



## SCOOTLE INTER- OPERABILITY

→ PUTTING TEACHERS IN  
TOUCH WITH RESOURCES

Teachers need seamless access to online tools outside their jurisdictional boundary. This pilot demonstrated that Tasmanian teachers could securely access the Scootle teaching and learning resource operated by Education Services Australia without having to create a new account. This efficient use of a national investment gives jurisdictions control over access, thus making that investment more attractive for jurisdictions to use. By integrating with a jurisdiction's identity and access system, a national asset, such as Scootle, becomes more attractive for use by that jurisdiction because teachers and students are automatically linked, without having to create or manage accounts. This makes it easier for more teachers and students to use the service which in turn improves the value of the asset to all stakeholders.

### → WHAT WAS THE PROBLEM?

Students and staff must be able to use online resources, applications and collaboration tools safely. Jurisdictions rightly require that identity assertions are especially important to education jurisdictions. For activities within ICT environments controlled by a jurisdiction, this is relatively simple to implement. However, there are many valuable online resources outside a jurisdiction's control for which safe and manageable access would be desirable. This is more difficult to enable.

Currently, jurisdictions do not share identity information with each other. Teachers wishing to use extra-jurisdictional resources must create brand new identities, increasing the barriers to

use. For example, a year 7 teacher with 6 average-sized English classes would need to create 160 new accounts to use just one external resource with her students! In addition, ongoing maintenance is required to keep information current, and effort in managing accounts elsewhere in the school or system is being duplicated. This is unhelpful and unnecessary.

It would be useful to allow staff and students seamless access to trusted external services, such as the teaching and learning environment Scootle. Web-based Scootle is provided by Education Services Australia (ESA) and provides access to over 9,000 curriculum based digital learning materials to teachers nationally. Presently each school must manage new teacher accounts, creating an administrative burden

However, the Tasmanian Department of

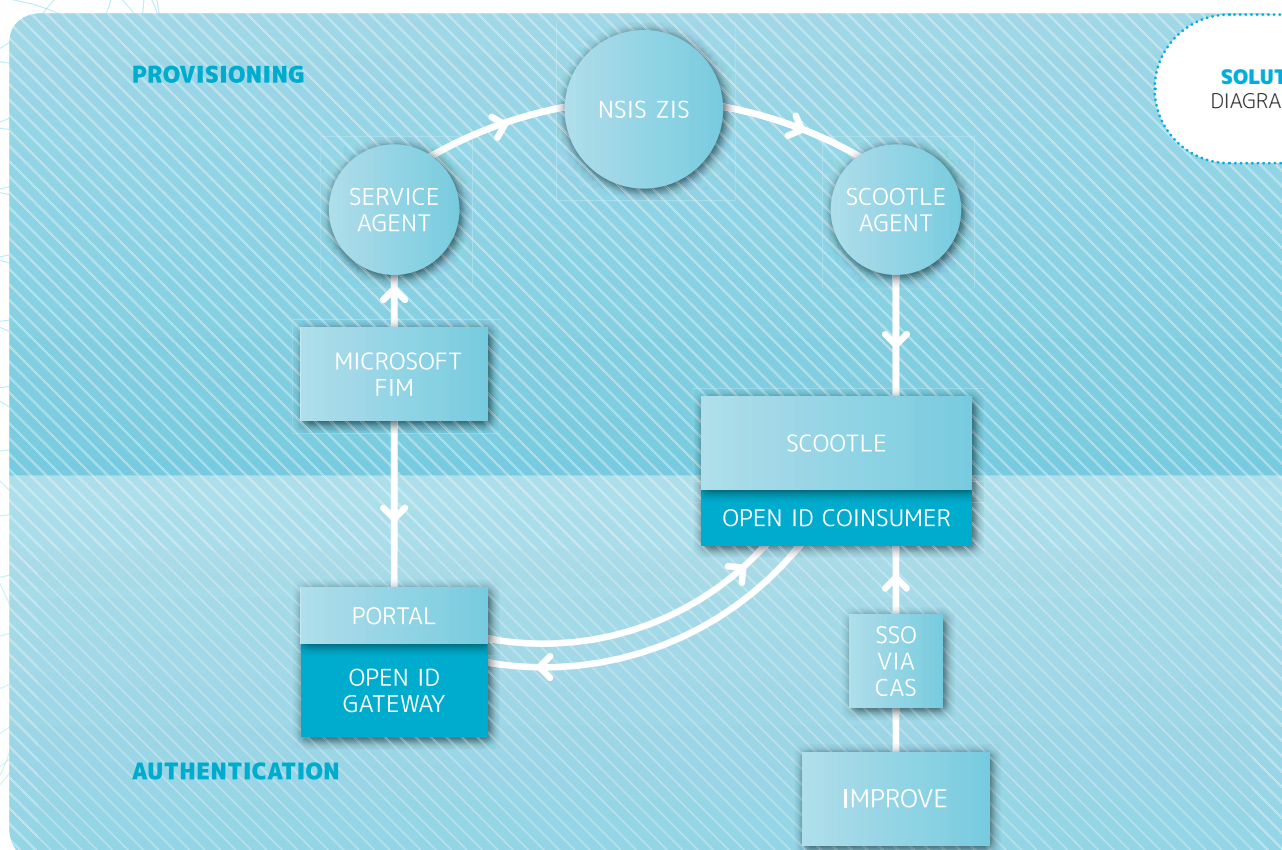
### → BACKGROUND

The Digital Education Revolution envisages "technology enriched learning environments" for all young Australians. Putting the right information at the right time into the hands of learners, teachers, parents and policy makers is critical for its success.

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 building an open standard for interoperability between Australian schools to enable information to be used when and where it is needed. The work has centred on the use of the Systems Interoperability Framework (SIF) to facilitate the exchange of information.

This initiative, known as "Towards SIF AU", has developed a national specification (the SIF AU Specification) and a business case identifying the costs and benefits of adopting SIF. A program of 12 pilot projects solving practical interoperability challenges has shown the clear benefits of working together and using SIF to solve common problems.

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



**P** Education (TAS-DoE) has a well-developed identity system that manages all teacher, staff, student and parent usernames, group membership and application access. **2** TAS-DoE currently provides Same Sign On for most of its internal applications but does not provide authentication services for external services – like Scootle. In order to meet its security and safety obligations, TAS-DoE requires that any external service must give it account control and management, not just Same Sign On support. This legitimate requirement adds significant technical complexity.

**→ HOW WAS THE PROBLEM SOLVED USING SIF?**

The project split the problem into two parts, using complementary technologies:

1. Provisioning of identity information using SIF

**2. Authentication with openID.**

Although OpenID and similar technologies such as Shibboleth have previously been used to deliver a single solution to both provisioning and Single Sign On (SSO), it can be achieved more quickly, cheaply and securely by combining SIF (for provisioning of identities into the application) and OpenID (to provide Single Sign On capability). This solution also allowed TAS-DoE to control its staff's identities (and consequently access) in the downstream Scootle system - a benefit not offered by other approaches

**PROVISIONING**

A SIF agent was created for the Microsoft Forefront Identity Manager (FIM) used by TAS-DoE for its identity service. This agent provides identity data to Scootle via the Scootle SIF agent. Each time data is changed in FIM, those changes are propagated in the ESA-hosted Scootle

application. This means that permissions for a Tasmanian teacher using Scootle are always under the direct and immediate control of TAS-DoE.

**AUTHENTICATION**

The second part of the project enables a Single Sign On to Scootle using an OpenID gateway between FIM and the already-provisioned Scootle. This is secured via a whitelisted OpenID that only accepts TAS-DoE identities. A minimum of information is sent via OpenID - just enough to enable Single Sign On. This makes OpenID very simple and cost-effective to deploy. It is also more secure; a shared identity assertion between the two services consisting of an OpenID-generated URL is passed from the TAS-DoE IDAM to Scootle by means of the newly-defined SIF Identity Object.

Access to Scootle also enables future SSO access to other linked ESA services such as Improve.

**"WE'RE GOING TO GET MUCH BETTER ENTERPRISE SYSTEMS BOTH SENDING AND RECEIVING THE DATA BECAUSE THE MODEL IS THERE IN THE MIDDLE."**

## → BENEFITS

### JURISDICTION BENEFITS

Many insights have been gained though having a SIF solution tested in the context of cross-jurisdictional needs and infrastructure. Staff capability in interoperability has been developed. Methods, examples and an emerging culture of sharing of information about interoperability has been established. Additionally, the pilot projects provided a model for replacing existing bespoke solutions with an approach based on open standards, and explored some of the real-world issues associated with that process.

Participants have gained tangible benefit from helping to create a piece of national infrastructure. The open source agents and frameworks created can be reused collaboratively, with the advantage that shared maintenance reduces costs, expertise is preserved and a larger pool of users is available to share problem solving. This continues the development of a knowledge and code-base that can be reused across Australia, distributing capability that can valuably assist jurisdictions as they address the complex challenges that the Digital Education Revolution presents.

### 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 transferable to other jurisdictions or vendors working with SIF.

### PILOT-SPECIFIC BENEFITS

**Reuse of architecture and agents.** The architecture and agents developed in this pilot will be reused in a production project to provide access for TAS-DoE staff to ESA-hosted Scootle.

### International interest in FIM agent.

There is international interest in the FIM agent refined in this pilot, which can be reused in Australia and potentially worldwide for MS FIM integrations using SIF.

### Groundwork for "trusted federation" policy development.

The pilot has significantly contributed to the ongoing discussion on identity sharing which will inform future agreements between ESA, TAS and across other jurisdictions. Trusted federation discussions principles will be relevant for the production project and other projects involving cross-jurisdictional authentication.

### Identity and authorisation

**expertise was adapted from the ACT/MELCOE LPI pilot.** This version was developed by TAS-DoE, informed by a review of options by MELCOE. MELCOE created a production-level OpenID implementation for cross-jurisdictional Single Sign On using SIF identity provisioning and OpenID authentication. TAS-DoE's solution documentation will be made available to other jurisdictions for reuse in any appropriate production project. This provides a technological basis for jurisdictions to have confidence that third-party systems will honour their central identity management policies.

## → PARTICIPANTS

The project was sponsored by Greg Curtis, Manager of Application Support and Development at TAS-DoE and Jerry Leeson, Business Solutions Manager at ESA. Funding was provided through the SIF AU Program as a part of the Federal Government's Digital Education Revolution (DER). All participants contributed in kind to this new approach to solving real-world problems.

Importantly a commercial vendor, a ministerial company and a university partner all took part in the project and made significant contributions. Insight4 developed the SIF Agent for TAS-DOE, and provided their time and expertise to the project. ESA developed the Scootle agent. MELCOE provided expert advice and fundamental architecture templates for identity and authorisation. The SIF AU team acknowledges the time and effort contributed by these participants.

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 OF THE PILOT

Mapping of source and target applications

to SIF provided both the catalyst and the path for improving the data models of those systems towards enterprise capability:

*"[discussing data requirements with ESA] resulted in Scootle improving its enterprise model in order to take the data...they did the okay thing for when they developed Scootle and now the world is changing. So I think using these models, we're going to get much better enterprise systems both sending and receiving the data because the model is there in the middle." [Project sponsor, TAS-DoE]*

Multi-agent developers consistently found that they could reuse both skills and code in subsequent agents:

*"...the SCO ( Scootle agent) has taken a lot less time in comparison (with the RNI me.edu agent)...A lot of the agent code is very similar!..." [Developer, ESA]*

Using a common framework for both agents helped:

*"...the agents sit on the same common code -- there's just the customisations I've implemented. That in a way did help me, the framework things I've written are based on the fact that I've had to do a second agent, and knowing all the problems, the things I had to overcome, putting that in a common place so I don't have to worry about those issues anymore." [Developer, ESA]*

Another developer found a framework developed in a previous pilot very helpful, and continued the tradition of open source improvement:

*"I updated the concise agent framework that Insight4 had previously developed... this is now in a really usable state for .NET developers...The framework saved me time because it insulated me to an extent from the formulation of SIF messages (but) because of the amount of work you do with the ZIS and verifying and viewing the results of your tests and so on -- you get a pretty good understanding of SIF and SIF messages that go to registering*



and provisioning and publishing data."  
[Developer, Insight4]

An active central team with a strong documentation focus mitigated the lack of meeting attendance by some participant's project managers:

"When you are running projects, some things often get left behind, or will have lower priority in the wake of the pressure of trying to get things delivered, whereas there's two people here with steel gauntlets smashing every week to get diaries written and things in systems and updated pages -- so it's very valuable and important for that stuff to develop."  
[Project manager, Insight4]

"..if it was left to the jurisdictions, they would get absorbed into their regular day-to-day business, and not necessarily have enough time for the SIF pilots."  
[Developer, Insight4]

"...it's the central project team having this as their primary focus, not just shared which is our normal thing in jurisdictions." [Project sponsor, TAS-DoE]

## → KEY FINDINGS

As the pilot progressed, some 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 specification supported the interoperability needs of the pilot program.** However, to continue to serve the needs of the Australian education sector, the SIF AU specification will require ongoing development. This will include continual engagement with local industry and SIF vendors.
- **Savings of around 30%** were seen where a programmer redeveloped an agent from one system for a different system. This process provided savings in both development teams associated with this pilot.
- **Policy review is important** to ensure that projects appropriately share information between jurisdictions.

- **Policy issues can take time to resolve:** Implementing inter-jurisdictional authorisation is not technically difficult. However, it raises matters of policy and also involves jurisdictional personnel beyond the team. The exploration of such issues in this project can be used to inform other cross-jurisdiction production projects in the future.
- **Although key staff availability and changes affected this pilot, it was still completed on time.** This points not only to the resilience the program and the advantage of continuous documentation, but also to the need to adequately assess and notify such risks.
- **The combination of SIF and OpenID reduced costs:** It proved cheaper to use both technologies than either technology in isolation.

## → NEXT STEPS

On the successful conclusion of the pilot program the following steps were suggested:

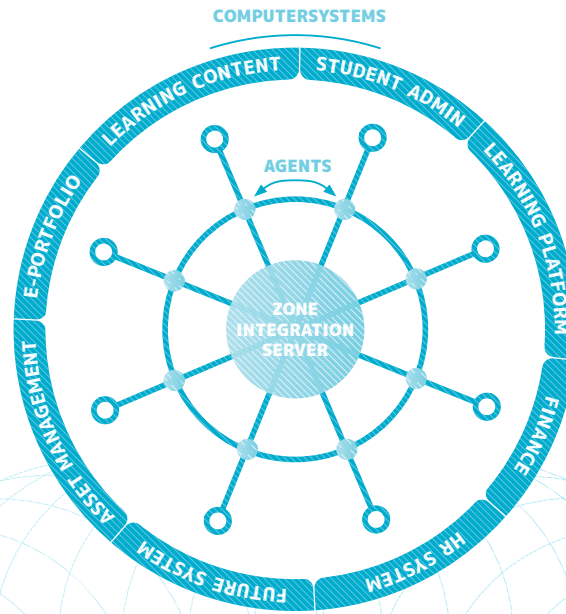
- Learnings from this pilot should be communicated throughout the jurisdiction(s).
- Data mappings which required extension of existing SIF Objects, or the creation of new ones, should be communicated back to the SIF AU Data Standards Working Group (DSWG) to improve the evolving SIF AU specification.

- \* Develop the pilot solution into a production project to allow TAS-DoE staff Single Sign On access to ESA-hosted Scootle.
- Facilitate discussions with two other jurisdictions considering reusing solutions generated by this pilot.
- Further expose the FIM Identity agent development undertaken in this project to the international community.

## → ABOUT THE SYSTEMS INTEROPERABILITY FRAMEWORK

The Systems Interoperability Framework (SIF) is a simple but powerful approach to 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); a software agent that maps the information in a computer system to the Specification; and a "traffic cop" directing the flow of information between systems known as the Zone Integration 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.



THE SIF  
ARCHITECTURE  
DIAGRAM 1.2

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