LOW CODE APPLICATION DEVELOPMENT AS A SERVICE:

GAME CHANGER FOR THE SMB WORLD

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Introduction

Software is an essential part of every company in every industry today. In general there is usually a solution for the majority of business and operational requirements, but there are many, many circumstances when off the shelf software does not meet a business's needs without bending current business processes into a pretzel to accommodate the limitations of the code.

To solve that challenge, companies turn to either internal or external resources to modify their software to better serve their needs. That's challenge enough if you are a large company with deep pockets, but mention software application development to most small or medium sized businesses, the usual response is a look of panic by the business side and a groan by the IT team. Fact is, writing custom apps has historically been highly technical, painful, time consuming and expensive. Add to those the low likelihood of having the right development skills in house or the process expertise to fully articulate, review and test any application that is developed and it's no wonder that most SMBs create sometimes elaborate workarounds for outdated software, make due with spreadsheets or "sneakernet" to share information. Time is lost, information fidelity is compromised, and equally important, opportunities for competitive improvement are put aside. Ironically, it is this avoidance of custom applications—which can be so helpful to a business—that most puts SMBs at a competitive disadvantage. Worse, leadership typically knows what they need and what they're missing out on but are not in a position to act.

Low Code Application Development: Opportunities & Challenges for SMBs

Rather than using traditional software development languages, tools and timeframes, low code development tools use higher level graphical user screens to create workflows, perform actions as well as manage, consume and analyze data. Depending on the tool, they may be specialized for purely operational applications, data management, web development or even user interface creation. What they all have in common is that they enable non-coders to define business processes, workflows and reporting. Low code development tools greatly reduce or eliminate hand-coding, which enables the accelerated delivery of business applications.

While it is true that depending on the application some ancillary hand-coding may be needed to get certain functions working to specific requirements, overall low code application development makes it possible for companies to get the important functionality they need without historical cost and expertise challenges of building applications in house.. Practically speaking, then, what does this mean for a business? While every company is different, most face similar challenges: an increasingly mobile workforce, greater and greater demands for reporting and analytics (which in turn call for more complex data manipulation) and increasing economic pressures to accelerate moving to the cloud. Without an internal software development team, and with the cost of third-party development high and uncertain, low code development enables what has frequently been out of reach for SMBs.

Despite its promise, low code application development is not widely adopted in the SMB market. A prime reason is that the IT departments in these small to mid sized organizations are stretched for both human and financial resources. They quite often do not have the time to learn and master another software tool despite the benefits it would provide. They may also not have the internal expertise to handle the back end systems integration required to get many low code tools working in a meaningful way inside of their particular configuration of software applications and data sources. The end result, that many SMBs are not taking advantage of the low code application opportunity for their business.

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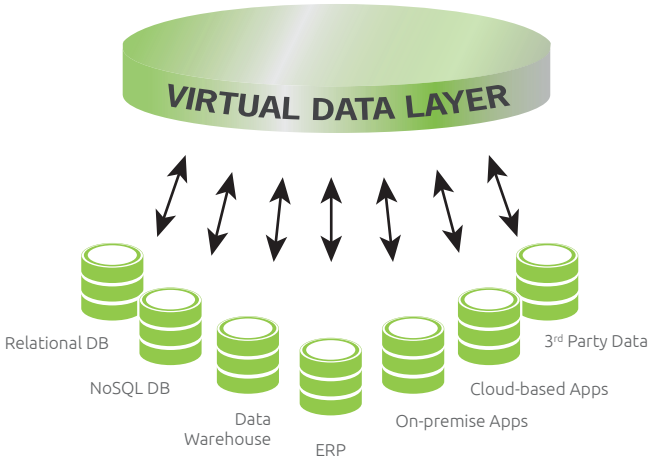
Accur8 Software's Low Code Application Service to the Rescue

Low code application development as a service changes this narrative in a way that can be called revolutionary; it's just what SMBs have been waiting for to support their efforts to become more efficient and support profitable business growth. Using our advanced tools, Accur8's low code development service builds custom applications in collaboration with an SMB. Utilizing our tools, together we work through the definition and development processes, user screens, views and workflows. Our platform is fully configurable so we are able to tune the application to each company's individual needs. Best of all, Accur8's low code platform can have a company's applications running in weeks, not months. There is even a self-serve capability that enables the business to modify their application as needed after it is in production.

A Deeper Dive inside Accur8's Low Code Application Engine

Accur8 has developed a technology platform that, at a high level, is comprised of a configurable front end development framework and a data virtualization layer that streamlines dealing with back end systems. The platform handles the foundational considerations of application development such as security, monitoring, auditing, business logic and querying source data, out of the box. The following provides a more in-depth view of how our platform works.

Data Virtualization – Streamlining Back end Systems



The above illustration shows the fundamental principle of data virtualization. The data required from the various data sources is abstracted to one virtual data layer. This virtual data layer effectively becomes a single virtual database for applications to draw data from.

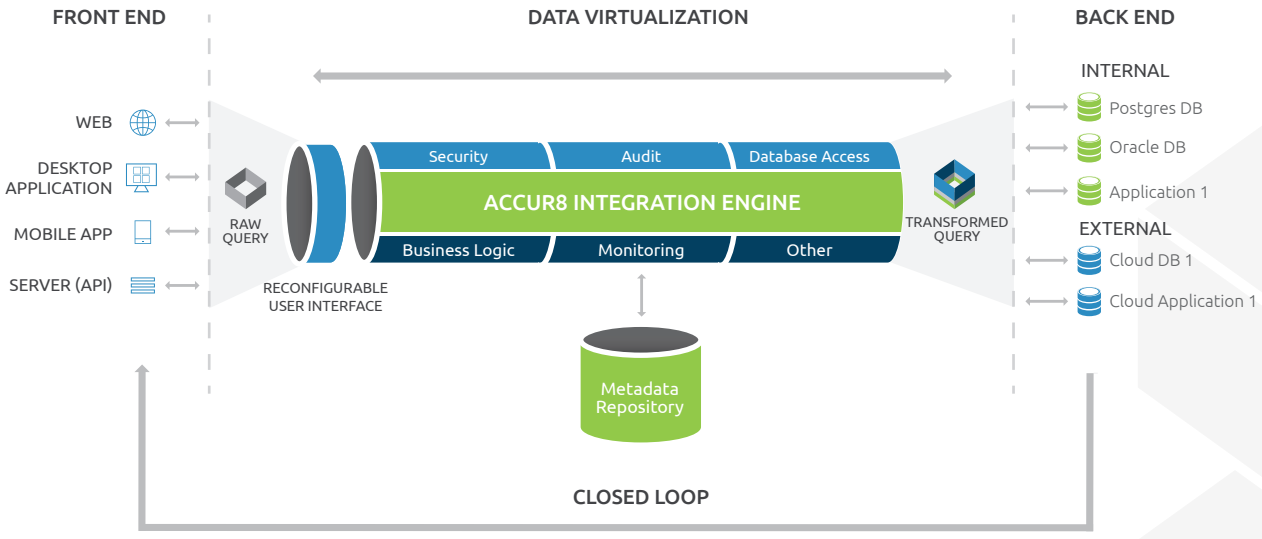
Some of the attributes of data virtualization are:

- Selected heterogeneous data sources can be easily combined into one virtual data layer and can be accessed via queries or web services
- Data sources can be located in the cloud or on-premise or a combination of both
- Selected data can be modeled and a virtual data layer created in days
- There is no need to replicate or move data from its source system
- The virtual data layer integrates smoothly with our front end development framework and tooling

With data virtualization, our front end framework only needs to integrate with the virtual data layer to access the underlying data sources required to feed an application. This is distinct difference from traditional architectural approaches where special "plumbing" (code weaving through layers of middleware) is built to connect an application to each of its data sources. This traditional approach works but requires more time coding and greatly increases the complexity and cost of back end integration, especially as an application grows and scales.

For example, consider an application with hand-coded integration that draws data from eight different sources. If a single change to the application is needed, then there may be required modifications on each of the eight unique sets of connections that join the application to its data sources. This consumes developer time, as considerations about multiple layers of middleware integration (security, auditing, monitoring, business logic, etc.) have to be taken into account. The probability of bugs and coding mistakes goes up exponentially. An application can become brittle as even small changes can cause it to break, requiring debugging to get it working again.

The Accur8 Engine – Streamlining Application Development



The first step in Accur8's approach is to model the data sources required for an application to a data repository. The location of tables, the type of joins, security and other key bits of information are mapped from each of the selected data sources to a metadata repository (essentially a warehouse that stores important knowledge about an application's underlying data). The resultant metadata repository contains a detailed map on how to locate all of the data that underlie the virtual data layer.

For the front end of our applications we have a self-serve application development framework. It is comprised of a rich set of tools and functionality for reporting, analytics, dashboards, forms, drilldowns, alerts, security, the monitoring and auditing of user activity, etc. We work collaboratively with customers to quickly configure the optimal UI/UX for an application. Building the views, features and workflow for each user of the application can be developed with the customer in real time. This front end framework is built with components that bind data from the virtual data layer and are rendered in real time. This means that modifications made in one template are populated throughout the application. Hand coding can be done where required if a specific screen has unique requirements. The front end has self-serve capabilities so users can modify screens and views on their own post production. This may mean, for example, removing a field, changing a calculation or building a custom dashboard.

From here, Accur8's query engine is engaged. When a query for specific data is made to the virtual data layer, it is passed to our query engine that augments it with key information pulled from the metadata repository. This creates a transformed query that has the imbedded intelligence (location, security, business logic, auditing, etc.) to retrieve the required data from the underlying data sources. The query engine has the ability to seamlessly handle queries that require gathering data from two or more disparate data sources by stitching them together, in real time, into a single result set making it appear to the end user as if they are dealing with unified database underlying the application. This greatly simplifies and streamlines development as there is no longer the need to handle complex integration between a front end system and multiple back end systems. The Accur8 platform is hardened and proven to scale having been used to build applications with 500+ active users, integrating over a 100 million records a day in real time from multiple back end systems.

The Accur8 Difference

According to Forrester research, low code application development is one of the fastest categories of growth in the IT world. Most SMBs have not participated in this trend. The main reason is that they typically operate limited IT teams and do not have the time or resources to take on the responsibility to learn and use another set of tooling.

To address this need, Accur8 offers low code application development as a service model. Our team has deep expertise in building applications using our technology platform in a range of industries. In our model we build the needed application using our low code platform with heavy collaboration from our customer. After completing the requirements gathering process with a customer we quickly build the first version of the application. We then share the screens, views and functionality we have built. The customer sees first hand how the application is taking shape with respect to the UI/UX, functionality, workflow and all kinds of other items that pop up with a first hand view. They can provide input on the spot as to what needs to be changed and modified. Typically, we can modify the screens and workflow at the point. Items that cannot be taken care of immediately are changed within days. This iterative process gives the customer the opportunity to make changes on-route. With our self-serve framework the customer is also able to make changes post production as they see how the application works in the field and learn what needs to be refined. This means a customer does not need to settle to an application that has a suboptimal user interface or one that requires a quirky, inefficient workflow.

The Benefits of Accur8's Low Code Applications as a Service

- ✓ A company gets all the benefits of using a low code application development platform immediately without needing to purchase low code tooling, undergo internal training and work through data integration issues before beginning to build applications.
- ✓ Applications can be built to meet the exact requirements and needs of a company enabling them to streamlining operational processes, improve service levels and boost productivity.
- ✓ Building applications is accomplished in a fraction of the time and cost of traditional development approaches.
- ✓ Companies can leverage the cloud in a meaningful way
- ✓ A wider-range of people within the organization can contribute to an application's development assuring alignment with business and operational needs, not just technical requirements.
- ✓ The initial cost of setup, training, and deployment are typically much, much lower compared to traditional in-house or third-party software development.
- ✓ Custom screens and views can be built for each user that align with their job function, which reduces errors and increases efficiency.
- ✓ Self-serve capabilities allow users to modify their screens and views as their needs change.
- ✓ New features can be implemented quickly, bypassing the complexity of back end systems.
- ✓ Integrating additional data sources (internal/external) to an application as needed in the future is fast and easy.
- ✓ Can be easily built on top of legacy data extending lifecycle and usefulness of the legacy system.

Some Examples of Low Code Applications using Accur8 Software's Tools

1. **Vendor Tracking System for a National Purchasing Cooperative**

   A low code application was developed to streamline the tracking and reporting of all purchase and collection information from vendors in a national purchasing cooperative. The application replaced a complicated and largely manual process. As a result, the cooperative achieved better tracking of vendor purchases and the collection of fees, saving time and money.

   The application's user interface was developed with customer staff and only contains what is needed for users to easily achieve their tasks. The need to copy data into and out of spreadsheets was eliminated, and wide-ranging analytics for both cooperative and vendors on purchase and payment history was made available for the first time.

   Delivered quickly and at a low cost to the cooperative, they now have a streamlined system that provides benefits both internally and to their members and vendors.

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2. **Custom Cloud Storage System for Healthcare Company**
This healthcare billing company was using an on-premise storage area network (SAN) approach to storing and accessing terabytes of key data on patients, medical procedures including images, and billing information. Their approach was expensive and data was often cumbersome to access by users and applications. Accur8, working collaboratively with the customer, configured its low code tooling to develop an application that intelligently stored current data on premise for immediate access and older data in the cloud using AWS's low cost (S3) and super low cost (Glacier) in an optimal way. The application provides users a unified view and easy access to company-wide files including those in storage. The company realized tremendous monthly savings and much easier access to its data.

Conclusion

The low code revolution is here, and it offers the potential to transform how companies do business. The historical challenge has been that to take advantage of low code applications organizations had to purchase the tools and develop expertise in using them, requiring a sometimes-considerable investment of money and time. SMBs, usually lacking technical resources and extra budget, had little choice but to sit on the sidelines. With Accur8's innovative service SMBs now have a new way to take advantage of the opportunity.

Accur8 brings its low code platform and expertise in developing applications to the table. The customer works collaboratively with us to design and build the applications that meet the specific needs of their business, getting the user experience, workflow and analytics they want. The end result is that an SMB gets the custom applications they need with the time and cost savings of low code application development, without needing to devote resources to learn to use one themselves. Yes, the low code revolution is here, and Accur8 Software helps SMBs to join.

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