



# USERS CONFERENCE 2017



## Technology Update

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## Technology Update

A status update on our development agenda.



Good morning.

The format for this year's technology update will be a little different than the last couple of years. It will consist largely of a status update on some of our key development initiatives.

For the most part these are major projects so they tend to be long running – this means they provide a pretty good idea of what we will be working on for the next year. That being said, there are 2 or 3 items that we will discuss today that we did not mention at all last year as they moved up our priority queue rather quickly.



## Technology Update

### DB2 Update

- biggest and most difficult technology change we've done in the last decade (or more)
- the most important change we are currently working on

We'll start today's update with a status update on our work on the DB2 relational database.

This is probably the biggest and most difficult technology change we've ever done. Truthfully I'm not completely certain of the whole history of Maves, but certainly in my time at Maves and for at least a few years prior.

DB2 is also without doubt the most important change we are currently working on.

## Technology Update

### DB2 Update

- primarily a technology change without introducing new functionality
- this technology change is a cornerstone and a key enabler for many more changes
- a relational database provides tools and capabilities that facilitate more functional change

For many of you, your area of expertise is in the operational field and the technology parts of this conference may not be the most compelling topics for you. I get that, really I do. When we're out for an evening, don't think my wife hasn't told me on more than one occasion to stop talking tech.

So you may wonder why I would suggest that a change that is primarily a technology change that does not add new functionality is that important.

Although this is only a technical change on the surface, it is a cornerstone for many other future changes, so it is a key enabler for much more.

Changes, of course, are certainly possible without the relational database technology, but with it many changes are easier and thus more changes are made possible. The technology really gives us many more tools and ultimately that helps us to do a better job for you.



## Technology Update

### DB2 Update

- so are we done?
- continue to progress toward DB2 becoming our primary database
- by now we wanted a client with an installed system running on the DB2 database
- finding the right candidate to beta test has been a challenge

So with that introduction to this portion of our update, you may be thinking I'm prepping to tell you how we've completed everything on this front. Unfortunately, that's not the case.

We have continued to make progress toward making the DB2 relational database the main technology for data storage in Maves. However, I regret that I have to say that we have not made all of the progress that we would have liked. By now we wanted to have a client with an installed system running on the DB2 database, but that has not yet happened.

So how close are we to reaching that goal?

Last year we mentioned that we were trying to find a beta test partner. Unfortunately having someone come along that is a candidate to beta test is not something you can call up on demand.



## Technology Update

### DB2 Update

- we continued to test to make sure the system was as robust as possible
- we did get client testing from a beta client
- we are now working with another client that will be running on DB2 in 3 to 4 months
- our objective for a client fully operating on DB2 is happily in sight!

While we looked for a beta test partner, we did keep testing and improving the system to make sure the system was as robust as possible.

Happily our testing has now included client testing from a beta test client. In addition we are also now working with another client that will be running on DB2 in the next 3 to 4 months.

So no, we don't have the active operational client we wanted to be able to tell you about, but we're pleased that this objective now seems to be in sight.



## Technology Update

### DB2 Update

- continue to expand the use of DB2 in Maves
- DB2 mirroring has now been standard in all Maves upgrades and deployments for over a year
- mirroring is more robust and performance has been improved

The delay for a full DB2 system did not keep us from progressing forward with our efforts to use relational database technology. We have continued expanding on our use of the DB2 relational database in PvxPlus based installations.

We have put more effort into the DB2 mirroring - which has now been a standard element of all Maves upgrades and deployments for over a year.

In that time we have also continued to improve these tools, making them more robust and improving the performance of the mirroring to reduce lag.



## Technology Update

### DB2 Update

- DB2 is now used for the majority of Action Grids to retrieve data
- later this year that will go to 100%
- started to use DB2 for reports
- also in use for other “outbound” activities – system interfaces

We now use DB2 to drive the majority of Action Grids

and later this year that will go to 100%.

The work we’ve done to improve DB2 mirroring has also allowed us to begin to use DB2 for reports. We’ll take a closer look at this in a later session today, but I’ll mention now that this work is allowing us to modernize the look of the reports, improve the performance of the reports, and provide some new capabilities in reports.

We’re also using DB2 in some other “output only” activities. For example we’ve used it in integrations with 3rd party systems and will work to make it the primary means to provide outbound data interfaces.





## Technology Update

### DB2 Update

- DB2 is a key enabler
- mirroring provides the opportunity to expand DB2 use without the need for it to be the primary database
- has provided benefits: performance, better data consistency, lower storage requirements, lower upgrade time, and more
- continue to derive more benefits from

DB2 is a key enabler for us.

The mirroring has provided a way for us to start using DB2 in a number of ways without waiting for it to be installed as the primary database.

Last year we discussed how the work we had done with Highviews improved performance, data consistency, storage requirements, upgrade time, and Highview development time.

As we'll discuss today, we continue to derive more benefits as our use of DB2 expands. That includes our expanded use within Highviews, and expanding DB2 to new areas such as reports and 3<sup>rd</sup> party interfaces.

Our desire to get to a fully DB2 based Maves is so that we can continue to leverage DB2 as a key enabler for other areas of the system that we want to make improvements to and to update and modernize.



## Technology Update

### eDocs Update

- first deployed eDocs 2 about 2.5 years ago
- a complete re-write built using industry standards (Apache FOP, xml, xslt, xsl-fo)
- Maves' first Java application

That wraps up our update on DB2. Now some info on eDocs changes and additions.

Some 2.5 years ago we deployed our first release of eDocs 2.

This was a complete re-write of eDocs. We built eDocs 2 around the Apache FOP rendering engine and based it around various industry standards. For those that care about such things (and we've already established that's probably mostly just me) the standards we used include xml, xslt, and xsl-fo.

This was also our first application built with Java.



## Technology Update

### eDocs Update

- eDocs2 is now running at a dozen clients – soon 14
- have rendered over a million documents
- stable and has very good performance
- no significant changes required to the core

eDocs 2 is now running at a dozen different clients - soon to be 14 - and has rendered over a million documents.

We're quite happy with eDocs 2. It is very stable and has very good performance.

Although we have been making changes around it, we have not had to make any significant changes to the eDocs Core system for some time.

As an aside we do have some changes planned for the core in the near future to support new features we want to introduce. But for today we're going to talk more about how we are continuing to build on the original eDocs platform we created a couple of years ago.



## Technology Update

### eDocs Update – Forms Library

- created eDocs Forms Library
- consists of all our base forms (currently about a dozen)
- actively manage and curate the forms

An area we began to devote attention to this past year - and which is very fundamental - is our management of the forms printed by eDocs.

To manage the forms more effectively, we've created an eDocs Forms Library.

The forms library consists of all our base forms - there are currently a dozen forms produced by eDocs. I'll give you a brief overview of what we're doing to better manage the forms.

Simply organizing our forms activity under one umbrella was the first step for us to provide a more consistent overall forms package. We want to actively manage and curate the forms we have.



## Technology Update

### eDocs Update – Forms Library

- new design standards to improve look and feel and consistency
- reviewing existing forms – updating to match the new standard
- a little over half the forms have been reviewed and updated – more to do

We put some effort into developing design standards for our forms, with the intent being to have more consistent look and feel to the overall forms package, and to create better looking forms.

We have been using those design standards to review the design of all the forms in the eDocs Forms Library.

So far we have reviewed over half the forms in the base library and updated them to follow the new design standards.

The result I think is a set of forms that look much better and provide a more consistent look and feel.



# Technology Update

QUANTITY	PRODUCT LOT	DESCRIPTION	GROSS WEIGHT	NET WEIGHT
81	0000000001	CAN GRFTY FISH & HADDFI	1,800.70	1,736.88
56	0000000002	CAN GRFTY FISH & HADDFI	1,800.56	1,870.56
20	0000000004	CAN GRFTY FISH & HADDFI	861.70	780.88
27	0000000005	CAN GRFTY FISH & HADDFI	748.70	714.56

QUANTITY	PRODUCT LOT	DESCRIPTION	TYPE	QUANTITY	GROSS WEIGHT	NET WEIGHT
20	0000000001	PREMIUM CHICKEN	CEL	1010.00	1,010.00	1,010.00
20	0000000002	PREMIUM CHICKEN	CEL	1010.00	1,010.00	1,010.00
20	0000000003	PREMIUM CHICKEN	CEL	1010.00	1,010.00	1,010.00
20	0000000004	PREMIUM CHICKEN	CEL	1010.00	1,010.00	1,010.00
20	0000000005	PREMIUM CHICKEN	CEL	1010.00	1,010.00	1,010.00

I realize these are small and don't show much detail. I hope they serve the purpose of getting a glimpse at the overall look and feel of the new forms.

Some highlights to point out ... ???????



## Technology Update

### eDocs Update – Forms Library

- more work to do ...
  - more forms to review and update
  - forms to add
  - design standards to update
- on-going continuous process

The forms library, and even the form design standards, are still very much a work in progress - but I believe the progress we've made already has resulted in significant improvements.

The balance of the forms in the base library, about 3 or 4 forms, still have to undergo the design review and update.

In addition we still have forms that we plan to develop and add to the base library, and we plan to continue to update the design standards as well,

so work on forms will be ongoing.

So the forms library is something that will be constantly reviewed, updated, and improved upon for functionality, look and feel, and coverage of forms required in the operations of your business. This is not a once and done affair.



## Technology Update

### eDocs Update – DocSign

- eDocs DocSign was introduced last year (aka Signature Capture)
- first major addition to eDocs platform
- had some growing pains but is now very stable – but still more work to do

Last year we introduced eDocs DocSign (we previously referred to this as Signature Capture). It was our first significant addition to the eDocs core system.

The initial rollout was quite successful, but as volumes and number of active signing tablets grew we experienced some issues with robustness. Dealing with the tablet OS and the wireless nature of the tools took some adapting to. But we're happy to report it is now very stable.

But we still have more work to do - we have new features planned for this and we continue to work on ensuring it is as robust as we can make it, so we continue to make improvements to this module.





## Technology Update

### eDocs Update – DocStore

- eDocs DocStore is a new addition for this year to the eDocs platform
- provides a more robust document store for eDocs generated documents
- simplifies integration of alternate rendering tools such as Planet Press

This year we have another new addition to the eDocs platform — eDocs DocStore.

The eDocs DocStore will create a more robust document store for all of the documents generated by eDocs.

It also adds a standardized approach for 3rd party integrations, to allow 3rd party tools send documents to Maves to be stored in connection with Maves operational data.

For example, if you're using Planet Press to render your forms, the rendered forms can be sent back to Maves so that they can be attached to Maves Highviews as if the document was generated by Maves eDocs. The Sierra Pacific folks may be thinking that you do this already. And that is true. We are formalizing the integration in DocStore so that it uses a standard mechanism that any 3<sup>rd</sup> party tool can use.



## Technology Update

### eDocs Update – DocStore

- adds the ability to store various external documents from ad hoc sources
- multiple methods to attach external documents
- coming in April!

That brings me to another capability that DocStore will provide that we think will be of interest. That is the ability to store various external documents from ad hoc sources, and attach them to orders, receipts, and invoices and to have them available in Maves Highviews in the same way that eDocs documents are available.

There will be multiple methods to do this. One of them is through the 3<sup>rd</sup> party integration I mentioned. Note, this means that the documents sent from a 3<sup>rd</sup> part system do not have to be alternates to the Maves rendered documents. You could send any document from any system to Maves and store the document. What you need is a Maves transaction to attach the document to.

We will discuss this enhancement in more depth later today in a separate session, so I'll leave it at that as I don't want to completely spoil Tim's presentation. This feature is expected to be ready for the next release in April of this year.



## Technology Update

### Reports (aka BIRT)

- 2 key components:
  - use of DB2 data
  - use of the BIRT reporting tool
- our DB2 work to make Maves data available in DB2 – whether full DB2 or Mirroring – was a key enabler to begin the use of BIRT

Next on our update agenda is reports.

I mentioned earlier, we have begun to use DB2 for reports. This means the data for our reports will come from the DB2 database. But our work on reports is not only about DB2. Another element of this work is related to a reporting tool called BIRT.

BIRT is the reporting tool that we are using for reporting. We have talked about BIRT at past conferences. At the time we were discussing our investigation of and research into reporting tools and BIRT in particular. Now because of the work we have done to make more Maves data available in DB2 — whether using full DB2 or Mirroring — we have been able to begin the work of rewriting reports with BIRT.

We will look at BIRT and some sample reports in a later session today, so I won't be going into much detail now. But this is an example where DB2 is acting as an enabler. While using DB2 for reporting does provide some benefits, the biggest benefit is that it more easily enables the use of tools such as BIRT.



## Technology Update

### Reports (aka BIRT)

- improvements include:
  - report performance
  - aesthetics
  - new capabilities with output
- initially some key inventory reports
- coming in June – full upgrade may not be required!

I said that I would not be getting into any details just now, but I will reiterate what I mentioned when I was discussing the status of DB2. That is that BIRT with DB2 provides a number of improvements to our reporting solutions, including report performance, report aesthetics, and new capabilities with the reporting output.

BIRT based reports using DB2 will be available shortly after our next release planned for April. It currently is scheduled for a June timeframe. I would also mention that the initial availability will not include every Maves report, rather it will be a subset of reports beginning with key inventory reports such as OR51, IC03, IC07. You won't necessarily require an upgrade to take advantage, and as new reports become available the installation effort of the new reports is very minimal.

While details are not final, we expect to make BIRT reports available to any client that is on a recent release. Specifically this means clients with a Maves release from the last couple of years or so — these are clients that have mirroring running on their system already.



## Technology Update

### Highviews

- the majority of Action Grids to be DB2 based in April release – over 40 Action Grids
- many operational Action Grids, including TMS and FMS, not just WMS
- 100% of Action Grids will use DB2 by the end of the year

Now a little bit about Highviews

I mentioned that the majority of the Highviews are now being driven by DB2. This begins with our next release in April where the majority of Action Grids will use DB2 for their data retrieval. This development is pretty much complete now and it brings the number of Action Grids using DB2 to just over 40.

These include what we believe are the most important or key Action Grids - those that are used most for operational assistance and provide key operational information. That also now includes a number of Transportation and Finance Action Grids, not just Warehouse Management System Action Grids.

Also, as I mentioned earlier, we will have 100% of Action Grids using DB2 by the end of the year.



## Technology Update

### Highviews

- Highviews re-write announced last year is in process
- will eliminate dependence on Flash
- portions of the user interface that handle security and navigation are complete
- current effort is on the actual Action Grid containers

Last year we announced we would be re-writing the Highviews system. That project has started and is currently underway. This is being done to eliminate dependence on the Flash run-time technology.

The scope of the project is actually a bit broader than was mentioned last year. This is because the portions of the user interface that use the Flash run-time includes the security login, change password, and those screens related to security plus all the navigation and menu screens.

I mention this now because these have all been completed and we are currently working on the Action Grid containers themselves.



## Technology Update

### Archiving

- provides access to historical information longer than in the past
- supports Maves' commitment to improving our ability to facilitate e-commerce services
- first new features available in April!

Archiving is something new for this year - it did not get serious attention in our development plans last year and as a result we had not mentioned this item before. The ideas behind the new Archiving had been developed then, but it wasn't until more recently that the importance of it began to drive it up in priority.

This importance is in large part tied to our efforts to bolster Maves support for clients involved in providing e-commerce related services. As a result the first elements of this new feature will be available with the new April release.

We'll talk more about Archiving in a separate session, but I will mention that besides supporting e-commerce activity, it also provides the obvious — a way to keep historical information in the system longer so it is available to users and clients for reference purposes



## Technology Update

### Cloud VPL

- a service offering long in the making
- have been testing Maves in the cloud using Amazon's elastic computing services
- initial target was end of 2017, but may be ready by summer

Although we have not officially announced this at our past conferences, providing a cloud hosted Maves VPL solution is another topic we have been discussing internally for some time.

Last year we began testing Maves in the cloud using Amazon Elastic Computing hosting services with the hope of being able to provide this new service by the end of 2017.

Happily our testing so far has gone well. Well enough that we may have this option available this summer.

This too is another topic for which we have a separate session a little later. So I'll leave the details for that session





## Technology Update

### Internal

- replacing SOX with a new ticket system
- help improve our support service by better supporting changes to support processes
- currently piloting with 3 clients, and will soon be expanding to include additional clients
- new client support portal

I will also mention an Internal system change. Our support system that we all refer to as SOX is being replaced. This is something we have been contemplating for some time.

We have looked at a number of options that include both on premise - that is internal Maves hosted systems - and cloud hosted solutions. We have been evaluating for some time and we recently started using a new system on a pilot basis beginning with 3 clients, two of which are here at the conference.

In the next couple of weeks we will move to the next phase of our evaluation which will include the addition of a few more clients.

The new system provides better functionality that will assist us with changes to our support processes - changes that are intended to improve how we provide support, or maybe said differently, the results of our support services.

On a more immediately visible level, the support portal is much improved. We hope this will encourage clients to use this more than in the past rather than sending support requests only by email.



## Technology Update

### Final Note

- A theme of continuous enhancement
- A theme of DB2 enabled change

There is something that comes up in most of the topic areas that we discussed today – I hope you see a theme beginning to emerge where we have more work, more features, more enhancements, more robustness fixes on each of the areas that we have been tackling over the last couple of years.

It is our intent to make it a theme across the product that as we begin work on improving each area of the system, that work is only the first step in a continuous improvement effort for that system module. It will take time to tackle all areas of the product and get momentum going, but this is the goal, and the only way to make significant strides in making the Maves product a better product.

The other theme I hope you can see is that DB2, although not quite where we wanted to be with it, is beginning to provide the basis that enables more and more change.



## Technology Update

# Q & A

