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Focus Solutions Group plc

A Focus on Change A Technical Perspective

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A Focus on Change A Technical Perspective

1 Introduction

1.1 Are you stuck in the 20th Century?

Even though we are now well into the 21st Century, a significant part of the IT industry is still stuck in the 20th Century in its approach to software design. A term coined by our US partners, the MPO Group, labels the problem as 'Twentieth Century Solutions'. The key word here is 'Solution', which implies addressing a specific business need. Typically, the approach to doing this in the last century was characterised by embedding the business knowledge and rules within the software code itself.

Through this embedding of business logic and rules, the '20th Century Solution' suffers from the following undesirable traits...

- ~ It is subject to expectation and reality gaps due to 'Chinese Walls' that invariably develop between the end-user and the provider of the 'solution'.
- ~ Slow to build and hard to maintain due to the close collaboration required between the end-user and the provider of the 'solution'.
- ~ Shares redundancy with other 'solutions' where common business knowledge and rules require to be duplicated in heterogeneous 'solutions'.
- ~ Lock-In due to the inability to extricate the business knowledge from the solution and the tendency to be 'hooked' into a solution that represents a substantial investment.
- ~ High cost of ownership to maintain ever changing business environment.

1.2 Implement Today - Legacy Yesterday

As computer technology becomes a more and more integral part of people's lives, the 21st Century consumer has more and more demanding expectations. This demand acts as a catalyst for an ever-increasing pace of

change - something 'Twentieth Century Solutions' are finding it very difficult to keep up with. Conventional approaches take a view based on a moment in time and the system is then based on solving that problem. The business logic is locked away inside the application, making it difficult to change.

Add to this the increasing burden of continual regulatory and legislative changes and we end up with a situation that the brand new IT 'solution' may have already become a legacy system the day it is implemented.

1.3 Into the 21st Century

Towards the end of the 20th Century the IT industry has made advances to bring down the 'Monolith' computer program. However, the object-oriented/componentised approach to software design still leaves you with the 'solution' paradigm. For technical or non-business related applications (e.g. operating systems, middleware, word processors, etc.) this approach may be fine, but in the commercial world it still leads to embedded business knowledge.

Enter stage left, a new approach to software design more suited to the rigours of the 21st Century and its accelerated pace of change. This new approach is characterised by the following traits...

- ~ Visual toolkit for 'assembly' of business rather than technical content, which is intention based.
- ~ Consists of 'assemblies' that are loosely-coupled with other 'assemblies' in an 'application stack' using a message based approach to communication.
- ~ Capable of easily applying industry wide data standards to aid communication between players in the same market arena and their suppliers.
- ~ Scalable, robust, stateless and platform independent.

- ~ Capable of adjusting to the completeness and richness of the data
- ~ Separation of form and function to facilitate multi-channel deployment

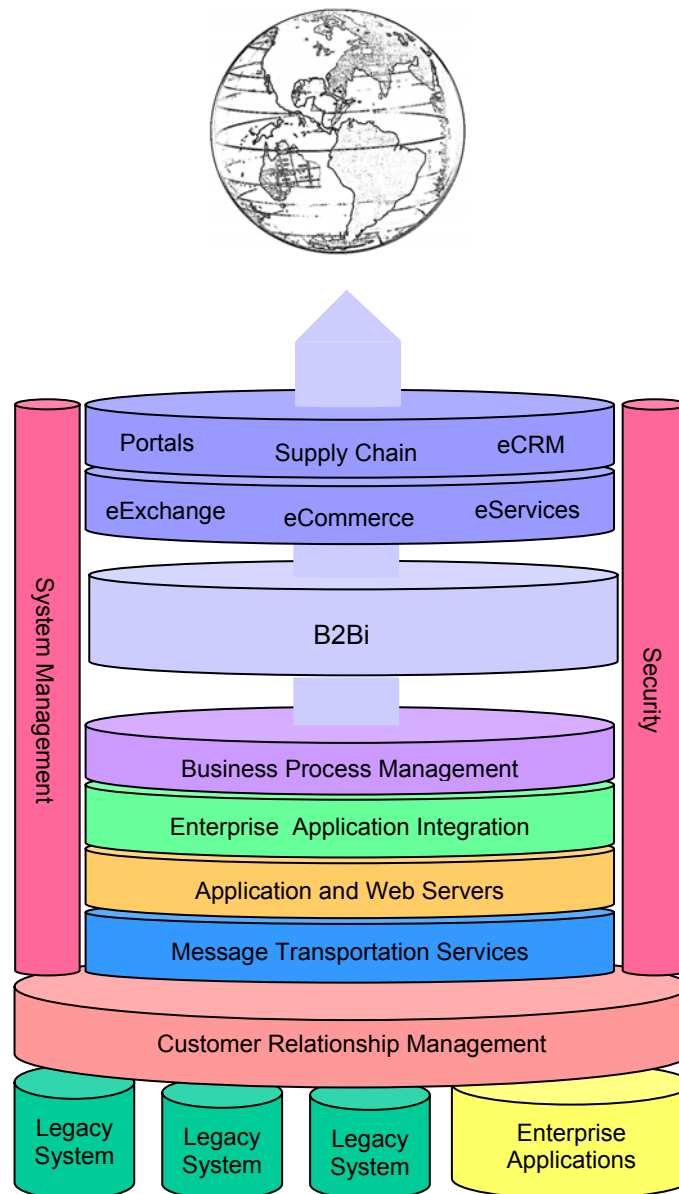
The aim of this document is to explore some of the concepts of this new 21st Century approach and how they are illustrated in the goal:technology product suite created by Focus Solutions Group.

2 The Application Stack

The various 'assemblies' that we consider as the basis for 21st Century software could be seen as collaborating in an 'application stack' of independent but connecting software components. Best-of-breed for

each function is swapped in or out to achieve optimum results. Any new applications will need the capability to easily operate within this 'stack', pre-populating data already captured elsewhere, and transferring data to other applications easily.

The glue that can be used to bind the 'application stack' together could be made up of various different approaches such as message brokering systems or Enterprise Application Integration (EAI) solutions. Overall control and management of the 'application stack' can be executed through Workflow and/or Business Process management (BPM) technologies. An example 'application stack' implementation is shown below:



3 Collaboration - a Message Based Approach

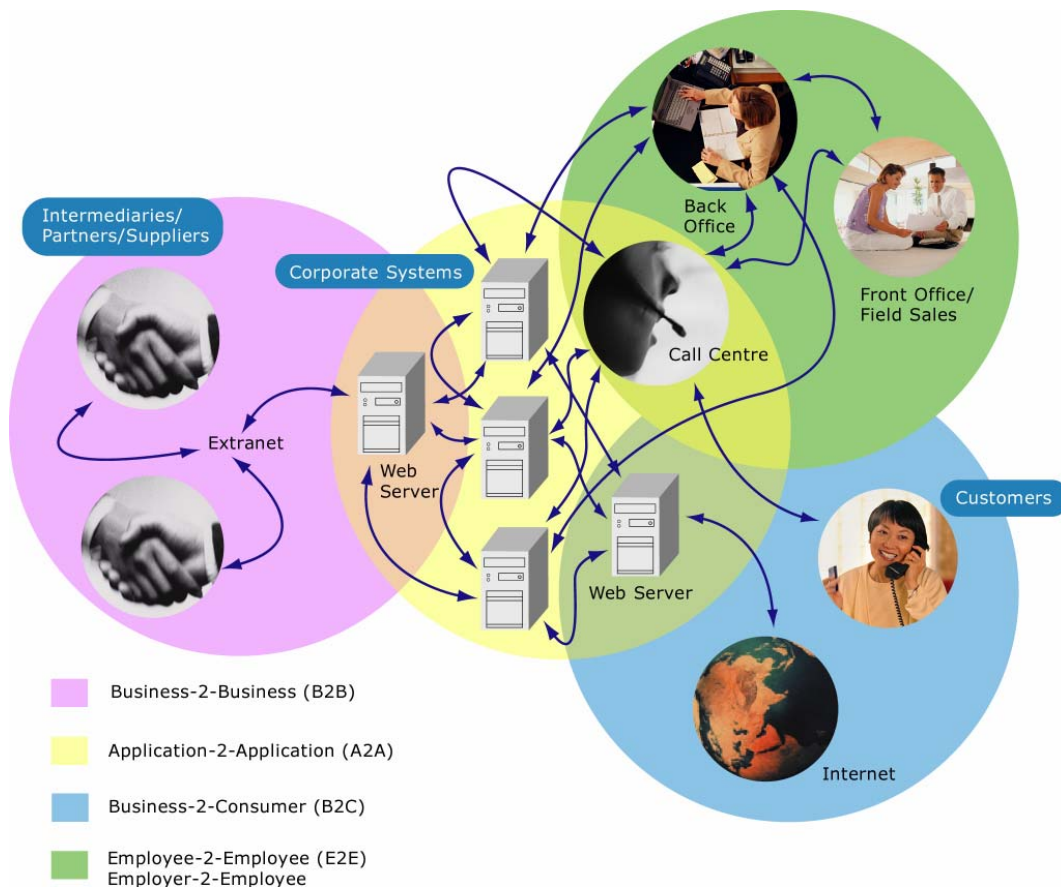
3.1 Learning your ABCs

The end of the 20th Century saw the introduction of x2x-speak, such as Business-2-Business (B2B), Business-2-Consumer (B2C), etc. This trend has continued into the 21st Century with new additions such as the Application-2-Application (A2A) tag applied to Enterprise Application Integration (EAI) solutions. The end result is a plethora of these acronyms to cover different aspects of the business and different sales channels. How these might apply in practice in a typical organisation are shown below.

In the situation below it is clear that there is potential for a 'spaghetti' of communication lines to exist between various functions and systems of the business. With an increasing focus on business processes developing as businesses learn to adapt to the 21st

Century, this has led to a proliferation of products in the Enterprise Application Integration (EAI) and Business Process Management (BPM) arena. As these products develop and mature, new standards will emerge, such as those being developed by the Business Process Management Initiative (BPMI.org) and the Workflow Management Coalition (WfMC). These, along with the new XML Web Services Architecture, will enable a new generation of tools that help to manage this 'spaghetti' in a much more effective way.

However, having got the 'spaghetti' under control, organisations are still segmenting their businesses into individual channels, such as those represented by the above x2x scenarios. While this may well make sense at the level of business management it does not necessarily make sense from a technology strategy point of view – particularly when considering the overall management of customer/partner relationship(s) and their associated transactions and data.



3.2 Everything-2-Everything

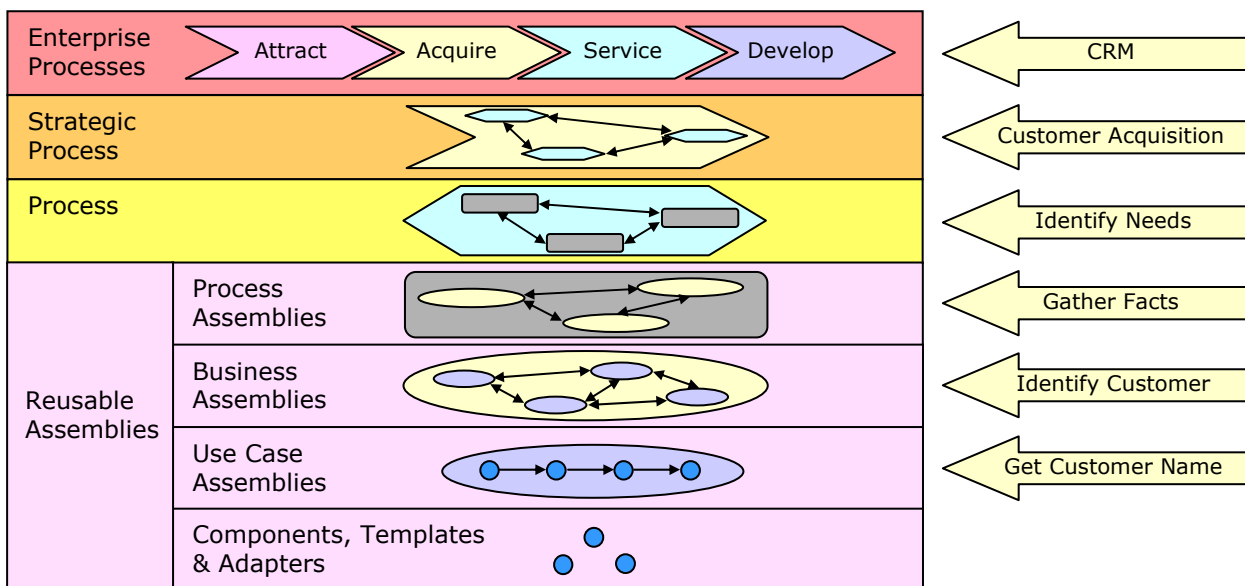
Instead of thinking of the individual x2x scenarios illustrated on page four, an E2E acronym has been coined to cover End-2-End solutions – something that could be applied to Business Process Management (BPM) methodologies. We, however, consider End-2-End to be 20th Century terminology – in our vision for goal:technology this would be better thought of as Everything-2-Everything. We see this being applied potentially at all levels within the 'Application Stack' through XML-based Messaging, to provide a loosely-coupled integration approach for the independent but connecting software assemblies. Our E2E view of the 'Application Stack' would look conceptually like the diagram below.

3.3 Getting the Message

While XML provides a basic language framework for communication (a kind of lingua franca) there has been an explosion of various different dialects in various different industry types and even in different sectors of the same industry. A panacea to this is seen as a "Universal Business Language" initiative launched by OASIS, an international consortium that creates interoperable industry specifications. Such an initiative will assist in standardising common information that most industries share, though it won't preclude the existence of industry specific

standards which will still co-exist with them. Some drivers will exist to re-organise some of these industry specific standards to remove fragmentation that has crept in due to the sheer pace at which XML dialects have been developed – an example here is the eMerge initiative instituted by ACORD, the insurance industry's standards developer in the United States and internationally.

While it could be said that XML dialect standards are in a state of flux, this should not act as a barrier to developing solutions on them. Using the loosely-integrated approach that we see in the 'application stack' view of technology solutions, this only requires the implementation of 'translation' or mapping steps into the process to allow exchange of common information between components of the stack that talk different dialects. Such translation/mapping capabilities have become a fundamental aspect of many Enterprise Application Integration (EAI) solutions. This approach compares much more favourably from 20th Century approaches which relied on trying to hot-wire heterogeneous technical platforms together over and above trying to get individual components or applications to talk to each other.



4 Intent versus Implementation - A model for Change

4.1 Bridging the Gap - a User Oriented Approach

A business user oriented approach aims to bridge the 'expectation gap' that often develops in '20th Century Solutions'. This is the difference between what the business user expects i.e. their actual requirements, the requirements that were gathered and the actual end 'solution' delivered. It is not uncommon for all three to differ significantly. It is this 'expectation gap' that is one of the biggest contributors to overspend on IT projects as well significantly impairing the ability to respond rapidly to change.

In the 21st Century, this is achieved through visual toolkits, aimed primarily at non-technical business users with no programming experience. These enable them to rapidly populate fully functional 'assemblies' with first-hand business knowledge. It is the 'intelligent' platform behind 21st Century software that automatically interprets how this knowledge is applied and managed across multiple systems and technologies.

This approach not only encourages innovation, but can also help to change the nature of the relationship between the business user and his IT colleagues from one of mere information provider (and sometimes dictator!) to one that is more based on cooperation and collaboration.

4.2 Rapid Application Development (RAD)

Using a highly visual approach, but without being distracted by the semantics of visual presentation in different implementation scenarios, the 21st Century toolkit allows the user to rapidly develop and prototype their ideas. This allows business users to create 'applications', trial them and learn from experience quickly without lengthy expensive development timescales. Such an approach with '20th Century Solutions' is invariably prohibitively expensive. Consequently you cannot use them to gain this valuable experience and knowledge to enable rapid response to change.

4.3 Agile Solutions for Rapidly Changing Problems

By adopting an approach where the Business Content, Business Logic and Organisational Structure within an 'application' are all separated from each other allows the user to make changes to each with little or no impact on the others. As a result, the impact of change is minimised. This separation is analogous to the classic three tiers which allows significant changes to be made with either little or no impact on the overall 'application' functionality or a clear impact that can be easily identified and regression tested. Using a visual approach and yet encouraging a structured discipline aids understanding, and as a result makes the 'application' easier to maintain. Using traditional approaches of 'Twentieth Century Solutions', changes could have a significant impact on the other areas and would require extensive regression testing.

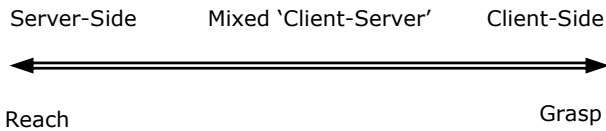
In addition, 21st Century software can implement a templates approach to facilitate global/ whole sale changes to be made (under the control of the user) to the library of 'applications' very quickly. This is through allowing the propagation of changes across an entire library of 'applications' which are based on the same template components. This not only allows a rapid response to changes in business or legislative practices, but also allows new concepts to be tried out or delivered very rapidly to the marketplace - something that is actually precluded from traditional software development and deployment techniques.

An 'application' can be maintained more easily and changed more quickly compared with traditional software development. An 'application' can also be broken down in to a number of distinct areas: - the 'application' structure/layout, the underlying data model, and the business & navigation logic.

4.4 Grasp Versus Reach

The payback for focusing on 'intent' rather than physical 'implementation' also allows the rendition of a particular scenario to be automated to suit the available technology and/or the end user's own capabilities. An

illustration of this is where an implementation may need to consider the degree to which a solution is implemented client-side (off-line), server-side (on-line) or as a mix of the two, i.e. client-server. These different profiles can be said to have varying degrees of 'Reach' versus 'Grasp'...



The 'Reach' of an application, i.e. the size of the audience that can access it, tends to increase as reliance on the browser technology employed by the end-user is reduced. The 'Grasp' or ability of an application to perform a task, increases as the end-user functionality is enriched to assist the user in completing the task. These aspects can tend to compromise each-other in that as 'Reach' increases, the use of lowest common denominator technology can impact on the 'Grasp' and, likewise, increasing the 'Grasp' tends to introduce reliance on technologies that can reduce the 'Reach'.

This balancing act that 'Twentieth Century Solutions' needs to play with is another feature that the 'intent based' approach serves to automate. 21st Century software will be capable of automatically setting the Grasp-Reach balance to be suitable to the environment it is deployed into.

5 goal:technology - 21st Century software in action

5.1 goal:technology Today

Today **goal:technology** is a unique XML based software suite which offers the complete solution for intelligent transaction management, both on and offline. Interactive forms and complex data capture routines can be quickly and easily created without the need for technical knowledge from their designers, sourcing the data from the user and other systems both internal and external.

One of its core design goals is the move toward the 'executable specification'. It attempts to allow the problem owner to directly influence the deliverable, rather than writing a specification for some one else to interpret in a separate implementation exercise. It also allows this same knowledgeable person to maintain the solution as the business context changes. This is achieved by ensuring that only the 'what' needs to be described. The 'how' of the implementation is handled by the tools in a standard, consistent way.

It also separates form from function, presentation from content. It is this separation which allows multiple implementations to utilise the potentially very different physical resources of the target devices to deliver the same business content.

The **goal:technology** product suite consists of building, viewing and managing components:

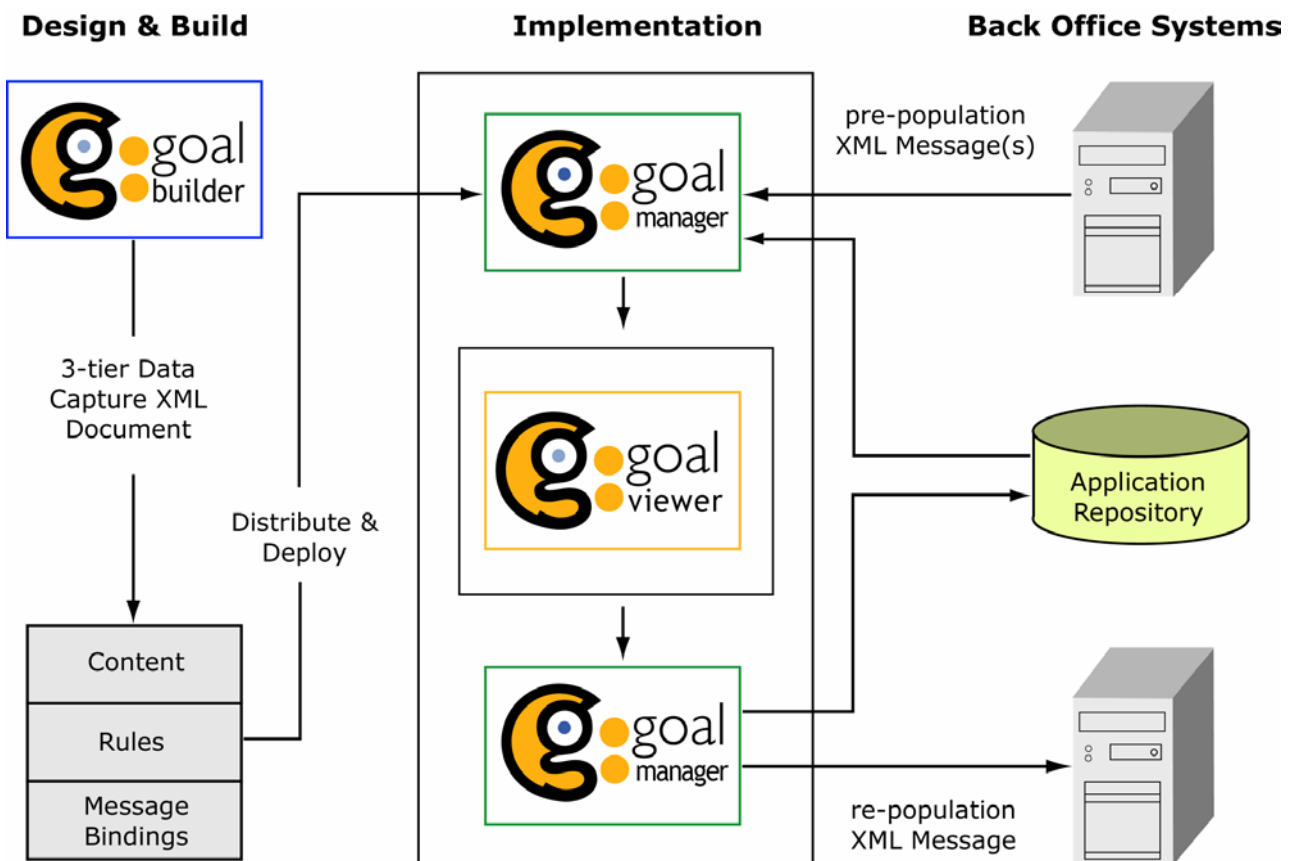
~ **goal:builder** is a visual toolkit with an easy-to-use interface that means it can be used by business users in collaboration with their IT colleagues. It is a multi-user, client-server application for the Microsoft Windows platform which enables a wide-variety of different users to construct processes to capture complex data, including validation of this data and rules to be applied to the data.

~ **goal:viewer** enables the 'applications' built by goal:builder to be viewed across various different technology platforms. There are two main flavours of this component of the goal:technology suite, **goal:viewer(online)** and **goal:viewer(offline)**. These collectively span all major channels to market including web-based systems, CRM systems, across Internet Service Providers to intermediaries and direct to the consumer. goal:viewer(online) has both a Microsoft and a Java version, enabling a wide reach to be achieved.

~ **goal:manager** controls the management of the data capture components built using goal:builder. It includes versioning, updating, pre-population, storing and sending of the data which has been captured.

~ **goal:utilities** are a set of components that facilitate the testing

of the data capture designed within goal:builder including simulating the live environment. This allows for early identification of problem rules, creating a more efficient final result. The utilities also include a self documenting tool providing a specification of the data capture component.

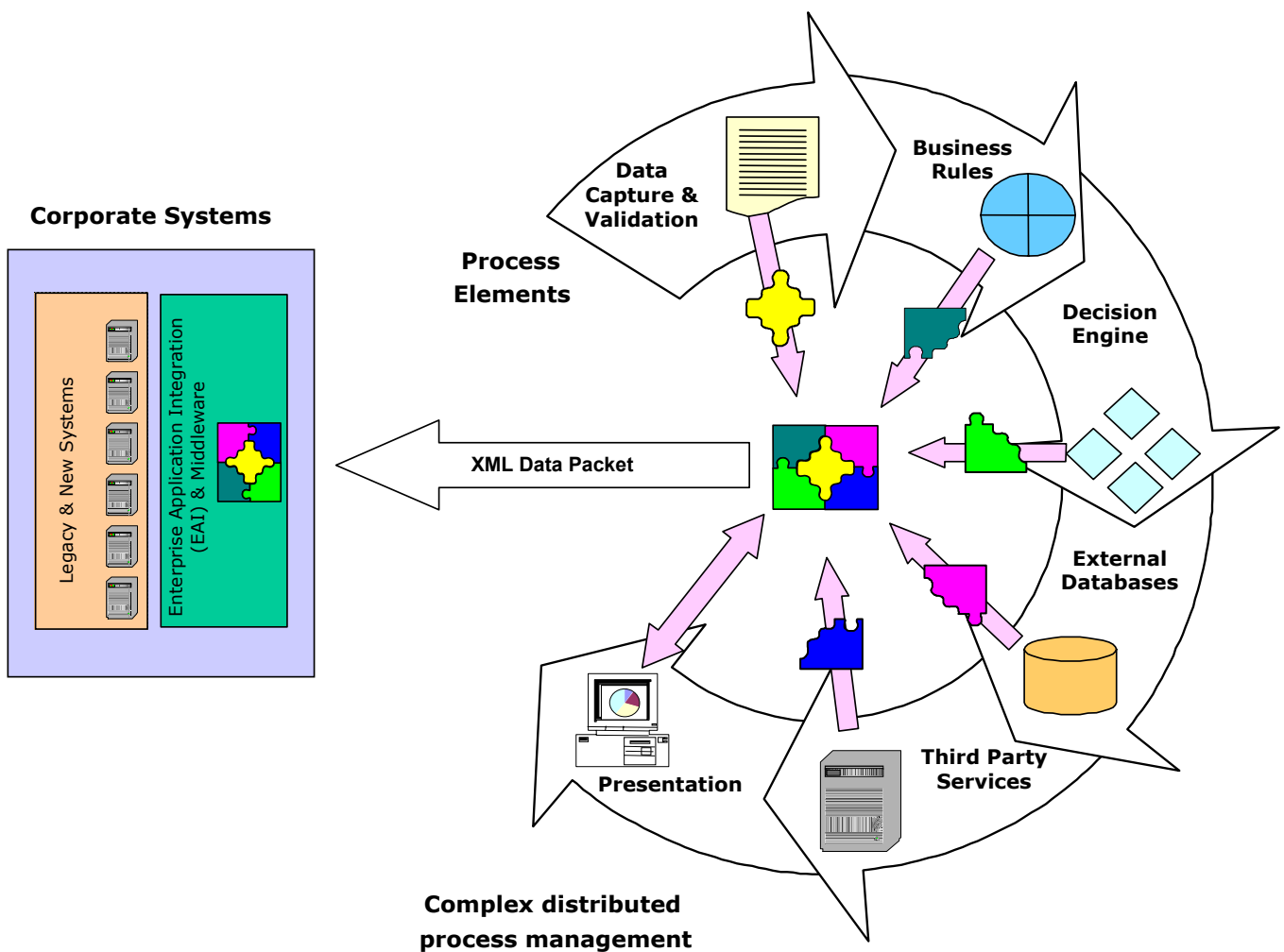


5.2 The goal:technology Vision

Our vision of **goal:technology** is as a collaborative process engineering tool-kit that enables business and IT users to manage complex distributed processes across different technical infrastructures and diverse applications, rapidly and cost effectively. Whilst data capture is important it only forms part of any business application. The data needs to be massaged, new data derived, it needs to be stored, retrieved, transmitted and presented in various ways to implement any particular process.

This will include accessing data from external databases and two-way integration

with decision engines and third party systems – based on goal:technology’s current ability to create and manage XML data packets as required to meet any particular industry or company XML messaging standards. This capability extends to the easy delivery of data to the corporate system(s). Building on this, it will ultimately handle all the stages of complex transactions from the initial capture of the data, through setting up the business rules, applying the them according to the decision process, completing the transaction by addition of further data and presenting the results back to user, to other systems or to the back office.



6 Conclusions/Summary

21st Century software is here and ready to help organisations overcome the challenges presented to their IT infrastructures by rapidly changing business processes, partners and problems. Supported by developments in messaging technology, it

satisfies the need for collaborative solutions that can easily change and be deployed anywhere in the value chain both inside and outside a company's enterprise. End users can now participate in the development of applications ensuring that their problems are solved not just for today but for tomorrow.

References and Further Reading

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Enterprise Integration with Workflow Management by Fred A. Cummins, Electronic Data Systems Corporation.

Interesting Times For Workflow Technology by Mordechai Beizer, Chair, AIIM Accreditation Workflow Subcommittee.

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