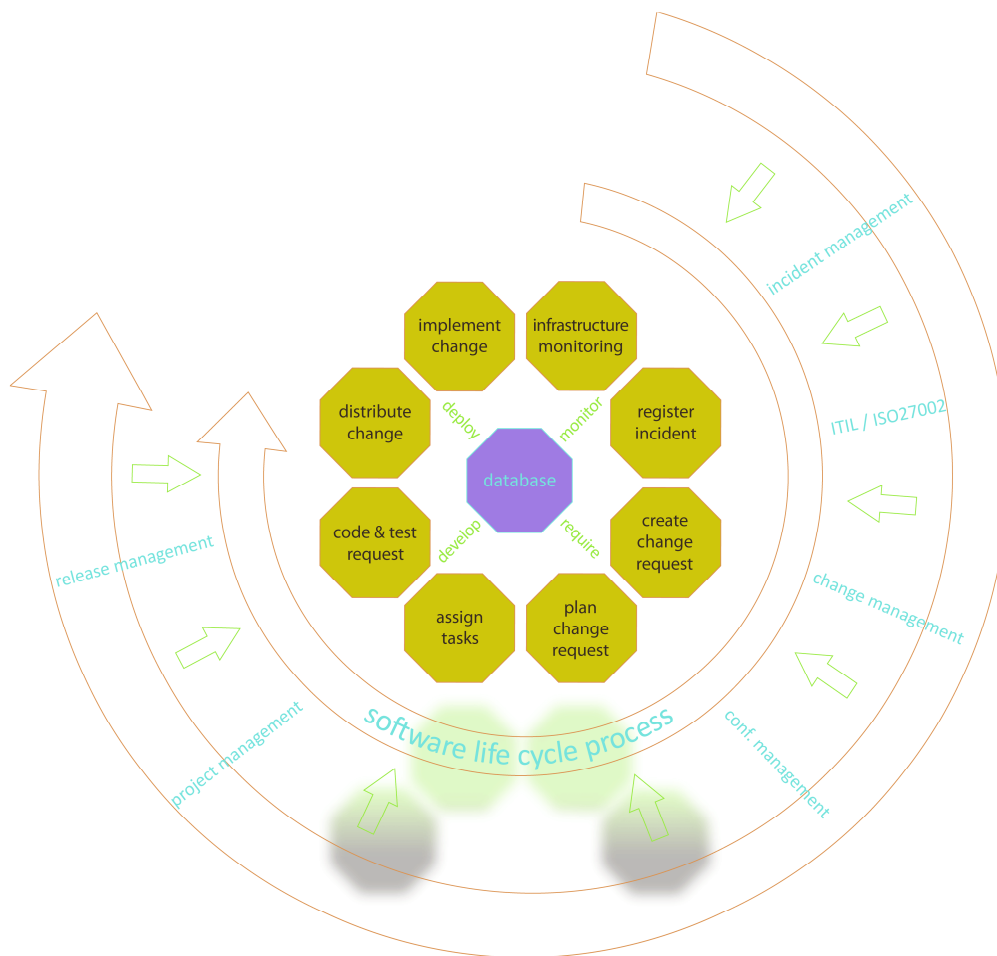




# Managing the Software Development Life Cycle process of your LANSAs development

*White Paper on the importance of interfacing with modern development languages*



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# Introduction

## Chapter 1

### Software Development and Software Change Management

**T**echnology for application development continues to be more complex and constantly evolving. Green screens (5250), Windows, Web, Wireless, Midrange servers; these are some of the technologies that are commonly found in mid-size companies. The development tools and programming languages that you need to support these environments include RPG, COBOL, Microsoft .NET, Visual Basic, C#, HTML, Java (J2EE) and XML. For an average programmer it is an impossible task to keep updated on this plethora of languages as well as to effectively implement them into the average business environment.

Without the right tools it is impossible for companies to get a complete overview on the status of their production software or to get a good understanding of the automation of their business. The current complexity of the entire software life cycle process requires adequate management of the changes being made to the software still in development, the software that is in production, as well as the changes being made in model definitions and test configurations.

Software Change Management is an essential discipline for IT departments in companies. Modern companies rely on software to support a large part of their business. Often changes that are made to software are changes that are made to the business itself. Thus, changes require caution, and therefore a Software Change Management (SCM) solution that is well suited for the demands and wishes of the user/client is necessary.

### 4GLs, IBM Power Systems and Software Change Management

Programming languages have developed throughout the history of software. To provide more clarity on the distinctions between the languages, a format was created to define the different languages.

These are grouped into different generation languages (GLs):

- 1GL – Machine Code
- 2GL – Assembler

- 3GL – Cobol, C++, Java, Pascal
- 4GL – Visual Basic, Uniface, Progress 4GL, Oracle, IBM EGL, LANSA, Magic

In the world of business software, 4GLs have a productivity advantage. This is especially true for the logic within the application. 4GLs are primarily designed for business administration software and are, therefore, inextricably linked to the use of databases. Within this field, they offer the necessary flexibility and high levels of productivity.

A server platform that excels in its architecture to support business and administrative software, and thus also excels in the use of databases, is the IBM Power Systems platform. This business system was previously known under the names (in chronological order) AS/400, iSeries and System i. The operating system for IBM's Power Systems platform is IBM i (formerly OS/400). Many large companies turn to the IBM Power Systems platform to support their business processes, whereby a choice is often made to develop their own customized software. A 4GL language is often used to write applications to suit the business. The choice then falls between languages such as LANSA, AS/SET, CA:2E, CA:Plex, IDDOS and Magic.

Given the importance of the continuity of the business environment, and thus the development and maintenance of business applications, Software Change Management is an essential discipline for these companies. Moreover, it is of critical importance that the provider of the SCM solution provides continuity in the support of the chosen 4GL environment. A lack of, and in some cases the discontinued support for, an SCM environment for the programming language has become a problem that more and more companies are facing. No support means that you have to look for another solution to protect the continuity of your Software Development Life Cycle<sup>1</sup>.

### **What to expect from this White Paper?**

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1. The various phases in software development are also referred to as the Software Development Life Cycle (SDLC). Think of steps such as Planning, Analysis, Design, Testing, Implementation and Maintenance. It is essential that the SCM solution you choose covers the entire SDLC process.



In this White Paper we focus on application development in 4GL environments in the IBM Power Systems platform, with emphasis on software development in LANSAs. We address questions such as: How do you administer the Software Development Life Cycle process of your LANSAs development? And, what is, in relation to Software Change Management, the importance of interacting with modern development languages? We also discuss the vision of software provider Remain Software in the Software Change Management field and address the experience of LANSAs as it pertains to the use of the SCM solution TD/OMS from Remain Software.

**“CHANGES THAT ARE MADE TO THE SOFTWARE ARE CHANGES THAT ARE MADE TO THE BUSINESS ITSELF. THEREFORE, CHANGES REQUIRE CAUTION. AND, THUS, A FINELY TUNED SOFTWARE CHANGE MANAGEMENT (SCM) SOLUTION.”**

# Development and Changes in LANSAs

## Chapter 2

### The LANSAs development environment

LANSAs is a development environment for the generation of applications on multiple computer hardware platforms. LANSAs is a complete family of integrated software development tools. The most important feature of the LANSAs environment is the RDML language, which is classified as a 4GL (4<sup>th</sup> generation computer language). LANSAs first flourished in the IBM Power Systems platform, but it now runs on multiple platforms, including Windows, Unix, and Linux.

LANSAs's integrated software suite consists of four core products and a set of complementary products, which can be used separately for specific requirements or can be used in a complete infrastructure.

**Visual LANSAs** is the name for LANSAs's Integrated Development Environment (IDE) for building, modernizing, and integrating business applications. Visual LANSAs has a product evolution of more than twenty years and is now used by thousands of developers across various industries throughout the world.

**RAMP** is a complete process for the rapid modernization of a legacy software system. RAMP provides an application development framework that incorporates the functionality of green screen applications (Power Systems, System i, iSeries, AS/400) with new visual components in a rich GUI.

**LANSAs Integrator** is a versatile and scalable integration server that is used by programmers to exchange data in any format or using any protocol. It can also be used to remotely call functions in other systems. LANSAs Integrator enables integration of Application-to-Application (A2A) and Business-to-Business (B2B) transactions through XML and Java services.

**LANSAs Composer** is a Business Process Integration (BPI) tool that allows business analysts a top-down overview of the whole business. LANSAs Composer provides connections between different systems in the same



way as LANSA Integrator, but it differs with the addition of a graphical mapping tool and a process orchestration engine.

### **LANSA and Software Change Management**

Although LANSA is supported by multiple vendors of Software Change Management solutions, Remain Software is increasingly considered a key partner in the field of Software Change Management. In the Benelux alone, the majority of the LANSA community uses Remain's TD/OMS solution. In addition to this, Remain's Software Change Management suite continues to attract more and more followers. One important reason for this is that some SCM suppliers do not keep current with the latest LANSA (or other 4GL) developments. In contrast, TD/OMS – due to the clear strategic vision of Remain (see Chapter 3) – closely follows these developments. Many LANSA users make their choice for the TD/OMS due to the reliability and excellent interfacing of TD/OMS with LANSA. But above all, because Remain, with TD/OMS, provides an integrated Software Change Management solution for the LANSA community.

The collaboration between Remain Software and various LANSA organizations has become so strong that Remain is allowed full access to LANSA. This provides LANSA users who use the TD/OMS Software Change Management many benefits.

“In the LANSA community, which consists of 7,000 customers worldwide, Software Change Management is for many medium and large customers an important link in the management and implementation process of LANSA applications,” says Danny Hellemons of LANSA Europe. “In recent years IT departments are increasingly expected to meet SCM standards. In addition, environments in terms of management and implementation are becoming more complex through heterogeneity and diversity.”

**“SOFTWARE CHANGE MANAGEMENT IS, FOR MANY MEDIUM AND LARGE CUSTOMERS, AN IMPORTANT LINK IN THE MANAGEMENT AND IMPLEMENTATION PROCESS OF LANSA APPLICATIONS.”**

### **Added value of SCM for LANSA users**

When it comes to selection of a Software Change Management package, most users of 4GL environments in general, and those of LANSA in particular, have a few key issues, including:

- Does the SCM solution meet the standards?
- Does the SCM solution support heterogeneous environments from a single vision?
- Does the SCM solution include version management?
- What is the degree of integration with the 4GL environment?

According to Danny Hellemons of LANSA Europe, the choice often falls on TD/OMS due to its excellent price/performance ratio, the simplicity in the design and use of TD/OMS, the support of complex heterogeneous environments, and the extensive LANSA integration. “There are a number of players in the Software Change Management market which offer a LANSA coupling and integration. Often, however, there is only a minimal coupling which does not fully make use of the possibilities within the LANSA Repository in relation to Software Change Management. In addition, SCM suppliers have often been chosen for an isolated approach of LANSA applications, which makes the management and implementation in a heterogeneous environment complex. Therefore, the preference is often given to TD/OMS.”





# Software Change Management with TD/OMS

## Chapter 3

### Remain's Vision on Software Change Management

**V**ery early in the history of TD/OMS Remain Software had a vision that a Software Change Management solution should connect with all of the languages deployed on the IBM Power Systems (IBM i ) platform. An interface with all of the known languages, including CA:2E, CA:Plex, ASSET, IDDOS, Magic, and LANSAs was a must. This vision from nineteen years ago remains true today. This complete integration also includes new development environments in the IBM i platform; such as IBM's Enterprise Generation Language (EGL), which are being supported by TD/OMS. This focused vision and the clear roadmap of Remain Software ensures that TD/OMS is now taking a significant lead on its competition.

Remain maintains the philosophy that all developments within TD/OMS must be done in-house. Outsourcing, and thus the dependence on a third party, is absolutely not an option for Remain. The modules that are built within TD/OMS are fully integrated. As they are that specific, they are developed by Remain directly. An important advantage of this is that new developments can be quickly integrated.

Interfaces have evolved fully with the TD/OMS solution. Through the continual development of TD/OMS, the interfaces – for example LANSAs, IDDOS and CA:Plex – must also be continuously updated. Due to this, the graphical user interface (GUI) of TD/OMS has been exchanged for the Eclipse GUI. This meant that all interfaces had to be customized and become Eclipse GUI based. This leads to many advantages, namely the features that Eclipse provides.

The interfaces in TD/OMS are conceptually clearly designed. This means that, for example, the Magic Interface is designed in the same way as the LANSAs interface. They are based on the same concept. Remain is thus able to quickly and flexibly implement changes. If users have specific requests and demands, Remain is able to make adjustments within that concept. These customer specific needs can be met by Remain, or – which is almost



always preferred – they can also be designed as a standard option within TD/OMS. It is then included in the generic functionality of TD/OMS and maintained within the standard maintenance agreement.

**“A SOFTWARE CHANGE MANAGEMENT SOLUTION MUST CONNECT ALL OF THE DEVELOPMENT LANGUAGES DEPLOYED WITHIN THE IBM POWER SYSTEMS (IBM i) PLATFORM. IT MUST PROVIDE INTERFACES WITH ALL MAJOR LANGUAGES, FROM CA:PLEX, CA:2E AND ASSET, TO IDDOS, MAGIC AND LANSA.”**

“Remain, similar to LANSA, is continually applying new, market demanded, functionality.” says Danny Hellemons, of LANSA Europe. “Remain is always one of the first to include the new LANSA capabilities in their Software Change Management environment. For our progressive clients this is very significant. Remain has in recent years, not only in Europe but also in the United States, successfully developed as a business, signing progressive multinationals. Similar to LANSA, TD/OMS certainly deserves the title “Advanced Software Made Simple”.

#### **Features of TD/OMS**

TD/OMS from Remain Software is a flexible and cost effective Software Change Management solution for IBM Power Systems, Windows, and UNIX. An important feature of TD/OMS is that it provides a complete Software Development Life Cycle process, while giving real-time insight into the configuration. Whether users are in the development, testing, acceptance or deployment phase, TD/OMS helps the IT organization to streamline the change process for every type of application, no matter how complex the environment is.

From incident registration to the implementation of the software into production, TD/OMS is an integrated solution that supports the entire process. It includes a comprehensive Help Desk Management System and can be integrated into the existing (ITIL) process. The impact of changes can be analyzed via the configuration database, which greatly reduces risks.

TD/OMS also supports compliance regulations such as SOX and ISO27002. It is backed by a powerful reporting facility that provides TD/OMS auditors



insight into the change process at any time. All TD/OMS management structures can be fully customized using the easy to use GUI. This can meet operational needs and can keep the maintenance process controlled. Managers have a complete overview of outstanding requests, tasks, and program workload.

According to Danny Hellemons, LANSA Europe, TD/OMS features a range of significant advantages for LANSA users. “For example: the management of a heterogeneous environment mix. This could include LANSA applications with RPG, Windows, or other non-LANSA applications, for example. It also addresses issues related to design and all from one management environment. Furthermore, the power of the LANSA Repository is fully utilized, so that everything developed in LANSA can also be included in the SCM process. Lastly, TD/OMS grows along with the increasingly extensive LANSA product portfolio.”

**“TD/OMS HELPS IT ORGANIZATIONS TO STREAMLINE THE CHANGE PROCESS FOR EVERY TYPE OF APPLICATION, NO MATTER HOW COMPLEX THE ENVIRONMENT IS.”**

# Interfacing with other languages

## Chapter 4

### Interfacing with APIs

**A**n application programming interface<sup>2</sup>, or simply an API, is a set of program instructions and norms that allow computer applications (software) to communicate directly with each other. APIs often form the separation between the different layers of abstraction, allowing applications at a high level of abstraction to function and outsource the lesser abstract work to other programs.

An API defines the access to the functionality behind it. The outside world does not know the details of the functionality or implementation, but thanks to the API the functionality can be used. One advantage of this is that multiple deployments can be accessible with an API, as long as they conform to the API.

Streamlining of the Change Management process is possible only when data is available from every available application in the market and applications not yet built. Interfacing makes this possible. TD/OMS supports interfacing with all major languages.

### TD/OMS and Interfacing

TD/OMS is built from the ground up to integrate with existing processes and technologies. TD/OMS connects seamlessly with 4GL languages such as LANSA, AS/SET and IDDOS. Furthermore, TD/OMS integrates fully with Eclipse and IBM WebSphere to deliver a robust platform for software development. Lastly, TD/OMS integrates with the Open Source tools Mylyn, Subversion and BIRT.

TD/OMS manages everything that can be seen as an object. In addition to PC objects, messages and documents, for example, this also includes objects derived from 4GL tools. Remain provides 4GL interfaces for all 4GLs



working on IBM's Power Systems: LANSА, AS/SET, CA:2E, CA:Plex, IDDOS and Magic.

**“STREAMLINING OF THE CHANGE MANAGEMENT PROCESS IS POSSIBLE ONLY WHEN DATA IS AVAILABLE FROM EVERY AVAILABLE APPLICATION IN THE MARKET AND APPLICATIONS NOT YET BUILT. THE INTERFACING OPTIONS OF TD/OMS MAKE THIS POSSIBLE.”**

### **LANSА - TD/OMS**

The TD/OMS LANSА module enables users to manage their Software Development Life Cycle. By managing key information items such as Incidents, Change Requests, and Tasks, users are able to control the various aspects of application development. LANSА-TD/OMS works with all LANSА software components, including RDML(x), IBM i (OS/400) and web components (PC).

After a successful completion of tests, application administrators can move the components to the production environment. After the granting of a task, programmers are able to select and link components from the configuration database. With a push of a button the required components are copied to the development environment. Programmers can complete their tasks and the components move on to the next step in the life cycle (the test environment).



# The Remain Software Roadmap

## Chapter 5

### The future of TD/OMS

In general, our software environments grow and become more complex. Because of this complexity, more functionality must be added to applications in order to cope with issues such as distributed and remote development, change control, process support, web support and more. To remain competitive, organizations must be able to change strategies, rapidly adapt to new market conditions, and quickly introduce new products and services.

Remain Software recognizes that businesses have made significant investments in time and money in order to adapt their original applications. The solutions that Remain has developed help customers to develop new applications or modernize their legacy applications. In order to anticipate the needs of customers and the market, Remain uses new methods and a clear roadmap for the development of new generations of the TD/OMS Software Change Management solution.

### IBM i Roadmap

Remain Software is committed to the roadmap of the IBM Midrange Systems (Power Systems, formerly System i, iSeries and AS/400). Therefore, it is very important for Remain to closely follow IBM's strategic developments in the IBM Power Systems Portfolio.

### Project Gravity – Multi-Platform Framework

Parallel to the dedication to IBM's Power Systems, Remain Software is working toward the first official release of a ten-year development effort that has been given the code name Gravity. Gravity will divide target platforms into modules and bring them together into one uniform Change Management Framework. All of our current technology has a place within this project, with the first version to be launched in 2011. Project Gravity is based on Eclipse, Service-Oriented Architecture (SOA), OSGI, and is multi-platform and multi-database.



### **About Remain Software**

With more than nineteen years of experience and expertise in the Software Change Management field, Remain Software has built an independent and dynamic Software Change Management platform for heterogeneous software development environments.

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