Foreword

This series of resources is not the complete answer to the task of implementing SIF within your organisation. It is however, a collection of the best available information at the time of writing.

The characteristics of the SIF community are:

- neutral environment,
- community approach, and
- contribution and transparency

The Implementation Working Group relies on the community approach and the contribution of its members. The aim of this is to provide valuable resource to aid colleagues in implementation and the planning process for the adoption of SIF.

These resources should be considered as living documents that will grow in effectiveness due to relevant contribution from adopters who have gone through the challenges of implementation.

On behalf of the current and future members of the community, we ask that if your hard won experience and knowledge are going to make the progress of other adopters less arduous, that you do not remain silent but you share your very relevant experience. Please email your comments to uk@sifassociation.org.

Thank you

Implementation Working Group
SIF Association UK
SIF Association UK
Implementation Planning Toolkit

Introduction

Some people make integrating technology sound easy, but others recognise that acquiring the best technology can be very complicated. If you believe that it is important to make good decisions about selecting, acquiring, implementing, and managing data integration this Toolkit is for you.

The purpose of this Toolkit is to provide school, local authority and Regional Broadband Consortia (RBC’s) personnel with the necessary information and resources to successfully integrate management information systems using the SIF Data Standards and SIF Certified software. It is designed to make it easier for people in educational settings to plan and make the best possible decisions as they implement the SIF Standards.

One of the keys to any integration project is in viewing all of the components as part of a system. The underlying theme of this document is that schools, local authorities and RBC’s interested in implementing SIF Certified software should see this as an opportunity to begin creating an Enterprise Information Management System (EIMS) for their organisation. To assist with that task, this Toolkit will walk you through the planning process from conception-of-need to the deployment of the technology based on the premise of that systemic approach, and a recognition that the integration will evolve over time. Within the Toolkit you will find the steps you should take to identify your data integration needs, consider your options, acquire the technology, and implement the SIF Solution that will serve you today and provide a foundation for the future.

There are seven major phases that a school, college, LA and/or RBC will need to engage in to achieve the first successful implementation. You may not need help with all of them, but to make this planning process simple and relevant, this guide has been developed in the context of a typical project that might be undertaken by a local authority.

What is Presented in This Toolkit?

The focus of this document is primarily about integrating SIF Certified software that is used to meet administrative and instructional needs in the context of establishing an Enterprise Information Management System. It should be clearly understood that the technical standards and relevant products will mature over time. Hopefully you will find the in the set of generic questions presented, many that will help you with your decision making process both now and in the future. These are common-sense, experience-based ideas, rather than approaches tied to specific situations or products. These ideas are based upon experience implementing integration technology within schools, local authorities and RBC’s across the country.

This Toolkit contains information about project planning, data management, computer hardware, software, and networking, as well as budgetary and human resource concerns. This information relates to the use of integration technology as a tool for:

- Managing information management activities related to instruction.
- Improving decision making by providing information that is timely, accurate, and comparable.
- Automating and streamlining day-to-day operations.

This Toolkit was designed to provide educators with a process for getting the best possible technology solution for your school and/or local authority. Within the kit, you will find a series of steps that you should take to:

- Identify your data and systems integration needs
- Thoughtfully consider your options
- Acquire the appropriate technology,
• Implement a solution that will serve you today
• Provide a foundation for the future.

This kit covers a variety of issues you are likely to encounter during the process. You may not experience all of them, but you should be aware of them so that you can ensure that the solution you choose will reflect your organisation's needs and the context in which your school, local authority or RBC works.

Who Should Use This Toolkit?

This Toolkit was developed for people in one of three roles:

• Persons who will be providing executive leadership to the data integration initiative;
• Persons who have been given the responsibility to manage the data integration in an education organisation;
• Persons who will be responsible for data integrity within any applications which will be part of the implementation.

The individuals who might fill these roles include principals, business managers, information technology staff, technology coordinators, school administrators, food service staff, librarians, integrators, consultants and others. They may be the ones with final decision making authority over what will be done, or they may make recommendations to the ultimate decision maker.

If you perform one of the roles mentioned above, this kit will help you answer real-world questions about how - and how not - to go about the process of putting SIF-enabled technology into place. The expectation is that as you go through the process outlined in the kit, you will find a number of useful ideas that can be applied to your specific situation.

The Toolkit is not designed to cover the range of technical issues one might encounter during a SIF Implementation. The document is focused on those non-technical issues, yet it includes terminology and concepts basic to understanding this technology. Definitions are provided throughout and can also be found in the glossary.

The guidelines provided in this Toolkit are expected to be most useful to persons in schools, local authorities or RBC's. The examples were obtained from different types of education organisations who have actually engaged in SIF Implementations.
# Table of Contents

**Foreword** .................................................................................................................... 2

**SIF Association UK** .................................................................................................... 3

**Implementation Planning Toolkit** ................................................................................ 3

- Introduction ..................................................................................................................... 3
- What is Presented in This Toolkit? .................................................................................. 3
- Who Should Use This Toolkit? ....................................................................................... 4

**Table of Contents** ........................................................................................................ 5

**How SIF Works** .......................................................................................................... 9

- Data Objects and Agents .................................................................................................. 9
- Elements of a SIF Zone ..................................................................................................... 10
- SIF Zone Functions ......................................................................................................... 10
- Creating an Enterprise Information Management System ............................................. 11

**Planning for Success** .................................................................................................. 14

- Making Project Decisions – A Quick Guide ................................................................... 14
- Data Integration Project Management ............................................................................ 15

**STEP I - Assess Needs** ................................................................................................ 17

- You Know You Want to Be There! – Knowing What You Need ........................................ 17
- What Is A Needs Assessment? ......................................................................................... 17
- Who Should Carry Out Your Assessment? ....................................................................... 17
- Who Should Participate In The Needs Assessment Process? ......................................... 18
- What Tasks Are Involved In the Needs Assessment Process? ........................................ 19
- Identifying the Needs ...................................................................................................... 19
- Reviewing and Prioritise the Needs ............................................................................... 20
- Key Questions To Ask About Your Organisation’s Data Synchronisation Needs ............. 21
- Report the Results ........................................................................................................... 22

**STEP II - Developing the Programme and** ................................................................ 23

**Project Plans** .............................................................................................................. 23

- Why Plan? ....................................................................................................................... 23
- Why should we consider implementing SIF Interoperability as a Programme rather than as a single Project? .................................................................................. 23
- Where do we start? .......................................................................................................... 24
- What are the differences in these plans? ......................................................................... 25
- Who Is Responsible For The Project Plan? ..................................................................... 26
- What goes into the Project Plan? .................................................................................... 26
- Planning Process ............................................................................................................. 27
- Selecting a Project Manager ........................................................................................... 27
### STEP III - Define Requirements ........................................................................................................... 28
1. Introduction ........................................................................................................................................ 28
2. Requirement Conventions .................................................................................................................. 28
3. Data Integration Requirements ........................................................................................................... 29
4. Business Process Re-Engineering ...................................................................................................... 31
  Appendices .......................................................................................................................................... 32
  Writing Your Requirements .................................................................................................................... 32
  Presenting Your Findings: The Requirements Walk-Through ................................................................. 32
  Functional Requirements ...................................................................................................................... 32
  What Should Be Included in the Functional Requirements? ................................................................. 33
  Technical Requirements ....................................................................................................................... 35

### STEP IV - Information Governance .................................................................................................... 37
  Data Protection ..................................................................................................................................... 37
  Data Quality ......................................................................................................................................... 38
  Data Security ....................................................................................................................................... 39
  SIF Security ......................................................................................................................................... 39

### STEP V - Establish an Implementation Strategy .................................................................................. 42
  Assumptions ......................................................................................................................................... 42
  Steps ...................................................................................................................................................... 42
  High Level Deliverables ....................................................................................................................... 44

### STEP VI - Pilot Implementation: Key Considerations ........................................................................... 45
  Identify Risks ....................................................................................................................................... 45
  Scheduling Your Pilot Project ................................................................................................................ 45
  Monitoring the Progress of the Pilot ...................................................................................................... 45
  Handling Schedule Slippage .................................................................................................................. 46
  How Do You Make Sure the Data Integration is working? ..................................................................... 46
  Issues Tracking Log ............................................................................................................................... 46

### STEP VII - Conduct User Training .................................................................................................... 47
  Knowing How to Train Users ................................................................................................................ 47
  Who Should Receive Training? ............................................................................................................... 47
  When Should Initial Training Be Provided? ........................................................................................... 47
  What types of training are needed? ......................................................................................................... 48
  When is additional training needed? ..................................................................................................... 48

### STEP VIII - Supporting, Maintaining and Growing Your SIF Data Integration Solution .................. 49
Who Should Serve On A Data Integration Steering Committee?...........................................49
How Should The Data Integration Steering Committee Be Managed?........................................50

Appendix A: TEMPLATE - NEEDS ANALYSIS ........................................................................51
Appendix B: TEMPLATE – PROGRAMME PLAN .................................................................52

  Programme Version Control .................................................................................................52
  Overview ...............................................................................................................................53
  Programme Purpose .............................................................................................................53
  Programme Scope ................................................................................................................53
  Programme Objectives .........................................................................................................53
  Assumptions .........................................................................................................................53
  Approvals .............................................................................................................................54
  Programme Approach ..........................................................................................................54
  Programme Deliverables and Quality Objectives ...............................................................54
  Roles and Responsibilities .....................................................................................................54
  Dependencies .......................................................................................................................55
  Plans for Support Activities .................................................................................................55
  Programme Resources and Facilities ....................................................................................55
  Risk Management ................................................................................................................55
  Quality Management System ..............................................................................................56
  Projects .................................................................................................................................56
  Programme Control ............................................................................................................56
  Programme Schedule ..........................................................................................................57
  Appendices ............................................................................................................................57

Appendix C: TEMPLATE – PROJECT PLAN .........................................................................59

  Project Version Control ........................................................................................................60
  Overview ...............................................................................................................................60
  Programme and Project Purpose ..........................................................................................60
  Project Scope ........................................................................................................................60
  Project Objectives ................................................................................................................60
  Project Stakeholders .............................................................................................................61
  Assumptions ........................................................................................................................61
  Approvals .............................................................................................................................61
  Project Approach ................................................................................................................61
  Monitoring Project Deliverables and Quality Objectives ....................................................61
  Roles and Responsibilities .....................................................................................................62
Appendix D: TEMPLATE – DATA INTEGRATION REQUIREMENTS ........................................... 67
Appendix E: TEMPLATE – FUNCTIONAL REQUIREMENTS............................................ 68
Appendix F: TEMPLATE – DATA MAPPING ...................................................................... 69
Appendix G: TEMPLATE – HIGH LEVEL DELIVERABLES ............................................. 72
Appendix H: TEMPLATE – ISSUES TRACKING LOG ...................................................... 74
Appendix I: READINESS TOOLKIT .................................................................................. 75
  Readiness Survey ........................................................................................................ 75
  Scoring the Survey ...................................................................................................... 81
  Measuring your data integration readiness ............................................................... 83
  Readiness Measurement Table .................................................................................. 84
  Readiness Rating Worksheet ...................................................................................... 85
  Readiness Assessment ............................................................................................... 86
  Extended Analysis ..................................................................................................... 87

SUPPORTING DOCUMENTATION .................................................................................. 88
  INVITATION TO TENDER (ITT) .................................................................................. 89
  SIF IMPLEMENTATION PLANNING QUESTIONS ....................................................... 92

GLOSSARY OF TERMS .................................................................................................. 94

Individual templates are available to download from the SIF Association UK website (www.sifassociation.org/uk).
How SIF Works

Beginning in late 1998 a group of dedicated software engineers and educators began the development of the SIF Implementation Specification to enable software application to share data quickly, dynamically and securely. This group, which has expanded over the years, was drawn from companies and Local Authorities (LA) large and small, and from all across the education, skills and children’s services landscape. They represented countless years of institutionalised software development and database design, and each had a vested interest in preserving the systems they helped create. But they also realised that enabling software programs to “talk” to each other and share data was so important that they needed to overcome their own company focused view of the problem. They needed to develop a solution that was flexible, scalable, reliable, secure and affordable, both for the schools as well as the suppliers.

Their solution, the SIF Zone, meets all of these needs. The SIF Specification views a school or LA as a single system of data in which the software applications make up the component parts. This logical grouping of software applications is called the SIF Zone.

At the centre of this Zone is a software application called a Zone Integration Server (ZIS). This program serves as the “central nervous system” of the Zone by tying together all of the applications, facilitating their communication and regulating their activities (see image at right). The school / college / local authority / RBC’s technical administrator determines the manner in which a ZIS structures the Zone, including all security and authentication parameters.

Data Objects and Agents

Many of the companies involved in the initial creation of the Specification had already invested significant resources in developing and maintaining software applications. The question was how to get each of these different, and sometimes competing, software applications to talk to each other and share data.

The answer was twofold: the Data Object and the Agent.

A Data Object is a standard definition of some piece of school system information. For example, a learner’s name, address and phone number are part of the “LearnerPersonal” Data Object. By having different software programs understand this common definition of a learner, it is possible for them to share this information properly.
The SIF Specification currently defines many Data Objects with more to be defined as the Specification evolves. By agreeing on these definitions, SIF makes it possible for software programs built on different platforms and with different database designs to share data.

How each application moves and processes these Data Objects is the job of the **SIF Agent**. The list of things this Agent is required to do is documented in the SIF Specification. Because this functionality is specified in a standard format, software suppliers have some choice about how this Agent functionality is added to their software applications. Some suppliers have chosen to make the Agent functionality built into their application, while others have chosen to have the Agent run as a separate module or service. Regardless of how it is implemented, all Agents produce the same results, because the rules for Agent behaviour are specified and agreed upon.

### SIF Zone Functions

Now that we understand the parts of a SIF Zone — the ZIS, the SIF Agents and the Data Objects — let’s take a closer look at how a Zone functions. A SIF Zone uses a “publish and subscribe” model, which is similar to how you get a magazine delivered to your home. Unless you register with the magazine you will not receive it. (We’ll leave junk mail out for the moment). Once you have registered with the magazine, subscribed in fact, you receive a copy of the magazine whenever it is published.

SIF Agents do the same thing in a SIF Zone. Once a ZIS is set up, each SIF-enabled software application registers with the ZIS so that it can communicate with the SIF Zone. An Application can then act as a provider for and/or a subscriber to various Data Objects. In a basic example, a Management Information System (MIS) might act as the provider of the LearnerPersonal Data Object and a Library or Catering Application would subscribe to events for that object. Since each of these applications is part of the Zone, whenever there is a change to learner information in the MIS, the MIS would publish an Event that is relayed by the ZIS to all subscribers. This lets them know that a change has taken place (see Overview of a SIF Zone and SIF Messaging on Pages 6-8).

Because of the way a Zone is configured, all of this notification happens instantly and automatically. As a result, as soon as a new learner is added to the school or someone’s phone number is updated, that information is automatically transferred to all of the subscribing systems and updated almost instantly. In addition, because of the way the Zone is
configured, it is possible to distribute this information to as many systems as are authorised to receive it, eliminating large amounts of data entry.

Creating an Enterprise Information Management System

SIF “works” when a software application using its Agent sends out a message to the ZIS with information that another software application needs. The ZIS forwards that information onto the requesting application through the receiving application’s Agent. SIF-enabled software applications and Agents don't talk to each other directly; each application talks to its Agent which talks to the ZIS, which in turn handles all further communication. The ZIS’ role as a “third-party message handler” means that the SIF framework is easily expandable, very reliable and relatively straightforward for software companies to write Agents for. As you can see, creating an enterprise information management system to move data has tremendous advantages for school management. By moving data quickly and accurately, costly and redundant data entry is eliminated, freeing staff to focus on delivering services directly to learners. In addition, because all of the data is based on the same source, changes are distributed quickly.

This guarantees that everyone has access to the most current and accurate data available. However, creating an Enterprise Information Management System (EIMS) for school data management requires more than just SIF-enabled software. It also requires that the school, local authority or RBC undertake a system-wide analysis of what data is currently collected and some decisions about how this data is to be shared.

Because of the flexibility inherent in the SIF model, schools, local authorities and RBC’s can establish a wide range of business rules that meet their particular needs and then implement SIF Certified applications in support of those rules. However, without agreement within a school, local authority or RBC about issues such as data ownership and clarity surrounding which establishments or individuals are responsible for adding or updating data, establishing a fully functional SIF Zone would be a difficult task.

The underlying premise of SIF — creating a uniform and unified data system — can act as the catalyst to the kind of management review and business reengineering in education, which many private sector businesses undertook a decade or more ago. By looking at their data management and operational systems from a data perspective, many businesses were able to implement technology to improve efficiency and help improve their operations. SIF offers the same opportunity to schools today. With budgets under scrutiny, operational efficiency and the ability to generate valid and timely reporting is critical to the successful operation of a school, local authority or RBC. By taking a systematic approach to data management, and by implementing SIF-enabled software to support those systems, schools can redirect resources and staff from redundant data-centric tasks to more valuable child centred education.

This Toolkit is designed to help work through the internal review necessary to establish an EIMS and to implement SIF Certified software in support of that system.
## Overview of a SIF Zone & SIF Messages

### Traditional Set-up

- The situation in many schools and school systems is that there are a series of software applications which all may require the same data, but which have no way to talk to each other.
- It may be possible for one or two applications to share data through proprietary methods, but open, dynamic and synchronised data sharing does not occur.

### SIF Zone

- A SIF Zone is a logical grouping of applications, in which each application has an Agent that communicates with other Agents through the Zone Integration Server (ZIS).
- The ZIS handles all security information and message routing.
- A SIF Zone is platform independent and supplier neutral, meaning that all data can be shared dynamically.

### Agent Registration

- Each Agent sends a SIF_Register message to become part of the Zone.
- The ZIS then sends an acknowledgment or SIF_ACK message to confirm the registration.

### SIF_Provide

- An application wishing to serve as the Provider of a data object sends a SIF_Provide message to the ZIS.
- The ZIS enters this information into the Access Control List (ACL).
Each application wishing to subscribe to this data object sends a SIF_Subscribe message to the ZIS.

Any events generated for this object will be sent to all Subscribers.

The Provider may also be a Subscriber.

In this example, the MIS application is the provider of the LearnerPersonal data object and the other applications are subscribers.

When a new learner is added to the MIS application, a SIF_Event is generated.

This SIF_Event informs all of the subscribing applications about the addition, and each application in turn processes the new learner into their database.

In this example, the MIS application is the provider of the LearnerPersonal data object and the other applications are subscribers.

The Library application has just been installed and needs to be populated with existing learners. The Library application, through its Agent, sends a request for all learner records.

Upon receiving the SIF_Request, the MIS application sends a SIF_Response to the ZIS containing all of the learner record information.

The ZIS forwards the request to the requestor, in this case the library system, and the library system is now synchronised with the MIS without the need for manual re-entry of all of the learner records.
Planning for Success

If you are considering a SIF implementation there may be work on-going elsewhere in your sector e.g. it would be advisable for you to contact your LA if you are a school. It would be advisable to consult with all stakeholders before initiating a project independently.

Making Project Decisions – A Quick Guide

The decision making process established for a project is critical to its success. If the process is not well defined, there is a high risk of producing a solution that is not aligned to the needs.

Consider the following analogy that is commonly referred to when broaching the development of a solution to meet a need:

*You have been approached by a school with a request for a swing desired by the learners in a school. The vision for the swing is in box 1.*

1. As Proposed by the Project Sponsor
2. As Specified in the Project Plan
3. As Designed by the Project team
4. As Built by the supplier
5. As Installed by the Staff
6. What the learners Wanted

You think this is a great idea and they generate a Project Board with a sketch of the swing (shown above in Box 2) to the project team.

*The Project Board send an e-mail to the Project Manager telling them that the School wants a swing built at the school. The Project Manager writes up a work order which is taken on by a member of the Project team who has time to design it for someone else to build. The specifications will result in Box 3.*

*A supplier has been assigned the task of building the swing. They review the specifications and immediately determine that the design won’t result in a swing that works. Modifications are made and the product in Box 4 is made available for installation.*

*The school premises officer doing the installation receives the swing, determines that the tree that is to hold the swing needs to be modified to allow the swing to swing. The result is Box 5.*
Once the learners see the result of their request, they are mortified. All they wanted was a tyre swing that would be hung from a branch of the tree as in Box 6.

It is probable that you’ve seen lots of really efficient swings but because you’ve never built one you may not have a clue on how to get started. The key to ensuring that the successful implementation of SIF will meet your needs and that the anticipated benefits will be realised is to follow a proven logical process for sound decision making. You must identify your data sharing requirements and keep them in the forefront. How will you know when you have completed the task if you have no concept of where you are going?

**Data Integration Project Management**

There are many published methods for building technology solutions of all types and levels of complexity. Regardless of the variety, these generally contain a similar set of elements. This document describes the different steps of the process in a way that will help to meet your specific needs. Specifically, you will find guidance on the following steps:

1. Developing a project Plan which:
   a. defines your overall purpose, objectives, goals, and assumptions,
   b. identifies project participants along with their roles and responsibilities,
   c. establishes timelines.
   d. success criteria
2. Beginning a project plan organised by objective, defining each task and the steps needed to undertake the task.
3. Conducting a needs assessment and defining your requirements.
4. Describing your current environment.
5. Evaluating options and determining your implementation strategy.
6. Implementing the selected technology solution(s).
7. Training the users.
8. Making plans for supporting, maintaining, and growing your technology solution on an ongoing basis.
These steps are illustrated here:

The rest of this document is designed to provide your SIF Implementation Project Team with some ideas, suggestions and tools to guide you through the various steps of this process. Following this map will lead you to make the decisions that will best meet your data integration needs.

**Project Management Resources**

Joining the SIF Association will give you access to people who have practical experience of implementing SIF. You can attend a conference if you are not a member. The dates of meetings are available on the SIF Association web site. Contact uk@sifassociation.org if you would like to attend a conference or for more information.

Many useful resources and case studies are available from the SIF Association UK web site (www.sifassociation.org/uk).

You may find the services of an external consultant, your RBC or LA helpful in the early stages of your project.

Dependant on the scale, complexity and risk of the project you may consider using professional project management services.
STEP I - Assess Needs

Objective: By the end of this section you should be able to successfully engage in a Needs Assessment that will serve as the foundation for your data integration project.

Synopsis: One of the key elements to constructing a successful Management Information System (MIS) is having some clear ideas about what you want to be able to do with your data. The following section is designed to help you gather all the possibilities (the needs assessment) and lead you to consider the priorities for your data integration solution. This section describes the purpose of the Needs Assessment, who conducts the Needs Assessment, the specific tasks to be undertaken and the structure of the Needs Assessment Report.

Output: Needs Assessment Report

You Know You Want to Be There! – Knowing What You Need

One of the key elements to constructing a successful Management Information System (MIS) is having some clear ideas about what you want to be able to do with your data. Chances are that there are people who work with you who have additional ideas about what would be valuable. The following section is designed to help you identify the possibilities (i.e., perform a needs assessment) and lead you to consider the priorities (i.e., define your requirements).

What Is A Needs Assessment?

Often a needs assessment is an evaluation of the existing environment and capabilities of an organisation in order to determine what interventions will be needed. In the case of technology implementation, a needs assessment is an evaluation of the needs you hope the technology will meet. You should try to think of all the ways in which linking your organisation's data systems could make your operations easier and more effective. Begin by defining your business requirements and identifying the characteristics of the data that you need shared between or among software systems.

It is probable that the SIF standards encompass most, if not all, of your current data needs, so you can then identify the SIF objects and data elements that currently apply and which SIF Certified applications support those data objects. If there happen to be any data that you require and which are not covered by the SIF standards you are able to request that SIF add those data in a future release of the specific application.

Who Should Carry Out Your Assessment?

An important step in defining your data sharing needs is to look at the entire data management enterprise for your organisation. If you miss this step, the needs you identify may be just a small portion of the overall data integration need.

To manage integration strategy takes organisation, coordination and cooperation. The result will be better than if all your separate needs are dealt with independently. Keep in mind that selecting a solution or set of solutions that meets all of your organisation's data sharing needs may compete with other potential uses of the organisation's scarce resources. If the organisation has a Technology Plan it would be wise to have this project included within it.

Ensuring that there is strong support from the top of the organisation is also a critical success factor; it is important that key member or members of senior management be identified as the project “champion(s)” (SRO - Senior Responsible Owner - is the phrase used in some circles) and should take the lead. Without such sponsorship, hurdles across departments can become insurmountable, doors will remain closed, agendas will remain unchanged, and the risk of failure increases dramatically. An external perspective can be useful in identifying needs or impediments that those most closely involved can miss. As a result, you may want to bring someone with systems integration experience into the organisation that is able to explain what is possible and to help guide you through the process.
Who Should Participate In The Needs Assessment Process?

All staff involved in data management and usage should be involved in defining the needs for data sharing. These can include:

- Administrators (at all levels)
- Teachers
- Instructional & administrative support staff
- Technical support staff

It is the individuals involved in daily operations who are the ones ideally suited to define data sharing requirements because, although they may not have a full grasp of technology, they are the ones who are most familiar with the organisation's functions and current needs. Typically they are the instructional or administrative staff that is trying to provide and manage effective instruction or efficient administrative support.

Administrators generally need summary information at a broader level of detail than their staff. For these participants, the data integration problems must be presented in a way that describes the organisation's operations and potential impact data sharing can have on efficient use of resources as well as decision making. It is critical that administrators first gain a good grasp of the entire data management enterprise across the LA in order to appreciate how serious the data integration problem is. The list below is examples of the types of database applications one may find in a local authority:

- MIS
- VLE
- 14-19
- e-Portfolio
- Finance
- Library
- Timetable
- Cash-free services
- Print
- Network Access
- Physical Access (buildings, rooms, lockers)

Instructional staff are another extremely important category of users that benefit from electronic data sharing. Their jobs include such tasks as grading, managing class assignments, reporting on learner attendance, writing lesson plans, or developing interactive or multimedia learning activities for their learners. Any one of these tasks may be assisted by a computer-based tool; however, it's unlikely that any linkages between them exist today. Teachers are also an excellent source of ideas on how they could leverage interoperability in order to address the needs of their learners.

Technical support staff will be charged with maintaining and supporting the data integration technology. Because SIF in your organisation may require a wide area network, they should be intimately involved in the needs assessment. They will likely have concerns related to the following:

- The data integration tools compatibility with the existing infrastructure, equipment and software
- Adherence to technical standards
Network and system capacity (e.g. amount of transactions it can process simultaneously, per day or per month, number of applications to be integrated, back-up issues)

Wide area network requirements (e.g. stability of network connections, connectivity, centralised vs. decentralised applications)

Information Technology or research staff may also have insight into the basic information requirements of others throughout the organisation, especially if they are the ones constantly asked to generate reports combining disparate types of information from different sources.

You may also want to consider involving your clients – learners and parents. They will be the ultimate beneficiaries from integration services because they are constantly asked for the same information to update these multiple systems. They may also have different or fresh ideas about concerning data integration needs.

It's clear that there are many groups of individuals that can be impacted by implementation of the data integration technology and their needs should be assessed. If it is not possible to include them all in the needs assessment process, consider involving representatives of each group. Recruitment of individuals who are applying “best practices” will result in getting the most reliable information on which to build your integration solution.

**What Tasks Are Involved In the Needs Assessment Process?**

Once the major requirements have been identified, you can begin collecting more specific information. You may want to handle the needs assessment as a project of its own even though it is really just one piece of the planning process. It is important that the decision makers have all of the information they need in order to make appropriate, educated decisions.

Once you have recruited the participants who will provide input to the needs assessment, you will need to identify, review and prioritise the needs.

**Identifying the Needs**

This part of the process can take some time and should be managed carefully. Establish a realistic schedule and stick to it as closely as possible. Provide all participants sufficient time to be heard and listen carefully, often individuals will find it difficult to describe a problem because they would rather solve it. Another situation you will likely discover is that issues are identified, but no one is sure of the underlying reasons behind them. Your job is to probe deeper to try and uncover those factors.

There are several methods that can be utilised to collect information for defining data integration needs. The following table contains a few examples.

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Approach Assets</th>
<th>Approach Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Survey</td>
<td>Structured interviews that take place over the phone, are short in duration, and mediated by trained interviewers, instead of self-administered by respondents.</td>
<td>Provides control over the number of respondents. Interviewers ensure accurate and complete questionnaire completion. Allows for gathering information rapidly along with choice of the most appropriate sample group.</td>
<td></td>
</tr>
<tr>
<td>Written</td>
<td>Survey instrument designed to capture needs from</td>
<td>Consistent format allowing for easy compilation of results.</td>
<td>Questions need to be carefully constructed to avoid</td>
</tr>
<tr>
<td>Method</td>
<td>Description</td>
<td>Approach Assets</td>
<td>Approach Liabilities</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------</td>
<td>------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>individuals independent of time or place.</td>
<td>Convenient for respondents.</td>
<td>misinterpretation. Because the results are self-administered by respondents return rate can be low and quality of information can be poor.</td>
</tr>
<tr>
<td>Interviews: One-on-One</td>
<td>Meeting with individuals using a list of questions designed to elicit responses that reveal needs.</td>
<td>Personalised approach encourages sharing and allows for deeper exploration into topics.</td>
<td>Requires significant time investment. More difficult to draw conclusions across multiple sources.</td>
</tr>
<tr>
<td>Interviews: Group</td>
<td>Meeting with a group of individuals using a list of questions designed to elicit responses that reveal needs.</td>
<td>Works well when the group is comfortable with one another and can provide a well rounded exploration and identification of needs. Better use of time than individual interviews.</td>
<td>Groups may intimidate some participants which will limit the amount of information that is revealed.</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>The convening of a small group of people (8-10) for question-driven discussion about needs under the guidance of a moderator.</td>
<td>Provides insight into peoples' shared perceptions and allows for time-efficient direct involvement of multiple users.</td>
<td>Some staff may limit their participation because groups intimidate them. Requires thoughtful preparation of a skilled moderator.</td>
</tr>
<tr>
<td>Direct Observation</td>
<td>Analysts observe users at their place of work in order to identify data sharing needs.</td>
<td>Users are behaving in their natural habitat, instead of an artificial environment. Reveals needs arising from everyday situations that the users may not articulate in other settings.</td>
<td>Can be time-consuming and being observed can make some staff uncomfortable.</td>
</tr>
</tbody>
</table>

The following questions could be used in a data integration needs assessment for an education agency.

1.  What is your job?
2.  What are the principal types of information you deal with in your job?
3.  Where does the information come from?
4.  How is the information collected and maintained?
5.  Who uses the information and what do they use it for?
6.  What is the primary mechanism used for communicating the information?

**Reviewing and Prioritise the Needs**

Following the collection of the information regarding your organisation’s data integration needs, you will need to analyse, sort, filter, and finally disaggregate the needs that have been expressed. The review process first involves studying the input with a goal of identifying the major needs that were described. This activity is highly organisational in nature and will typically begin with general, high-level requirement statements.
Upon review of the data sharing requirements that were revealed during the data gathering process you will likely be able to come up with a basic listing of all systems that could benefit from linkages working between or among them.

Most SIF Implementations have begun with the synchronising the basic learner enrolment process between systems. Put quite simply, when a new learner enrols, basic elements from their enrolment record in the MIS are published for consumption by other applications. For example, the learner may need an identification card so the system that provides that service may need to receive the data and a network account to log on to the network.

Begin by creating a list of all of them followed by statements of data sharing need.

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Management</td>
<td>System used to manage learner records throughout their academic career in school or college.</td>
<td>The learner management system needs to share data with the lunchroom, library, transportation, and classrooms.</td>
</tr>
<tr>
<td>Food Services</td>
<td>System used to manage the distribution and consumption of learner meals.</td>
<td>Food services needs to know specific information about learners in order to serve their nutritional needs.</td>
</tr>
</tbody>
</table>

See Appendix A for a Needs Analysis template

Once information has been gathered, you must review the needs and determine which ones are most important for inclusion in your integration solution.

First, you must extract the key information - the statements of discrete, separate needs, each of which can be assessed and addressed. Hopefully, many participants will cite the same or similar needs. Keep these needs to a reasonable number, perhaps by listing the needs at a fairly general level. Remember, at this point there is no need to think about how the actual technology will work; focus on what data the participants need and want.

Now you must prioritise the needs. It is likely that the set of needs you have gathered is a mixture of things that could best be addressed in a number of different ways:

1. Some needs (such as ones involving repetitive tasks and mass storage and retrieval of data) are best carried out using technology
2. Some other needs or tasks are best done manually
3. Some needs are problems that can be solved by changing your organisation's policies and procedures
4. Finally, some needs simply do not make the cut. You can afford to defer or ignore them, and live with the consequences

The more linkages established between applications, the more costly and difficult it may be to implement and support. Caution is recommended when working with users not to raise expectations prematurely, so do not promise the participants that the links will occur right away. Adapt the following questions and use them as a guide for prioritising.

**Key Questions To Ask About Your Organisation's Data Synchronisation Needs**

Because this project will require dedication of budgetary resources, it is a good idea to link needs to the organisation’s mission, vision and goals. You can easily make these links by answering the following questions:

How will meeting this need support the organisation’s mission?
Who will benefit from this need being achieved and how?
Would meeting this need aid the LA in meeting its goals?

The needs you define at this point, and the priorities you attach to them, will be used during the next phase of the overall process: development of the implementation strategy.

**Report the Results**

This could be the Interface Matrix – a version used is the Birmingham POC but perhaps better represented visually as a stakeholder diagram or more technically as information ‘choreography’

The Report will include a summary of the Needs Assessment Process

- Stakeholders
- Interview /workshop notes
- Basis for prioritisation
- Recommendations
STEP II - Developing the Programme and Project Plans

**Objective:** By the end of this section you will have an understanding on how to create and use Programme and Project Plans with which to establish projects resulting in effective data interoperability.

**Why Plan?**

There is a temptation to see programme and project management as an expensive luxury which can be safely ignored. However...

- ...have you ever tried to develop a teaching and learning project without learning objectives?
- ...or get funding without a plan on how the funds will be used?
- ...or host a meeting without an agenda?

The result is often chaos and anarchy at worst and inefficiency and redundancy at best.

With federated technologies such as SIF, the risks associated with lack of, or poor, planning are magnified through:

a) More organisations participating and being reliant on others.

b) Learner’s education being adversely impacted.

**Why should we consider implementing SIF Interoperability as a Programme rather than as a single Project?**

Implementing data interoperability will generally require the engagement of multiple application suppliers, multiple teams in schools & local authorities, and 3rd-party systems integrators. Each will need to devote resources and changes to business process outside the direct control of the management of the interoperability implementation team. The timely, or otherwise, availability of outputs from one organisation can impact the delivery in another.

The complexity of managing federated arrangements after implementation is not covered in this document, but there are some transferable lessons.

As resource allocation and change management in any organisation will generally lie with its own senior management, each will want / need to establish in-house projects with its own executive sponsor and the internal project board controlling their own teams and resources. The outcomes of these projects will feed into the overall interoperability programme. Typically, implementing SIF will involve a minimum of 6 stakeholder groups;

- school MIS team,
- school VLE team,
- MIS supplier,
- VLE supplier,
- ZIS supplier, and the
- LA team.

Each will have their own project team with work packages and deliverables.

At a simplistic level, a Programme is a portfolio of Projects selected, planned and managed in a co-ordinate way.
Where do we start?

It is true that SIF is a technology solution, but all technology solutions should support a solution required by the business. Before you can fully consider implementing SIF Certified products and solutions, you have to decide what you are trying to achieve. This is not an easy task, especially as key influencers will not necessarily know everything that this technology can and will deliver.

The Programme Plan is one of the first steps and is a single, consolidated source of information about the programme and projects in terms of initiation and planning, and provides information about scope, objectives, work packages, teams, deliverables, risks, and issues across the whole implementation. It lays the foundation for how the programme will be structured, and how it will be managed in terms of change control across projects, oversight & control, and risk & issue resolution. Each Project will have its own plan which reflects what is coming through from the Programme Plan.

The Programme Plan and Project Plans are tools to help you scope and obtain commitment from all of the affected groups and individuals within yours and other organisations who are associated with it.

These are not only effective planning tools, but are also communication vehicles that can be referenced throughout the implementation. They offer quick references and overviews of the implementation, why it is being conducted, who is involved and in what capacity, and the general approach and timeline that exists for the implementation.

The Programme Plan can most succinctly be described as the agreement between the participating organisations defining:

- The overall high level Business Case
- The required outcomes
- The dependencies between projects
- The success indicators; overall and for each project
- The sign-off process including user acceptance testing
The Programme Business Case will include the impact on personnel, changed working practices, training, data quality, and security as well as the technical requirements. For example; it is pointless implementing a technical solution which propagates dirty data across many applications.

The Programme will have an Executive Sponsor who is an individual with overall responsibility for ensuring the programme meets its objectives and delivers the projected benefits. This individual should ensure that the programme maintains its business focus, has clear authority and that the work, including the risks, is actively managed. The Executive Sponsor represents the customer and owns the Business Case. Typically, the Executive Sponsor will be a first or second tier local authority officer or a Head Teacher. From experience: the lower the empowerment, the greater the risk of programme failure.

The Programme will be supported by a Programme Manager whose role is to ensure that each of the Projects, through the individual Project Managers, delivers on-time, on-budget and to specification.

The Programme may be supported by a Programme Office depending on the number of projects, work packages and deliverables.

The Programme is managed by a Board consisting of the Executive Sponsor (who chairs the meetings), a Senior User (accountable for ensuring that the user needs are specified correctly and the solution meets those needs), and a Senior Supplier (provides knowledge and experience of the main disciplines involved in production of the deliverables, and, represents the supplier’s interests within the programme). The ‘Senior User’ will be from the end-user community and the ‘Senior Supplier’ will be representative of the supplier community.

As already stated, planning is essential and everything cascades from the Programme Plan as the diagram shows. See Appendix B for a Programme Plan template.

Each Project is a temporary organisation that is created for the purpose of delivering one or more business deliverables according to the specified Business Case.

Each Project Plan can most succinctly be described as the agreement between the technical and business groups within an organisation and which defines:

- Partners and external stakeholders;
- The project management framework to be used on the project;
- Roles, responsibilities, accountabilities, and activities of the team members;
- Management commitments (specifically in terms of communications and control);
- The empowerment framework; and,
- Outcomes and objectives

Each project plan can change throughout the project life cycle subject to previously agreed tolerances at Programme level. It is created at the beginning of the programme, approved by the key project stakeholders, and is available for reference throughout the project life cycle.

**What are the differences in these plans?**

All these plans contain the same information albeit at different levels of detail:

- Graphical summary (such as a Gantt chart)
- Description of the plan
- Prerequisites and assumptions
- External dependencies
- Risks
- Tolerances

The above will cascade into the lower-order plans.

Each Project Plan especially provides a consolidated and summary level overview of that project. It allows all parties involved in the project (stakeholders) to document the scope and objectives, approach and deliverables of the project. It also, at the outset of the project documents, the agreed upon communications plans, control mechanisms, and responsibilities of team members. Essentially, the Project Plan is a fundamental communications tool within the project environment.

Additionally, the Project Plan contributes to the following key success factors:
- Structured management organisation;
- Disciplined management processes;
- Project governance;
- Project management best practices; and,
- Internal/external communications.

Having a project Plan will provide the following benefits:
- Improved client partnerships;
- Improved project management processes;
- Improved communications;
- Better project sponsorship;
- Recognition of Senior Management’s role;
- Progress towards best practices;
- Improved relationships with users; and,
- Improved on-time and on-budget delivery of projects.

Who Is Responsible For The Project Plan?

The Project Manager has responsibility for ensuring that the Project Plan is developed and approved internally before taking it o the Programme Board. Development of the Project Plan cannot be done in isolation by any one party since it outlines an agreement between the project stakeholders of what the project will deliver and how. The Programme Manager is instrumental in providing the internal Project Sponsor and the Project Manager with a solid understanding of the background of the project. The internal Project Sponsor provides support and approval for the Project Plan within that organisation.

What goes into the Project Plan?

The framework for an effective Project Plan provides the structure within which to document the knowledge areas and processes that are considered fundamental to project success. These include:
- Project management disciplines;
- Project governance processes;
- Formal risks and issues management;
• Use of and role of the project office (where appropriate);
• Problem management; and,
• Structured communications processes.

Though the Project Plan contains an overall, high-level description of both the project and deliverables scope, it should not be confused with the Work Packages or Deliverable Specifications. These specification documents are outcome-oriented deliverables and will be produced within the context of the project. Within the Project Plan, the description of the project outcome should be limited to a high level description. For an example of a Project Plan see Appendix C.

Planning Process

Selecting a Project Manager

The role of the Project Manager (PM) is key because all participants will rely upon them for direction. This individual must have the authority to lead the team and make decisions without having to defer to others on the outside to resolve issues.

The importance of selecting the right person for this job can not be over emphasised. Choose someone who can make it happen; someone with proven leadership skills. Ideally it will be someone who has successfully managed similar implementations in the past or has been a member of comparable project teams. If no one suitable is available within the organisation, it may be worthwhile to look toward other sources of help, such as external contractors.

Establishing a Project Team

The PM oversees the efforts of the project team, which consists of people who are focused on the success of the project. Make sure the project team has sufficient manpower, but make it no larger than it needs to be to get the job done. The PM should keep in mind that more is not always better, and that throwing more people at a project can often lengthen - not shorten - the process because of the need to get everyone oriented and coordinated in their efforts. The project team will encompass staff from other parts of the LA and supplier representatives. Because of this it is important to make clear agreements up front about the percentage of each member's time the project will demand. It is also important to give the project team the resources (money, time, equipment, and authority) it needs to get the job done.

Appointing an Advisory Group

Depending upon the complexity of the proposed pilot, it may be advisable to establish an advisory group, in order to encourage the spirit of collaboration and cooperation throughout the LA. This group should meet periodically to review progress, and address the issues that can't be dealt with effectively by the project team itself. Consider including:

• Users who will eventually have to accept and reap the benefits.
• A technical authority.
• Knowledgeable outside experts.

Remember, this technology is only a tool to solve the business problems experienced by people and doesn't implement itself; people implement technology.
STEP III - Define Requirements

At this point in the process, a general statement describing each need of what is required. It is not necessary to delve into information about the technology. This will be done later in the process when it's time to define the functional requirements. Develop enough descriptive information that documents what has been learned so far.

The following outline is recommended for development of a Requirements document:

1. Introduction
   1.1. Document Purpose
   1.2. Background
   1.3. Scope
   1.4. Objectives

2. Requirement Conventions

3. Data Integration Requirements
   3.1. Identification Number
   3.2. Description
   3.3. Priority
   3.4. Procedural Impact
   3.5. Acceptance Plan
   3.6. Source(s)
   3.7. Rationale

4. Business Process Re-engineering
   4.1. Current Business Process Flow
   4.2. Future Business Process Flow

5. Appendices (source documents, etc)

Each section is described below:

1. Introduction
   This section should reflect what was developed in the Project Plan along with a description of the assessment process employed to capture, analyse, and prioritise the requirements.

2. Requirement Conventions
   The requirement conventions should explain how the requirements were identified, written and prioritised. The following table contains a list of commonly used terminology when developing requirement statements.
3. Data Integration Requirements

The Data Integration Requirements are intended to capture user needs. These are the tasks or actions that the integration technology is intended to accomplish.

Because you are targeting the SIF data standards for the integration, it would make sense to group them according to the high level categories recognised by the initiative.

- Data Analysis & Reporting
- Meals
- Human Resources
- Library
- Learner Information
- Finance
- Learner Transport
- Geographic Information
- Assessment
- Network / Identity Management
- Behavioural

Because your LA may have systems that contain functionality from several categories listed above, you may want to group these together.
3.1 Identification Number

Each major requirement should be assigned a unique identification number. If there are related sub-requirements, assign those a sub-number (i.e. 3.1.1).

3.2 Description

As you describe each requirement make sure they are concise and written in such a way that they can be used to test against.

3.3 Priority

Based upon the requirement conventions, assign a value to each requirement. Those statements contain the terms “shall” or “must” are hard requirements and must be met. Requirements that are desirable but not mandatory will contain the term “should.”

3.4 Procedural Impact

If the requirement involves changing policies or procedures in the LA, this should be noted here. This will be important because these must be in place and documented prior to deployment.

3.5 Acceptance Plan

To make sure the statement is concise enough to be measurable, describe what user expectations would be to indicate that this requirement has been fulfilled.

3.6 Source(s)

Identify where the requirement came from. This may be an individual, group, or external source. It’s important because additional questions may come up later and you will want to follow up with the appropriate individuals.

3.7 Rationale

The supporting rationale for each requirement should be described here. If it is not understood why a need exists, it’s likely the solution may not satisfy it correctly.

The following is an example of how the requirements might be documented.

<table>
<thead>
<tr>
<th>Req ID</th>
<th>Priority</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Learner Information Enrolment Data</td>
<td>1</td>
<td>The school or college administrators must be able to efficiently share enrolment information with all other departments in the LA that need to know about them in order to provide services.</td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
<td>The school administrators are the official “owners” of learner enrolment data and the first to know about the entry of a new learner. In order to provide immediate services to new learners, other departments must be aware of their existence as soon as possible.</td>
</tr>
<tr>
<td>Source</td>
<td>John Jones, Principal, Newtown School</td>
<td></td>
</tr>
<tr>
<td>Procedural Impact</td>
<td>Currently this information is shared using paper forms as the communications medium. Each department initials the form indicating their awareness of the new enrolment. New procedures will need to be developed for each affected department prior to deployment of the integration.</td>
<td></td>
</tr>
<tr>
<td>Acceptance Plan</td>
<td>Individuals responsible for sending and receiving information between systems must be satisfied with the timeliness, quality, and reliability of information</td>
<td></td>
</tr>
<tr>
<td>1.0.1 Learner Information Enrolment Data Food Services</td>
<td>1</td>
<td>The school administrators must be able to share new learner enrolment information with food services.</td>
</tr>
<tr>
<td>Rationale</td>
<td>The school administrators are the official “owners” of learner enrolment data and the first to know about the entry of a new learner. In order to provide immediate meal services to new learners, food services must be aware of their existence as soon as possible.</td>
<td></td>
</tr>
</tbody>
</table>
Kathy Smith, Head Cook, Newtown School

**Procedural Impact**
Current procedure has the learner showing up at lunchtime with a paper form from the main office indicating the type of lunch to be served. If the learner is receiving free or reduced lunch this event can cause embarrassment. Because the food services staff will have access to timely information regarding new learners, new procedures may need to be developed to determine service requirements prior to the child showing up.

**Acceptance Plan**
Food services staff need to verify that the data was received and consumed appropriately into their system. School administrators and registrars need to know that the data they sent was successfully received and processed.

See Appendix D for a Data Integration Requirements template.

### 4. Business Process Re-Engineering

Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises. It promotes the idea that redesign and reorganisation of a business or institution is necessary to lower costs and increase quality of service and that technology can be the key enabler for that change. It assumes the design of workflow in most large organisations is based upon assumptions about technology, people, and goals that are no longer valid. There are typically seven principles of reengineering to streamline the work process and thereby achieve significant levels of improvement in quality, time management, and cost:

1. Organise around outcomes, not tasks.
2. Identify all the processes in an organisation & redesign them in a prioritised order.
3. Integrate information processing work into the real work that produces the information.
4. Treat geographic dispersed resources as though they were centralised.
5. Link parallel activities in the workflow instead of just integrating their results.
6. Put the decision point where the work is performed, and build control into the process.
7. Capture information once and at the source.

Data integration technology is clearly an enabler for business process reengineering. Because of this, it is recommended that this be done along with the data integration implementation.

#### 4.1 Current Business Process Work Flow

Workflow is a term used to describe the tasks, procedural steps, organisations or people involved, required input and output information, and tools needed for each step in a business process. A workflow approach to analysing and managing a business process tends to focus on documents or objects and data elements. In general, workflow management focuses on processes rather than documents.

This section will focus on the current business processes that are being used to manage this information. It is recommended that each step in the process be described along by area of responsibility along with an estimate of the time it takes to complete each step. This will be critically important information that you may want to use should you need to produce a cost/benefit analysis to justify use of any additional funds for this project.
The diagram (above) illustrates a fairly typical scenario where common information about learners needs to be shared among multiple groups. What needs to be described is what happens today that provides those areas with the information they need.

Attempt to derive the reason behind each task and be prepared to discover that the reason might be: “because it’s always been done that way.” Once completed you should have a good description of your starting point.

4.2 Future Business Process Work Flow

Now that you understand all of the steps that are currently followed to get a task done, consider how that process may change in an environment supported by SIF data integration. It is recommended that a new process be defined taking into account the streamlining that your LA, school and college will enjoy. This can lead to the need to modify current policy and procedures or create a situation where new ones need to be developed.

You might want to return to the current work flow diagram and modify it to represent how the process should work once the data integration is in place.

Appendices

The appendices should contain source documents and reference materials that were used in the development of the requirements.

Writing Your Requirements

Okay, you've defined and prioritised a set of user requirements. Your next step involves translating these into a statement of what your integration solution should do. Now, try to produce a Requirements Definition document that is thorough and self-explanatory, so your successor or others will have no trouble seeing what you've done and how you've reached your conclusions. The more people participate in these discussions and the development of these plans, the more they will "buy-in" to the solution, and "buy-in" is critical for success.

Presenting Your Findings: The Requirements Walk-Through

You will want to provide the opportunity for your management and the user community to review your findings. This can be accomplished by hosting sessions designed to walk stakeholders through the requirements to ensure your findings are accurate. In addition to gaining assurance that you understand the needs thoroughly, this also serves as an excellent mechanism to gain the support and commitment necessary to effectively manage change.

The walk through should be presented in a non-threatening environment that encourages participation. Make sure the input received is documented and incorporated into the document where appropriate. If there are significant changes that need to be made, you might want to schedule a follow-on session to present the final document and get sign off.

You should now have enough information to begin development of the functional requirements that will define how the data integration must perform. Before launching into this phase, you should consider doing a readiness assessment to measure how prepared the stakeholders are to handle the change that will occur as a result of the data integration.

A Readiness Assessment survey that can be used for this purpose is included in Appendix I of this Toolkit.

Functional Requirements

You have made major in-roads towards getting your data integration in place. You now understand what is required from the user’s perspective and you have prepared the LA to be ready for the changes to come. Now is the time to describe how the software needs to behave to meet the needs.
What Should Be Included in the Functional Requirements?

Up to now, your task has been to identify and examine the needs of your LA that might be addressed by implementing SIF Integration Solutions. The discussion, thus far, has focused on an "integration solution," rather than the set of standards driven tools, that will meet your needs. Even if you are not thoroughly knowledgeable about SIF Implementations, you may know enough to begin considering how to address your organisation's needs by utilising the technology to streamline processes, including the reengineering of some existing procedures.

The **Functional Requirements** can be inserted into each of the requirements identified in your Needs Assessment. They should describe how a product will work entirely from the user's perspective. The functional requirements don't talk about how the thing is implemented; it talks about what the features are supposed to do. A **Functional Requirement** states in detail what exactly the SIF Integration technology should be expected to do (rather than what your LA should be able to do).

Consider this analogy. You're shopping for a new house, but you first create a check list of your needs. Your house must be:

- Large enough to accommodate your family of four.
- Enough bedrooms to allow each child a room of their own.
- Room for hosting out of town guests.
- Enable the hosting of large dinner parties.
- Have a two car garage to house your Ferrari and Jaguar.
- State of the art kitchen for preparing meals for large dinner parties.
- Large garden for the children to play in.
- Located in a nice neighbourhood with low traffic volume.
- Have an office for your spouse to be able to telecommute.
- Etc.

Armed with your list, you approach an estate agent to get help finding the ideal home for your family. Without such a list you are likely to settle upon a home that won’t satisfy your needs. The Functional Requirements play the same role in specifying what capabilities the data integration must have. You don't care how it works internally; you do care what services are delivered to those who will use and maintain it.

There are many approaches to developing Functional Requirements. The typical approaches used by the computer industry usually involve using function charts, data and/or process modelling, diagramming, and other techniques that educational decision makers find difficult to comprehend. The most direct and simple approach that can satisfy all audiences is to look at the Functional Specifications as a clear description of what the data integration needs to do.

It is recommended that details related to current processes and systems be included in the Functional Requirements. This should cover the type of information the systems are responsible for managing as well as a high level description of the processes and procedures utilised by the users to maintain the data. Because the integration technology will change these processes and procedures by streamlining the flow of information, it is critical that all of the user's current responsibilities are well understood.

The Functional Requirements should be developed with direct alignment to the Requirements. It should describe the characteristics or functions to be carried out within the data integration. Include all the information that you feel comfortable with; but don't feel like you must include everything.

The following table suggests how Functional Requirements might be documented using the Requirements as your baseline.
### Requirement Table

<table>
<thead>
<tr>
<th>Req ID</th>
<th>Priority</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Learner Information Enrolment Data</td>
<td>1</td>
<td>The school administrators must be able to efficiently share enrolment information with all other departments in the LA that need to know about them in order to provide services.</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td></td>
<td>The school administrators are the official &quot;owners&quot; of enrolment data and the first to know about the entry of a new learner. In order to provide immediate services to new learners, other departments must be aware of their existence as soon as possible.</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>John Jones, Principal, Newtown School</td>
<td></td>
</tr>
<tr>
<td><strong>Procedural Impact</strong></td>
<td>Currently this information is shared using paper forms as the communications medium. Each department initials the form indicating their awareness of the new enrolment. New procedures will need to be developed for each affected department prior to deployment of the integration.</td>
<td></td>
</tr>
<tr>
<td><strong>Acceptance Plan</strong></td>
<td>Individuals responsible for sending and receiving information between systems must be satisfied with the timeliness, quality, and reliability of information</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1</strong></td>
<td>The management information system must be able to send enrolment information to the library and catering systems as soon as the learner record is entered into the system.</td>
<td></td>
</tr>
<tr>
<td>1.0.1 Learner Information Enrolment Data Catering</td>
<td>1</td>
<td>The school administrators must be able to share new learner enrolment information with catering services.</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>The school administrators and registrars are the official &quot;owners&quot; of learner enrolment data and the first to know about the entry of a new learner. In order to provide immediate meal services to new learners, catering must be aware of their existence as soon as possible.</td>
<td></td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>Kathy Smith, Head Cook, Newtown School</td>
<td></td>
</tr>
<tr>
<td><strong>Procedural Impact</strong></td>
<td>Current procedure has the learner showing up at lunchtime with a paper form from the main office indicating the type of lunch to be served. If the learner is receiving free or reduced lunch this event can cause embarrassment. Because the catering staff will have access to timely information regarding new learners, new procedures may need to be developed to determine service requirements prior to the child showing up.</td>
<td></td>
</tr>
<tr>
<td><strong>Acceptance Plan</strong></td>
<td>Catering staff need to verify that the data was received and consumed appropriately into their system. School administrators need to know that the data they sent was successfully received and processed.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.1</strong></td>
<td>The management information system must be able to send enrolment information to the catering system as soon as the learner record is entered into the system.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.2</strong></td>
<td>The catering system must be able to communicate that the enrolment transaction was received from the management information system.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.3</strong></td>
<td>The catering system must only accept transactions from an authorised individual.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.4</strong></td>
<td>If the catering system is not available, there should be a mechanism to hold the transaction and make repeated attempts at delivery until it is successfully received.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.5</strong></td>
<td>The data must be mapped using the Systems Interoperability Framework (SIF) data standards.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.6</strong></td>
<td>The Supplier tools included in the data integration solution must be SIF Certified.</td>
<td></td>
</tr>
<tr>
<td><strong>Functional Requirement 1.0.1.7</strong></td>
<td>The management information system must be able to respond to a request for enrolment information from the catering system.</td>
<td></td>
</tr>
</tbody>
</table>

See Appendix E for a Functional Requirements template.
Technical Requirements

The technical requirements section follows the functional requirements and should address the following:

Data Flow

Documenting the flow of data can be a time consuming task fraught with detail and complexity. The figure (right) is an illustration of the SIF data model and flow for the standards.

The red boxes represent learner data; the blue boxes contain data describing schools; and the remaining boxes each cover different subject areas.

What you will want to do in this section is describe in a big picture view the data objects and elements that you will want to be exchanged and what each department needs to send and/or receive. In this section you will also estimate the number, type, and frequency of transactions that will need to be transmitted.

Data Mapping Requirements

The data mapping requirements should reveal what data is needed to be sent and received by each application involved in the integration. Included in the Toolkit is a spreadsheet designed to accomplish this mapping. An example worksheet for mapping learner enrolment data can be found in Appendix F.

<table>
<thead>
<tr>
<th>SIF Object</th>
<th>Object Description</th>
<th>SIF Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>SIF Object</strong></td>
<td><strong>SIF Agents</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Object Description</strong></td>
<td><strong>Zimbra (eMail)</strong></td>
</tr>
<tr>
<td>LearnerPersonal</td>
<td>Learner Details</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>This object contains personal information related to a learner</td>
<td></td>
</tr>
<tr>
<td>LearnerAttendance</td>
<td>This object provides attendance information for a learner. Date for Roll Call and lessons may be included</td>
<td>x</td>
</tr>
<tr>
<td>LearnerAttendanceSummary</td>
<td>This object provides a summary of a learner's daily attendance.</td>
<td>x</td>
</tr>
<tr>
<td>LearnerContact</td>
<td>This object contains information linking learners to the relevant learner contacts</td>
<td>x</td>
</tr>
<tr>
<td><strong>ContactPersonal</strong></td>
<td>This object contains the personal details of any person created as a contact at a school.</td>
<td>x</td>
</tr>
<tr>
<td><strong>LearnerExclusion</strong></td>
<td>This object contains information related to a learner being excluded from one or more sessions of school.</td>
<td>x</td>
</tr>
<tr>
<td><strong>LearnerSpecialNeeds</strong></td>
<td>This object contains information regarding a special education need (SEN) for a learner when provisioned within a school or establishment.</td>
<td>x</td>
</tr>
<tr>
<td><strong>LearnerSchoolEnrolment</strong></td>
<td>This object contains information related to learners enrolment: On roll, off roll, left school</td>
<td>x</td>
</tr>
<tr>
<td><strong>SchoolGroup</strong></td>
<td>This object describes specific groups and includes resources and timetabling information. All groups are based upon a SchoolGroupType record.</td>
<td>x</td>
</tr>
<tr>
<td><strong>SchoolGroupType</strong></td>
<td>This object describes courses or class groupings organised and/or taught within a school or establishment.</td>
<td>x</td>
</tr>
<tr>
<td><strong>LearnerGroupEnrolment</strong></td>
<td>This object contains information about a learner's enrolment in a course (teaching group) or other (class or registration) group.</td>
<td>x</td>
</tr>
<tr>
<td><strong>WorkforcePersonal</strong></td>
<td>This object contains key personal information relating to a workforce member, who might be a teacher or other employee of the school or LA.</td>
<td>x</td>
</tr>
</tbody>
</table>

Once you have defined the applications, objects, and elements that will be used in your data integration, you should be ready to establish your implementation strategy.
**STEP IV - Information Governance**

**Objective:** By the end of this section, you will know the technical and operational issues that need to be addressed when implementing SIF to ensure that data quality, data security and Data Protection needs are met.

It is vital to have information governance at the heart of information handling. Where large groups of discrete organisations are processing personal information there must be some central control over how this is done. This is beneficial to the organisations themselves as it tends to harmonise policy, guidance and procedure. This simplifies the process of learning new methods of work. When planning a SIF implementation, as with any form of data sharing, it is necessary to ensure that there is agreement on what data is shared and between whom and strict access controls need to be put in place to stop unauthorised personnel accessing or viewing data that they should not have access to.

**Data Protection**

The Information Commissioner’s Office was asked in early 2009 to assess the compliance of SIF with the Data Protection Act 1998. The response received stated that “SIF is a tool, the circumstances of its use and day to day adherence to the [Data Protection] principles will determine if information shared by SIF has been shared in a manner which complies with the Act. In other words compliance depends on how organisations use their tools, rather than on the tools themselves.” Furthermore, the Information Commissioner’s Office “… can see no reason why the use of SIF should present any difficulties in respect of compliance with the Data Protection Act 1998.*

The response contained some useful suggestions and recommendations regarding Fair Processing Notices, user training and information governance. This Toolkit provides guidance on these areas. A suggestion was also made that it may be useful to consider penetration testing. This should be considered as part of wider data security information risk management and is not necessarily specific to SIF, but is something that organisations may wish to consider as part of a SIF implementation.

Organisations implementing SIF solutions should already be aware of their responsibilities under the Data Protection Act 1998. The Data Protection Act requires all organisations which handle personal information to comply with a number of important principles regarding privacy and disclosure.

The Act states that anyone who processes personal information must comply with eight principles, which make sure that personal information is:

- Fairly and lawfully processed
- Processed for limited purposes
- Adequate, relevant and not excessive
- Accurate and up to date
- Not kept for longer than is necessary
- Processed in line with your rights
- Secure
- Not transferred to other countries without adequate protection


The Information Commissioner also states that organisations who collect or share personal information should issue a ‘Privacy Notice’.¹

¹ Prior to 2009, ‘Privacy Notices’ were termed ‘Fair Processing Notices’
Privacy Notices should say:

- who is collecting information
- what it’s going to be used for
- who the information is being shared with

Organisations should already be issuing privacy notices, so when implementing SIF these notices will need to be revised and reissued to ensure they reflect any new data sharing or collection that the implementation will provide.

The Department for Education recommends that a single, short and easily understandable Privacy Notice can be provided by the LA or school at the same time as other communications. For example: a child receiving Social Care Services or a child looked after might receive their Privacy Notice as part of other information about the services they are being offered; a child receiving start-of-school-year information might be given their Privacy Notice as well.

The Department for Education have provided suggested texts for Privacy Notices, and further background/guidance which can be found at [http://www.teachernet.gov.uk/management/ims/datamanagement/privacynotices/](http://www.teachernet.gov.uk/management/ims/datamanagement/privacynotices/).

**Data Quality**

- Institutions have differing standards of data.
- Data quality checks and an agreement over data structure need to be established before data is propagated to other systems.
- Possibility of using a RAW ZONE and a CLEAN ZONE – defining a threshold of quality, limits data moved into the clean zone. Rejected data returned to user for validation.
- There are cultural differences over how and when data is updated – these need to be taken into account.
- People need to be managed carefully in order that they do not feel defensive about their systems or the quality of their data.
- Any SIF Implementation programme needs to include an analysis of data processes and culture – within all organisations involved in the SIF implementation. Data requirements of all organisations need to be taken into account.
- A data asset review should be undertaken before SIF implementation, with each member of the partnership putting forward a subset of data. There is technology available to help check data matching and integrity.
- Data validation exercises should take place before and after SIF implementation.
- Any partnership should run detailed duplicate checks before and whilst data is transferred.
- It may be possible to use a SIF agent for the data comparison and validation.
- Although SIF implementation is often in partnership – between schools is more competitive. It can be very complicated when dealing with multiple sites and organisation types, especially within the 14-19 arena.
- Mandatory and optional data is different within different systems. It is important to recognise the risk that administration staff may spoof data (where data is required for a mandatory field but is not collected by the organisation) in order to get the data transferred. This data is then exported into a different database, leading to incorrect data in another system.
- Suppliers need to check different system requirements before SIF Implementation.
- Managers need to be skilled in understanding the change process.
- The impact of the change process on all people involved with the SIF Implementation needs to be managed carefully.
Training for administration staff needs to be considered, in line with the growing professionalism of education administration staff. (See ‘Useful Links’.)

Staff within schools, local authorities etc. will need training in order to understand data quality and data ownership. Becta’s Information Management Strategy framework can help here: http://webarchive.nationalarchives.gov.uk/20110130111510/http://schools.becta.org.uk/index.php?section=lv&catcode=ss_lv_mis_im03&rid=16037

Data Security

Becta produced a series of good practice guides to help schools, colleges and universities protect personal and sensitive data. Building on good practice from industry and central government these guides describe procedures and possible technical and operational solutions that can help organisations reduce the risks of data security incidents and comply with current legislation:

Included within this guidance is a document to help organisations to assess their information risks as part of an overall approach to managing information (Information risk management and protective markings). This guide recommends that institutions adopt the Government Protective Marking Scheme to apply protective marking labels to electronic and paper documents, to indicate the level of protection the data requires. The Protective Marking Scheme has six categories of confidentiality, but not all will be used within educational institutions. The most common are NOT PROTECTIVELY MARKED or PROTECT, with some data being RESTRICTED.

A UK Management Board Sub-Committee (Security Task Force) reviewed whether the SIF Specification would need to transfer impact levels or protective marking information. The current consensus is that tagging individual data elements would not be practical or useful as the impact level of a piece of data is not an absolute - it depends on the context it is used in, which is known only by the receiving application. Instead, a pragmatic approach would be for all parties in a zone to agree as to the maximum impact level of data that can be passed around with SIF. This agreement will help ensure that the overall level of risk of a security breach does not increase because of the movement of data.

To comply with the Data Protection Act, end systems will have to maintain appropriate access control measures to ensure that only authorised individuals can access specific data. This is irrespective of the impact level, as although a particular role or individual may be entitled to access a particular record containing RESTRICTED data that does not necessarily mean they are allowed to see all RESTRICTED data.

SIF Security

As with any tools that are used to share data, to comply with the Data Protection Act it is important to set SIF up in a secure way that ensures only authorised individuals get access to data and messages cannot be intercepted. This can be achieved with technical and operational solutions and SIF has a number of security measures available:

1. Authentication level - This defines the level of authentication required by the message originator to be considered a secure channel upon message delivery to other agents.
2. Encryption level - This defines the level of encryption required for the message
3. ACL - Access Control List defines which applications can access which groups of data. Therefore ensuring the right data gets to the right applications registered on a Zone.
4. Agent Registration – only pre authorised and validated agents can register with the ZIS.
5. Element level filtering – this allows an Administrator to control access to elements within data objects at Agent, Zone and ZIS levels.

http://www.cabinetoffice.gov.uk/spf/sp2_pmac.aspx
The following is more technical in depth explanation of a recommended secure implementation.

1) Authentication Level

The SIF Specification provides several levels of authentication and encryption protection. The highest level, level 3 is recommended.

Authentication Levels:

0 No authentication required and a valid certificate does not need to be presented.
1 A valid certificate must be presented.
2 A valid certificate from a trusted certificate authority must be presented.
3 A valid certificate from a trusted certificate authority must be presented and the CN field of the certificate's Subject entry must match the host sending the certificate.

A SIF implementation that will support Authentication Level 3 means that a valid certificate from a trusted certificate authority must be presented and the CN (common name) field of the certificate's Subject entry must match the host sending the certificate.

SIF_AuthenticationLevel 3 requires that the CN contents match the host where the message was originated. For instance, a CN entry could be "sifassociation.org" or perhaps "207.95.37.30". If a ZIS at sifassociation.org (IP address 207.95.37.30) contacts an agent at MyAgent.sifassociation.org, the agent's SIF HTTPS transport layer can look at the CN entry in the certificate that was presented by the ZIS and compare it to the actual IP address of the ZIS. SIF_AuthenticationLevel 3 ensures that not only a valid and trusted certificate was presented but that the agent is actually communicating to the ZIS located at the IP address referenced in the certificate.

It is recommended that all ZIS and Agent implementations support client authentication as well as server authentication. When client authentication is being used, the connection first authenticates the server (the party that is being contacted) and if the authentication was successful, the server will request that the client present its certificate for authentication. In this manner, both the ZIS and the agent confirm that they are communicating with the proper parties.

If authentication based on certificates is being used, care needs to be given to determine if Level 2 (anonymous certificates) will provide the necessary level of protection. With Level 2 authentication, it is possible to use a web browser to make secure connections to the ZIS using the certificates that are built into the browser. This level of authentication is what is used by almost all Internet transactions (stock trading, shopping, financial, etc.). Level 2 does expose the user to a risk of a "man-in-the-middle" attack that cannot occur using Level 3 authentication.

Level 3 mandates that a certificate issued by a trusted authority, (i.e. school), be installed before the agent will be able to connect to the ZIS.

2) Encryption Level

The SIF Specification supports different levels of encryption:

0 No encryption required
1 Symmetric key length of at least 40 bits is to be used
2 Symmetric key length of at least 56 bits is to be used
3 Symmetric key length of at least 80 bits is to be used
4 Symmetric key length of at least 128 bits is to be used

It is recommended that implementations support encryption level 4. Symmetric keys are used to control the operation of a cipher so that only the correct key can convert encrypted text to plain text. Therefore data transferred between applications is encrypted preventing other parties being able to view the data.
The major governing factor as to the strength of data encryption is the length of the cipher key. Thus a 128-bit implementation typically provides stronger encryption than an 80-bit implementation and is, therefore, recommended for UK SIF implementations.

The SIF_EncryptionLevel bit sizes are based on symmetric ciphers. A table that lists the equivalent key length for a public-key cipher is listed below.

<table>
<thead>
<tr>
<th>Symmetric Key Length</th>
<th>Public Key Length</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 bits</td>
<td>256 bits</td>
<td>Very weak, not recommended except for very minimal protection (i.e. prevents casual snooping but can be broken in minutes by knowledgeable attackers).</td>
</tr>
<tr>
<td>64 bits</td>
<td>512 bits</td>
<td>Weak. The current U.S. &quot;standard&quot; has been bumped up to 64 bits from 56 bits but the key length is still weak for sensitive data.</td>
</tr>
<tr>
<td>80 bits</td>
<td>768 bits</td>
<td>Moderate</td>
</tr>
<tr>
<td>128 bits</td>
<td>2048 bits</td>
<td>Strong, recommended for Internet. <strong>Recommended for UK SIF implementations</strong></td>
</tr>
</tbody>
</table>

Table: Key Lengths

3) **ACL** - Access Control List allows the Administrator to control access by application to data objects. Therefore preventing a broadcast of data to all applications registered on a Zone.

To enable the movement of data a central hub is required to determine where data is directed to. The Zone Integration Server (ZIS) fulfils this role. Within the ZIS is the Access Control List which defines which applications can access which data objects. The list also allows the administrator to determine how an application can obtain data and prevents a rogue agent from being able to register within a zone.

4) **Agent Registration** – only pre authorised and validated agents can register with the ZIS. Within an implementation, an organisation will need to centrally administer the ZIS servers. This organisation will be responsible for registration of agents on the ZIS. This will prevent unauthorised agents from accessing the system and accessing data.

5) **Agent, Zone, ZIS level filtering** – this allows an Administrator to control access to elements within data objects per application.

Data objects are grouping of data elements, it could be that an application may request a data object but within this object there maybe individual elements that it may not be appropriate to share. Therefore filtering allows the administrator to remove restricted data elements from a message.

**Implementations must include a means of achieving Element Level Filtering. At the time of writing this can be achieved in Zone Integration Servers offered by the three commercial ZIS providers. It is intended that the next version of the SIF Infrastructure Specification (2.4) will include Element Level Filtering.**

**Physical access to the ZIS must also be restricted and anyone with access to data on the ZIS must have undergone an enhanced CRB check.**
STEP V - Establish an Implementation Strategy

Objective: By the end of this section, you will know the typical issues involved in planning, staffing, managing and directing an effective data integration implementation strategy.

Assumptions

It is assumed that, by this stage, a business case for the implementation of SIF has successfully been made, and that adequate financial resources are available to proceed.

Steps

1) Identify any existing SIF Infrastructure at LA or RBC level that you may be able to use.
   a) If it is possible to achieve what is required by joining a solution that has already been implemented, then doing so has clear potential for significant cost and time savings. For example, you may be able to take advantage of an existing Zone Integration Server.
   b) If no existing implementation is appropriate to join, for technical or political reasons, then draw upon the accumulated experience of establishments and organisations which have already fulfilled similar aims – either by direct contact or by attending a SIF Association UK conference.

Common questions to ask when comparing other implementations are:
   i) What is the scope of integration that you undertook?
   ii) Why did you select the solution that you did?
   iii) How would you rate the products and services that you used?
   iv) What issues did you encounter during implementation?
   v) If you could change any aspect of the solution, what would it be?

2) Educate and engage with users to manage expectations.
   a) A project as far-reaching as this cannot be completed quickly, and all involved parties must recognise this.
   b) The Project Team must recognise that there may be resistance to the implementation of a data integration solution, as it is likely to result in changes to the roles and responsibilities of end users.

3) Consider information governance and data security.
   a) While data governance issues should have been addressed by existing processes - even before this data integration solution is proposed - it is crucial to recognise the importance of Data Protection and security with respect to every aspect of this project.

4) Determine and minimise risks.
   a) It may be advisable to run a small scale pilot to learn about the technology before attempting a high profile implementation that tries to deal with every intended end user and application. Approaching your implementation in this way reduces risk and allows its impact to be measured in a controlled environment, while in turn providing feedback that is invaluable when rolling out the technology on a larger scale. If adopting this plan, then it is recommended that the pilot be a project in its own right - organised, documented and implemented separately to minimise scope creep and any potential for confusion.

5) Select SIF hardware and software platform.
   a) One fundamental step in the implementation strategy is the selection of a ZIS product and checks regarding the availability of SIF Agents for the applications that are to be involved in the solution. A complete list of SIF
Certified applications and Zone Integration Server suppliers can be found on the SIF Website at http://www.sifassociation.org/uk. Some suppliers may also be able to develop custom SIF Agents for high priority legacy/custom applications.

b) A Request for Information (RFI) is a useful tool for exploring the range of suppliers who could provide you with products or services, and then narrowing down your search for the most appropriate solution. An RFI should concentrate on defining what your data integration solution is required to accomplish rather than how it should accomplish it, so that respondents are free to propose what they feel to be the most appropriate combination of products and services that will fulfil your task.

c) Depending on purchasing policy at your establishment, a procurement strategy should be developed which takes into account relevant EC procurement directives, public procurement regulations and any existing framework agreements.

d) If a suitable framework is identified then you will need to run a mini-competition and issue an Invitation To Quote (ITQ) against which potential suppliers can bid. By issuing an ITQ, the supplier community can ascertain your desired product functionality, equipment needs, and an anticipated delivery schedule, while you can take advantage of competition between companies and possibly discover unique selling points that may suggest a steer towards a specific supplier.

During the development of your ITQ, you will want to collaborate with the individual in your organisation who is responsible for the administration of purchases; this person may even have an ITQ template that you can use. If you are not part of the Management Information Systems department then you should involve them as well; implementation delays may result if you wait too long before doing so. In addition to assisting you with decisions on how best to request what is needed, these individuals can be instrumental in removing barriers that could frustrate impatient users and reduce the value of the needs assessment.

e) If no suitable framework is available then, dependent on the value of your proposed purchase, you should consider whether a full tender or ECC tender needs to be conducted.

6) Plan scalable resource infrastructure.

a) Financial
   i) Initial purchase and on-going support costs for any software, including ZIS and Agents.
   ii) Outright purchase or recurring external hosting costs for the hardware platform on which the ZIS runs.

b) Technical
   i) The network which connects the ZIS and Agents must have the capacity, reliability and connectivity to support the solution effectively.

c) Human
   i) As an absolute minimum, there must be a Project Manager with responsibility for ensuring that all tasks are defined, scheduled, assigned and monitored, so that the data integration solution is delivered successfully. It is important to remember that the Project Manager is unlikely to have direct authority over all participants, since some aspects of the project will be assigned to suppliers or staff in different departments who report to others. Consequently support from higher management is essential.
   ii) It may be appropriate to delegate certain activities to external consultants or suppliers who have experience with the successful implementation of similar data integration projects. Ideally, such people would have familiarity with the SIF Specification, skill in the configuration of ZIS software and SIF Agents, plus knowledge of Management Information Systems. Beware, though, of any proprietary customisation of SIF technologies that is carried out by external bodies, as you may incur on-going costs to keep these extensions maintained and upgraded in line with new SIF Standards.
7) Establish projected timeline and milestones.
8) Organise training, support and data integrity checking.
   a) These tasks have associated costs, and the project budget must allow for these.
9) Create phased deployment plan and implement.

**High Level Deliverables**

Although the table (see Appendix G) is very basic it is an extremely useful process to complete. In the first instance it allows users to ensure that all of the basic high level requirements are met for implementation and this will allow a view of the strategic aims of the organisation to be defined.

In addition it will assist high level decision makers to become acquainted with the real requirements of an implementation project. It is probably advantageous for a considerable amount of prior research to have been completed prior to the exercise being completed.

It is probably necessary for additional work after the initial exercise to either confirm or change the variables. The salient point at the end of the exercise is for all parties to be in agreement with the end findings.
STEP VI - Pilot Implementation: Key Considerations

Identify Risks
Before proceeding there are some important questions to ask; is the pilot SIF Implementation really necessary? Upon satisfactory completion, is it intended to be rolled out as a full implementation or simply discarded? The answer will greatly affect the time, energy, resources and risks associated with the pilot implementation. These are some typical risks associated with a SIF Implementation:

- **Size** - number of stakeholders in a different geographic locations can make communication difficult
- **Complexity** - greater the number of systems and applications to be integrated the greater the risk.
- **Timescale** - due to the shortened timescales, minor slippages will have a major impact in the overall schedule and budget
- **Testing** - difficulties associated with thoroughly testing new technologies with enough data to replicate a full scale deployment.

Scheduling Your Pilot Project
If your pilot involves the use of any contractors, it is recommended that you make the schedule an integral part of your contract. Some SIF Data Integration projects are dependent upon the good will of each supplier involved. In these situations the risks are increased and you may want to add additional contingency to account for that. The entire team and advisory committee should be involved in the development of the schedule. It should cover each task, the effort required in person hours, by whom it will be done, and when it will be done for every phase in the implementation process. Any payment to outside contractors should be based on the submission of specific deliverable items according to an agreed upon schedule.

Other considerations when developing your pilot project schedule:

- Make sure that the project Plan clearly defines what a successful pilot would look like.
- Based upon the possible outcomes of the pilot, the Plan should spell out what the next steps will be.
- Closely examine other activities that could impact the pilot such as holidays, vacations, and other LA events that could limit resource allocations at any time during the project.
- Don’t sacrifice quality in order to meet deadlines – be prepared to adjust the schedule.
- Watch out for projected dates (arrived at by detailed estimates) being overruled for "political" reasons, especially in the absence of additional resources.

The installation of hardware and/or software to support the data integration should first occur in a test bed environment. You will want to make sure that all of the components are working correctly before you move it into production.

Monitoring the Progress of the Pilot
A key role of the project manager is to monitor progress on an ongoing basis. It works best to set up a routine where progress is reported on a weekly basis by the project team members to the project manager. Because a SIF Data Integration project involves Suppliers and internal LA staff, it is recommended that weekly meetings be convened via conference call. This provides the means to have everyone affected to engage in solving problems and committing to appropriate tasks involved in resolution. The project manager then integrates these commitments into the plan to produce an overall status update for the project. Web-based message boards and other electronic communication tools are also helpful in keeping everyone informed and they provide a record of the conversations which can be useful both for documentation as well as in resolving recurring issues.
Handling Schedule Slippage

Slippage is perhaps seen as inevitable in a complex SIF Pilot project. But due to the relatively short timescales involved the impact can be significant. The first and foremost rule you must practice in dealing with it is: honesty. If it’s occurring, don’t try to disguise it because the news will come out eventually. Breaking bad news gradually makes it more palatable than waiting to deliver a monumentally bad update all at once. Secondly, be prepared to consider de-scope the pilot project to bring the project back on track.

How Do You Make Sure the Data Integration is working?

Your integration pilot project is well underway. The management information system is talking to both the library system and lunchroom accounting. You are quickly approaching the day when your pilot data integration will be "complete." How will you measure its success?

Fortunately the functional specifications you developed within the Requirements Document, will serve as the basis for your test plan. To verify the system's completeness and proper functioning you must firstly, test against each functional specification described. If the data integration pieces perform as expected, consider them complete. Secondly, you must perform a data comparison to verify the expected data is being transferred from system to system correctly.

Issues Tracking Log

As with all project management methodology, an Issues Tracking Log is fundamentally important to record issues and to provide a monitoring process for the successful resolution of issues. A template can be found in Appendix H. It is paramount, for all parties engaged in the project, to be aware of the Issues Tracking Log’s existence and control of the Issues Tracking Log should be centralised under the guidance of the Project Manager.
STEP VII - Conduct User Training

**Objective:** At the conclusion of this section you should be able to build and deliver an effective training curriculum to support your data integration installations.

**Knowing How to Train Users**

When implementing SIF a training programme should be set up. This should ensure that the staff involved understands the impact the data exchange has on information they use on a daily basis. They must also understand where the data is going to and coming from. As issues arise, they will need to communicate effectively with their peers and support staff to achieve a resolution.

The training programme should be designed so that it can be re-used as SIF Standards evolve and tools are upgraded to newer versions. Standards are fluid and will be updated as needs change.

**Who Should Receive Training?**

Typically, this will include everyone who has a responsibility for maintaining data in the systems that are being linked. Also consider including people who make use of the data, or interact with it in some off-line fashion.

The scope of this will vary in accordance to the applications that are being connected.

- For example, you might just be linking a library system to a management information system for user provisioning purposes. This scenario would involve a limited set of users which makes development of your training plan a fairly easy exercise.

- A more complex implementation might, for example, include an assessment package. This would involve a much larger user audience – teachers. In this case your development plan will be more complex and training may have to be provided in phases.

You should be able to derive a list of trainees from the needs assessment you did early on in the project. The type of training may vary in accordance to their role. For example:

- Administrative staff members, consuming information that is part of the data integration, will need to understand where it comes from. This includes individuals who may maintain information on a limited basis, such as personnel who enter learner enrolment information. Senior staff should have a general understanding of the data integration and its impact on management information. They may never access these systems directly but they are likely to request information from them.

- Those responsible for installing and maintaining your data integration technology infrastructure will need specific technical training. Where they will be required to provide support, these individuals should also attend the various types of user training sessions. This will enable them to learn about potential problems and user needs that are related to both the data integration and the applications.

- Teachers using applications that have been linked by SIF will also require training.

**Tip:** Everyone who will be impacted by the data integration should be trained at some level, including learners, teachers, administrators, administrative staff, and technical support staff.

**When Should Initial Training Be Provided?**

Training should ideally be delivered immediately before the data integration components are installed at a site. It is recommended that a pilot implementation is used for demonstration purposes.
Participants should be temporarily released from their regular responsibilities or you might offer classes outside of normal office hours. Be aware that scheduling training during school may require having to arrange for substitutes which may place additional financial burden on the project.

**Tip:** Most of the training should be delivered just prior to the data integration installation to make sure the knowledge is still fresh in people's minds.

### What types of training are needed?

Using the Systems Interoperability Framework (SIF) to share data will contribute to the Local Authority and the school achieving their established goals. When designing your training make this the backbone of your curriculum. This, along with the need to establish a high comfort level with the data integration is essential.

Because you may be preparing training for users with multiple levels of technical skills, you may have to target the lowest common denominator. Another approach would be to divide the training into multiple groups in accordance to their level of understanding and experience. If you don’t have the luxury of developing and delivering separate training modules it is better to err on the side of being too basic.

The training materials you develop should be made available in both hard (paper) and soft (electronic) mediums. It is also recommended that you make them available through a web-site if that is possible. These materials are important because they give users something to refer to when they have questions after the training. In addition, examples of success stories of how the SIF Data Integration technology is being used elsewhere might further motivate staff receiving training.

### When is additional training needed?

Even though local authorities have a responsibility for education, it is not uncommon that on-going training has not been given the attention it needs. This can lead to a project failure because the end users become frustrated and decide they have better things to do with their time. You need to plan for follow-on training on a periodic basis. In addition, you will want to provide additional training when changes occur in the SIF Standards and accompanying software tools. It is also important to have a plan for training new users.

In-service or planned staff development days are excellent opportunities to schedule training sessions or report on enhancements that will be coming along.

Consider developing and publishing a frequently asked questions (FAQ) document on the web. If you choose to do this, make sure the owner is clearly established and updates are made each time a new question arises. This information resource will aid immensely by enabling users to solve their own problems thereby reducing the support burden on your technical staff.
STEP VIII - Supporting, Maintaining and Growing Your SIF Data Integration Solution

**Objective:** Provide the knowledge necessary for growing and maintaining your SIF Data Integration Solution.

Once your SIF Data Integration Solution is live, connected organisations will be reaping the benefits of more timely, accurate, and comparable data. Individuals who previously spent significant time entering and reconciling data will have more time to focus on providing services to learners, and parties responsible for other applications that need the data but which are yet not connected should be clamouring to join in.

SIF has already made great strides in standardising instructional, financial, and human resource data, and the next release of SIF standards aims to connect even more applications. This section examines specific issues pertaining to the support, maintenance and growth of your data integration solution once it is in operation.

To manage and develop your data integration solution, it is imperative that you understand the SIF Standards development process and schedule, as well as the versioning that will occur with associated tools. You must also explain the impact of these changes to your user community and involve them in expansion and upgrade decisions.

The following items are some examples of key on-going support and maintenance issues:

- Management of the data integration.
- Monitoring of data protection and data security practices.
- User support through help desks, documentation, and training.
- Reviewing usage and scaling up the infrastructure as appropriate.
- Maintaining technology components.
- Tracking system effectiveness.
- Upgrading software to new releases.
- Observing relevant policy changes by Government or professional bodies.
- Replacing and redeploying equipment.
- Finding qualified help when required.

There may be other establishments and organisations who wish to join your solution, or implement their own solutions using you as a template. Equally, you may get requests to link add applications to your Zone(s). Fulfilling such requests requires technical, financial and personnel resources, so it will be necessary to collaborate with others when planning on-going maintenance and timely support.

**Tip:** Because the data integration solution is an enterprise-wide asset, a steering committee may be useful to assist in planning enhancements and growth.

**Who Should Serve On A Data Integration Steering Committee?**

By the time that your data integration solution goes live, you will know who is most interested and excited about the possibilities. Many of these people may already be asking what happens next, so look for a selection which represents the widest possible range of stakeholders and draws upon all areas of expertise. You will want to recruit knowledgeable users as well as technical staff who are respected by them. Be careful to include individuals on whom you can rely to follow through any independent assignments, and consider representation from both the Pilot Project Team and their advisory committee, along with potential new users.
How Should The Data Integration Steering Committee Be Managed?

Over time, the membership of your data integration user community will change and the steering committee should be careful when finding replacements to ensure that a good cross-section of stakeholder types is preserved. Alternatively, you could rotate part of your membership on an annual basis – but avoid replacing everyone otherwise you will lose the institutional knowledge that is critical to the continuing success of the solution.

Committee meetings should be scheduled on a regular basis, and complemented with ad-hoc specialist sessions as required. The details will vary depending on the ambition of your implementation schedule, but make sure that an agenda is published well in advance, so your members can perform any necessary research and/or fact-finding prior to the meeting and so that everyone’s time is used effectively.
## Appendix A: TEMPLATE - NEEDS ANALYSIS

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner Management</td>
<td>System used to manage learner records throughout their academic career in the LA/RBC.</td>
<td>The learner management system needs to share data with the lunchroom, library, transportation, and classrooms.</td>
</tr>
<tr>
<td>Catering</td>
<td>System used to manage the distribution and consumption of learner meals.</td>
<td>Catering systems need to know specific information about learners in order to serve their nutritional needs.</td>
</tr>
<tr>
<td>Library Services</td>
<td>System used to manage learning resources of the school library.</td>
<td>The library needs to know when a new learner has enrolled to be able to manage library materials for them.</td>
</tr>
<tr>
<td>Identification Cards</td>
<td>System used to issue learner identification cards.</td>
<td>The identification card system needs to know when a new learner has enrolled to be able to issue a card for them.</td>
</tr>
<tr>
<td>Network Account</td>
<td>System that keeps track of and authenticates users on the school’s network.</td>
<td>These accounts need to be generated ASAP so that a new learner and/or teacher can sign on to the network for applications/ assignments on the first day of school/work.</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff/Learner E-Mail</td>
<td>System that provides e-mail accounts for learners, teachers and staff.</td>
<td>These accounts need to be generated ASAP so that a new learner/teacher has e-mail communication on their first day of work/school.</td>
</tr>
<tr>
<td>LA Data Warehouse</td>
<td>System that enables the collection of data in support of LA decision making processes.</td>
<td>The LA’s data warehouse needs to know about new learners who have enrolled in the LA.</td>
</tr>
</tbody>
</table>
Appendix B: TEMPLATE – PROGRAMME PLAN

[Enter the Programme name here]

Contents

[Enter the Programme name here] ............................................................................................................ 52
Programme Version Control ...................................................................................................................... 52

Overview .................................................................................................................................................. 53
Programme Purpose .................................................................................................................................. 53
Programme Scope ..................................................................................................................................... 53
Programme Objectives ............................................................................................................................... 53
Assumptions .............................................................................................................................................. 53
Approvals .................................................................................................................................................. 54
Programme Approach ............................................................................................................................... 54
Programme Deliverables and Quality Objectives .................................................................................... 54
Roles and Responsibilities ......................................................................................................................... 54
Dependencies ............................................................................................................................................ 55
Plans for Support Activities ....................................................................................................................... 55
Programme Resources and Facilities ......................................................................................................... 55
Risk Management ..................................................................................................................................... 55
Quality Management System ..................................................................................................................... 56
Projects ...................................................................................................................................................... 56
Programme Control .................................................................................................................................. 56
Programme Schedule ............................................................................................................................... 57
Appendices ................................................................................................................................................ 57
References .................................................................................................................................................. 57
Terminology ................................................................................................................................................ 57

Programme Version Control

Document name: [ENTER THE DOCUMENT NAME HERE]

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Changes / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Version 1.1
Page 52
© SIF Association
Overview

Programme Purpose
The purpose of the [enter the name of the implementation here] Programme is to build the necessary infrastructure to facilitate data synchronisation between applications in schools that need to share learner information.

The programme consists of a number of projects each of which has a separate Project Plan that reflects the requirements of the Programme.

Programme Scope
The scope of this programme involves the following:

- Conduct a Needs Analysis to determine the opportunities for dynamic electronic data sharing of learner information
- Develop Functional Requirements aligned to the identified needs in order to identify the tools and implementation strategy best suited to the local authority.
- Develop a data integration implementation strategy and deployment plan.
- Commission development platforms and undertake initial trialling of the architecture.
- Implement a data quality assurance programme
- Implement staff training and awareness
- Deploy full architecture and run full scale stress testing

Programme Objectives
The objectives of the programme are:

- Harmonised learner records that will enable access to timely, accurate and comparable information about children that will result in improved decision making at the classroom, school, local authority, regional and national levels
- To make sure efficient use of staff resources through streamlining the maintenance of learner information.
- To improve quality and timeliness of service to learners, families and staff.
- To leverage investments in application software and network technology
- To eliminate duplicate learner records across systems.

Assumptions
- The stakeholders will appropriate staff time and the financial resources necessary to conduct the programme and projects.
- The SIF Association UK will continue to develop and maintain the standards to meet local authority needs.
- Software suppliers will create solutions that are Certified with the SIF Implementation Specification (United Kingdom).
• The local authority recognises the value of information resources as a mission critical commodity necessary to successfully educate children.

Approvals
The Executive Sponsor and the management team will collectively approve this Programme Plan in its final release. Approval of this document will be confirmed through the distribution of the document to all programme stakeholders and their formal sign-off.

Programme Approach
The programme will be broken into projects, and risk will be minimised by approaching the project activities in a staged manner, adding successive complexity and detail to these project activities over the programme life cycle using the methodology of team -> work package -> deliverables.

Programme Deliverables and Quality Objectives
This programme will provide the following key deliverables which will be contained in a final report developed by the team.

Internal programme deliverables will include:
• Monthly status meetings unless otherwise required on a weekly basis.
• Progress status reports will be published on a monthly basis in the form of meeting minutes organised in alignment to the programme and project plans.
• The overall programme review, including lessons learned, will be developed at the end of the project with input from all programme and project team members.

Project-orientated deliverables will include:
• Needs Assessment
• Functional Requirements
• Implementation Strategy and Deployment Plan
• Development platforms and trialling of the architecture.
• Data quality is assured
• Staff are adequately trained and aware
• Deployment of the full architecture

Roles and Responsibilities

<table>
<thead>
<tr>
<th>ROLE</th>
<th>RESPONSIBILITY</th>
<th>INDIVIDUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Sponsor</td>
<td>Decision-maker for the [insert name of implementation here]</td>
<td></td>
</tr>
<tr>
<td>Senior Supplier</td>
<td>Technical resource providing the local authority with guidance and direction targeting successful deployment of the data integration technology</td>
<td></td>
</tr>
<tr>
<td>(Integration Consultant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior User</td>
<td>Works with the Integration Consultant to collect, analyse and process</td>
<td></td>
</tr>
</tbody>
</table>
### (Business analysis skills)

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme Manager</td>
<td>Coordinates all aspects of the programme ensuring that activities and milestones occur when scheduled and are successfully accomplished</td>
</tr>
</tbody>
</table>

### Dependencies

The most critical dependency within the scope of this programme is our reliance on timely and effective communication and support from the supplier and user communities. Business priorities and technical barriers may prevent them from adequately participating in the project. Those risks must be identified and an approach to address them should be included in the Risk Management section of the Programme.

### Plans for Support Activities

**Training:** Programme and Project team members must have familiarity with the concepts technology proposed for the programme. Business area representatives on the project may not have the same level of familiarity so an internal workshop should be conducted early in the project to explain the technology concepts and details to them.

**Quality Assurance:** User walkthrough will be conducted upon completion of the first draft of each deliverable in order to ensure the information gathered and analysed is accurate. Testing will be undertaken at unit, system and user acceptance levels. All testing will be undertaken against a previously approved test plan and the outcomes documented for Board level sign-off.

**Documentation Support:** Team members will be responsible for preparing the content of project deliverables. Clerical support will be provided for formatting and subsequent publication.

### Programme Resources and Facilities

**External Staff Resources:** Due to time and skill set constraints, it is recommended that the local authority engage the services of an integration consultant with successful experience in implementing data integration technologies in a large organisation.

**Internal Staff Resources:** The implementation team will require a full time business analyst to work with the integration consultant to identify needs and develop the data integration requirements. It is estimated that the programme manager will dedicate 100% of their time towards management of the projects.

**Facilities:** The Programme Management and Office teams will require office and meeting space in order to conduct the work necessary.

### Risk Management

The key risks identified for this project and the mitigation responses are identified below:

**Staff availability:** As mentioned earlier in the document, we have a strong dependency on the selected staff to work within the schedule of this programme to provide the support we require. Their own business priorities and technical barriers may limit their ability to participate. To mitigate this it is suggested that an early kick-off meeting with each of the identified stakeholders to gain their commitment by providing them with a detailed Project Plan of their required participation.

Following approval of the Programme, the Programme Manager will work with the relevant project teams to identify, analyse, track and control risks throughout the duration of the project. The risks identified above, along with any additional risks, will be documented and managed in the Programme Risk Management Plan, which will be published.
Quality Management System

All activities will be documented and subject to sign-off.

All deliverables will be tested and accepted only within the agreed tolerances.

Projects

This Programme is being conducted in a staged approach with each successive Project building on the previous.

- **Project Planning and Kick-off**
  - Build the project plan and kick-off the project

- **Stage 1: Education & Research**
  - Educate the team on the SIF Association and Standards and Tools. Conduct research on the current state of information systems in the local authority. Determine the users to be consulted for collecting needs.

- **Project 1: Needs Analysis**
  - Collect, analyse and prioritise data sharing needs from appropriate staff

- **Project 2: Functional requirements**
  - Based upon findings from the Needs Analysis, develop the functional requirement to support the expressed needs

- **Project 3: Implementation Strategy and Deployment Plan**
  - Develop an implementation strategy that will be manageable for the local authority taking into consideration financial and time constraints
  - Develop a deployment plan that operationalises the implementation strategy

- **Project 4: Development platforms and trialling of the architecture**
  - Source, configure and execute

- **Project 5: Data quality is assured**
  - Run validation checks across the full set of data stores

- **Project 6: Staff are adequately trained and aware**
  - Create and implement training programmes for SLTs, AOs and VLE managers.

- **Project 7: Deployment of the full architecture**
  - Source, configure, execute and test at unit, system and user acceptance levels

Programme Control

The following control procedures will be implemented:

- Project Management software will be used to develop the project plan and to track and report on actual progress.

- Programme Status reports will be provided on a monthly basis in the form of meeting minutes.

- Project Initiation Documents will be produced and signed off at Project and Programme levels.

- Milestone assessments
• Exception reports
• Tolerance RAG reports
• Work package descriptions
• Deliverable descriptions
• Issues log(s)
• Risk log(s)

Programme Schedule
This programme is expected to be complete within 9 months of initiation. It is anticipated that deployment will occur shortly thereafter.

The Gantt chart shows the relationship between the Projects and the overall Programme Plan.

Appendices
References
• Information on the SIF Association, a component of the proposed architecture, is available at http://www.sifassociation.org/uk/

In most cases this document does not re-state the information contained in the documents specified above. It is, therefore, recommended that the reader of this document refer to the other documents for additional information.

 Terminology

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIF Association</td>
<td>The SIF Association is a unique, non-profit collaboration composed of over 2300 schools, districts, local authorities, states, U.S. and International Departments of Education, government agencies, software suppliers and consultants who collectively define the rules and regulations for educational software data interoperability. The SIF Implementation Specification enables diverse applications to interact and share data efficiently, reliably, and securely regardless of the platform hosting those applications. The SIF Association has united these education technology end users and providers in an unprecedented effort to give teachers more time to do what they do best: teach. For further information, visit <a href="http://www.sifassociation.org">http://www.sifassociation.org</a>. The goal of the SIF Association is to make it possible for school administrators, teachers and other school personnel to have access to the most current and accurate data available.</td>
</tr>
<tr>
<td>Extensible Mark-Up Language (XML)</td>
<td>Extensible Mark-Up Language is a subset of SGML. Its goal is to enable generic SGML to be served, received, and processed on the web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML.</td>
</tr>
<tr>
<td>Zone Integration Server (ZIS)</td>
<td>Server software that manages the exchange of SIF Messages by communication with SIF Agents.</td>
</tr>
</tbody>
</table>

Version 1.1  Page 57  © SIF Association
| SIF Agent | The SIF Agent is a smart application that knows how to translate data records to and from standard SIF Objects. It is a supplier provided interface program that connects products from various suppliers together. When an application makes a change in one of the SIF Objects, its agent will generate an Event message containing the changes that were made. The ZIS will receive this event and propagate it to all other agents that are interested in updates to that particular object. |
Appendix C: TEMPLATE – PROJECT PLAN

[Enter Programme name here]

[Enter the name of the Project here]

Contents

[Enter Programme name here] .................................................................................................................. 59
[enter the name of the Project here] ........................................................................................................... 59
  Project Version Control.......................................................................................................................... 60
Overview .................................................................................................................................................. 60
Programme and Project Purpose ............................................................................................................. 60
Project Scope ........................................................................................................................................... 60
Project Objectives .................................................................................................................................. 60
Assumptions ............................................................................................................................................... 61
Approvals ................................................................................................................................................ 61
Project Approach ..................................................................................................................................... 61
Project Deliverables and Quality Objectives ............................................................................................ 61
Roles and Responsibilities ........................................................................................................................ 62
Dependencies ............................................................................................................................................ 62
Plans for Support Activities ..................................................................................................................... 62
Project Resources and Facilities ................................................................................................................ 63
Risk Management ..................................................................................................................................... 63
Quality Management System ................................................................................................................... 63
Stages ......................................................................................................................................................... 63
  Work Package 1 – Deliverables ............................................................................................................ 64
  Work Package 2 – Deliverables ............................................................................................................ 64
Project Control .......................................................................................................................................... 64
Project Schedule ...................................................................................................................................... 65
Appendices ................................................................................................................................................ 65
  References ............................................................................................................................................ 65
  Terminology .......................................................................................................................................... 65
Project Version Control

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author</th>
<th>Changes / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This document and the attached Appendices recognise all trademarks, copyright and the IPR of their respective owners.

Overview

Programme and Project Purpose

The purpose of the [enter the Programme Name here] Programme is to build the necessary infrastructure to facilitate data synchronisation between administrative applications that need to share information.

The programme has a number of projects of which this project is one and this Project Plan reflects the requirements of the wider Programme.

Project Scope

The scope of this project involves the following:

[Insert Project Scope – this should be drawn from the wider programme plan and should set the boundaries of the project.]

For example:

- Develop a data integration implementation strategy and deployment plan.

Project Objectives

[Insert Project Objectives – this should be drawn from the wider programme plan]

For example:

- The objectives of the project are:
- Harmonised learner records that will enable access to timely, accurate and comparable information about children that will result in improved decision making at the classroom, school, local authority, regional and government levels
- To make sure efficient use of staff resources through streamlining the maintenance of learner information.
- To improve quality and timeliness of service to learners, families and staff.
- To leverage investments in application software and network technology
To eliminate duplicate learner records across systems.

Project Stakeholders

[Insert Project Stakeholders here]
For example:

- Head teacher
- MIS Officer
- Attendance Officer
- Authority MIS Support

Assumptions

[Insert and assumptions necessary to complete the project to satisfaction]
For example:

- The stakeholders will appropriate staff time and the financial resources necessary to conduct the project.
- The SIF Association will continue to develop and maintain the standards to meet local evolving needs.
- Software suppliers will create solutions that are certified with the SIF Implementation Specification
- The local authority recognises the value of information resources as a mission critical commodity necessary to successfully educate children.

Approvals

Where local approval processes exist they should either replace or be additional to the items listed below.
The Project Sponsor and the management team will collaboratively approve this Project Plan in its final release.
Approval of this document will be confirmed through the distribution of the document to all project stakeholders.

Project Approach

The project will be broken into team -> work package -> deliverables, and risk will be minimised by approaching the activities in a staged manner.

Monitoring Project Deliverables and Quality Objectives

This project will provide the following key deliverables which will be contained in a final report developed by the team.
Internal project deliverables will include:

- Weekly status meetings
- Progress status reports will be published on a weekly basis in the form of meeting minutes organised in alignment to the project plan.
- The overall project review, including lessons learned, will be developed at the end of the project with input from all project team members.

Project-orientated deliverables will include:
- An implementation strategy that will be manageable for the organisation taking into consideration financial and time constraints
- A deployment plan that operationalises the implementation strategy

**Roles and Responsibilities**

Further roles and associated responsibilities may be identified and documented below.

<table>
<thead>
<tr>
<th>ROLE</th>
<th>RESPONSIBILITY</th>
<th>INDIVIDUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Sponsor</td>
<td>Decision-maker for the [insert name of project here]</td>
<td></td>
</tr>
<tr>
<td>Senior Supplier</td>
<td>Technical resource providing the organisation with guidance and direction targeting successful deployment of the data integration technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Where sub-suppliers or multiple consultants are involved this role is the single point of reporting for the project</td>
<td></td>
</tr>
<tr>
<td>Senior User</td>
<td>Works with the Integration Consultant to collect, analyse and process information relative to needs analysis and requirements definition.</td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>Coordinates all aspects of the project ensuring that events and tasks occur when scheduled and are successfully accomplished</td>
<td></td>
</tr>
</tbody>
</table>

**Dependencies**

The following are dependencies for this project:

- The Needs Assessment, to determine the opportunities for dynamic electronic data sharing of learner information, has been completed
- The Functional Requirements aligned to the identified needs in order to identify the tools and implementation strategy best suited to the organisation, has been completed.
- A test plan for the project deliverables has been developed and agreed.

**Plans for Support Activities**

**Training:** Project team members must have familiarity with the solutions proposed for the project. Business area representatives on the project may not have the same level of familiarity so an internal workshop should be conducted early in the project to explain the technology concepts and details to them.

**Quality Assurance:** User walkthrough will be conducted upon completion of the first draft of each deliverable in order to ensure the information gathered and analysed is accurate during this walkthrough all assumptions made should be tested with the user/client.

Testing will be undertaken at unit, system and user acceptance levels. All testing will be undertaken against a previously approved test plan and the outcomes documented for Board level sign-off.

**Documentation Support:** Team members will be responsible for preparing the documentation required by the project.
Project Resources and Facilities

External Staff Resources: It is recommended that the organisation consider engaging the services of an integration consultant with successful experience in implementing data integration technologies in an organisation of similar complexity.

Internal Staff Resources: The implementation team may require access to a person who is familiar the business process or a business analyst to work with the integration consultant to identify needs and develop the data integration requirements.

Facilities: The team will require appropriate resources which may include office space, meeting space, and clerical support.

Risk Management

The key risks identified for this project and the mitigation responses are will be identified and recorded below:

For example:

Staff availability: As mentioned earlier in the document, we have a strong dependency on the selected staff to work within the schedule of this project to provide the support we require. Their own business priorities and technical barriers may limit their ability to participate. To mitigate this it is suggested that an early kick-off meeting with each of the identified users to gain their commitment by providing them with a detailed work plan of their required participation.

Following approval of the Project Plan, the Project Manager will work with the Programme Manager and the project team to identify, analyse, track and control risks throughout the duration of the project. The risks identified above, along with any additional risks, will be documented and managed in the project Risk Management Plan, which will be published.

These risks and mitigations will be reviewed and updated on a regular basis throughout the project and reported to the board as necessary.

Quality Management System

All work packages and deliverable descriptions will be documented and subject to sign-off.

All deliverables will be tested and accepted only within the agreed tolerances.

Stages

This project is being conducted in a staged approach with each successive stage including additional levels of detail.

For Example:

- Project Planning and Kick-off
  - Build the project plan and kick-off the project

- Stage 1: Education & Research
  - Educate the team on the SIF Association standards and tools. Conduct research on the current state of information systems in the local authority. Determine the users to be consulted for collecting needs.

- Stage 2: Needs Assessment and Functional Requirements
  - Assimilate the outputs from these stages

- Stage 4: Implementation Strategy – Work Package 1
- Develop an implementation strategy that will be manageable for the organisation taking into consideration financial and time constraints

- Stage 5: Deployment Plan – Work Package 2
  - Develop a deployment plan that reflects the implementation strategy

**Work Package 1 – Deliverables**

For example:

<table>
<thead>
<tr>
<th>Deliverable code</th>
<th>Deliverable description</th>
<th>Team Leader (names to be inserted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3-WP1-D1</td>
<td>Written report of the strategy</td>
<td></td>
</tr>
<tr>
<td>P3-WP1-D2</td>
<td>Cost analysis of the strategy</td>
<td></td>
</tr>
<tr>
<td>P3-WP1-D3</td>
<td>Exemplar project plan for the strategy</td>
<td></td>
</tr>
<tr>
<td>P3-WP1-D4</td>
<td>Produce a full ‘User Acceptance Test’ plan</td>
<td></td>
</tr>
</tbody>
</table>

**Work Package 2 – Deliverables**

For example:

<table>
<thead>
<tr>
<th>Deliverable code</th>
<th>Deliverable description</th>
<th>Team Leader (names to be inserted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3-WP2-D1</td>
<td>Scope development platform requirements for Project 4</td>
<td></td>
</tr>
<tr>
<td>P3-WP2-D2</td>
<td>Produce trialling and test plans for the development environment for Project 4</td>
<td></td>
</tr>
<tr>
<td>P3-WP2-D3</td>
<td>Produce data quality assurance test plans for Project 5</td>
<td></td>
</tr>
<tr>
<td>P3-WP2-D4</td>
<td>Produce staff training and awareness programmes and materials for delivery by Project 6</td>
<td></td>
</tr>
<tr>
<td>P3-WP2-D5</td>
<td>Produce a full scale roll-out plan based on the exemplar project plan for delivery by Project 7</td>
<td></td>
</tr>
</tbody>
</table>

Each Team Leader will produce a Team Plan which shows how the Work Package and its deliverables will be achieved. These Team Plans will be signed off at the levels of Programme and Project Manager.

**Project Control**

The following control procedures will be implemented:

- Project Management software may be required to develop the project plan and to track and report on actual progress.
• Project Status reports will be provided to the Programme Office on an agreed basis in the form of meeting minutes.
• Project Initiation Documents will be produced and signed off at Project and Programme levels.
• Milestone assessments
• Exception reports
• Tolerance RAG reports
• Work package descriptions
• Deliverable descriptions
• Issues log(s)
• Risk log(s)

Project Schedule
This project is expected to be complete within agreed time scales of its initiation. It is anticipated that deployment will occur shortly thereafter.

There are no allowed tolerances to the delivery dates shown in the Project Plan.
The Gantt chart shows the relationship between this Project and the overall Programme Plan.

Appendices
References
Information on the SIF Association, a component of the proposed architecture, is available at http://www.sifassociation.org/uk. In most cases this document does not re-state the information contained in the documents specified above. It is, therefore, recommended that the reader of this document refer to the other documents for additional information.

Terminology

<table>
<thead>
<tr>
<th>TERM</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIF Association</td>
<td>The SIF Association is a unique, non-profit collaboration composed of over 2300 schools, districts, local authorities, states, U.S. and International Departments of Education, government agencies, software suppliers and consultants who collectively define the rules and regulations for educational software data interoperability. The SIF Implementation Specification enables diverse applications to interact and share data efficiently, reliably, and securely regardless of the platform hosting those applications. The SIF Association has united these education technology end users and providers in an unprecedented effort to give teachers more time to do what they do best: teach. For further information, visit <a href="http://www.sifassociation.org">http://www.sifassociation.org</a>.</td>
</tr>
<tr>
<td></td>
<td>The goal of the SIF Association is to make it possible for school administrators, teachers and other school personnel to have access to the most current and accurate data available.</td>
</tr>
<tr>
<td><strong>Extensible Mark-Up Language (XML)</strong></td>
<td>Extensible Mark-Up Language is a subset of SGML. Its goal is to enable generic SGML to be served, received, and processed on the web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML.</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Zone Integration Server (ZIS)</strong></td>
<td>Server software that manages the exchange of SIF messages by communication with SIF Agents.</td>
</tr>
<tr>
<td><strong>SIF Agent</strong></td>
<td>The SIF Agent is a smart application that knows how to translate that data records to and from standard SIF Objects. It is a supplier provided interface program that connects products from various suppliers together. When an application makes a change in one of the SIF Objects, its agent will generate an Event message containing the changes that were made. The ZIS will receive this event and propagate it to all other agents that are interested in updates to that particular object.</td>
</tr>
</tbody>
</table>
## Appendix D: TEMPLATE – DATA INTEGRATION REQUIREMENTS

<table>
<thead>
<tr>
<th>Req ID</th>
<th>Priority</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Source</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Procedural Impact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acceptance Plan</td>
</tr>
<tr>
<td>1.0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rationale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Source</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Procedural Impact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acceptance Plan</td>
</tr>
</tbody>
</table>
Appendix E: TEMPLATE – FUNCTIONAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Req ID</th>
<th>Priority</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rationale

Source

Procedural Impact

Acceptance Plan

Functional Requirement 1.0.1

1.0.1

Rationale

Source

Procedural Impact

Acceptance Plan

Functional Requirement 1.0.1.1

Functional Requirement 1.0.1.2

Functional Requirement 1.0.1.3

Functional Requirement 1.0.1.4

Functional Requirement 1.0.1.5

Functional Requirement 1.0.1.6

Functional Requirement 1.0.1.7
Appendix F: TEMPLATE – DATA MAPPING

Example 1

SIF Data Mappings
Application 1: ________________  Application 2: ________________

OBJECT Name: LearnerAttendance

(Note: ‘A’ indicated elements that are received from an ‘Add’ Event. All other elements would be received in an ‘Update’ or a Response to a Request)

<table>
<thead>
<tr>
<th>Element {}</th>
<th>Attributes and Values</th>
<th>Rec’d Mode</th>
<th>Formatting / Expected Values</th>
<th>Maps to Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>LearnerAttendance</td>
<td>LearnerPersonalRefID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SchoolGroupRefID</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SchoolYear</td>
<td>Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>StartDate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EndDate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ReasonsList</td>
<td>Reasons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reason/Code</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reason/Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reason/Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reason/Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SessionAttendanceTotal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SessionsPossible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AuthorisedAbsences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UnauthorisedAbsences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AlternativeTuitionHours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Code</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Example 2a

<table>
<thead>
<tr>
<th>Object Description</th>
<th>SIF Agents</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner</td>
<td>LearnerPersonal</td>
<td>This object contains personal information related to a learner.</td>
</tr>
<tr>
<td>LearnerAttendance</td>
<td>LearnerAttendanceSummary</td>
<td>This object provides attendance information for Roll Call and lessons.</td>
</tr>
<tr>
<td>LearnerContact</td>
<td>LearnerContact</td>
<td>This object contains information linking learners to the relevant learner contacts.</td>
</tr>
<tr>
<td>LearnerExclusion</td>
<td>LearnerExclusion</td>
<td>This object contains information related to a learner being excluded from one or more sessions of school.</td>
</tr>
<tr>
<td>LearnerSpecialNeeds</td>
<td>LearnerSpecialNeeds</td>
<td>This object contains information related to special education needs (SEN) for a learner when provisioned within a school or establishment.</td>
</tr>
<tr>
<td>LearnerSchoolEnrolment</td>
<td>LearnerSchoolEnrolment</td>
<td>This object contains information related to learners enrolment: On roll, off roll, left school.</td>
</tr>
<tr>
<td>SchoolGroup</td>
<td>SchoolGroup</td>
<td>The object describes courses, or class groupings organised and/or taught within a school or establishment.</td>
</tr>
<tr>
<td>SchoolGroupType</td>
<td>SchoolGroupType</td>
<td>The object describes courses or class groupings organised and/or taught within a school or establishment.</td>
</tr>
<tr>
<td>Workspace</td>
<td>Workspace</td>
<td>This object contains key personal information about a teacher or other employee of the school or LA.</td>
</tr>
</tbody>
</table>
### Example 2b

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DQMP (LEA)</strong></td>
<td>Agent used by Birmingham LEA - Children and Young Peoples Services to populate Birmingham central learner database</td>
<td>Requires frequent updates to objects by automated collection and subscription to events. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>Zimbra (eMail)</strong></td>
<td>Agent used for the provisioning and maintenance of learner and staff email accounts</td>
<td>Requires notification when new learners or staff members are added to the MIS system and marked as on roll or active. In order to create and update email accounts. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>Moodle (VLE)</strong></td>
<td>Agent used for the provisioning and maintenance of learner and staff accounts</td>
<td>Requires notification when new learners or staff members are added to the MIS system and marked as on roll or active. In order to create and update Moodle accounts. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>HIVE (Universal File Repository)</strong></td>
<td>Agent used for the provisioning and maintenance of learner and staff accounts</td>
<td>Requires notification when new learners or staff members are added to the MIS system and marked as on roll or active. In order to create and update Hive accounts. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>Mahara (ePortfolio)</strong></td>
<td>Agent used for the provisioning and maintenance of learner and staff accounts</td>
<td>Requires notification when new learners or staff members are added to the MIS system and marked as on roll or active. In order to create and update ePortfolio accounts. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>IDM (Identity Management)</strong></td>
<td>Agent used for the provisioning of learner and staff credentials used for BCC single sign on network</td>
<td>Must be registered on all zones to provide standard GUID for each learner and staff record</td>
</tr>
<tr>
<td><strong>CLM (14-19 Diploma)</strong></td>
<td>Agent used to transfer learner and attendance data between CLM and School MIS Databases.</td>
<td>Requires ability to send and receive attendance data to and from schools. Also updates to Learner information to add new diploma learners to the CLM central Database. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
<tr>
<td><strong>BSF - Redstone</strong></td>
<td>Agent used for the provisioning and maintenance of learner and staff accounts in BSL Learning Platform and Schools Active Directory</td>
<td>Requires notification when new learners or staff members are added to the MIS system and marked as on roll or active. In order to create and update Learning Portal accounts. Subscription to Identity object (IDM) to provide GUID</td>
</tr>
</tbody>
</table>
Appendix G: TEMPLATE – HIGH LEVEL DELIVERABLES

Template A

Although the table below is very basic it is an extremely useful process to complete. In the first instance it allows users to ensure that all of the basic high level requirements are met for implementation and this will allow a view of the strategic aims of the organisation to be defined. In addition it will assist high level decision makers to become acquainted with the real requirements of an implementation project. It is probably advantageous for a considerable amount of prior research to have been completed prior to the exercise being completed. It is probably necessary for additional work after the initial exercise to either confirm or change the variables. The salient point at the end of the exercise is for all parties to be in agreement with the end findings.

**HIGH LEVEL DELIVERABLES DOCUMENT**

<table>
<thead>
<tr>
<th>Does your implementation already have a ZIS? Y/N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>If NO:</td>
<td>When are you planning on installing your ZIS?</td>
</tr>
<tr>
<td>If YES:</td>
<td>What version is supported?</td>
</tr>
<tr>
<td></td>
<td>Location?</td>
</tr>
<tr>
<td></td>
<td>URL?</td>
</tr>
<tr>
<td></td>
<td>Test environment?</td>
</tr>
<tr>
<td></td>
<td>Live ZIS?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Will the LA/RBC be hosting the ZIS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>If YES:</td>
</tr>
</tbody>
</table>
### APPLICATION:

<table>
<thead>
<tr>
<th>SIF Agent?</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec version</td>
<td></td>
</tr>
<tr>
<td>Where will it be hosted?</td>
<td></td>
</tr>
<tr>
<td>What objects does it support?</td>
<td></td>
</tr>
<tr>
<td>Maintenance Agreement details: (Does it include SIF Agents, upgrades etc? What exactly is covered?)</td>
<td></td>
</tr>
<tr>
<td>Are you planning on having a SIF Agent?</td>
<td></td>
</tr>
<tr>
<td>When will it be available?</td>
<td></td>
</tr>
<tr>
<td>What objects will it support?</td>
<td></td>
</tr>
</tbody>
</table>

### SUPPLIER:

- Organisational contact details:
  - Project Manager:  
  - Developer:  
  - Support Manager:  

### Who’s paying for the application? (LA/School?)

### Who supports the application? (LA/Supplier?)
## Issues Tracking Log

**Project Name:** [insert implementation name]

<table>
<thead>
<tr>
<th>Issue ID</th>
<th>Program ID</th>
<th>Date Raised</th>
<th>Raised By</th>
<th>Functional Req'tment ID #</th>
<th>Priority</th>
<th>Issue Owner</th>
<th>Status</th>
<th>Coder</th>
<th>Date Coded</th>
<th>Taster</th>
<th>Date Test Successful</th>
<th>Impact / Problem Description</th>
<th>Impact Status / Resolution Description</th>
<th>Date closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>i001</td>
<td>MIS SIF Agent</td>
<td>10.1.08</td>
<td>DO</td>
<td>1.0.11</td>
<td>RED</td>
<td>DO</td>
<td>Resolved</td>
<td>MT</td>
<td>12.1.08</td>
<td>MB</td>
<td>14.1.08</td>
<td>Agent isn’t delivering the correct learner ID</td>
<td>Agent wasn’t capturing the correct ID so it was modified to do so</td>
<td>15.1.08</td>
</tr>
<tr>
<td>i002</td>
<td>Zone Integration Server</td>
<td>20.1.08</td>
<td>NB</td>
<td>1.0.12</td>
<td>RED</td>
<td>DO</td>
<td>Resolved</td>
<td>RB</td>
<td>21.1.08</td>
<td>MB</td>
<td>22.1.08</td>
<td>ZIS not delivering the acknowledgement from school meals app back to the MIS SIF Agent</td>
<td>Glitch in the ZIS directory management code</td>
<td>24.1.08</td>
</tr>
</tbody>
</table>
Appendix I: READINESS TOOLKIT

Readiness Survey

The survey on the following pages is designed to measure individual perceptions about your LA / RBC’s readiness for a data integration initiative. Read each statement in the survey and mark the response which most closely describes how you feel about that statement. The possible responses are:

1. **Strongly Disagree** - I am certain that this statement does not accurately describe my LA/RBC/school/college.
2. **Disagree** - I do not believe that the statement describes my LA/RBC/school/college.
3. **Neutral** - I am unsure of my LA/RBC/school/college position with respect to the statement, have no opinion about the statement, or do not understand the meaning of the statement.
4. **Agree** - I believe that the statement describes my LA/RBC/school/college.
5. **Strongly Agree** - I am certain that the statement accurately describes my LA/RBC/school/college.

*Leave Blank* - I do not know how to respond.

Mark one, and only one, response for each statement or leave it blank. Work through the survey quickly, as your initial reactions provide the best measures for readiness assessment.

Although some of the questions may seem repetitious, they are intrinsically linked to the overall strategy of the Implementation Planning Toolkit, and the answers will be influenced by the preceding questions.
<table>
<thead>
<tr>
<th>Readiness Survey Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I understand and support the business goals for our data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 I understand the term “business process” in relation to our data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Our LA/RBC/school/college has a formal data integration methodology, and I am aware of how this project can align with that policy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Organisational personnel understand the important role of information in business processes within our LA/RBC/school/college.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Within our organisation, there is a clear champion/senior sponsor for our data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Our schools/end users are fully aware, ready and willing to participate in the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Our organisational IT services/personnel understand the business role of data integration.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Our organisational IT services/personnel have the knowledge and skills to support the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 The LA/RBC/school/college can identify and name the applications and data to be integrated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Our senior sponsor, of the data integration project, is an executive with responsibility for the area that will be directly affected.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Our organisational IT services/personnel understand the concept of business process re-engineering and the impact on current business practices. (Ref p30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 I understand the business drivers/benefits that generate necessity and desire for data integration.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Our senior sponsor knows, and understands the commitment, that will be needed by the IT services/personnel for a successful data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness Survey Item</td>
<td>1 strongly disagree</td>
<td>2 disagree</td>
<td>3 neutral</td>
<td>4 agree</td>
<td>5 strongly agree</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>---------</td>
<td>-----------------</td>
</tr>
<tr>
<td>14 The IT services/personnel have established corporate standards compatible with the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 I can identify the work flow and business processes that the data integration project will affect.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 The schools/end users are informed and prepared to assume an active role in implementing the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 The senior sponsor is committed to do whatever is necessary to ensure success of the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 I understand the outcomes that must be produced by the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Our RBC, LA and schools (and/or colleges) are able to describe data sharing needs that are not currently being satisfied.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 The senior sponsor will ensure that the completion of the data integration project will serve as a resource &quot;owned&quot; by the appropriate local management governance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 The Project Board understand their roles and responsibilities in the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 The IT services/personnel will contribute and support to meet the deliverables of the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 LA/RBC/school/colleges personnel understand their roles and responsibilities in the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 The LA/RBC/school/college personnel involved in the project can describe themselves in terms of their project responsibilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 I believe that the data integration project can help achieve the LA/RBC/school/college's overall goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 The senior sponsor will ensure that the LA/RBC/school/college personnel have sufficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness Survey Item</td>
<td>1 strongly disagree</td>
<td>2 disagree</td>
<td>3 neutral</td>
<td>4 agree</td>
<td>5 strongly agree</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>-----------</td>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>time, resource and authority to complete their deliverables in the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 The senior sponsor has a full and active commitment to the success of the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 I understand the data integration methodology being deployed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 I understand the role of information/data in delivering LA/RBC/school/college new business processes achieved by the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 The LA/RBC/school/college personnel are prepared to lead the initiative and assume ownership of their responsibilities within the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 The senior sponsor has a good working relationship with IT services/personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Our IT services/personnel actively support data integration for the right business reasons.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 The LA/RBC/school/college utilises applications in support of the data integration project business processes. (Application standards commonality)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 I believe that the senior sponsor understands the cost and resource required to implement the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 Our IT services/personnel can ensure the quality of the data integration project deliverables.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 The LA/RBC/school/college personnel know the users of all products to be integrated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37 I understand the impact of the data integration project in changing current business processes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 The senior sponsor understands how personnel will be affected when the data integration project is operational.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39 The IT services/personnel are committed to selection of the correct technologies that help the LA/RBC/school/college achieve the desired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness Survey Item</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>outcomes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 Information-driven decision support needs cannot be met without defined interoperability between the LA/RBC/school/college's operational databases.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41 The senior sponsor understands the changes that must occur for the IT services/personnel to build and support a data integration strategy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 I understand the role of business processes in producing concise, relevant information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43 LA/RBC/school/college personnel understand that the data integration project may change their current working practices.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44 The IT services/personnel are willing to provide support to the project led by the business organisations of the Project Board.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 The senior sponsor understands the time and resource demands that will be initially placed on LA/RBC/school/college personnel to implement the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46 I have the relevant previous experience of data integration methodology.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47 The IT services/personnel can adapt the methodology to fit needs unique to our project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48 I believe that the senior sponsor has established realistic outcomes for the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49 The senior sponsor understands and values the integration technology in meeting the organisational objectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 I am committed to do whatever is required to achieve the outcomes of the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51 The LA/RBC/school/college personnel understand how their information expectations will be met by the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readiness Survey Item</td>
<td>1 strongly disagree</td>
<td>2 disagree</td>
<td>3 neutral</td>
<td>4 agree</td>
<td>5 strongly agree</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>------------</td>
<td>-----------</td>
<td>---------</td>
<td>-----------------</td>
</tr>
<tr>
<td>The IT services/personnel understand the planned LA/RBC/school/college business roles within the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The IT services/personnel will work with all appropriate LA/RBC/school/college personnel to develop the data integration project scope.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Project Board understands the value of information/data when managing LA/RBC/school/college business processes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The LA/RBC/school/college business units have data sharing agreements across organisational lines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The IT services/personnel are prepared to support the data integration when it is operational.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The senior sponsor will help the IT services/personnel acquire needed skills, knowledge, technology and resource.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The organisational business units understand the need for a data integration methodology/strategy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affected organisational business units believe in and support the data integration project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our IT services/personnel effectively support the periodically changing LA/RBC/school/college business requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Scoring the Survey

The following process describes the steps needed to manually score readiness survey results, and to perform analysis of those results.

This Toolkit provides a scoring spreadsheet to enhance the readiness assessment process. To use the spreadsheet enter the survey responses, filling one column for each survey. (Note: a blank item on the survey is scored as a zero.) Also enter the total number of completed readiness surveys.

There is also an excel spreadsheet designed to perform all of the scoring calculations.

Use the worksheet on the next page to manually score surveys. You'll develop twelve separate scoring results (the right-most column of the matrix) following these steps: Transfer responses from the survey sheets to the scoring matrix, matching survey statement numbers with the numbers of the cells in the scoring matrix. When scoring a single survey, enter the response from that survey. When scoring multiple surveys, enter the average of all responses for each statement number.

Sum the averages across each row in the scoring matrix, and record the sum in the total column.

Divide each row total by 5 to calculate an average for each row. Record the average in the right-most column of the scoring matrix.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>total</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Q12</td>
<td>Q25</td>
<td>Q37</td>
<td>Q50</td>
<td>total</td>
<td>average 1</td>
</tr>
<tr>
<td>Q7</td>
<td>Q22</td>
<td>Q32</td>
<td>Q44</td>
<td>Q56</td>
<td>total</td>
<td>average 2</td>
</tr>
<tr>
<td>Q4</td>
<td>Q16</td>
<td>Q30</td>
<td>Q40</td>
<td>Q59</td>
<td>total</td>
<td>average 3</td>
</tr>
<tr>
<td>Q5</td>
<td>Q17</td>
<td>Q27</td>
<td>Q34</td>
<td>Q48</td>
<td>total</td>
<td>average 4</td>
</tr>
<tr>
<td>Q13</td>
<td>Q31</td>
<td>Q41</td>
<td>Q49</td>
<td>Q57</td>
<td>total</td>
<td>average 5</td>
</tr>
<tr>
<td>Q10</td>
<td>Q20</td>
<td>Q26</td>
<td>Q38</td>
<td>Q45</td>
<td>total</td>
<td>average 6</td>
</tr>
<tr>
<td>Q3</td>
<td>Q18</td>
<td>Q21</td>
<td>Q28</td>
<td>Q46</td>
<td>total</td>
<td>average 7</td>
</tr>
<tr>
<td>Q8</td>
<td>Q14</td>
<td>Q35</td>
<td>Q47</td>
<td>Q53</td>
<td>total</td>
<td>average 8</td>
</tr>
<tr>
<td>Q6</td>
<td>Q19</td>
<td>Q23</td>
<td>Q51</td>
<td>Q58</td>
<td>total</td>
<td>average 9</td>
</tr>
<tr>
<td>Q2</td>
<td>Q15</td>
<td>Q29</td>
<td>Q42</td>
<td>Q54</td>
<td>total</td>
<td>average 10</td>
</tr>
<tr>
<td>Q11</td>
<td>Q33</td>
<td>Q39</td>
<td>Q52</td>
<td>Q60</td>
<td>total</td>
<td>average 11</td>
</tr>
<tr>
<td>Q9</td>
<td>Q24</td>
<td>Q36</td>
<td>Q43</td>
<td>Q55</td>
<td>total</td>
<td>average 12</td>
</tr>
</tbody>
</table>
Now, use the results from the survey scoring matrix to develop a profile of your data integration readiness. Complete the readiness measurement table and readiness rating worksheet on the next page, following these steps:

1. Transfer the averages from the scoring matrix into the un-shaded cells in the centre of the measurement table. Match the cell numbers to place the averages into the correct cells. (Average 1 is placed in the cell marked (1), Average 2 is placed in the cell marked (2), . . . )

2. Sum the averages across each row, then multiply by the weighting factor shown in the row score cell. Record each result in the correct row score cell.

3. Sum the averages down each column, then multiply by the weighting factor shown in the column score cell. Record each result in the correct column score cell.

4. Follow the instructions contained in the readiness rating worksheet, to calculate an overall measure of your data integration readiness.
## Readiness Measurement Table

<table>
<thead>
<tr>
<th>Business Imperative</th>
<th>People Readiness</th>
<th>Information Technology Readiness</th>
<th>Business Readiness</th>
<th>row scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
<td>(wt 2.33)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Executive Sponsorship</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(wt 2.33)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data Integration Development Method</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(wt 1.33)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Business Process Orientation</th>
<th>(10)</th>
<th>(11)</th>
<th>(12)</th>
<th>(wt 0.67)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>column scores</th>
</tr>
</thead>
</table>
Readiness Rating Worksheet

<table>
<thead>
<tr>
<th>(a). Sum the four row scores and enter the total here</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) Sum the three column scores and enter the total here</td>
<td></td>
</tr>
<tr>
<td>(c) Sum lines (a) and (b) and enter the result here</td>
<td></td>
</tr>
<tr>
<td>(d) Divide the amount on line (c) by 2</td>
<td></td>
</tr>
<tr>
<td><strong>This is your overall Readiness Rating</strong></td>
<td></td>
</tr>
</tbody>
</table>
Readiness Assessment

Use the scale below to evaluate the meaning of your overall readiness rating. Data integration can be a complex undertaking that requires careful planning and specific attention to risk management. This assessment can help to determine appropriate next steps for your organisation based upon the level of readiness.

Examine individual row and column scores from the measurement table to help identify specific areas of strength and risk. Tailor your data integration initiative plans to leverage the strengths and mitigate the risks.

<table>
<thead>
<tr>
<th>Readiness Level</th>
<th>Readiness Rating</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>91 - 100</td>
<td>Integrated: Data integration is used as an integral part of the organisations business processes.</td>
</tr>
<tr>
<td>4</td>
<td>76 - 90</td>
<td>Point-Solution: Data integration is used as a point-solution to meet local and specific information needs.</td>
</tr>
<tr>
<td>3</td>
<td>46 - 75</td>
<td>First Increments: The organisation is ready to build the data integration in increments, while learning from each project.</td>
</tr>
<tr>
<td>2</td>
<td>26 - 45</td>
<td>Prototyping: The organisation is ready to try a pilot and/or proof-of-concept project as a learning experience.</td>
</tr>
<tr>
<td>1</td>
<td>0 - 25</td>
<td>Investigating: The organisation needs more education, investigation, and understanding to proceed.</td>
</tr>
</tbody>
</table>
Extended Analysis

The assessment steps described above provide only a very high-level look at your organisation’s readiness for data integration. Deeper analysis of the data, particularly evaluating the spread of multiple responses to a single survey statement, yields greater understanding. Extended analysis helps to discover:

- **Strengths** - Statements where the ratings are consistently high (all fours and fives) are indicators of organisational strengths. Adapt data integration project plans to recognise and exploit strengths.

- **Weaknesses** – Statements where the ratings are consistently low (zero, one, and two) indicate areas of weakness. Adjust plans to minimise impacts while gaining strength in these areas.

- **Risks** – Statements where ratings are widely divergent, ranging from high to low, indicate areas of disagreement among the team. Widely varied perceptions indicate areas of potential risk. Further explore these areas to understand the reasons for diverse beliefs. Work to build consensus, and adjust plans to mitigate any inherent risks.
SUPPORTING DOCUMENTATION
INVITATION TO TENDER (ITT)

These are sample questions that may help in discussion with suppliers/customers and help support your implementation.

Version 1.3

1. Systems Interoperability Framework (SIF) Involvement SIF Certification

   1.1. Please list SIF Certified applications that will be provided by your company as part of this proposal (as posted on SIF Certification Registry: http://certification.sifassociation.org/SitePages/CertificationRegistry.aspx)

   1.2. Please list applications that will be provided by your company as part of this proposal that are not SIF Certified but that have SIF Agents available.

   1.3. When do you intend to have these applications SIF Certified?

   1.4. For each SIF Certified application, please supply a copy of the Conformance Statement Questionnaire (CSQ) that you completed as part of your certification application.

   1.5. For each application that has a SIF Agent but is not yet SIF Certified, please provide a description of each agent’s functionality in complete detail.

2. SIF Experience

   2.1. Please provide a brief history of your company’s involvement with SIF (UK) implementations. In addition, please provide the following information:

   2.2. Describe the implementation and support services available from your company during deployment of the SIF Certified applications that will be provided as part of this proposal.

   2.3. Describe the functions(s) supported by your application(s) (i.e. subscriber, provider, etc.).

   2.4. Please list other agent suppliers and / or SIF Certified applications that are known to have been deployed by schools and / or local authorities that have implemented your SIF Certified applications that will be provided as part of this proposal.

   2.5. Please list the SIF (UK) data objects available in the SIF Certified applications that will be provided as part of this proposal.

   2.6. Please name the zone integration server(s) that has been tested for use or that existing customers have used during deployment of the SIF Certified applications that will be provided as part of this proposal.

   2.7. List at least three reference schools and / or local authorities that have purchased and/or deployed your SIF Certified application.
2.8. Please provide customer contacts for each reference.

2.9. How many total customers do you have that have purchased and / or deployed your SIF Certified applications that will be provided as part of this proposal? Note that a comprehensive confidential list of clients may be requested if your organisation is chosen for further consideration.

3. Agent Costs

3.1. Are costs for your agent(s) included in the costs for your software or are they separate costs?

3.2. How are upgrades to your agent(s) priced?

3.3. Describe installation support and its cost.

3.4. Describe on-going support and its cost.

3.5. Are upgrades included in software maintenance or annual service agreement?

3.6. Zone Integration Server (ZIS)

3.7. Does your company provide or market a Zone Integration Server (ZIS)? (If not, proceed to the next section.)

3.8. Identify the version(s) of the UK SIF Specification that the ZIS supports.

3.9. Please provide a list of references from these implementations that we can contact.

3.10. Does your proposal include the cost of the ZIS and implementation?

3.11. What is the cost for upgrades?

3.12. What are the costs for training and support for the ZIS?

3.13. Describe the training and support provided (documentation, phone support, etc.).

3.14. What additional software needs to be installed and operational in order for your ZIS to run properly?

4. SIF Association Participation

4.1. Please provide your original date of SIF Association membership.

4.2. List leadership positions held by staff in your organisation as part of the SIF Association, including working groups, task forces and/or committees.

4.3. List SIF Association working groups, task forces and/or committees in which your company actively participates and staff hours of company involvement in each group.

4.4. List any and all SIF activities in which you have participated, including Developers Camps, Connect-a-Thons, conference and trade show demonstrations, and quarterly and annual meetings.
5. SIF Support

5.1. Will your company assist the local authority in using SIF to interface your application with other internal and external legacy information systems used in the local authority / Regional Broadband Consortium?

5.2. What support does your company provide for agent specific questions? Describe your escalation procedures.

5.3. What specific training, support and development assistance will be provided?
SIF IMPLEMENTATION PLANNING QUESTIONS

General Planning:
- What is the scope of this integration project?
- What benefits do you want to gain through integration?
- What data needs to move and to where?
- What are the changes/benefits you expect to see through integration?

Personnel:
- What activities will you be responsible for internally, what will you outsource?
- Who will lead and who will coordinate the project Internally/Externally?
- Who is the project coordinator for each supplier?
- Do you have adequate technical staff resources?
- What kind of technical & human resource will be necessary and who will be responsible for providing what aspects of each?

Communication:
- How will progress & decisions be documented?
- What process will you use to: develop consensus; share information; communicate policy & procedure changes?
- How will you set and manage expectations?
- Are there legal and/or confidentiality requirements to consider?

Political:
- Who are the stakeholders in your schools/Local Authority that need to be involved in this process? What roles do they need to play?
- Who are the thought leaders that need to be brought on board to ensure success with this effort?
- Who are the gatekeepers that control access to data/information today?
- Who owns the data today?
- What are the existing rules/processes for data management? Why are they in place?
- Are there any role based security policies in place?
- How will current data owners' jobs change with integration?
- Are there Union or work rule issues involved?

Technical:
- What is your existing security model?
- What remote support methodologies will you utilise with each supplier?
- What impact will this have on connectivity & network load?
- What are your hardware requirements?
- What are your security needs both data & physical?
- Are there technical issues that will necessitate staff training or external consultants?
- How do other system components impact SIF? (e.g. MIS)
- Are there custom data mapping needs?
Things to do:

- Formal analysis of existing work and data flow
- Create impact statement
- Plan to retrain staff on SIF-enabled systems (it is likely it will change their jobs and interactions)
- Be aware of internal politics
- Plan monthly Project status meetings
- Define process for error reporting
- Keep an open mind about problems (if it’s not working it’s everybody’s problem)
- Talk to other Local Authorities that have implemented the SIF data integration technology that you are considering, feedback from these Local authorities can prove to be invaluable. This should happen early in the evaluation process because you will want to learn key information before making your decision. There are certain questions you should ask to help you compare their data integration to your own situation. If you choose to work with a supplier that is unfamiliar to you, you will want to ask the same questions of several of the supplier’s references.
  1. What is the scope of integration that your Local Authority undertook?
  2. Why did you select this solution?
  3. What did you find most successful?
  4. What issues did you encounter when implementing?
  5. If you could change certain aspects of the solution, what would you modify?
GLOSSARY OF TERMS
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>The liaison between an application and the ZIS. An agent is responsible for sending messages to and receiving messages from the ZIS. For incoming messages, an agent translates the XML message into the data recognised by its application, and applies any changes to the application’s data. An agent is also responsible for monitoring changes in the data associated with its application, assembling it into a SIF message, and submitting it to the ZIS.</td>
</tr>
<tr>
<td>Attribute</td>
<td>An item associated with an element that describes, modifies, or provides extra information about the element content (think of it as an adjective describing the element).</td>
</tr>
<tr>
<td>Authentication</td>
<td>The process of verifying whether someone or something is in fact who or what it declares itself to be.</td>
</tr>
<tr>
<td>Authoritative Provider</td>
<td>The software application that is deemed the authoritative source of the data.</td>
</tr>
<tr>
<td>CDM</td>
<td>See Conceptual Data Model</td>
</tr>
<tr>
<td>Certification</td>
<td>Certification is the process the zone integration server (ZIS) or application and agent as a pair are put through by the software applications developer. The certification for the SIF Specifications is conducted by the Open Group, a third party certification authority hired by the SIF Association. Certification warrants and tests the claims that the software application vendors assert about their ZIS or agent to the SIF Specification.</td>
</tr>
<tr>
<td>College</td>
<td>Further Education (FE) in the United Kingdom includes education for people over 16, usually excluding universities. It is primarily taught in FE colleges (which are similar in concept to United States community colleges, and sometimes use “community college” in their title), work-based learning, and adult and community learning institutions.</td>
</tr>
<tr>
<td>Common Elements</td>
<td>Data elements that are common across multiple data objects.</td>
</tr>
<tr>
<td>Conceptual Data Model</td>
<td>(CDM) - A map of concepts and their relationships that represents the high-level logical structure of the sets of data, which is independent of any software or data storage structure.</td>
</tr>
<tr>
<td>Curriculum</td>
<td>A plan of instruction that details what learners are to know, how they are to learn it, what the teacher's role is, and the context in which learning and teaching will take place.</td>
</tr>
<tr>
<td>Data Model</td>
<td>A description of the data structure and the way data are organised and used.</td>
</tr>
<tr>
<td>Data Protection Act</td>
<td>The Data Protection Act is a United Kingdom Act of Parliament. It defines a legal basis for the handling in the UK of information relating to living people. It is the main piece of legislation that governs protection of personal data in the UK. Although the Act does not mention privacy, in practice it provides a way in which individuals can enforce the control of information about themselves. Most of the Act does not apply to domestic use, for example keeping a personal address book. Organisations in the UK are legally obliged to comply with this Act, subject to some exemptions. Compliance with the Act is enforced by an independent government authority, the Information Commissioner's Office (ICO). The ICO maintains guidance relating to the Act. The Act defines eight principles of information-handling practice. More details can be found at: <a href="http://www.ico.gov.uk/what_we_cover/data_protection.aspx">http://www.ico.gov.uk/what_we_cover/data_protection.aspx</a></td>
</tr>
<tr>
<td>Data Object</td>
<td>A logically related set of elements that is exchanged in the zone. Data objects are defined using XML.</td>
</tr>
<tr>
<td>DPA</td>
<td>See Data Protection Act</td>
</tr>
<tr>
<td>Element</td>
<td>A data field representing a defined piece of information.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Encryption</td>
<td>A way of coding information in a message so that if it is intercepted by someone as it travels over a network it cannot be read by the human eye.</td>
</tr>
<tr>
<td>Event</td>
<td>A type of message that is sent by an agent when information in its associated application is added, changed, or deleted.</td>
</tr>
<tr>
<td>Extensible Markup Language</td>
<td>(XML) - A standard language used to describe data. SIF messages are defined using XML.</td>
</tr>
<tr>
<td>GUID</td>
<td>Globally Unique Identifier, a 32-character identifier unique across space and time. Frequently used to uniquely identify each instance of a data object (RefId), resulting in a mechanism for uniquely mapping a specific person, school, etc. in one application with the same entity in another application.</td>
</tr>
<tr>
<td>Horizontal reporting</td>
<td>The transfer of data between multiple software applications within an organisation using a SIF Zone Integration Server (ZIS).</td>
</tr>
<tr>
<td>HTTP</td>
<td>See Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>HTTPS</td>
<td>See Hypertext Transfer Protocol over Secure Socket Layer</td>
</tr>
<tr>
<td>Hypertext Transfer Protocol over Secure Socket Layer</td>
<td>Hypertext Transfer Protocol over Secure Socket Layer or HTTPS is a URI scheme used to indicate a secure HTTP connection. It is syntactically identical to the http:// scheme normally used for accessing resources using HTTP. Using an https: URL indicates that HTTP is to be used, but with a different default TCP port (443) and an additional encryption/authentication layer between the HTTP and TCP. This system was designed by Netscape Communications Corporation to provide authentication and encrypted communication and is widely used on the World Wide Web for security-sensitive communication such as payment transactions and corporate information systems. Ref: <a href="http://en.wikipedia.org/wiki/HTTPS">http://en.wikipedia.org/wiki/HTTPS</a></td>
</tr>
<tr>
<td>Internet</td>
<td>A worldwide &quot;network of networks&quot; that allows participants in different electronic networks to share information, transfer files, access news, and communicate through electronic mail.</td>
</tr>
<tr>
<td>Key Stage</td>
<td>A Key Stage is a stage of the state education system in the UK setting the educational knowledge expected of learners at various ages. The stages are as follows: Key Stage 0: Nursery and reception years (3-5 years old). Now included as part of the Early Years Foundation Stage Key Stage 1: Years 1 to 2 (5-7 years old) Key Stage 2: Years 3 to 6 (7-11 years old) Key Stage 3: Years 7 to 9 (11-14 years old) Key Stage 4: Years 10 to 11 (14-16 years old). The exams at the end are typically of the GCSE level. Key Stage 5 (more commonly referred to as Sixth Form): Years 12 to 13 (16-18 years old). The exams at the end are typically A-Levels, AS-Levels, NVQs or HNDs. The National Curriculum sets out targets to be achieved in various subject areas at each of the Key Stages.</td>
</tr>
<tr>
<td>KS</td>
<td>See Key Stage</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LA</td>
<td>See Local Authority</td>
</tr>
<tr>
<td>LDM</td>
<td>See Logical Data Model</td>
</tr>
<tr>
<td>Learning Platform</td>
<td>A learning platform is an integrated set of interactive online services that provide teachers, learners, parents and others involved in education with information, tools and resources to support and enhance educational delivery and management. The term learning platform refers to a range of tools and services often described using terms such as educational extranet, VLE, LMS, ILMS and LCMS providing learning and content management. The term learning platform also includes the personal learning environment (PLE) or personal online learning space (POLS), including tools and systems that allow the development and management of e-portfolios. In principle a learning platform is a safe and secure environment that is reliable, available online and accessible to a wide user base. A user should be able to move between learning platforms throughout their life with no loss of access to their personal data.</td>
</tr>
<tr>
<td>Local Authority</td>
<td>Local Authorities (LAs) have a duty to promote the economic, environmental and social well-being of their area, including working on cross-cutting schemes with other partners. They are democratically accountable, which gives them a distinctive leadership role in local community to set a vision for education, children and young people’s services and bring together partners to achieve change and improvement. There are 150 LAs in England. Those LAs are responsible for the strategic management for education and children and young people's services including: • The welfare and education of every child • Special Educational Needs (SEN) • Planning the supply of school places • Making sure every child has access to a suitable school place, or has suitable provision made for them • Supporting the challenging schools, and intervening where a school is failing its pupils • Allocating funding to schools • Implementing the refurbishment or rebuilding of every secondary school over the next 10 to 15 years through Building Schools for the Future.</td>
</tr>
<tr>
<td>Logical Data Model</td>
<td>(LDM) - contains granular details about the relationships between the data elements and the desired flow of data.</td>
</tr>
<tr>
<td>LP</td>
<td>See Learning Platform</td>
</tr>
<tr>
<td>Management Information System</td>
<td>A computer based system designed specifically for schools to provide a depository for learner information. An MIS, dependant on provider, may provide, but not be limited to the following information: home address; school photo; telephone contact numbers for emergencies; dob; dietary requirements (if applicable e.g. kosher meals, nut allergies); timetable details and number of absences. It may also provide information on individual learners including behaviour and attendance and inform the school workforce with information to make decisions on pupil learning.</td>
</tr>
<tr>
<td>Managed Learning Environment</td>
<td>(MLE) - Managed learning environments, are concerned with whole institutional systems, and involve the joining-up or interoperation of several separate systems - Learner Record Systems, Library Systems, Management Information Systems, VLEs, timetabling systems and so on. This is in contrast to a virtual learning environment, where the focus is on the tools used in the process of teaching in an online setting. Essentially, a managed learning environment helps to set the perimeters of the learning experience, and makes it possible to standardise the resources used in learning in a manner that results in measured results.</td>
</tr>
<tr>
<td>Message Queues</td>
<td>Persistent storage areas, such as databases or files, where messages reside while waiting to be delivered.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MIS</td>
<td>See Management Information System</td>
</tr>
<tr>
<td>MLE</td>
<td>See Managed Learning Environment</td>
</tr>
<tr>
<td>PDM</td>
<td>See Physical Data Model</td>
</tr>
<tr>
<td>Physical Data Model</td>
<td>(PDM) - specifies implementation details which may be features of a particular software application or version.</td>
</tr>
<tr>
<td>Provide</td>
<td>To be able to respond to requests for a given data object. There is only one designated provider (default responder) in a zone per object. Providers of an object must be able to supply all mandatory elements within that object.</td>
</tr>
<tr>
<td>Publish</td>
<td>To send event messages to the zone whenever an event occurs affecting a given data object.</td>
</tr>
<tr>
<td>Pull Mode</td>
<td>The mode in which an agent functions. An agent in Pull mode polls the ZIS to get any messages waiting for it. Pull mode agents always initiate contact with the ZIS.</td>
</tr>
<tr>
<td>Push Mode</td>
<td>The mode in which an agent functions. An agent in Push mode allows the ZIS to send messages to it in real time. Initiation of communication is bi-directional between the ZIS and the agent.</td>
</tr>
<tr>
<td>RBC</td>
<td>See Regional Broadband Consortium</td>
</tr>
<tr>
<td>Regional Broadband Consortium</td>
<td>Regional Broadband Consortia (RBCs) are consortia of local authorities established to procure cost-effective broadband connectivity for schools in England. There are 10 RBCs covering 139 of the 150 local authorities.</td>
</tr>
<tr>
<td>Report Manifest</td>
<td>A report definition describing the data to be contained in a report.</td>
</tr>
<tr>
<td>Request</td>
<td>A type of message containing a query for a specific data object.</td>
</tr>
<tr>
<td>Response</td>
<td>A type of message containing data objects sent in reaction to a request message.</td>
</tr>
<tr>
<td>School</td>
<td>An educational institution providing primary and secondary education, prior to tertiary education (college or university).</td>
</tr>
</tbody>
</table>
| Schools Interoperability Framework       | The SIF Association is a unique, non-profit collaboration composed of over 2300 schools, districts, local authorities, states, U.S. and International Departments of Education, government agencies, software suppliers and consultants who collectively define the rules and regulations for educational software data interoperability. The SIF Implementation Specification enables diverse applications to interact and share data efficiently, reliably, and securely regardless of the platform hosting those applications. The SIF Association has united these education technology end users and providers in an unprecedented effort to give teachers more time to do what they do best: teach. For further information, visit http://www.sifassociation.org.  
  (Known as the Systems Interoperability Framework Association in the UK and Australia) |
| SCORM                                    | Sharable Content Object Reference Model (SCORM) is a collection of standards and specifications for web-based e-learning. It defines communications between client side content and a host system called the runtime environment (commonly a function of a learning management system). SCORM also defines how content may be packaged into a transferable ZIP file. |
| Selective Message Blocking               | (SMB) - allows an agent to tell the ZIS to suspend delivery of event messages until further notice.                                                                                                            |
| SIF                                      | See Schools Interoperability Framework (US)                                                                                                                                                                 |
  (Known as the Systems Interoperability Framework Association in the UK and Australia)
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIF-compliant</td>
<td>A product which conforms to the SIF standard, but has not been certified.</td>
</tr>
<tr>
<td>SIF-certified</td>
<td>A product which conforms to the SIF standard and has passed the SIF certification process.</td>
</tr>
<tr>
<td>SIF Implementation Specification</td>
<td>A data standard that describes how education sector applications can share data.</td>
</tr>
<tr>
<td>SIF Zone Services</td>
<td>SIF Zone Services are WSDL-defined service applications which will run over the extended SIF infrastructure.</td>
</tr>
<tr>
<td>SIF_ACK</td>
<td>The acknowledgement message used in every message exchange. The receiver of a message returns the Ack to let the sender know the message was received, or if there was an error.</td>
</tr>
<tr>
<td>Systems Interoperability Framework Association</td>
<td>See Schools Interoperability Framework Association (Known as the Schools Interoperability Framework Association in the US)</td>
</tr>
<tr>
<td>Working Group (UK)</td>
<td>The SIF Association UK brings together both public and private sector technology and educational communities to develop collaborative solutions for data interoperability. Members of the SIF association are expected to show their commitment to this ethos by providing representation on at least one UK Working Group or Task Force. Through participation in Working Groups, members can provide input into technical specifications and organisations activities, provide feedback, or contribute to designated tasks. Working Group Chairs and Co-chairs report directly to the UK Management Board.</td>
</tr>
<tr>
<td>Task Force (UK)</td>
<td>Small task forces (consisting of at least 2 suppliers and one end-user) are set up to define or produce specific documentation i.e. SIF objects, XML, object proposal and plans, business and use cases. Task Force leads report directly into the relevant Working Group.</td>
</tr>
<tr>
<td>SMB</td>
<td>See Selective Message Blocking</td>
</tr>
<tr>
<td>Subscribe</td>
<td>To receive event messages (adds, changes, deletes) for a data object and its elements.</td>
</tr>
<tr>
<td>Synchronise</td>
<td>A process that agents perform that establishes a common GUID in a zone between applications for each person, school, or other entity. Agents typically synchronise with the SIS agent when they are first installed, and again at the beginning of each school year.</td>
</tr>
<tr>
<td>UK Management Board</td>
<td>A task force of the SIF Association (US) set up to specifically manage affairs of the Association in the UK. Members are the board are elected in either a one or two year term. Elections are held annually.</td>
</tr>
<tr>
<td>ULN</td>
<td>See Unique Learner Number</td>
</tr>
<tr>
<td>Unique Candidate Identifier</td>
<td>Each candidate sitting GCE A/AS, GCSE Modular and Key Skills examinations will be allocated a Unique Candidate Identifier (UCI) number, which will be used to identify individuals during their modular courses. The UCI is 13 characters long and usually consists of the centre number, a year reference number, the candidate number and an alphabetical check digit. The UCI enables the awarding bodies to match the current exam entries with previous entries in unitised qualifications.</td>
</tr>
<tr>
<td>Unique Learner Number</td>
<td>A Unique Learner Number (ULN) is a 10-digit identifier, which is applied to the Learner Record of anyone over the age of 14 involved UK education or training. Learners will retain the same number for accessing their Learner Record throughout their lives, whatever their level of learning and wherever they choose to participate. Each ULN is issued and held by the Learner Registration Service (LRS). The LRS uses the number to index each learner’s identity details, education and training qualifications within the Learner Record.</td>
</tr>
<tr>
<td>Vertical Reporting</td>
<td>Automated reporting using the special case of vertical interoperability identified in the SIF Specification.</td>
</tr>
<tr>
<td>Vertical Reporting Choreography</td>
<td>The specific steps followed by agents regarding the movement of data in a vertical implementation.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Virtual Learning Environment</td>
<td>(VLE) - A virtual learning environment is a software system designed to support teaching and learning in an educational setting, as distinct from a Managed Learning Environment (MLE) where the focus is on management. A VLE will normally work over the Internet and provide a collection of tools such as those for assessment (particularly of types that can be marked automatically, such as multiple choice), communication, uploading of content, return of learners' work, peer assessment, administration of learner groups, collecting and organising learner grades, questionnaires, tracking tools, etc. New features in these systems include wikis, blogs, RSS and 3D virtual learning spaces. While originally created for distance education, VLEs are now most often used to supplement traditional face to face classroom activities, commonly known as Blended Learning.</td>
</tr>
<tr>
<td>VLE</td>
<td>See Virtual Learning Environment</td>
</tr>
<tr>
<td>WBL</td>
<td>See Work Based Learning</td>
</tr>
<tr>
<td>Work Based Learning</td>
<td>Work Based Learning is the component of a learning programme that focuses on the application of theory in an authentic, work-based context. It addresses specific competences identified for the acquisition of a qualification, which relate to the development of skills that will make the learner employable and will assist in developing his/her personal skills. Employer and professional bodies are involved in the assessment of experiential learning, together with academic staff.</td>
</tr>
<tr>
<td>XML</td>
<td>See Extensible Markup Language</td>
</tr>
<tr>
<td>ZIS</td>
<td>See Zone Integration Server</td>
</tr>
<tr>
<td>Zone</td>
<td>A logical collection of applications, agents, and a ZIS that exchange information with each other. Zones can be set up to exchange data at different levels. They are typically established at the district level, and are also frequently set up for each school.</td>
</tr>
<tr>
<td>Zone Integration Server</td>
<td>(ZIS) – Controls communication between agents. Its primary responsibility is to route messages from agent to agent, and to control which agents can request, provide, publish, and subscribe to which data objects. The ZIS is actually software, not hardware, and may or may not be installed on a dedicated server.</td>
</tr>
</tbody>
</table>