



TRANSFER OF STUDENT DETAILS

→ TASMANIA

SOLVING REAL WORLD PROBLEMS THROUGH INTEROPERABILITY, THIS CASE STUDY 1 OF 7 IN THE SIF AU PILOT PROGRAM, FUNDED BY THE FEDERAL GOVERNMENT AND SUPPORTED BY TASMANIAN DEPARTMENT OF EDUCATION.

→ INTRODUCTION AND BACKGROUND

The Digital Education Revolution envisages “technology enriched learning environments” for all young Australians. Key to its success is the capacity to put the right information at the right time into the hands of learners, teachers, parents and policy makers.

Since 2007 Chief Information Officers from Australia’s state and territory education systems, together with colleagues from the Catholic and Independent school sectors and with support from the Commonwealth Department of Education, Employment and Workplace Relations, have been working towards the establishment of an open standard for systems interoperability for Australian schools to enable information to be used when and where it is needed.

This joint initiative, known as “Towards SIF AU”, has enabled the development of a draft SIF Implementation Specification for schools in Australia (further referred to as the SIF AU Spec.) and a business case identifying the costs and benefits

of adopting SIF across the Australian Schools Sector. The business case assessed evidence gathered from interviews and surveys with key stakeholders, and through a program of pilot projects aimed at solving practical interoperability challenges making use of SIF. The pilot program was conducted in such a way as maximise the sharing of knowledge and solutions across projects and produce a knowledge base of enduring value to the schools sector.

This is a summary case study of one of these pilots.

→ OVERVIEW: TRANSFERRING CHANGES IN STUDENT DETAILS TO CENTRAL IDENTITY MANAGEMENT

The Department of Education Tasmania (DoE-Tas) needs to manage key identity information for all 80,000 staff and students within its jurisdiction. This information is centrally managed in a database but must also be delivered to other systems within the enterprise. This pilot developed a solution that used the

open standard Systems Interoperability Framework (SIF) to communicate changes in the identity-management database to a receiving system, ensuring that identities were kept up-to-date whenever changes occurred in the source system.

The successful pilot demonstrated that identity information in a receiving system could be updated immediately with changes to a central source system (based around the forthcoming DoE-Tas identity manager, Microsoft Forefront Identity Manager). The receiving system was the EQUILLA Digital Repository, which allows school students and staff to securely login to their local school systems.

To achieve this goal, the pilot used demonstration systems and anonymous data based around existing production systems and typical identity data. The software developed in this pilot forms one component of the new identity platform DoE-Tas plans to adopt.

As an integral part of the pilot this summary case study, an in-depth case study across all pilots and online project information (including a developer’s guide webinar), were developed in conjunction with the SIF AU team.

→ PARTICIPANTS

The project was approved by Trevor Hill, Director of Information Technology Services (DoE-Tas) and sponsored by Greg Curtis from DoE-Tas. Funding was provided by the Federal Government's Digital Education Revolution Fund (DER) through the SIF AU program. All participants contributed in kind to this new approach to solving real-world problems.

Importantly two commercial vendors also took part in the project and made significant contributions. The Learning Edge International developed a SIF Agent for their digital repository EQUELLA, and provided their time and expertise to the project. Insight4 developed a SIF Agent for the Microsoft FIM 2010 (FIM) product, made recommendations on extending the SIF Implementation Specification (Australia) (SIF AU spec) and finally built a .NET framework that has been made available as open source on the NSIS section of the groupsite. The SIF AU team acknowledges the time and effort contributed by both vendors.

The National Systems Interoperability Service (NSIS) supplied infrastructure in the form of a Zone Integration Server (ZIS). RM-Asia Pacific and Edustructures provided Agent Software Development Kits (ASDKs) and support for the pilots.

→ PARTICIPANT EXPERIENCE

Developers found that collaborations between pilots led to faster development overall, especially with the reuse of open source code artefacts. One developer reported:

"I've gone through [developer from another pilot]'s documents, and I've gained a lot of good insight into how to develop a higher level framework ..." [MS 22/07/09]

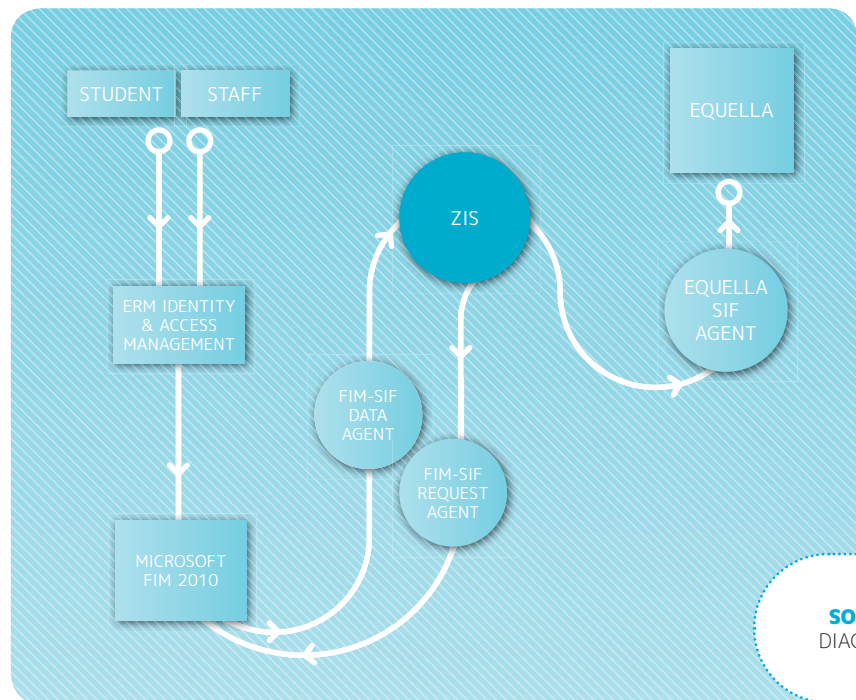
The same developer subsequently created a Concise Agent Framework in .NET for his own project, with consequent time savings. This open-source framework will be available in turn to future projects and other jurisdictions.

Benefits were also found in co-operation between the two commercial vendors contributing to the pilot, especially in areas like agent testing:

"Tested agents with [developer from another vendor] this week...gave me much better testing coverage than my test harness..." [JM 29/7/09]

Developers experienced some difficulty with SIF versions:

"The communication between the ADK and ZIS is based around versioned messages, and if an ADK sends a message



SOLUTION
DIAGRAM 1.1

with a version number that the ZIS isn't configure for, you will just get error messages." [JM 1/7/09]

An email concerning versioning on the SIF-Tech email list (set up for the pilots by the SIF AU team), authored by a vendor representative working with a different pilot team, helped to clarify the issue. The Tasmanian developer then passed on this information:

"I posted the versioning issue in the forum, which now contains some information for people who may come across the same problem." [JM 1/7/09]

Developers also found difficulties in accessing data from non-SIF third-party software:

"[software product] is extremely poorly documented...documentation is extremely patchy and does not give insight into inner workings..." [JM 9/6/09].

It took this experienced developer 60 hours to extract data from the system in an appropriate format. This appears to be another risk of complex proprietary systems, and highlights the potential problems of maintaining direct

interoperability between such systems in the increasing complex education connectivity landscape.

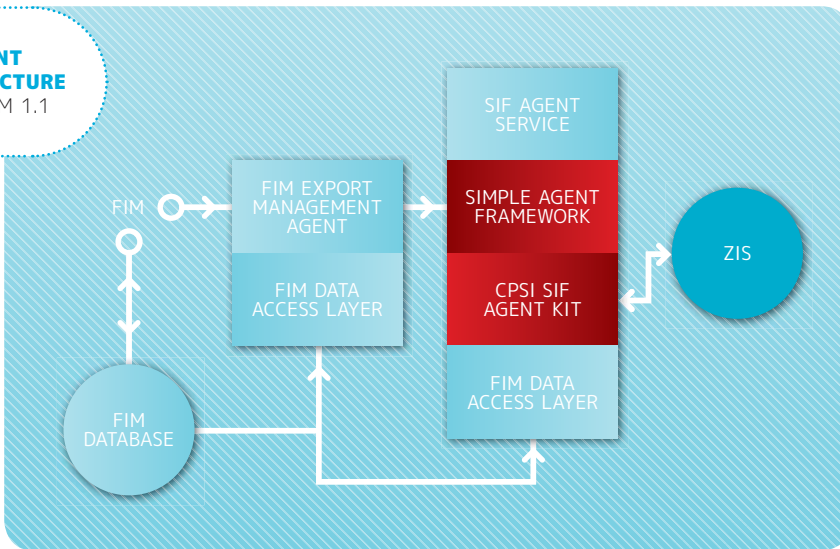
It took this experienced developer 60 hours to extract data from the system in an appropriate format. This was not a difficulty with SIF, but rather of a complex proprietary system. This highlights the potential problems of maintaining direct custom interoperability between such systems without a standards-based intermediary like SIF.

→ SOLUTION

Currently the DoE-Tas uses a custom application to manage enterprise identity, but plans to migrate to Microsoft Forefront Identity Manager (FIM) as its central identity platform. This pilot used SIF to communicate edits, additions and deletions in the central source FIM to a receiving system (the EQUELLA Digital Repository, which allow users to login and access local school systems). This process ensures that identities remain synchronised between the two systems

THIS JURISDICTION HAS GAINED CONSIDERABLE BENEFIT FROM HELPING CREATE A PIECE OF NATIONAL INFRASTRUCTURE

AGENT ARCHITECTURE
DIAGRAM 1.1



whenever changes occur in the source system. Using SIF as the intermediary layer means that the receiving system does not have to accept FIM protocols.

The pilot successfully synchronised student and staff logins and groups between the two systems. To achieve this, developers created two agents (SIF executables that contain the business logic for tasks). These remain available for future use within, and potentially beyond, the jurisdiction.

To work as much as possible in real-world conditions, the pilot used demonstration systems, anonymous data and agents based around existing production systems.

OPEN STANDARDS SUPPORT REUSE

A Concise Agent Framework developed by Insight4 accelerated development considerably. This framework was reused and enhanced by Education.au as part of Phase One Pilot 3 (SA). This was one of a number of examples of cross-jurisdiction collaboration and reuse found in the SIF AU Phase One pilot program.

TESTING

Testing proceeded very quickly, surprising the development team who, not having participated in a SIF project before, had allowed considerably more time. Testing revealed the robustness and reliability of a SIF system once all the pieces are in place.

→ **KEY FINDINGS**

As the pilot progressed, a number of key findings emerged:

- **Development time and cost was reduced** due to co-learning, collaboration and working to a

common data specification. Using the groupsite as a medium, people worked together with increasing enthusiasm and confidence, updating each others documents, helping each other across jurisdictions, and sharing access to experts.

- **The SIF AU spec supported the interoperability needs of the Phase One pilot program.** However, to continue to serve the needs of the Australian education sector, the SIF AU spec will require ongoing development. This will include continual engagement with local industry and SIF vendors.
- **The Tasmanian pilot participated in a “virtuous circle” of open, cross-jurisdictional development.** An experienced developer in the WA pilot developed an open-source agent framework in Java to assist both his work and the work of others. This both facilitated and motivated a Tasmanian developer to create a similar framework in .NET for his own pilot development. As a result, a .NET developer from the SA pilot used the framework to gain confidence and speed development. Both frameworks are available to help future developers.
- **Complexities emerged in getting data out of the source system:** A developer on the project spent up to 60 hours coming to grips with the complexities of extracting data from the source system, but needed only 30 hours of learning to become productive in SIF.
- **Learning SIF took developers some time, but development progressed very quickly from there forward.** Once SIF was understood, and the initial design of the agent refined, development proceeded very quickly. Additionally, learnings from other pilots

indicate that the SIF knowledge gained is completely transferable to other problems and other jurisdictions.

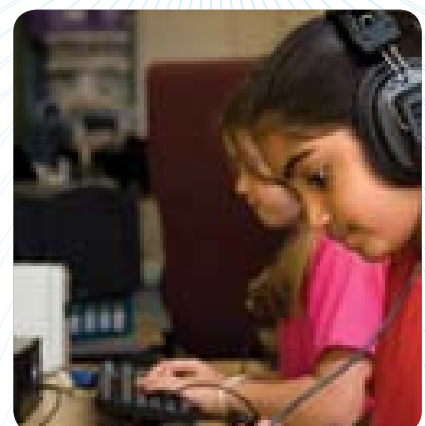
- **Once established, SIF is extremely robust.** Once the complexities of design, mapping and choreography were dealt with, SIF proved to be straightforward to implement and very robust in testing. Testing proceeded very quickly and with no exceptions, operational failures or lost messages. Tests ranging from full synchronisation to the deletion of a single record were performed without fault.

→ **BENEFITS**

JURISDICTION BENEFITS

It has proved useful to have a SIF solution tested in the context of jurisdictional infrastructure. Staff capability in interoperability has been developed. Methods, examples and an emerging culture of sharing of information about interoperability with other jurisdictions has been established. Additionally, the pilots project provided a model for replacing existing bespoke interoperability mechanisms with a method based on open standards, and explored some of the real-world issues associated with that process.

This jurisdiction has gained considerable benefit from helping create a piece of national infrastructure. The open-source agents and frameworks created can be reused collaboratively, with the complementary advantages that maintenance is shared (reducing costs), expertise is preserved and a larger pool of users is available to share problem solving. This is a starting point for a knowledge- and code-base that can be reused across Australia, distributing capability that can ultimately enable jurisdictions to solve the increasing complex problems that the Digital Education Revolution will present.



WIDER BENEFITS

This pilot has assisted in the testing and implementation of the newly-developed Australian SIF standard. In addition, the SIF skills developed in staff are highly transferable to other jurisdictions or vendors working with SIF.

PILOT-SPECIFIC BENEFITS

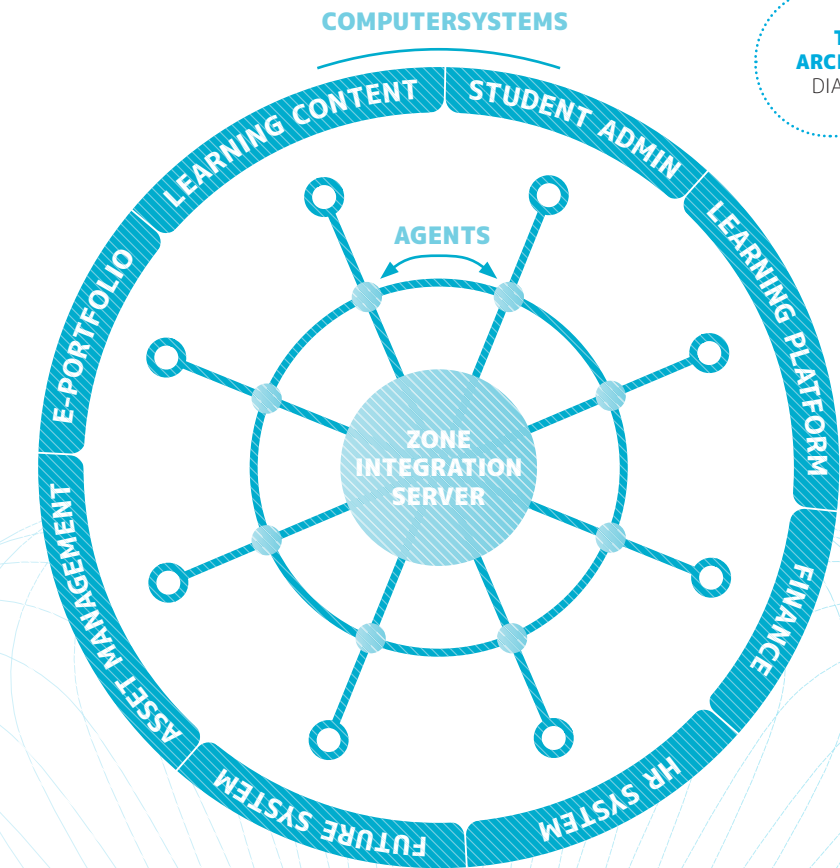
Through this successful pilot, the DoE Tas gained grounds for confidence in the role of SIF for the production version of their identity management project.

The agents created for this pilot are available for reuse. The FIM Agent can be reused in Phase Two pilots and beyond, and The Learning Edge EQUILLA Digital Repository agent can be reused in Tasmania and indeed anywhere in the world.

→ NEXT STEPS

On the successful conclusion of the Pilot Program the following steps were suggested:

- Learnings from the this pilot should be communicated throughout the jurisdiction.
- Data mappings which required extension of existing SIF objects, or the creation of new ones, should be communicated back to the SIF AU Data Standards Working Group (DSWG) to improve the evolving SIF AU specification.
- Begin discussions with Microsoft to inform them of the development and context of the agent created for the major Microsoft product integral to this pilot.
- Reuse an agent developed in this pilot in the forthcoming Phase Two pilot exploring Scootle integration into existing jurisdiction systems.



THE SIF ARCHITECTURE
DIAGRAM 1.1

→ INTEROPERABILITY FRAMEWORK

The Systems Interoperability Framework (SIF) is a simple but powerful tool for effectively integrating information from diverse computer systems. SIF manages both the “what” and the “how” of information sharing. Its core components are: a specification of what is to be transferred (the SIF Implementation Specification Australia); a software agent that maps the information in a computer system to that Specification; and a traffic cop directing the flow of information between systems called the Zone Intergration Server (ZIS).

The SIF Implementation Specification (Australia) is administered in Australian jurisdictions by the interim SIF AU Board, and internationally certified by the SIF Association.

→ MORE INFORMATION

For more detailed information, see the SIF AU Phase One Pilot Program Case Study. This study also forms one of

seven summary case studies on pilots from Tasmania, Western Australia, South Australia, Catholic Education Office Melbourne, Enterprise Scale SIF, National Systems Interoperability Service and the SIF AU Specification.

You can find case studies and other useful information on the SIF AU website:

<http://au.sifassociation.org/>

You can contact SIF AU by email:

info-au@sifassociation.org

→ ACKNOWLEDGEMENTS

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