Rusting Edge to Bleeding Edge

Case Study: Migrating from a Multivalue to a Cloud-based Relational database

By Bill Montgomery

I have just recently helped a client move from a Multivalue database to a cloud-based relational database and thought you might find my account of it interesting.

The Facts:

- Client is a manufacturer in the metals industry. Headquartered in the western suburbs of Chicago, with plants there, northeast Ohio, north-central Indiana, south-central North Carolina and recently, north-central Texas. Total employees: just under 200. 2018 sales: approx. 100 million.
- The application being replaced was a 30-year-old custom ERP system using a multivalued database (Universe on Windows). The new ERP application being migrated to is Microsoft Dynamics 365 (D365), which is a cloud-based ERP application using a relational database.
- This was the 3rd attempt at a migration. [1]
- The main reason for the migration was the diminishing support and technical talent available (especially younger talent) for the Multivalue application.
- The reasons D365 was chosen as the replacement application over others were:
    - Long term viability of Microsoft
    - Much more technical talent available (or so we thought) [2]
    - Cloud-based solution
    - Better references
- Only the Master files (Vendors, Customers, Products, Chart of Accounts, etc.) were migrated over, using spreadsheets. [3] Transactional data (Sales Orders, Purchase Orders, Invoices, etc.) were not. This seems to be common practice now.
- Vendors low-balling the costs of the project up front is also a common practice, although this is not *really* new.

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[1] This was the third attempt at a migration, but the first I was involved with. The first migration attempt was several years ago and was canceled due to, from what I've heard, sticker shock. The second attempt was cancelled because the company was sold early in the process.

[2] Jumping from Rusting Edge technology to Bleeding Edge has exposed an irony; the multivalue database technology was so old that it was hard to find talent, especially younger talent. Cloud-based databases are so new that it is likewise hard to find talent, though, unlike multivalue technology, this problem should fix itself as time goes on.

[3] Since D365 is a Microsoft product, the vendor specified that all data is to be imported from Excel spreadsheets. Flattening the Multivalue data is no problem when you have the proper tools. Of the many tools I have written throughout the years, one such tool is XLS. XLS works similar to the Multivalue query language 'SORT' or 'LIST' verbs except that the output is to a spreadsheet. Single value fields are repeated on successive rows to match up with the multivalued field rows. This makes for easier filtering and sorting in the spreadsheet. The vendor just needed to supply me with the column heading names and positions.

- Process was complicated by splitting the company in two on the old system first, requiring many programming changes there. This actually benefitted us later; the GO-LIVEs were staggered for each company two months apart, helping ease the users into the new system.
- Entire process took around 17 months (both companies), from when the contracts were signed to final cutover and access was restricted to Inquiry-Only on the old system. We missed the original GO-LIVE date by about 4 months. Missing a GO-LIVE date is not unusual. This often happens due to scope-creep by customization requests, and this was the case here. [4]

The post-migration thoughts from the team:

The following are the responses to the post-migration follow-up questionnaire that was sent to the key leaders of the project; IT Director, COO, the Corporate Controller, Operations Manager, and an Independent Consultant (IC) who is an expert at many Microsoft products:

What do you like about D365?

IT Director: **The interface, the navigation, the wide breath of functionality, the integration with MS Office 365, the strategic development that Microsoft is putting into the product over time. And, that it is cloud based.**

COO: **More structured than our previous platform. Easily accessed offsite. Somewhat intuitive to use the basics**

Corporate Controller: **The ability to easily export data, Direct, immediate posting to the GL. The number of modules and functionality.**

Operations Manager: **Everything is linked so one stop shop as far as linking purchase orders, sales orders, production orders and MRP potential.**

IC: **I like the cloud-based functionality that permits me to perform most functions through the Web without being on-site.**

What do you not like about D365?

IT Director: **Interfaces seem to be fewer with each new release.**

COO: **It is extremely difficult to extract and use information in the manner we would like. Our old platform was highly customized and we could get data easily. Surprisingly, it is hard to "poka-yoke" this tool. One must rely on procedure far too much. This is a problem.**

Corporate Controller: **D365 doesn't accurately perform simple calculations all the time particularly for SO invoices. The number of canned reports seems limited for a Microsoft based system, the financial reporting packaging requires custom report creation. The fact there are no standard balance sheet and income statements available at a click of a button is maddening.**

Operations Manager: **Unforgiving, a simple typo or error is extremely hard to go back and fix. reports are weak. high end system hard to adapt for shop workers. poor manufacturing job floor control for capturing manufacturing data.**

[4] Both the vendor and the client's IT director (who was also the project's manager) advised to keep customizations to a minimum. This advice wasn't followed. Also, many of the customization requests were communicated directly from the project's various team members to the vendor, leaving the project's manager unaware of them. This hurt both the implementation schedule and the budget.

IC: **I do not like the lack of access to data from an extract perspective without the usage of a Microsoft partner to help$$$ access the data.**

What surprised you during the migration?

IT Director: **The software worked fine, we were able to get the data translated and moved over. The biggest surprise was the users being surprised that the new system did not work like the old one.**

COO: **The data migration was extraordinarily difficult. Our "partner" didn't support us in the manner I expected – they were dismissive of our needs.**

Corporate Controller: **The lack of direct participation from our MS partner. The extensive cost overruns.**

Operations Manager: **consultants cost overruns and how expensive everything was. the time spent trying to go live, hundreds and thousands of hours of people's time. the hardest challenge I have ever seen in my 30 years.**

IC: The amount of work it takes to go through Order to Cash. The system has many steps to complete a business process.

In hindsight, what would you do differently if you could?

IT Director: **Communicated more that the post go-live would need more attention. Held more budget for phase 2.**

COO: **We would have taken an additional 6-9 months and thoroughly vetted the system. We launched far too early and we were unprepared and most processes were not well documented – and they still aren't. I would have also had a different project leadership mindset to run the project while also demanding more resources and attention from executive management – we did not provide the correct resources to the project.**

Corporate Controller: **Postponed the go-live. Our timeline was too aggressive and did not allow us the appropriate amount of time and training for our "outside the box" transactions. Picked a different partner. With one exception, none of the consultants seemed to be looking out for our best interests.**

Operations Manager: **we should have taken more time and talked to more companies who actually used the final 2 choices we came down to (D365 or Epicor). We may have chosen Epicor then as its more manufacturing friendly. we should have chosen a closer partner. we should have interviewed at least 5 partners and talked to some of their clients**

IC: **Better prepare the customer for altering their current business processes to fit with D365. Customers need to have a better understanding of "Change" and new ways of tracking data.**

Additional Comments?

IT Director: **Overall it was great to go live within 14 months with a fair amount of custom code. It was great to not lose a single customer order and to be shipping on the first day of go-live at each plant. The vendors gave estimates for the project that were too small, but this was the only way they could do the contract. All options we looked at would have gone over budget.**

COO: (none)

Corporate Controller: (none)

Operations Manager: **If you are going to a new computer system after almost 30 years, buckle up, it will be the most challenging, time consuming, culture challenge you will ever go through.**

IC: **Microsoft should be better prepared with an organized Knowledgebase of D365. Getting answers and understanding standard system performance should not be difficult for the technical end-user.**

The Lessons Learned:

- Manage user expectations, especially if they have never been through a migration before. The new system will be better than the old system, just not in everything. Also, canned, Off-the-Shelf ERP packages accommodate different businesses through the use of literately hundreds of settings. Nobody will know beforehand all of the settings that are right for your company. Many of them will be set through trial and error. Because of this, and because it is so different from your previous system, it will be difficult to use at first and mistakes will be made. Expect and allow for it.
- Keep customizations to a minimum (preferably none at all), at least for phase one. The advantages of this will be:
    - the implementation will be less expensive
    - the installation will be easier and on-time
    - the training will be easier
    - future updates will be easier to install
    - Best business practices are already built in.
    - Most "Bugs" will have already been found and fixed (Customizations will be where most "Bugs" will surface)
- If it is absolutely necessary for customizations, have one, and only one, gate-keeper for these requests to go through to the vendor, preferably the project's manager.
- Create user roles and simplified starting menus based on those roles. This will lower the intimidation factor to the users and expedite training.
- Getting information out of a cloud-based SQL database is exponentially harder than out of a on-premise multivalue database. You can't get much easier than a multivalue query language that works like this*:*

  LIST ORDERS WITH InvoiceYear = "2018" AND WITH GrossMargin% < "15" BY GrossMargin% BY CustomerName COLUMNS: OrderNumber OrderDate CustomerName ProductCode OrderTotal GrossMargin%

  For some things, newer isn't *always* better. It's just the way information systems have evolved. At least there will (eventually) be a lot more talent available to help.
- Make sure you have enough internet bandwidth and backup internet connections available. Also do malware scans on ALL desktops and remaining servers BEFORE GO-LIVE. We have found a few computers infected with malware that were eating up a lot of bandwidth.

Conclusion:

I found this project fascinating and I have learned a lot. I've done migrations before, but it was early in my career and it was from the software vendor side of It. I was moving companies TO Multivalue databases instead of now FROM Multivalue. It's really a shame too as I still think Multivalue databases are the best. But when the Multivalue database technical talent is disappearing and there isn't any younger talent emerging to take their place, the best solution is to migrate to a more popular database while there is still some Multivalue talent available to help.

Thanks for reading.

About Me:

I am a Multivalue programmer/analyst/consultant residing in the Chicago area. I've been programming in Pick/MultiValue applications since 1984, at first working for software vendors, then end-user companies, and finally, since 2003, as an independent contractor/consultant.

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