



Developing **AGILITY** January 2019

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We provide a wide array of materials to help you stay up to date on everything that's happening in the world of EAE and AB Suite.



Innovating Unisys Industry Solutions with Agile Business Suite



By Thangathen Ponnusamy, Global Product Manager – Agile Business Suite and Enterprise Application Environment, Unisys

Companies around the globe – and across such industries as banking, insurance, the public sector, telecom, and transportation – rely on Agile Business Suite (AB Suite®) to help differentiate their businesses by

enabling innovative new capabilities to be developed and brought to market with speed and confidence.

But it's not just clients that reap the benefits of AB Suite.

AB Suite powers the development of several industry solutions within Unisys, as well. And just like it does for our clients, AB Suite plays an instrumental role in enabling these solutions to deliver innovative capabilities and a differentiated, routinely enhanced experience.

Let's take a look at how AB Suite powers the core of our industry solutions.

Unisys Financial Services System

Unisys Financial Services System (UFSS) is a market-leading mortgage and investment servicing platform that spans mainstream mortgages, buy-to-let portfolios, second charges, and equity releases. With UFSS, companies have access to versatile, integrated, comprehensive savings and investment account management and administration functionality. And, the solution offers flexible and compliant mortgage servicing support, including account opening, further advances, interest rate changes, collections, redemptions, and arrears management. Over 40% of all mortgages in the U.K. are processed using UFSS. >>

UFSS is built on “core” capabilities that provide and manage the customer and account information on which the various UFSS financial modules operate. This core is an AB Suite solution that runs in both the ClearPath® MCP and Microsoft® Windows® environments.

The UFSS Host Integration Gateway (HIG) manages the interaction between the client’s system and core AB Suite application, as well as the transformation of generic XML messages to native UFSS messages and back again.

UFSS is also the basis of Unisys Banking as a Service (UBaaS), a new, multi-tenant, cloud-based core banking ecosystem. UBaaS leverages AB Suite alongside other Unisys products to provide the comprehensive choice of services institutions need to transform their core banking solutions and expand their digital banking capabilities.

Urbis

Urbis is a modular, agile, fully integrated, international core banking system designed to support every aspect of an institution’s operations. With 27 modules – including treasury, retail, lending, private banking, back-office operations, derivatives, and securities – the system is centered on extracting maximum value from a bank’s core customer information. Urbis also provides extensive risk monitoring and settlement capabilities, as well as statutory reporting and its own fully integrated general ledger.

Urbis utilizes AB Suite to facilitate and support SOA development. With the modular, reusable components in AB Suite, financial institutions can quickly and cost-effectively develop new applications and services within Urbis to meet changing customer needs.

Both UFSS and Urbis also serve as key solution components for Unisys Elevate™, a complete, integrated, omnichannel digital banking software offering that enables continuous, seamless customer journeys – no matter if the touchpoint is a mobile device, web browser,

branch location, or contact center. Elevate interacts with and links together Unisys core banking systems, existing channel applications, or those from third-party vendors to deliver a seamless customer experience. And with the Elevate Aggregator API-enabled banking platform, institutions can seamlessly integrate with and access their underlying systems of record within UFSS and Urbis.

Universal Voice Messaging System

Universal Voice Message System (UVMS) provides scalable, carrier-grade voicemail capabilities to residential and business customers, along with support for upwards of millions of mailboxes per deployment. In total, more than 100 million people worldwide rely on the solution.

AB Suite is a key technology within UVMS. With AB Suite at its core, UVMS offers the flexibility to define innovative mailbox feature sets, so telecom providers can create unique capabilities that align with specific subscriber group needs. The AB Suite based solution supports high availability call processing, as well as real-time prompt and call flow updating, allowing organizations to update and modify their services without their user communities experiencing any loss or degradation. And the ability to collect call detail information across more than 150 event categories enables a greater level of granularity to be included in billing records or used to support customer service interactions.

The Power Within

Just like you, we trust AB Suite to define and drive how we go to market in a variety of industries. We believe in the power of AB Suite. And as the solutions described above illustrate, we look to AB Suite whenever we challenge ourselves to create capabilities that deliver differentiated, market-leading client experiences.

We’d love to hear how AB Suite is helping your organization innovate. If you’d like to share an example for inclusion in a future Developing Agility article, please email Thangathen.Ponnusamy@in.unisys.com.



UNITE 2018 Recap: Great EAE and AB Suite Content

UNITE 2018, the annual conference for members of the International Unisys User Association and the broader Unisys user community, took place from September 17th through 19th in Chicago, Illinois.

As with every year of the conference, the 2018 version offered a great opportunity to meet old acquaintances, make new friends, network with partners, clients, and peers, and spend some dedicated time learning interesting information about all things Unisys.

And once again, UNITE 2018 included some valuable EAE and Agile Business Suite content.

In the **“AB Suite Program Update”** session, attendees learned about the high-level status and direction of the AB Suite program, heard about new clients and the exciting things they’re doing with AB Suite, and got a glimpse into what to expect in the software’s upcoming release.

Meanwhile, EAE users who’ve been considering whether or not to move to AB Suite received some compelling reasons to make the change in **“EAE to AB Suite Upgrade,”** a session that walked through the transition and highlighted how new AB Suite capabilities make the process even easier. And then, **“Getting Started with AB Suite”** showed how clients that are new to AB Suite can make life easy for veteran EAE users, new hires, and anyone with familiarity in Microsoft Visual Studio®, Eclipse™, C#, Java, and web or mobile development tools.

We made sure to get into some specifics, as well. For instance, **“Version Control Best Practices”** examined the value inherent in version control, showed how the software’s integration with Microsoft Team Foundation Server (TFS) and Visual Studio simplifies the process, and shared some insightful best-practice guidance from real-world AB Suite users.

Likewise, **“Good Glue: It’s All About Integration,”** looked at all the “other stuff” EAE and AB Suite applications have been connected with over the years, and detailed the various tools, products, and interfaces you can employ when considering integration projects for your own applications.

And **“Differentiate with AB Suite”** showed how existing and enhanced AB Suite features designed to support DevOps, create rich user experiences, and facilitate enhanced integrations help developers set the businesses they support apart from the competition.

As is tradition for a UNITE conference, we concluded with **“EAE and AB Suite Birds of a Feather,”** an open discussion that allowed users to share how they’re leveraging EAE and AB Suite to address specific operational and technical challenges at their sites.

It was a great year at UNITE – and yet another example of the value of face-to-face interaction.

We’d like to extend a hearty “thank you!” to everyone involved in UNITE 2018 – leadership, volunteers, and presenters included – for making this valuable, informative, high-energy conference possible.

We look forward to seeing you all at UNITE 2019!



Engineering Corner: Cloning an AB Suite Model Database

By Tomas Liu, AB Suite Developer Advocate, Unisys

Importing a large Agile Business Suite model can be a time-consuming process



To simplify and shorten it, we recommend using a cloned model database instead of importing the model again. Following this method, all you'll need to do is restore the backed-up database locally to set up your development environment. Below, we've outlined the steps you'll need to follow to make this happen.

Backing Up the Model Database

First things first, you'll want to create a backup copy of your model database. We recommend running the "SuitableForCloning.sql" script to make sure the database is a suitable source for cloning.

If no errors are detected, use the following steps to back up the model:

- Open SQL Server Management Studio
- Connect using an administrator account that also has a "sysadmin" role for the database
- Double-click the server name in the "Object Explorer" pane to expand the server tree
- Expand the "Databases" option in the "Object Explorer" pane
- Right-click the model database you want to back up, then select "Tasks>Back up..." to display the "Back Up Database" dialog box

- Go to the "Select a page" pane, choose "General," and then:
 - Set the backup type to "Full"
 - Select "Disk" in the "Back up to" option
 - Choose the default back up destination, or click "Add..." to enter a new one
 - Click "OK"

Restoring the Model Database

Now that you've backed up the model, the next step is to restore it.

To do so on your SQL Server instance, you'll need to:

- Open SQL Server Management Studio
- Connect using an account that has a "sysadmin" role on the chosen SQL Server instance
- Double-click the server name in the "Object Explorer" pane to expand the server tree
- Expand the "Databases" option in the "Object Explorer" pane
- Right-click "Databases," then select "Restore Database..." to display the "Restore Database" dialog box
- Go to the "Select a page" pane, choose "General," and then:
 - Select the "Device" radio button
 - Locate your model database backup file – note that you'll need to copy the backup file from another machine if it isn't available on yours
 - Click "OK" to restore the database >>

Initializing the Database

Once you've successfully restored the model database, you'll need to run an additional script to initialize and configure it.

So, go to your restored model database, then perform the following:

- Right-click the restored database in the “Object Explorer” pane, then select “New Query” to display a “SQL Query” editor window
- Copy and paste the SQL Script found in “ConfigureAfterRestoring.sql” to the “SQL Query” editor window
- Press “F5” to execute the SQL script that initializes and configures the database

And with that, you're done! The cloned model database will now be ready for use.

For more information about executing this process, along with helpful tips, answers to frequently asked questions, and additional instruction and resources, we encourage you to download the [detailed how-to document](#) from our support site.



Learning and Connecting at AB Suite User Day

On October 10th, 2018, clients from across Europe gathered at the Unisys Netherlands offices for the annual AB Suite User Day.

Attendees were treated to a packed schedule and some incredibly compelling content, much of which was delivered by Unisys personnel:

- **AB Suite Program Update and Strategy:** Offered an overview of the features planned for Agile Business Suite Release 7.0, as well as what's on the horizon for AB Suite 8.0 and beyond.
- **AB Suite Recent Developer Enhancements:** Showed developers how a solid understanding of the AB Suite Logic Editor will help them read and write code in the most efficient way possible.
- **AB Suite Public Model File:** Covered what the public model file is and how it can be utilized in the AB Suite development environment.
- **AB Suite and Object-Oriented Programming:** Shared an example OO project in AB Suite.
- **AB Suite, Microsoft Team Foundation Server (TFS), and DevOps:** Reviewed the integration capabilities that bring TFS and DevOps concepts into the AB Suite environment, as well as how everything works together to help you get high-quality releases to market faster.
- **AB Suite and the Cloud:** Discussed the possibilities that will be open to you with the AB Suite development environment running in the cloud.
- **AB Suite 7.0 and Beyond:** Introduced the refreshed Product Feature Modes in AB Suite 7.0, which allow you to expose specific functionality based on your unique requirements.

Unisys employees weren't the only ones running sessions. To truly put the "user" in AB Suite User Day, clients delivered a couple sessions during the event, as well.

For example, a team from Dutch insurer Achmea discussed how their company utilizes the Model Analysis Tool for Research, Investigation, and XREF (MATRIX) tool.

And Principality Building Society, based in the UK, described their experiences as they made the move from EAE to AB Suite.

We also invited attendees to an informal roundtable session that offered an opportunity to talk openly with the Unisys team about anything and everything related to EAE and AB Suite.

All in all, it was a great event that provided a great opportunity to learn about the development environment, meet some new faces, and get in some valuable networking time. We thank anyone who attended, ran a session, or supported the event from behind the scenes.

We hope to see you at the next AB Suite User Day!



Calculating Code Complexity with the MATRIX Tool

The term “cyclomatic complexity” refers to a software metric used to indicate the relative complexity of a given method.

The technique for determining cyclomatic complexity was first introduced in a [paper by Thomas McCabe](#) in 1976. Instead of inefficiently counting the lines of code in a method, McCabe devised of a way to assign a numerical value that speaks to the complexity of the method rather than its overall size. To arrive at this value, McCabe created a control flow graph of the code showing the basic blocks of code, with an edge between the blocks if the flow can pass from one block into the next.

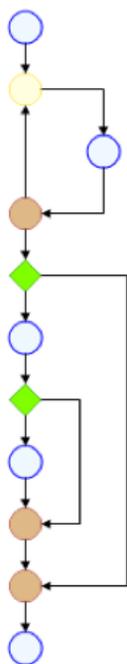
Using this graph as a guide, the complexity of a single method can be calculated using following the formula, where a “node” is a block of code and an “edge” is the logical flow between two nodes:

$$\text{Complexity: Edges-Nodes}+2$$

Once you determine this numerical value, it’s possible to identify overly complex methods that could benefit from some form of refactoring.

A sample flow graph showing the nodes and edges for an Agile Business Suite method – along with the accompanying logic – is provided below. >>

Flow Graph



Logic

```
Move GLB.SPACES CUSTOMER

|Determine From CUST.CUSTNAMES (IN_NAME) Serial
  Move CUST.CUSTOMER CUSTOMER
  Move CUST.NAM NAM
  Move CUST.POSTADD1 POSTADD1
  Move CUST.CREDLIMIT CREDLIMIT
  Break
End

|DoWhen (GLB.COPY = GLB.MAXCOPY)
  Move CUST.NAM IN_NAME
  | DoWhen (CUSTOMER = GLB.SPACES)
    Move "*** END OF FILE ***" POSTADD1
    Move GLB.SPACES IN_NAME
  End
End

Recall
```

The nodes in the example illustrate blocks of code, which can be: lines that don't affect the flow (the blue circles); "End" statements that terminate a block (the brown circles); database read looping statements (the yellow circles); or blocks that can affect the flow, such as the green diamonds used here to represent conditional statements. The edges – the lines between nodes – show the possible paths through the graph.

In this particular graph, there are 11 nodes and 13 edges. Here's how these figures are applied in McCabe's formula:

$$\text{Complexity: } 13 - 11 + 2 = 4$$

While useful as a way of comparing the relative complexity of two methods, this figure also indicates the number of distinct test cases required to completely test the method. The complexity of the above figure is four, which means four separate cases are needed to test every possible flow permutation through this method.

Aside from offering a useful indication of how hard it will be to fully test a method, the complexity figure also gives you a good idea of debugging difficulty. In fact, studies have shown a relationship between complexity and the frequency of defects in the code. So, refactoring not only makes the code easier to understand and test, it also reduces the potential for defects. A simple rule of thumb is that a single method should have a complexity of less than 20 and ideally under 10. Methods with a complexity over 40 are very difficult to debug and test thoroughly due to the sheer number of cases required to fully test every path through the logic.

Complexity, Simplified

The Unisys UK team developed a powerful query tool, called Model Analysis Tool for Research, Investigation, and XREF (MATRIX), which can assist with calculating the complexity of your AB Suite application. The example flow graph shown above was created automatically by MATRIX parsing the lines of logic in the following AB Suite method.

Clicking on a node in the flow graph highlights the corresponding block of code and the edges associated with it, making it easy to understand how the logic flows through a method. Likewise, clicking on a line of code highlights the corresponding node and the edges leading in and out of the node.

The screenshot shows the MATRIX tool interface. On the left, a flow graph is displayed with 11 nodes and 13 edges. The nodes are represented by different shapes: blue circles, yellow circles, brown circles, and green diamonds. The graph shows a main vertical path with several branches and loops. On the right, the AB Suite code is shown, corresponding to the flow graph. The code is as follows:

```
1 Move GLB.SPACES CUSTOMER
2
3 Determine From CUST.CUSTNAMES (IN_NAME) Serial
4 Move CUST.CUSTOMER CUSTOMER
5 Move CUST.NAM NAM
6 Move CUST.POSTADD1 POSTADD1
7 Move CUST.CREDLIMIT CREDLIMIT
8 Break
9 End
10
11 DoWhen (GLB.COPY = GLB.MAXCOPY)
12 Move CUST.NAM IN_NAME
13 DoWhen (CUSTOMER = GLB.SPACES)
14 Move *** END OF FILE *** POSTADD1
15 Move GLB.SPACES IN_NAME
16 End
17 End
18
19 Recall
20
```

With MATRIX, you're able to perform a background task that calculates the complexity of every method in your AB Suite application. When this calculation completes, you'll receive a spreadsheet showing the results, along with an average complexity for the entire system. >>

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	F
1	Name	Complexity	Predicate	Complexity														
2																		
3	ACTION_LINE.Main	7		7														
4	AGEDSTOCK.Frame05.Main	1		1														
5	AGEDSTOCK.Frame10.Main	1		1														
6	AGEDSTOCK.Frame15.Main	1		1														
7	AGEDSTOCK.Main	6		6														
8	CASH.Construct	3		3														
9	CASH.Main	3		3														
10	CASH.Prepare	5		5														
11	CINQ.Construct	5		5														
12	CINQ.Main	2		2														
13	CINQ.PopulateScreen	4		4														
14	CINQ.Prepare	2		2														
15	CNOTE.Construct	5		5														
16	CNOTE.Edit	9		9														
17	CNOTE.Main	6		6														
18	CNOTE.Prepare	3		3														
19	CONSOLIDA2.Main	14		14														
20	CONSOLIDAT.Main	26		26														
21	CREDITNOTE.Frame05.Main	1		1														
22	CREDITNOTE.Frame10.Main	1		1														
23	CREDITNOTE.Main	4		4														
24	CSUM.StoreOrSend	1		1														
25	CUST.Construct	3		3														
26	CUST.Main	2		2														
27	CUST.Prepare	1		1														
28	CUSTDELETE.Main	5		5														
29	CUSTEVENTS.Frame05.Main	1		1														
30	CUSTEVENTS.Frame10.Main	2		2														
31	CUSTEVENTS.Frame15.Main	2		2														

If you run this process at periodic intervals – say, once a month – you can use the results to determine if your application is getting more complex over time. While the total lines of code in your application or an individual method may increase, the average complexity should decline as code is refactored into smaller, more maintainable methods. If complexity is increasing, you may want to consider refactoring parts of the system using such new AB Suite features as method calls and object-orientated programming.

MATRIX simplifies this process by scanning the application for similar blocks of code that could be refactored into a method. The image below shows an example of this process. MATRIX scanned an entire AB Suite system for code similar to the block shown in the upper-left portion of the image. It found similar blocks in four Ispecs, so there is the potential to refactor this code into a single method.

Code To Match

```

1: ForEach Cust in Cust
2:   NameList.NO := Cust.CUSTOMER
3:   NameList.Name := Cust.CUSTOMER
4:   SendListDynamic "CUST.CUSTOMER" NameList
5: end

```

CASH.Construct

```

1: DoWhen (G_WORK.G_ISPEC = "CASH")
2:   : Return from NINQ
3:   Move G_WORK.G_ORDINATE CUSTOMER
4:   Lookup CUSTOMER Cust
5:   SingletonLookupCheck("CUSTOMER")
6:   Move Cust.NAM NAM
7:   Move Cust.POSTADD1 POSTADD1
8:   Move Cust.POSTADD2 POSTADD2
9:   Move Cust.POSTADD3 POSTADD3
10:  G_WORK.Clear()
11:  Cursor AMOUNT
12: End
13:
14: :Populate customer Name drpdwn list
15: ForEach Cust in Cust
16:   NameList.Name := Cust.CUSTOMER
17:   NameList.NO := Cust.CUSTOMER
18:   SendListDynamic "CASH.CUSTOMER" NameList
19: End
20:
21: Action := "Y"
22:
23:
24:
25:
26:
27:

```

Method	Line No	Description
CASH.Construct	15	
CINQ.Construct	2	
CNOTE.Construct	16	
CUST.Construct	7	
SALE.Construct	22	

This article only describes a small fraction of the features and capabilities available in MATRIX. If you would like to find out more about MATRIX, or explore a trial copy of the tool, please contact your Unisys sales representative or email Gary.J.Taylor@Unisys.com, Nigel.Tunncliffe@Unisys.com, or Andy.Wardle@Unisys.com directly.



Passion and Collaboration: The Heart of the New AB Suite LinkedIn Community

You asked, and we delivered!

Based on your feedback at the 2018 UNITE Conference and 2018 AB Suite User Day, we're proud to announce the creation of an all-new Agile Business Suite LinkedIn community.

Our Community's Purpose

This community gives the entire ecosystem of AB Suite professionals – clients, partners, and Unisys employees included – a shared space to actively connect with and learn from others. When you participate in the community, you'll learn about new opportunities, connect with AB Suite experts, talk to your peers about the latest trends and best practices, and dig deeper into the topics you care about. You'll gain fresh perspectives by taking part in group discussions, and help support your peers by sharing your own experiences and ideas.

Culture and Guidelines

We want to foster a community that's driven by passion and collaboration. This group is exclusively for technical discussions about AB Suite, and is therefore targeted at developers, system administrators, architects, project managers, and team leaders who are either actively using AB Suite or just beginning to familiarize themselves with the software. We want the discussions to be productive and respectful, and will not allow disparaging language, or the sharing of confidential, offensive, or inappropriate material.

Connecting with AB Suite Advocates

We have number of advocates in the community who are proven AB Suite subject matter experts. They're available to respond to posts, share best practices, and let you tap into their expertise any time you need a little extra knowledge. They'll also act as moderators and control membership in the group.

Get Involved, Be Heard

You can access the community by going to the [AB Suite LinkedIn group page](#) and entering a request to join the group. After joining, we encourage you to introduce yourself to the members, start posting, and jump into all of the conversations happening within the community.

We look forward to seeing you on there!



Info Center

New additions to our libraries of How To documents, white papers, and other useful information include:

- **How To:** How to Clone an AB Suite Model Database
- **How To:** How to Set up Team Foundation Server for use with AB Suite
- **Utility:** ABSLogAnalysis
- **Support Documentation:** Software Qualification and Support Matrix AB Suite 6.1

To view these and other resources, simply go to public.support.unisys.com and choose “Documentation” in the “Public Information” box located on the left-hand side of the screen. No special login is needed.

In addition, there are several pieces of thought leadership available on the [AB Suite homepage](#):

- [Why Agile Business Suite Should Be Your Development Environment](#)
- [AB Suite in the Application Lifecycle](#)
- [Agile Development with Agile Business Suite](#)
- [Unisys Agile Business Suite: Capitalize on Change, Don't React to It](#)

We also encourage you to view the list of available [AB Suite training courses](#). A blend of instructor-led and computer-based trainings, these great educational

resources include graphics, interactivities, simulations, and demonstrations with voice-over narration.

To stay up to date on the latest happenings in the ClearPath Forward® world, please [subscribe](#) to the ClearPath Forward Connection newsletter – and give the [December 2018 issue](#) a read.

And to learn about everything the ClearPath Forward Services portfolio has to offer, please visit our [web site](#) and check out our [brochure](#).

If you're looking to explore AB Suite on an evaluation basis, please [download AB Suite Express](#) today! This free download includes the full AB Suite package – AB Suite Developer and AB Suite for Windows Runtime – as well as a “getting started” course designed to help you begin exploring everything AB Suite has to offer in no time.