

Modernization of Uniface applications with the Thinkwise Platform



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Management Summary

The IT landscape is littered with software solutions that were once modern, but are now classified as being 'legacy'. This outdated software may continue to function without any problems for many years and that is precisely the reason why many companies keep postponing its replacement. After all, redeveloping software or migrating to a more modern technology takes time, money and effort.

However, as time progresses, the gap between legacy and modern software continues to widen. While at the same time, maintenance costs increase, there are fewer experts available who can work with this legacy software, and the support and development of the software has ceased. This is the moment when the software has reached its end-of-life and your organization must look for a way to modernize your applications. Especially in these times of digital transformation it is impossible to keep abreast of your competitors if you continue to rely on seriously outdated software.

Uniface history

Uniface, the subject of this document, is one of these outdated software solutions that is still in use at many companies. Companies that build applications to sell and companies that build applications for their own use, both use the Uniface software, from the Dutch company of the same name, which was very popular in the 80s and 90s. The software was far ahead of its time as a kind of low-code development tool with an integrated development environment and its own programming language.

But after almost two successful decades and two take-overs, the last version of Uniface, version 9.7, was released, upon which further development of version 9 terminated. Although a successor, Uniface 10, appeared in 2015, this version differed so much from its predecessor in terms of architecture that migration would take as much effort as redevelopment of the software or implementation of a new package.

A way out

For all those companies that have been looking for more than 10 years for an efficient way to modernize their outdated Uniface applications, there is now finally a solution: the Thinkwise Uniface Upcycler. The Thinkwise Platform is an enterprise low-code platform that is extremely suitable for the development of business-critical applications. The Upcycler is part of the development platform and is a tool with which existing applications can be read and converted at high speed into modern low-code applications. Based on our experience with numerous projects, we have now optimized this tool for Uniface applications. This makes it the perfect tool to get rid of legacy software for good and build a more modern future. This White Paper will explain exactly how it works.

Chapter 1:

History and legacy of Uniface

Uniface was established in 1984 with its head office in Amsterdam. The development platform offered organizations a method to develop their own applications with a minimum of programming. In combination with its own programming language, originally called UNIS, Uniface was very attractive for companies with an IT environment with high volumes of transactions, such as manufacturing, logistics and financial services companies. The platform was not only used by companies that facilitated their own business operations with Uniface, but also by ISVs that sold the applications they developed to end customers. In fact, Uniface was at the forefront of a software category that is now referred to as low-code. For years the software vendor was very successful, but after ten years its successful image started to show cracks. In 1994, the company was bought by Compuware and again ten years later, in 2014, by the American investment company Marlin Equity Partners. The fact, that it had been two years since the last major update had been released in 2012, was a sign that the software was well on its way to a legacy status.

The costs at Uniface have since been under severe pressure in order to make the company more interesting for acquisitions and investors. This was followed by a reorganization, many lay-offs, the closure of various offices abroad and a failed take-over. Further development of the then current Uniface product line was discontinued and the focus shifted to Uniface 10, which was intended to be the modern solution, and although not much changed under the hood, it turned the development environment completely upside down in terms of architecture.

Until recently, there was no easy way for Uniface customers to modernize their legacy Uniface applications quickly and efficiently. However, the solution is provided by a trusted source, namely Thinkwise, also a Dutch company with roots in model driven low-code Enterprise software development.

Thinkwise Upcycler

The Thinkwise Platform not only has many similarities with the old Uniface environment, it is also equipped with standard software solutions to modernize legacy applications. The so-called Thinkwise Upcycler allows you to import the metadata from existing applications into the development environment. In this way, it is possible to very quickly define the basis for the new low-code model, with which an old Uniface application can be migrated to a modern application within a very short time.



Modern low-code

And that is not all. Once the application is running in the new environment, it profits from numerous functional benefits that were previously outside its reach. Consider, for example, integrated support for the Web, mobile devices, Cloud implementations, and even automated machine based learning (MBL). Furthermore, every Thinkwise application is completely technology independent; the underlying technology, such as User Interfaces, Service Tiers and databases, are periodically updated by Thinkwise, without this affecting the previously built applications. This means that a Thinkwise application will always remain technically modern and will therefore never become legacy.

The Thinkwise Upcycler enables you to finally get rid of the legacy Uniface applications.

Chapter 2:

10 reasons to modernize applications with Thinkwise

Stranglehold of legacy software

Every organization working with outdated technology, understands the recurring problems that it causes. Maintenance is expensive, functionality is difficult to expand and development has ceased. This is an increasing problem for many Value Added Resellers, but also for companies that develop their own software. Their intellectual property, best practices and working methods are embedded in a legacy platform and there is no easy way out of this situation.

There is clearly a need. You can't possibly rely on outdated technology at a time when it is crucial to be able to respond quickly to changes in the market. This requires high speed development, modern APIs to be able to connect to other systems, and support for Cloud Computing and the many new devices and screen formats.

The only way to escape the stranglehold of legacy software is to migrate to a new technology. The question is, 'which one?'. Of course you can redevelop the software with modern 3GL languages or with currently very popular development tools, but this will take years and this software will eventually also become new legacy. Normally, No-code and Low-code platforms are not suitable for applications with thousands of entities and business rules, such as were often built with Uniface.

Low-code for enterprise core systems

A much better alternative is to recreate the existing software with an Enterprise low-code platform such as Thinkwise. With such a platform, the existing functionality, working methods and the philosophy of the software can be converted to a low-code model that is processed by a runtime engine, comparable to the old Uniface platform. Thinkwise, however, offers a much more modern interpretation of this, where the underlying technology is completely independent from the model. In practice, this means that all screen components, for example, are fully model-driven and that it is no longer necessary to build separate components. As a result, the functionality of the software always remains intact, despite the fact that Thinkwise periodically updates the technological components of the platform. In addition, you retain the high development speed of Uniface.

Does this sound too good to be true? Here are ten more reasons to modernize your Uniface applications with the Thinkwise Platform.



1. Thinkwise Upcycler

The Thinkwise Upcycler is one of the main reasons why companies choose Thinkwise to modernize their legacy applications. For a start, this tool (developed by former Uniface employees) migrates all basic information from the Uniface data model (entities, fields, keys, indexes, relationships), but that is not all. In fact, the Upcycler extracts as many properties as possible from an existing application. For instance, if a widget is used for a field, or a field is displayed in upper or lower case, this can always be found in the derived model. For example, the entire Uniface repository is read and all the useful components are imported into the Thinkwise platform. A new modern user interface is subsequently built automatically on the basis of this metadata.

2. Responsive design

An important benefit of Thinkwise is that all user interfaces are fully responsive. This means that every Uniface (desktop) application that is migrated to Thinkwise automatically becomes available as a web application and can be used on a tablet, smartphone or any other screen without the need to make adjustments. There is no need to build and maintain a separate web or mobile application for each environment. Do you still want to keep working with Windows? That is no problem, because the Thinkwise application, as a Progressive Web App (PWA), can also be installed locally as a Windows App.

3. Simple tabs

With user-friendly software it is important that the information is presented in a clear and accessible manner. Uniface applications use a lot of tabs and 'contained forms' for this, in practice this is quite difficult to modernize. You have to write code for this and in fact you have to build your own model view controller. Thinkwise allows you to fully customize the layout of your screens, including tabs and forms, but without the need for any programming

4. Efficient templates

Uniface uses the concept of Form Templates, which allows easy reuse of functionality and certain screens. However, this does not work very efficiently, because when adding a specific entry field, for example, you need to go through the entire application in order to adjust it on all screens. In Thinkwise it's all about screen templates, which are subdivided into so-called domains. These domains are combined in one model, which in Uniface is done with the interface, syntax and layout models. In Thinkwise, any modification of a screen template or a specific field is therefore automatic, everywhere it is used.

5. Recognizable field names

The Upcycler copies the logical field names or labels from the Uniface application during a migration and this saves a surprising amount of work. It ensures that following a first migration the end users are already familiar with what appears on the screen. This helps to increase support and acceptance and facilitate the transition to the new platform.

6. Multi-language support

The support of multiple languages is essential, especially for internationally-oriented applications. Unicode is an international standard used for encoding graphic characters and symbols in binary code, comparable with the ASCII standard. Thinkwise fully supports the Unicode standard. A Uniface migration to many other platforms poses an extra challenge for organizations that have implemented their Uniface applications with multiple languages and want to include this language support during the migration. Partly due to Unicode, the Upcycler completely resolves this challenge and transfers the multilingualism of a Uniface application to the Thinkwise Platform without any problems. This means that non-multilingual applications also automatically become suitable for multilingualism.

7. Authorization and rights

Another benefit of developing software with Thinkwise is the fact that the platform has a built-in authorization system. This allows you to easily create new users, including all the associated rights and roles. This is crucial in business environments where many different types of users are active. With the integration of this authorization system, it is no longer necessary to build and maintain this essential software component yourself.

8. Flexible test database

Software development requires a lot of testing and improvements. On a platform such as Uniface, the test database is independent from the data model, which means that when changes are made in the model, you have take action to keep the database synchronized with the model. Thinkwise does this automatically, and the test database is automatically changed whenever the data model is modified.

9. Code Deduplication & Testing

Although it is possible to build Uniface applications with little code, most applications do contain quite a lot of code. And frequently this code does not even concern business logic, but has been mainly written to benefit the operation of the application. During a Uniface migration the Upcyclor deduplicates all code from the Uniface application and enters it as a comment in the most suitable place in Thinkwise.

Thinkwise can subsequently fully test the programmed business rules automatically, by means of an integrated model-driven test engine. Two types of tests are provided: the unit tests and the process tests. Both can be run automatically after recording the input variables and the expected output, which saves a lot of time.

10. Database independent

Thinkwise supports various modern database management systems, but it is not a problem if the (legacy) DBMS of a Uniface application is not on this list. This is because the Upcyclor works on the basis of a Uniface Export File, which means that a migration is in fact database independent. To start a migration project, you only need to do a Uniface export of your applications (sources) and possibly your test data. This is sufficient information for the Upcyclor to transfer your Uniface applications to the Thinkwise Platform. The data is migrated in such a way that Uniface specific constructions such as overflow tables and the "u_version" feature are merged and disappear in the Thinkwise model, which does not require these tables.

11. (BONUS) Thinkwise software will never become outdated.

With Thinkwise, your applications are technology independent and in fact it is only the model that needs to be maintained. This means that applications never have to be redeveloped. Companies that started using Thinkwise 16 years ago, still work with the same blueprint, but they have effortlessly survived several technology upgrades: from Windows XP with Visual basic 6, to web (formerly Java, later ASP.NET, now React), to mobile with HTML5. Because Thinkwise offers you the certainty of support for new technology, you can fully focus on the functional development.



The Thinkwise
Upcyclor doesn't
look at **the database**,
but at the **Uniface**
Application Model



**think
wise.**

Low-Code
for Core
Systems

Chapter 3:

The process: **Migrate Uniface with the Thinkwise Upcycler**

It is clear that there are many similarities between the Thinkwise Enterprise low-code platform and the old Uniface system. For this reason alone Thinkwise is an eminently suitable platform to modernize these legacy applications.

What makes the transition even more attractive and accessible, is the Upcycler. This tool performs a large number of the migration tasks for you and can very quickly transfer all the basic information from the repository of a Uniface application to the low-code platform.

This makes it possible, just on the basis of an export from the Uniface source programs, to already generate an initial version of a Thinkwise application. The result is obviously not yet ready to be put into production, but a significant part of the work has already been done for you automatically.

This is however only the foundation. In this chapter we examine the possibilities of the Upcycler in more detail, divided into four categories.

1. Data model

There are many tools available in the market with which you can generate a data model on the basis of an existing database or vice-versa. This saves a great deal of manual work because you no longer need to enter all the information manually, and it avoids errors. Even Uniface offers this possibility with its "Load Definitions" feature. However, if we look more closely into the Uniface Application Model, then it appears that it contains far more information than only the database structure:

- Relationships (often not included in the database)
- Permitted values
- Presentation information (typography, formatting, etc.)
- Widgets (drop down lists, check boxes, etc.)
- Subtypes
- PROC Code in Triggers

Because of this, the Thinkwise Upcycler doesn't look at the database, but only at the Uniface Application Model.

The following things are exported:

- Entities and subtypes
- Fields
- Primary key, Candidate keys, Indexes
- Relationships
- All field aspects, such as:
 - Label, with retention of multilingualism
 - Attributes as upper/lowercase, whether or not a required field
 - Widgets
 - ValRep
- Code (read more in section 3)

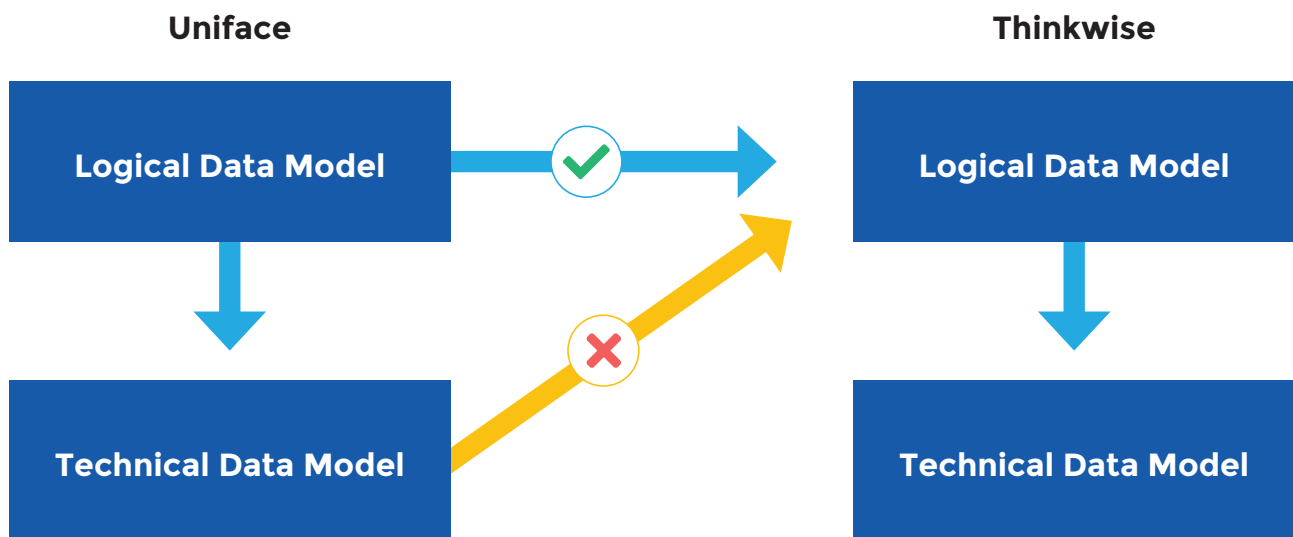


Figure 1 The Thinkwise Upcycler does not work from the database (technical data model, but from the Uniface Application Model (logical data model) to produce a new logical Thinkwise low-code data model.

2. Screens

The extent to which it is possible to migrate the screens of a Uniface application to a new environment, depends largely on how they are approached conceptually in both development tools. In Uniface you have to create screens manually and subsequently add entities and fields to them. If you select a tool that works along similar lines, then a migration is theoretically possible. However, it is questionable whether you should actually want this; migrating in this way results in retaining the old user interface.

Thinkwise offers a different and more dynamic approach to the Uniface user interface. In the Thinkwise Platform, tables are linked to screen-layout templates, and the user interface is constructed dynamically based on the relationships in the data model. Furthermore, the layout of the screens in Thinkwise is fully 'responsive', so that they can be used on all types of screens, from desktops and laptops to tablets and smartphones.

If you want to achieve the same with Uniface, then you have to develop a separate web application with DSPs (Dynamic Server Pages). So, migrating existing Uniface screens in itself provides few benefits. Unfortunately, in many Uniface applications business rules have been included as code at the screen level.

The Upcycler can therefore not just ignore the screens and does the following with them:

- All entities are linked the appropriate screen templates
- The code from components, signed entities and signed fields are migrated (read more in section 3)

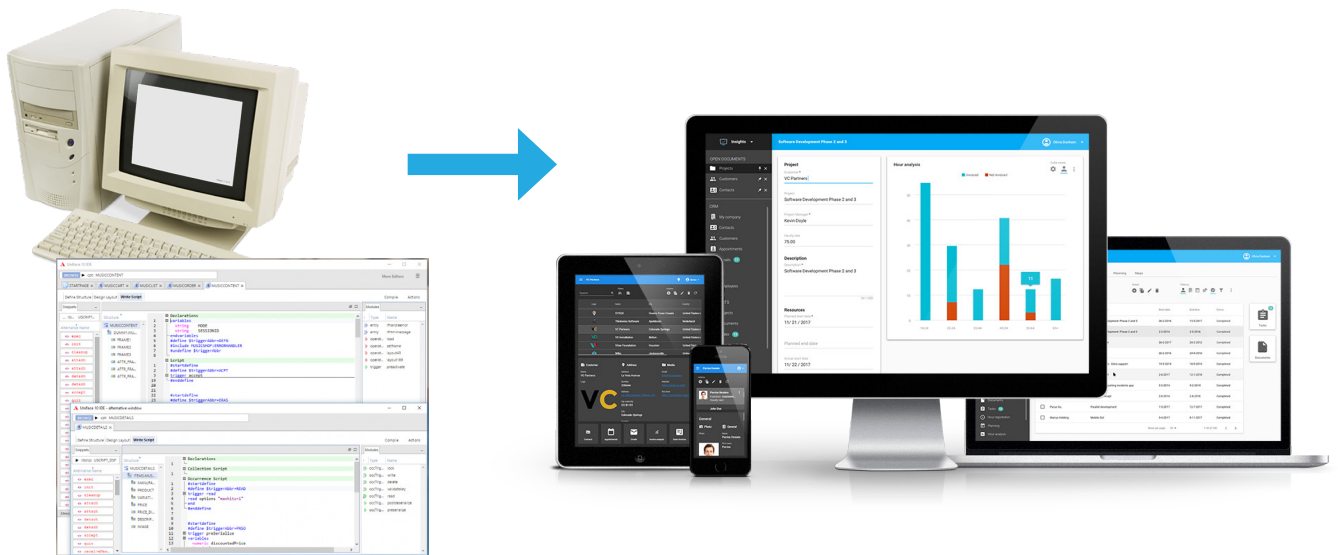


Figure 2 Migrating Uniface applications to Thinkwise makes them immediately 'responsive' and suitable for every platform

3. Code

A very important part of the Uniface migration process concerns how Upcyler handles the code. Uniface has its own PROC language, that can be found as pieces of code in Triggers. Thinkwise requires far fewer of these types of 'triggers' and uses the SQL language.

The runtime software of both platforms handles the code very differently. A relatively large part of the Uniface proc code is not written to implement business rules, but only to allow the application to work.

This presents the Upcyler with the following challenges:

1. Determine which piece of code must go where
2. Determine whether the code contains business rules
3. Translate the code to another programming language

It is not realistic and not cost effective to fully support all these components. The Upcyler therefore only focuses on the first step.

This implies that the Upcyler primarily ensures that:

- All code from a Uniface application is added as comment in the Thinkwise Platform.
- The code is linked to the related Thinkwise object. If there is no equivalent object, then the code is still available in the development environment.
- The code is deduplicated and links are created to the objects where the code is used. The Read triggers, which only contain standard code, will thus become one single piece of code in the Thinkwise Platform.

This method saves a lot of work when migrating code from Uniface to Thinkwise. Subsequently, someone has to go through all the code to localize the business rules and implement them in Thinkwise.

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The software
that you develop
on **the Thinkwise**
platform is your
own Intellectual
Property



**think
wise.**

Low-Code
for Core
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4. Authorization and multilingualism

In addition to the above the Upcyclr also offers the following basic functions, which all become a lot easier after a migration to Thinkwise.

4.1 Menu and authorization

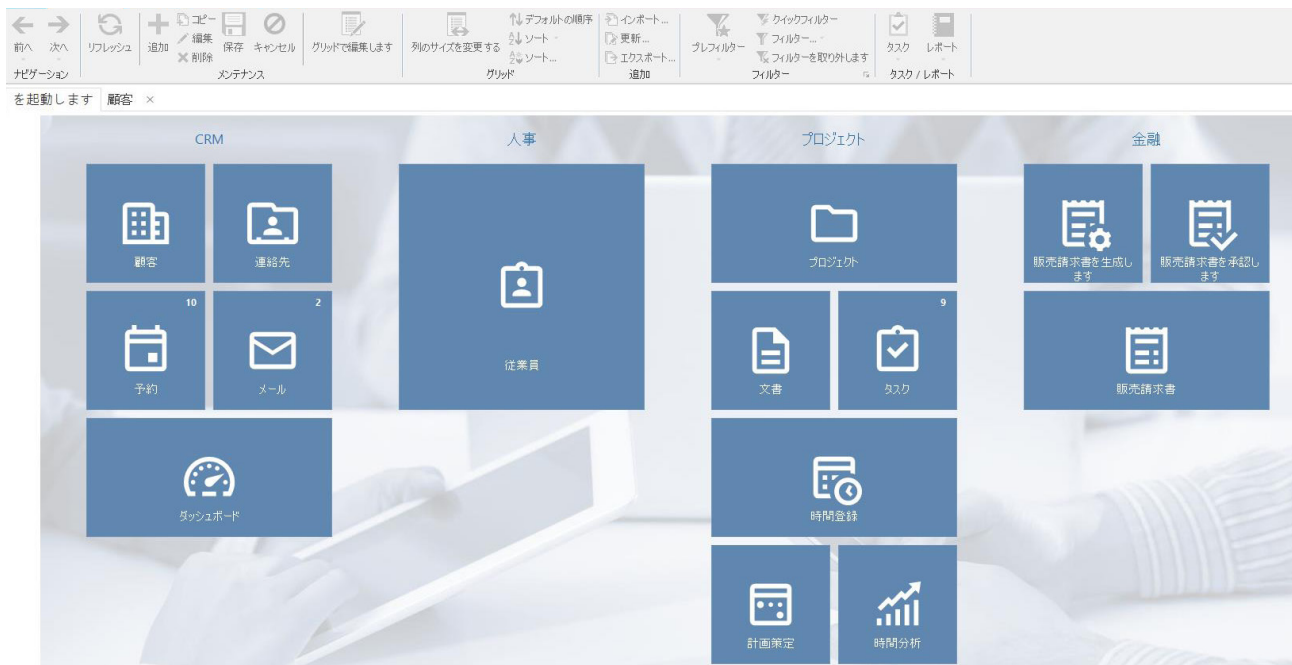
Uniface and Thinkwise both have a menu system, with which menus can be created. However, they differ in respect to complexity and ease of use. Many Uniface customers frequently do not use the standard, but have developed their own menu system in which they have included functionality such as, for instance, authorization. In Thinkwise a menu item always opens a screen, without the need of separate code. The platform has a built-in authorization mechanism. There are too many differences between Uniface and Thinkwise to be able to automatically migrate the menu structure. The Upcyclr does produce a menu for temporary use, which is based on the existing Uniface Application Models and Entities.

4.2 Multilingualism

It is not difficult to build multilingual applications in Uniface. Users of the platform have made good use of this option, even if the application is subsequently only rolled out in one language.

Thinkwise offers comparable functionality and the Upcyclr has no problem in automatically migrating the various translations of an application to Thinkwise. This work as follows:

- The Upcyclr migrates all messages from the Uniface repository.
- Messages in Uniface as \$text in a Label of a field or in a drop down list, work immediately in the Thinkwise application. The other messages are available in the Thinkwise Platform to be used, for example, in reports



4.3 Logging

Thinkwise has standard functionality for logging/audit trails that can be switched on automatically through the entire application, also with retrospective effect. To achieve this, logging tables are automatically created and the history of data can be easily stored. In addition, the platform offers standard options to monitor all the actions of the end users.

Migration accelerator

The extensive knowledge and experience of Thinkwise, gained during the modernization of applications, has been incorporated into the Upcyclor. However, the tool is not a magic wand that marginally transforms all Uniface applications into modern 'responsive' Thinkwise applications. It is an extremely useful tool to very quickly create a solid foundation during the transfer of the data model, including the available code and many extras. In practice, we see that this tool saves more than 50 percent of the effort, when compared to rebuilding a Uniface application in Thinkwise from scratch. And compared with recreating the software with a traditional programming language the low-code modeling method of Thinkwise is around ten times faster.

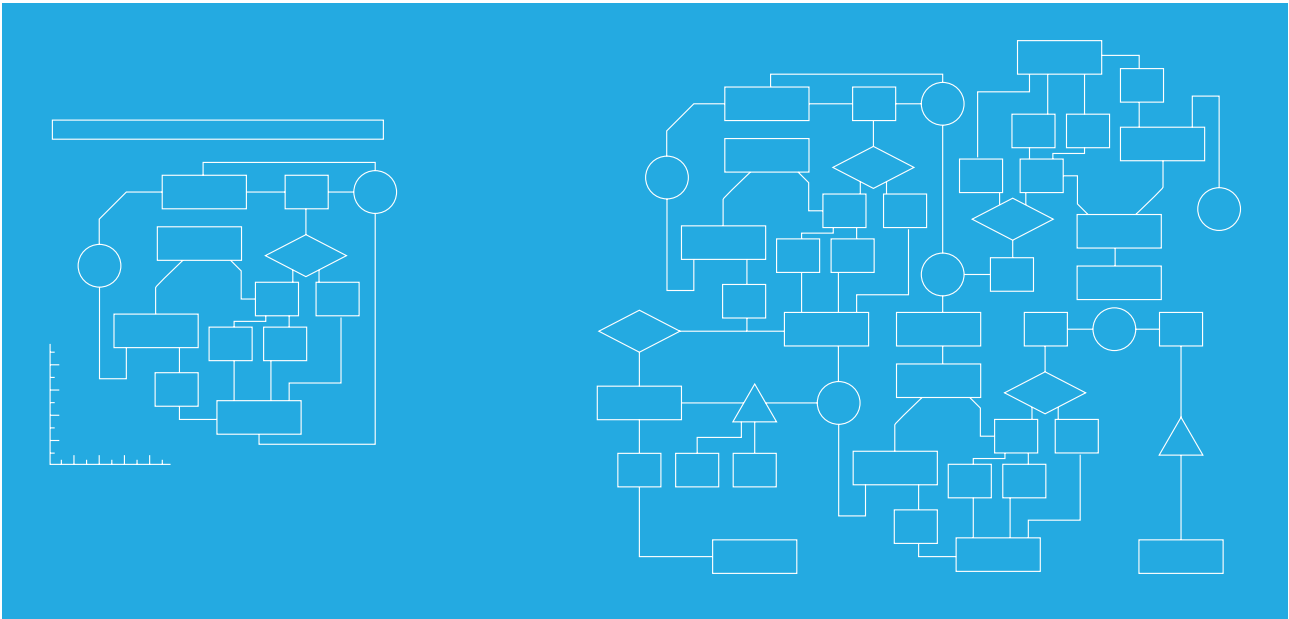


Figure 4 The Thinkwise Upcyclor migrates as many elements as possible from Uniface to Thinkwise, whereby some functions work immediately and others are available as a bonus for further processing.

Chapter 4:

Why would I not have the same challenges with Thinkwise in 10 years from now?

You are probably asking yourself, this all sounds very nice but why should I not be in the same situation again with Thinkwise at some time in the future? There are a number of reasons why this is not going to happen. Apart from the fact that the Thinkwise applications and platform themselves never need to become obsolete and are easily modifiable, there can always be another reason in the future to no longer want to work with Thinkwise. To ensure, at the very least, that so-called vendor lock-in is kept to a minimum Thinkwise has included the following facilities:

1. Thinkwise does not have its own programming language but uses SQL. This is a frequently used language that almost every software developer can understand.
2. The software that you develop on the Thinkwise platform is your own Intellectual Property.
3. All business rules, which are all developed in SQL are therefore placed directly in the database of your choice, without any conversion or obfuscation as triggers and/or stored procedures. These include the original comments from developers that are openly accessible, also outside the Thinkwise development environment.
4. The complete Thinkwise meta model including all logic is stored in a database, where it can be freely accessed and edited by developers.
5. Unlike other low-code vendors, Thinkwise does not have its own protected Cloud environment. You can decide for yourself where you store the data, logic, GUIs and models – on premise or in a Cloud of your choice, for example, Amazon Cloud or Microsoft Azure.
6. After termination of the Thinkwise subscription the User Interface and Service Tier stop running. You would then be able to develop your own new GUI and Service Layer on top of the business rules and database, which remain available and over which you then have complete control.



Conclusion

Migrating Uniface core systems

Many organizations are still using outdated software such as Uniface. They often feel trapped by the software vendor of the product, which they used to build their core business software, but that has not seen any further development since 2012.

Do the benefits still outweigh the costs? Many will answer this question with 'no', but for various reasons they often endlessly delay a migration to a more modern platform. There are numerous questions, such as which investments in time, money and effort are required to modernize the existing software. And which platform should you choose? You certainly want to make an informed choice and not be saddled after five years with technology that is outdated, or even worse, which is no longer being developed.

A future proof solution

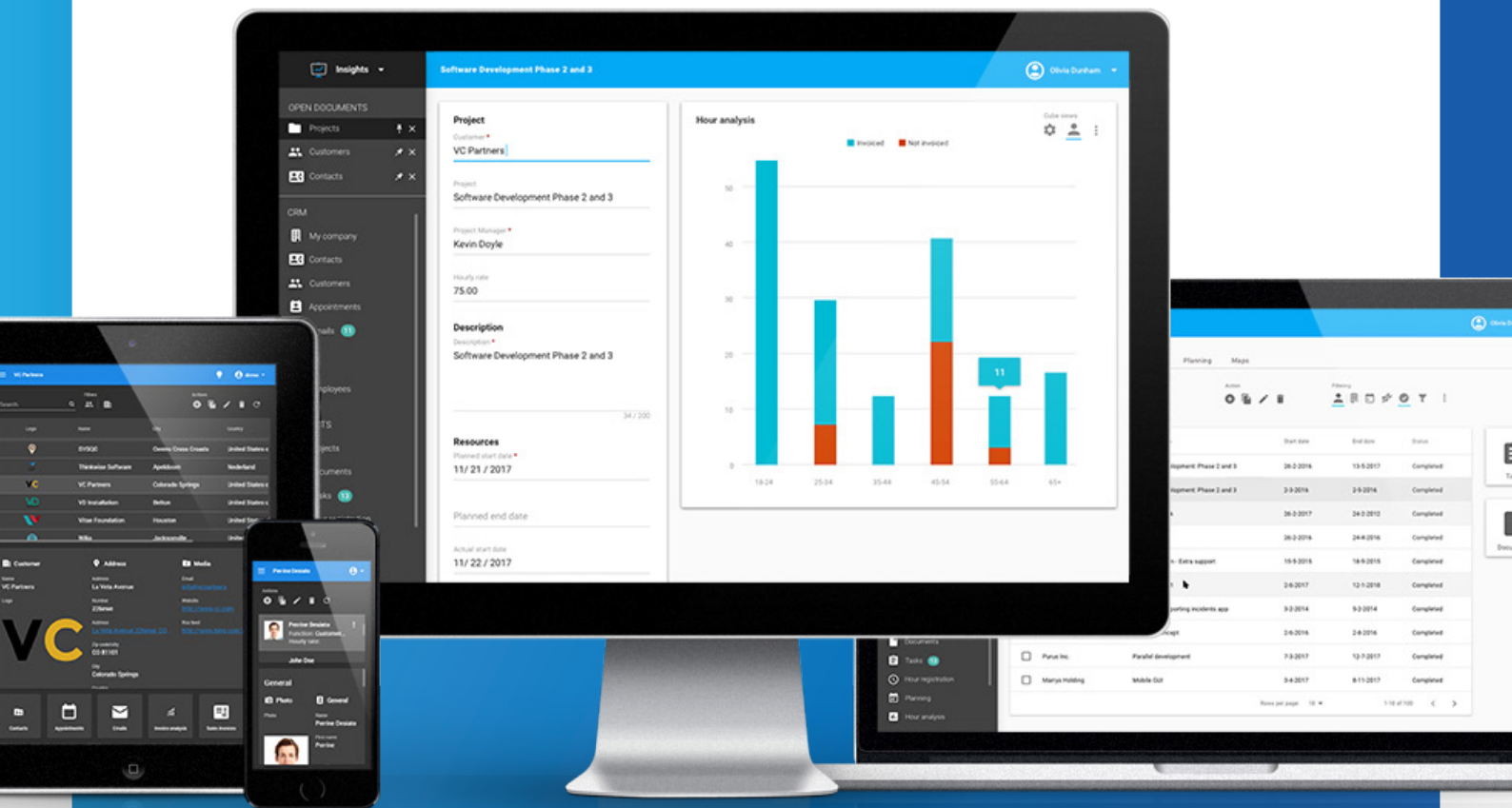
The good news is that there is now an efficient and future-proof way to free you from your outdated Uniface applications. The Thinkwise Platform has a similar philosophy to Uniface, and moreover it satisfies all modern standards of an Enterprise low-code platform. Furthermore the platform is delivered with the Upcycler, a universal tool for importing existing applications into Thinkwise, which has been specially optimized for Uniface applications.

This makes a Uniface modernization project a feasible reality. Using the Thinkwise Platform you can quickly transform outdated software into modern low-code applications which, because they are independent of technology, never become outdated. In addition, they also immediately benefit from all sorts of other functionality, such as a seamless integration with all modern (Cloud) platforms, applications and APIs, responsive design, AI and Machine Learning and much more.

Migrate now

Enterprise low-code is considered to be the future of business applications, so it is therefore high time for organizations to take the necessary steps. Bid farewell to your legacy and opt for the Thinkwise Platform, unleash your innovative strength and no longer be inhibited by continuing to use expensive, outdated software.

Are you ready to bid farewell to Uniface?



Has this white paper convinced you that the Thinkwise Enterprise low-code platform offers the fastest route to modernizing your existing Uniface applications?

Then please register for one of our Uniface Upcycler Webinars or request a demo with one of our Uniface experts.



Sign up for the Uniface Upcycler Webinar

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