SRINSOFT
Digital, IT and Engineering Convergent

Robust IBM i Application Migration

Case Study

Technology Partners

Client Overview:

The client had the necessity to modernize the current system to extend the value of aging platforms and current systems that requires to adopt modern approaches along with efficient technologies. This can be accomplished whilst removing the operational constraints that inhibit growth and agile response to revolutions in the business environment.

Why SrinSoft:

SrinSoft has an enviable expertise on IBM i (AS400/iSeries/System i) developing custom applications, enhancing ERP applications and modernizing Legacy Screens. With extensive experience in all key domains such as Insurance, Healthcare, Banking, Manufacturing and Distribution/Retail whereas we provide IT Consulting, Application Development and Software Maintenance Services on IBM i (AS400/iSeries/System i) platform. We support custom applications as well as ERPs like JD Edwards, SAP, INFOR JBA System21, Aurora, BPCS, etc.

Objectives:

The client project has been split into two major portions in order to have a clear path in terms of modernization of the application and phase wise approaches.

The first phase is the “Investigation and Planning” that includes:

- PoC in order to provide a sample view of modernized application
- Understanding the current application that provides:
  - High level documentation of application with module segregation.
  - Environment and Infrastructure setup such as Production/ DR/ Test/ Development systems.
  - Technical inventory with breakdown that connect with the type of code and application area.
  - 3rd party applications and interfaces
- Modernization strategy and the path forward that includes the scope of application modernization at each module and technical component level
- High-level modernization plan that includes timeline and resourcing requirements for the recommended modernization project.

The second phase is the ‘Actual Modernization’ that includes:

- Convert RPGLE/CLLE/IBM i native objects to modernized application along with the up-to-date suggestion is Microsoft C#/.Net environment
- Migrate relevant DB2 PF/LF/Queries to MS SQL Server that provides several advantages.
- Mitigation of 3rd party tools and interfaces
- Phased implementation, support, technical documentation and training.

Tools and Technology:

1. Improvements over Green Screen 5250 /RPG Applications:

- Non-Responsive UI

Conventional techniques used to develop UI-layer are not responsive and cannot meet the demands of the new class of devices.

- Software complexity & Spaghetti code

Interdependent business and data logic tiled the way for unmanageable legacy applications with massive modules, loads of code, and data complexity.

- Monolithic Code Base

As applications turned complex with large monolithic code bases, they eventually became unmanageable resulting in a natural downward spiral in terms of code quality.

- CRUD is crude

In a modern context with huge data volumes, this approach has severe limitations such as:

  - In collaborative environments with lots of concurrent users, data conflicts are likely as update operations are performed on a single data item.
  - Due to proliferation of data and foreign key dependencies, even smallest changes to schema have become heavyweight.
  - Basic CRUD operations are well-suited to meet the needs of structured data, but cannot model and store connected data that contains absence of a data log, data history of changes made are lost.
  - Conventional RDBMS are built for stability, but not for complexity or business agility

- Inflexibility, Lack of Modularity & Integration Challenges

Due to absence of modularity and interdependence between modules, even small changes call for a complete redeployment of the application making very inflexible, increasing risks associated with redeployment, discouraged frequent updates.

The eventual emergence of SOA as a popular architectural paradigm for building modular and granular applications, that are easier to integrate and scale.

- Inability to Scale

Monolithic architecture and tightly coupled code make scaling of applications possible only through running multiple instances of the application, which is a very inefficient way of handling transaction and data volumes. The tightly coupled architecture of legacy applications, doesn't allow for separation of concerns (resource requirements such as CPU, memory etc.), making it impossible to scale components independently.

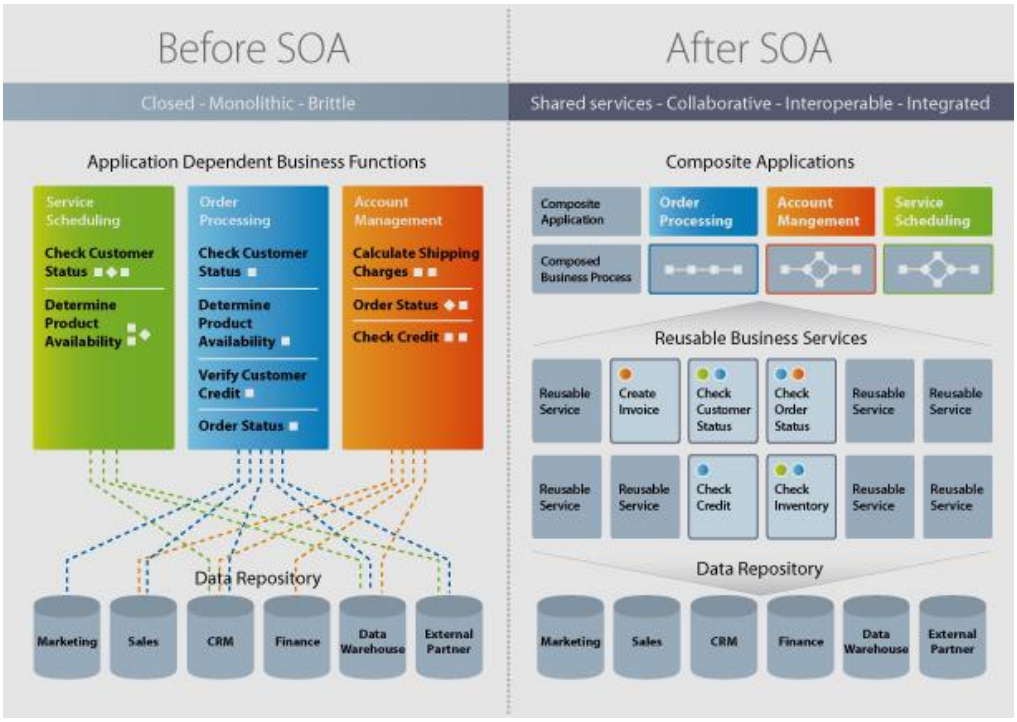
2. Modernization Benefits:

- Modernization is not just for retrofitting, but it is also making applications future-ready, avoid being replaced by a nimble-footed competitor and safeguard legacy investments.

- Merely Rehosting without architectural and technology modernization that achieves partial infrastructure modernization and does not remove any of the underlying constraints of the legacy application.
- UI facelift is only a quick fix to web that enables a legacy application and/or to make it look modern.
- Code migration is only partial modernization of the legacy code, and not the entire application.
- Modernization is a continuous process that emergence of disruptive technology paradigms is difficult to anticipate whereas inherently disruptive environment, enterprise business needs are rarely static, and are continuously evolving.

Infographics:

A Service-Oriented Architecture (SOA) solution concentrate and modernize the IT structures while, at the same time addressing legacy system and application issues with minimal or zero impact to underlying business rules.



Approach and Architect Design:

The below process flow details the modernization & migration approach followed by SrinSoft. At each step of the process, we will work closely with the client to ensure the modernization strategy suits the business needs/extensions.

1. One Time Activity:

- Investigation and Planning
  - Application Inventory and Scope
  - Migration Strategy and Plan

2. Sprint Activities:

- Pre-Migration Activities
  - Infrastructure Setup and Module Segregation
  - Resources and Sprint Plan

- Module Migration
  - DB Conversion
  - Code Migration
- Integration
  - SOA for Co-Existing Applications
  - 3rd Party Tool Mitigation
- Testing
  - Unit and Performance Testing
  - Functional and User Acceptance
- Implementation
  - Documentation and Training
  - Support

Performance Indicator:

- Automatic scale-up and scale-down based on the concurrent user that improves the user performance.
- Green screen application transformation to browser-based web application constructs more user-friendly.
- Multiple modules have created by using the micro service which will not affect any individual module during any server issues.
- Deployed individual module whereas user can make any changes in that particular module instead of redeploying whole modules.
- Correspondingly user can work on AS400 and web application together.

Cost and Savings:

Reduce total Cost of IT Ownership.

- Server Maintenance/Support Cost
- Upgrade Cost
- SWMA Cost

Implementation:

The following list explain about the implementation process.

- UX designed and send to the client, then made changes based on the client request.
- Simultaneously analyzed and extracted all the data (Schemas, Functions, Procedure) from existing AS400 DB2 application.
- Modern View Controller application created for the development process to proceed with the effortless implementation.
- Once approved UX to UI conversion along with the established ODBC connection. Also extracted all the data from DB2 to UI by using ODBC.
- Final deployment has made in iis server.

Migration Outcomes:

- Demand for responsive UI to support a wide range of devices.
- Demand for flexible, modular applications that can scale-up and integrate easily with other applications and systems.
- Ability to support state-of-the-art access and security in terms of people, organizations, and devices.
- Proliferation and popularity of a new generation of robust programming languages, and architectural paradigms.

- Demand for ability to integrate with other applications and to maximize value of legacy investments.
- Enhanced customer experience with sophisticated systems of engagement to support consumerization and personalization.
- Increased operational efficiency by reducing technology debt, lowering TCO, and higher ROI.
- Ability to support changing regulations and compliance burden that includes multiple business models in a platform environment.
- Shift from on-premises to cloud-based SaaS models, and opportunity to offer software-enabled services.

Business Benefits:

The client modernization project was implemented with minimum disruption using a low-risk, gradual, iterative modernization process to ensure no loss of business continuity. This gradual and nondisruptive process allows migration without any risk or down time. The list of business benefits mentioned below:

- Synchronizes Business process with modern technologies.
- Improved response to change in Business logic.
- Increased Operational speed and efficiency.
- Timely access to accurate enterprise information.
- Efficient management of Suppliers/Vendors/Distribution Channels.
- Shortens development and time-to-market cycles.