their Web application**. It offers a class library that plugs into Microsoft Visual Studio.

Visit the Web site development section at www.lansa.com/builtwithlansa/ to read the B2C case studies (business to consumer) and the many varieties of B2B case studies (business to business), such as B2E (employees), B2D (distributors, wholesalers, brokers), B2I (installers, technicians), B2S (suppliers), B2T (transporters, drivers) and more. →



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Ongoing Development and Maintenance Costs

A Google search on **ongoing cost of application development and maintenance** comes back with millions of results. Obviously it's a much discussed topic. According to Gartner, Application Development and Maintenance (ADM) accounts for 34% of IT budgets and optimizing ADM can cut costs by more than half. (April 2014, www.gartner.com/newsroom/id/2711017)

LANSA's products remove a lot of the technical complexity for the developer, making **both application development and maintenance more efficient and productive.**

LANSA's Business Rules Repository is more than field definitions, validation rules and reusable components – it promotes an entirely different approach to application development and maintenance.

The LANSAs Repository is both the custodian of data and business rule definitions, and the enforcer of the rules. When rule definition and enforcement are the responsibility of a single entity, application maintenance is vastly reduced and data integrity is ensured.

As LANSAs case study writer who regularly talks with customers, let me add some personal observations that I'm not always allowed to publish in case studies:

- Many of our customers work with such small and productive teams, that they do not want the actual size of their IT team published, as it may create worries for customers or shareholders. I am often asked to remove the actual number and just say "lean team".
- LANSAs learning curve is not only short, it is also a realistic skill to learn, both for RPG and COBOL developers as well as for college graduates. Learning Java or .NET, especially for older developers, is sometimes described as 'training to become a brain surgeon'.
- Where some case studies say customers have "trialed Java", there have often been years of effort down the drain with little or no result. These projects are then realized with LANSAs in a fraction of the budgeted time.

If you go to <http://bit.ly/lansa-productive> you will find many case studies that illustrate LANSAs productivity.

Conclusion

LANSA reduces the complexity of developing, maintaining, modernizing and integrating business-oriented, database-centric systems. These are the systems that run the daily operations of small, medium and large organizations in critical areas like enterprise resource planning, financial accounting, sales force automation, supply chain management and e-business.

LANSA is used by organizations that recognize the many advantages of tailored and well integrated systems, but who no longer have the time, money or inclination to hand-crank solutions the old way. Packaged solutions are fine to automate standard commodity processes. But it's in the gaps created by these generic solutions where the real opportunities to innovate and gain competitive advantage exist – and this is where LANSAs fits. ■

Requirement	Product	Skills Required	Studio/Design Environment	Deployment Client(s)	Deployment Server
Application Development and Maintenance	Visual LANSAs	Visual LANSAs	Windows	Browser Windows desktop	Any combination of IBM i, Windows and Linux
Develop native Mobile business apps for IBM i server deployment	LongRange	RPG or COBOL	Windows	Apple and Android Smartphones and tablets (Windows planned)	IBM i
Develop native Mobile business apps for cross-platform server deployment	LongRange for LANSAs	Visual LANSAs	Windows	Apple and Android Smartphones and tablets (Windows planned)	IBM i, Windows, Linux
Mobile enable existing 5250 applications	aXes Mobile	JavaScript	Windows	Apple and Android tablets	IBM i
Application Integration	LANSAs Integrator	IBM i: Any supported programming language Windows/Linux: Visual LANSAs	Windows		IBM i, Windows, Linux
Application and Process Integration	LANSAs Composer	Business analysis skills	Windows		IBM i, Windows, Linux
Invoke IBM i services from Windows applications	LANSAs Open for .NET	Any .NET supported language	Windows		IBM i, Windows
Deploy existing 5250 applications in the Cloud	aXes Cloud	IBM i administrator		Browser	Hosted IBM i environment
Develop applications for SaaS deployment	Visual LANSAs	Visual LANSAs	Windows	Browser	Hosted IBM i, Windows or Linux environment
User interface modernization of 5250 RPG/COBOL applications	aXes eXtensions	JavaScript	Windows	Browser	IBM i
Staged modernization of 5250 RPG/COBOL applications - navigation, user interface, and functionality	LANSAs RAMP	JavaScript Visual LANSAs	Windows	Browser Windows desktop	Start on IBM i and end on any combination of IBM i, Windows, Linux