BUSINESS CASE: Examine benefits to be gained by decoupling business logic from existing code base and recommend a way ahead.

# Business Case History

## Approvals

This document requires the following approvals.

Signed approval forms are filed in the approval document section of the Project Initiation Document.

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| --- | --- | --- |
| **Name** | **Date of Issue** | **Version** |
| Edward Nicholson | 31/12/2015 | 0.2 |

# Background

The ability to reconfigure one software solution to service different customers and markets is key to the success of global software companies such as SAP.

Intelligent Enterprise Products (IEP), like many other software companies, need to support a diverse set of customers and each customer may operate in very different markets. Business requirements can therefore be very diverse.

Historically, each customer would normally be provided with a bespoke solution to comply with the various business rules and processes. However this introduces a high maintenance burden and drives up the cost of ownership. A better approach is required.

In addition, many customers would benefit from insight into the degree to which their business policies affect their operating costs and their ability to deliver effective services.

# Purpose

The purpose of this business case is to recommend an approach which will help Intelligent Enterprise Products to drive out maintenance burden and cost arising from diverse business rules and policies and deliver meaningful customer insights.

# Required Benefits

In summary, the business benefits sought from undertaking this research are:

1. To examine whether IEP could reduce cost of ownership for the current codebase.
2. To reduce the costs and time taken to implement new business requirements.
3. To reduce the level of technical knowledge required to introduce process change.
4. To provide greater customer insight on business rules and operating constraints.

# Options

As Intelligent Enterprise Products specialise in Microsoft Cloud Technologies, only Microsoft Products and Services have been evaluated. Similar capabilities may be available from other cloud providers.

Three main options have been identified and there are also 3 sub-options as follows:

Option 1 – Do Nothing

Option 2 – Build a traditional business rules engine

Option 3 – Use Microsoft Cloud Services

Option 3a – Adopt Workflow Services

Option 3b – Utilise BizTalk Services

Option 3c – Incorporate Machine Learning

## Description of Options

### Option 1 – Do Nothing

With Option 1, the company would continue to operate as before and embed business logic within their code base.

### Option 2 – Build a business rules engine

In the past, software companies who needed to decouple business logic created a bespoke business rules engine and this is a viable approach which the company could adopt.

### Option 3 – Use Microsoft Cloud Services

There are three Microsoft Cloud Technologies which may help IEP to deliver their required benefits. WCF (Workflow Services), BizTalk Services and Machine Learning. Each of these are discussed below in more detail.

#### Option 3a – Adopt Workflow Services

Workflows are a natural way to express the coordination of asynchronous work. Workflows are also effective at representing long-running business processes. The adoption of Workflow Services would allow us to represent business processes as a series of managed workflows and contracts.

#### Option 3b – Adopt BizTalk Services

BizTalk Services have been available on the Microsoft cloud since 2012 and the range of services available have been extended. A full SOA application can be built and deployed and this is particularly effective when supporting hybrid cloud solutions. This extends the approach described in Option 3a.

#### Option 3c – Incorporate Machine Learning

Machine Learning was made available in Europe as a cloud service in 2015 and Microsoft have provided a range of learning and support materials including a virtual environment for building and testing solutions. Data can be analysed to create ‘rules’ which can then be used to predict future outcomes using a wide variety of statistical approaches.

## Evaluation of Options

Option 1 would not deliver the required benefits sought by the company and accordingly ‘Do Nothing’ is not recommended. Minor improvements could be delivered by refactoring the existing code. These rules are currently distributed across the various business functions and as a minimum these should be consolidated to ease maintenance.

Option 2 allows business rules to be held within the database rather than the code base. Complex rules can then be created by linking new rules to more primitive rules rather like PROLOG language processing. This is a low-risk approach to the problem which has been followed successfully in the past. While maintenance costs are reduced and more complex rules can be implemented, a great deal of time would be required to build up and link complex rule sets and customer insight into the operational and cost impact of these business rules is often lacking. Nevertheless this would represent a marked improvement on the existing approach and decouple business logic from the code base. Business rules could then be introduced or modified without instigating a software release.

Option 3a (Workflows) and 3b (BizTalk Services) would both successfully decouple business logic from the code base but 3a would require a significant rewrite of the existing codebase and 3b is expensive to implement. For these reasons, 3a and 3b have therefore been rejected.

Machine Learning (Option 3c) demonstrates great potential to deliver the customer insight which the Traditional approach (Option 2) lacks but as the services are less-established, Machine Learning presents a higher risk approach than the traditional Rules Based Engine.

IEP are an innovative cloud-based company and consider further investigation into 3c may provide competitive advantage over the more traditional approach.

## Recommendation

It is recommended that an investigation be undertaken to determine merits and risks associated with the use of machine learning as an approach for decoupling business logic from code.

# Key Risks

**Risk**: In the interim period, no improvements would be made to decouple business logic from code.

**Mitigation**: Work will continue in parallel to separate out business logic and transfer business rules to the database.

**Risk**: Training Data used for Machine Learning may be inappropriate to future planning.

**Mitigation**: Careful selection of training data and comparison against different time periods.

**Risk**: Team workload may rise and take priority over project tasks

**Mitigation**: Company Directors are both graduates and recognise importance of final thesis.

# Timescales

This project must be completed by the pre-set deadline of the 1st May 2016, this includes finalising all documentation, deploying the final product and preparing for a final presentation on the 8th May 2016.