



## Foundations for the Future

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Presenter

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**An introduction to MCDS** 

An introduction to the MortarCAPS Higher Learning Data Standard (MCDS), including benefits, University and Vendor Partners, Work to Date and Roadmap.



# Designed by the Sector, Built by the Sector, Owned by the Sector.



## About Us

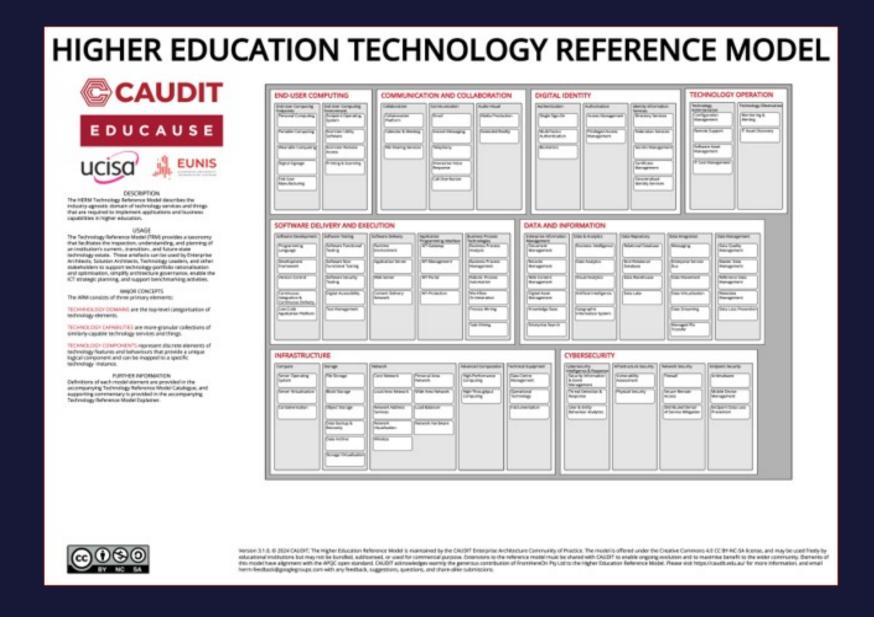
MortarCAPS Higher Learning Data Standard (MCDS) is the **first unified Commonwealth data standard,** aligned with the CAUDIT HERM, **built by the sector, for the sector.** 

Developed alongside CAUDIT this partnership ensures MortarCAPS stays aligned with the industry's needs and true to its purpose of supporting the sector.

The data standard is being developed by a dedicated working groups comprising representatives from over 70+ Australian, New Zealand & Canadian higher learning institutions.

MCDS is an **open standard for the sector, funded by software vendors** through an annual fee, to ensure the cost of maintenance does not burden the industry member institutions.

MCDS represents a collective effort to future-proof the sector, and deliver transformative benefits to institutions and students alike.





## MortarCAPS Charity

- MortarCAPS is a stand-alone Charity which is under the direction of CAUDIT through their role on the MortarCAPS Board of Directors.
- The constitution of the Charity outlines the purpose of MortarCAPS: To become the global benchmark for data standardisation in post-secondary education, transforming how institutions manage and share information.

#### **Objective**

The primary objective of MortarCAPS Data Standard is to establish and maintain an open (to the sector), global standard for data interoperability within the higher learning sector.

#### This includes:

- Pioneering a truly interoperable data framework, equiping higher learning institutions with the ability to adopt sector-wide agility, empowering them to move away from unnecessary complexity.
- Facilitating collaboration between educational institutions, technology providers, and other stakeholders.
- Supporting alignment across the global higher education landscape to enhance interoperability and improve data-driven decision-making.
- To support vendors to develop technology solutions which align with the standard and benefit the sector.
- Move the focus from investment in commodity systems, and allow institutions to drive innovation and differentiation where it matters.





## The Challenges

#### **Disconnected Systems**

- Education providers use different systems that don't talk to each other leading to a significant overhead of operating costs.
- It's hard for students to move between providers or get recognition for past learning.
- Industry can't easily access reliable data on skills and qualifications.

#### **Outdated Qualifications Framework**

- The education model hasn't kept up with modern learning needs like microcredentials or short courses.
- It doesn't reflect learning that happens in the workplace or online.

#### **Skills Gaps**

- Employers say many graduates don't have the right skills for the jobs available.
- There's no easy way to track or verify someone's full skillset.

#### **Lack of Lifelong Learning Options**

- Education is only offered at a full award level, meaning it's expensive and not equitable (only those willing to pay or take on debt).
- It's hard for adults to return to study, upskill, or retrain as careers change.
- Education isn't flexible enough for modern workers.

#### **Losing Ground Internationally**

- Other countries are creating faster, more flexible ways to learn and recognise skills.
- Australia risks falling behind in global education and workforce competitiveness.



# Founding Partnerships

We are grateful to the founders of this initiative who have chosen to prioritise what's best for the sector and fund the beginning of this revolution.

We look forward to finalising the partnerships with other critical vendors across the ecosystem.







Our **founding partners** are critical to ensuring the benefits of the standard are realised across the sector through RND investment in alignment with the standard.

We are also grateful to the implementation partners who are bringing this to life within institutions.







## MOU Partnerships

The success of the data standard also hinges on acceptance by the various 3<sup>rd</sup> parties that collaborate with or support the institutions.

The following 3<sup>rd</sup> parties are the organisations that we have a signed MOU with:







We are also at various stages of discussions with these 3<sup>rd</sup> parties:

- HOSA (AUS)
- TAFE Directors Association (AUS)
- ACODE (AUS)
- ATAC (AUS)
- AAF (AUS)
- Future Skills Organisation (AUS)
- ATEC (AUS Gov)
- ESDC (Skills Canada Federal)
- CAUBO (Canada)
- BC Government (Canada Gov)
- CUCCIO (Canada)
- Polytechnics Canada
- Statistics Canada
- JISC (UK)
- ARC (UK)
- UCISA (UK)



## MCDS Board Members



Warwick Calkin
Board Chair
Navitas CIO



Niranjan Prabhu

CAUDIT President



Kyle Dunsire
Ingenuity Holdings
CEO



Brian Stewart

CUCCIO Board

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Shane Rigby
LIXI Data Standard
CEO



Rebecca Ostergaard
CSIRO CDO



Michael Burgess
Independent Advisory



## Australian Working Group Leads































































## Canadian Working Group Leads

















































































## SuperStream – A Success Story for Data Standards

#### What is SuperStream?

An Australian Government initiative that made the process of paying superannuation contributions digital and standardised for all employers.

#### Why it was Needed

- Previously, super payments were slow, error-prone, and often paper-based
- Employers had to deal with many funds, each using different formats

## How Data Standards Helped

- Created a single, consistent format for all super payments and messages
- Enabled faster processing, better tracking, and fewer mistakes

#### What this means for Australians

- Faster contributions into super funds
- More visibility over their retirement savings
- Fewer lost or unclaimed accounts

#### What this means for Employers & Funds

- Lower admin burden
- More accurate and efficient payments
- Easier compliance with super regulations



## Open Banking

#### What is Open Banking?

• A government-led initiative that lets consumers safely share their banking data with other banks and apps to get better deals and more personalised services.

#### Why Do Data Standards Matter?

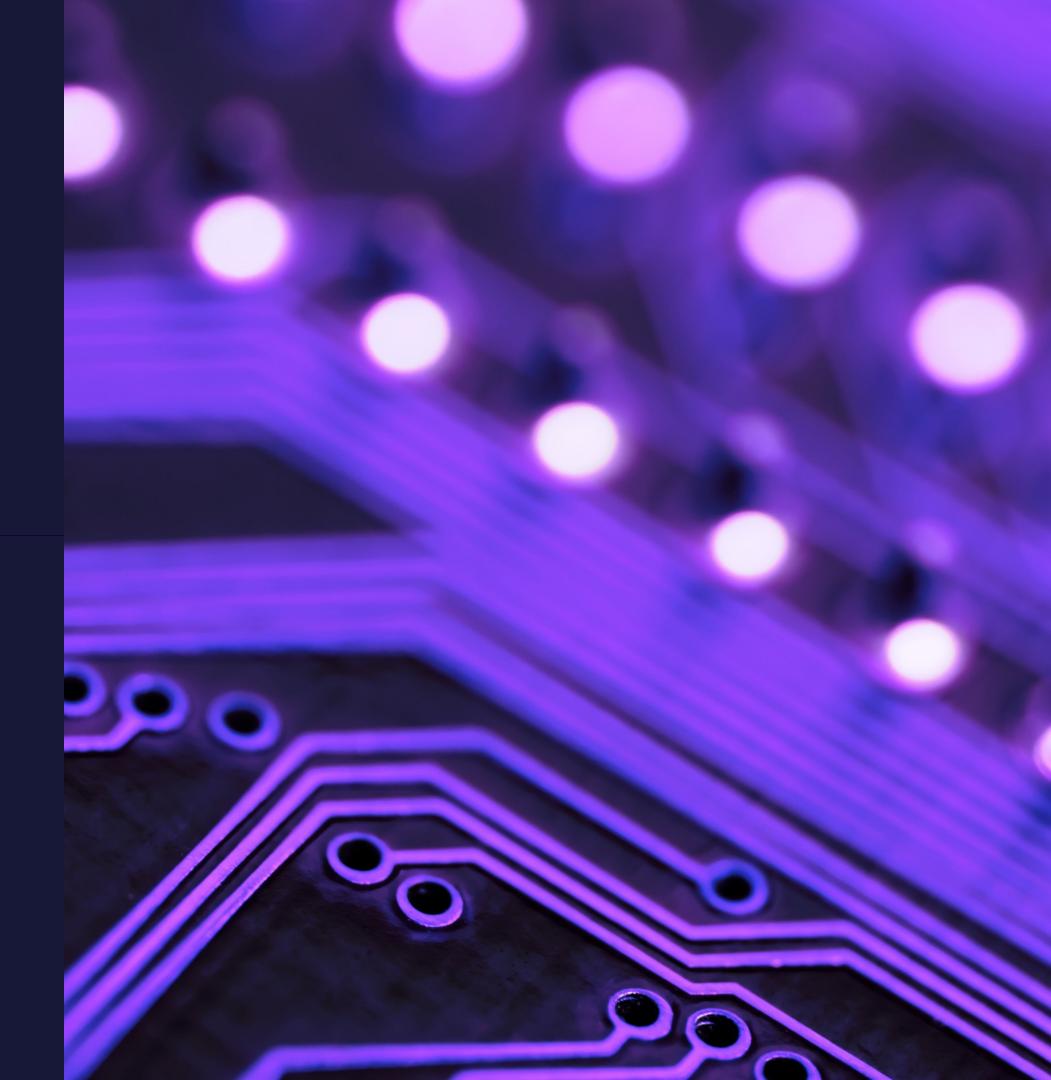
- Everyone uses the same "language" to share information, which makes it fast, accurate, and secure.
- Standards make sure data flows smoothly between systems, even if they're run by different companies.

#### **What This Means for Consumers:**

- Easier switching between banks or providers
- **Smarter tools** to manage money, savings, or credit
- More control over who sees their data and for what purpose

#### What This Means for the Sector:

- Reduces costs and duplication of effort & data
- Encourages innovation by new players
- Increases trust in digital services

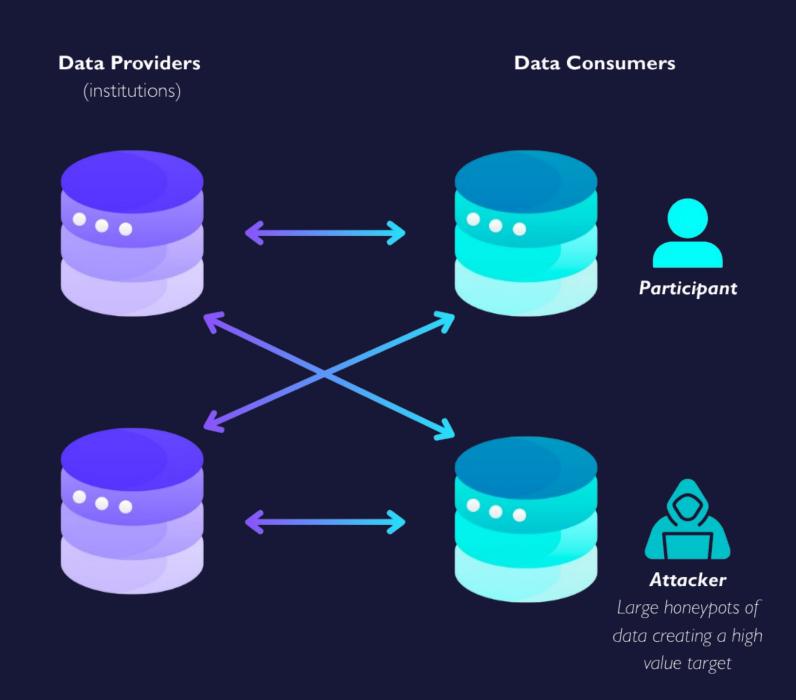




# The Business Problem

Today to share data, every participant will have to establish Trust with every other organisation.

Approaching this separately with individual, customised bilateral agreements is a costly, complex and duplication of effort

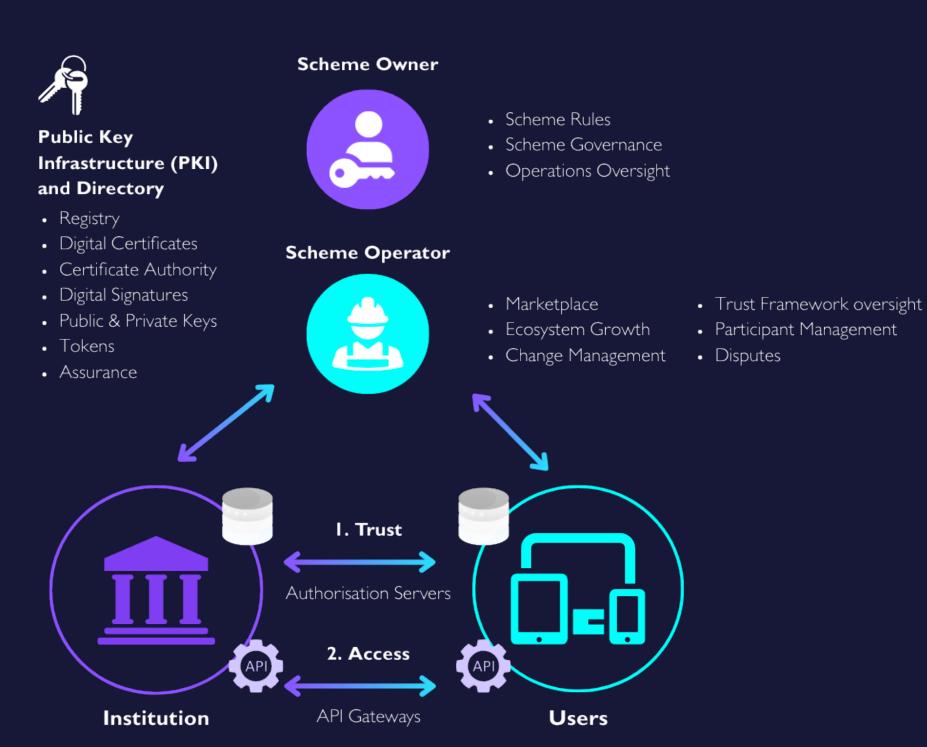




# Future Vision Open Education

Before one organisation can securely and privately access a client's data and services in another organisation, digital and commercial "Trust" needs to be set up between the two organisation.

In this model, Open Education will use the secure encryption of Public Key Infrastructure to maintain secure, private data exchange between Data Providers and Data Consumers.



Trust has to be set up before access is enabled

#### Key:

- Trust Infrastructure
- Access Data & Services







## Institutional Benefits

MCDS establishes a **consistent**, **structured framework** for student and institutional data, allowing providers to **unlock powerful insights**, **automate processes**, **and improve decision-making**.

#### **International Student Recruitment**

Institutions can create **automated risk assessment models** based on historical student success data, helping to identify low-risk applicants for expedited visa processing.

#### Financial Sustainability

 Revenue and enrolment trends can be analysed holistically across programs, and student demographics, enabling more accurate financial planning.

#### Financial Forecasting & Internal Decision-Making

 Data-driven financial forecasting becomes more accurate by integrating enrolment trends, funding models, and operational costs. MCDS acts as the foundation for all these initiatives, ensuring consistency, accuracy, and interoperability across institutional systems. By adopting this framework, higher education providers can future-proof their operations, improve student success, and drive financial sustainability.

#### **Retention, Student Support & Wellbeing**

• Early identification of at-risk students becomes possible through a unified view of student engagement, performance, and wellbeing data across systems (LMS, student records, counselling services, attendance, financial aid).

#### **Stackable Learning & Micro-Credentials**

• A unified digital credentialing system ensures that learners can accumulate and stack credentials seamlessly across institutions.

### Research Administration (Tracking Through Persistent Identifiers)

• Persistent identifiers for researchers ensure accurate tracking of research outputs, funding, and affiliations, reducing duplication and inefficiencies.

#### **Government Reporting**

• Regulatory reporting requirements are simplified through standardised data formats that align with government databases. (TCSI in Australia would have benefited from having this as a foundation).



## Case Study: Navitas

#### WHO:

Navitas is a global education provider supporting over 70,000 students annually across more than 90 colleges and campuses in over 20 countries. In Australia alone, Navitas collaborates with more than 15 university partners to deliver pathway and higher education programs, working across a diverse ecosystem of systems, providers, and regulatory frameworks.

#### THE CHALLENGE:

Navitas faced a critical challenge: managing data across a fragmented technology landscape. Each institutional partner required unique formats and custom APIs, creating inefficiencies, high development overhead, and limited data portability.

#### **SOLUTION:**

Navitas adopted the MortarCAPS Higher Learning Data Standard (MCDS) to bring consistency and interoperability to their internal systems and partner integrations.

Key actions included:

- Mapping existing student and event data structures to the MCDS model
- Introducing standardised, open APIs to reduce reliance on bespoke interfaces
- Establishing real-time, event-driven data sharing across key touchpoints (enrolment, attendance, assessment)
- Aligning internal teams and governance to sector-wide data frameworks

#### **OUTCOME:**

By adopting MCDS, Navitas created a unified, interoperable data foundation that has:

- Reduced time-to-integrate by standardising external data exchange processes
- Created a scalable model for new systems, vendors, and campuses
- Enhanced internal alignment between IT, academic, and compliance functions
- Accelerated digital transformation
- Reduced duplication of data handling efforts
- Enabled faster decision-making through real-time reporting
- Opened new capabilities in Al, automation, and analytics

#### **COMMENTS:**

"MCDS gave us clarity and consistency. Now we can reuse integrations, scale with partners, and shift focus to student outcomes instead of middleware."

Rob ShepardSolution Architect, Navitas



## Case Study: Practical Placements

#### WHO:

The Australian Government has established a new Commonwealth Prac Payment (CPP) for students to help them manage the costs associated with undertaking a mandatory placement (also known as a practicum) as part of a higher education course in teaching, nursing and midwifery, and social work; and nursing in vocational education and training (VET) courses.

#### **SOLUTION:**

The MortarCAPS Higher Learning Data Standard (MCDS) is being adopted by the sector to support the Commonwealth Practical Placement Initiative, ensuring:

- I. Consistency in data reporting to government and institutional stakeholders
- 2. Alignment of business processes across education providers
- 3. Interoperability between core systems including:
- 4. Student Management Systems (SMS)
- 5. Customer Relationship Management (CRM) platforms
- 6. Placement and workforce systems
- 7. Finance and grants systems

#### **OUTCOME:**

By adopting MCDS, the Practical Placements Initiative will benefit from:

- Accurate, real-time tracking of student placements
- Reduced duplication and reconciliation effort across systems
- A shared approach to placement data management at scale
- Foundation for future reporting and performance benchmarking

#### **SECTOR BENEFIT:**

By embedding MCDS into their digital ecosystems, institutions are ensuring that placements are managed transparently, efficiently, and in line with national expectations, without requiring costly bespoke integrations.



## Foundations for Modernisation





## Progress So Far

We've had a lot of productive discussions in our technical working groups over the past months and have already tackled a few hard topics.

**Party: Person & Organisation** 

**Contact Point & Location** 

Calendar, Learning Period, & Intake

Curriculum

**Document: ID & Recognition** 

**Credit** → **Recognition** 

**Fee & Financial Benefit** 

**Reference Data** 

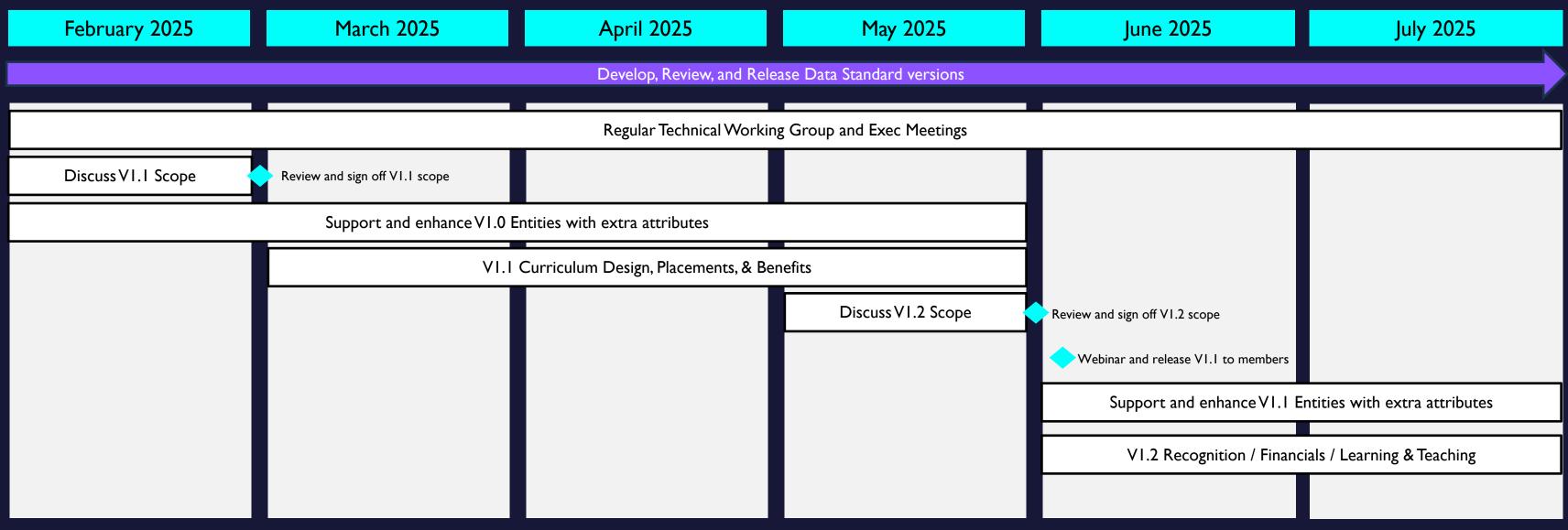


## VI.0

June - August 2024	September 2024	October 2024	November 2024	December 2024	January 2025	
		Develop, Review, and Release Data Standard versions				
		Regular Technical Working Group and Exec Meetings				
Engage CAUDIT						
Create V0.1 POC of Data Standard						
Establish Working Group Terms of Reference						
	Engage initial Australian Institutions					
		Initiate Regular Technical Working Group and Exec Meetings				
		VI.0 Build Model for Student Lifecycle Stages: Enquire & Apply, Offer & Admit, Enroll, Deliver Learning, Graduate				
					Release Preparation	



## VI.I & VI.2





## VI.2, VI.3, & VI.4





## Key Entities: VI.0

The following entities we're added to VI.0 of the Data Standard.

#### **Student Lifecycle**

#### **Enquire/Apply**

#### Offer/Admit

#### Enroll

#### **Deliver/Graduate**

#### **Entities**

Person (Prospect, Applicant),

Organisation,

Interaction, StudyApplication,

ContactPoint.

FinancialStudentBenefit, Fee,

Document.

Recognition (Credit),

EntryRequirements,

ProgrammeOfLearning,

LearningPeriod, Calendar, Intake,

Award, StudyPreference

ProgrammeOfLearningAvailability,

Interview

Person (Student),

StudyOffer,

NonAcademicRequirements,

AcademicRequirements,

Programme Of Learning Version,

Admission,

Location

Enrolment,

UnitOfLearning,

Timetable,

Class,

LearningResource,

ElementsOfLearning,

StudentProgress,

AreaOfLearning

Person (Graduate),

Assessment,

Grade,

LearningActivity,

Placement,

Attendance



## Key Entities: VI.I

There are several key entities that have either been updated or are new and which form the backbone of VI.I.

#### General Entities:

- Party:
  - Person (and roles: prospect, applicant, student, graduate),
  - Organisation
- Application:
  - Study Application,
  - Benefits Application (new),
  - Placement Application (new)
- Offer: Study Offer
- Benefit (new)
- Placement (new)

#### Curriculum Elements:

- Programme of Learning
- Area of Learning
- Unit of Learning
- Elements of Learning
- Learning Outcome
- Learning Activity
- Learning Resource
- Assessment
- Unit of Learning Group (new)
- Unit of Learning Logic (new)
- Unit of Learning Relationship (new)



## Party

#### **Organisation**

The Organisation is an exclusive sub-type of Party used to describe a non-Person Party, such as the institution, a school, faculty, department, or external groups like commercial, government, or non-government bodies.

#### **Person**

The Person is an exclusive sub-type relating to a specific individual. The Person may have many child roles, depending on their relationship with the institution, and any data from those roles that is a property of that individual, rather than the role, should also be reflected here.

#### **Person Roles**

Person roles are specific sub-types of the Person, containing information relevant to the role that Person played at a specific point in time. Example roles include Prospect, Applicant, Student, and Graduate.





## Curriculum

#### **Programme of Learning**

Describes the intention, rules, and composition of an institution's qualifications. Also known as an academic programme, degree programme, course, programme, degree, or course of study.

#### **Unit of Learning**

Describes the intention, rules and composition of the sequence of learning activities that, on successful completion, guarantees credit towards a qualification (usually a Programme Of Learning). Also known as a subject, course, unit, or paper.

#### **Area of Learning**

Describes the structure, rules, and composition of a specialised field, and define the relationship with other Curriculum Components. Also known as a Specialisation, Major, Minor, Plan, Sub-Plan, Stream, Area of Study, Field, or Tripos.

#### **Unit of Learning Relationship**

Defines the relationship of a Unit Of Learning to others, either universally or when related to a specific Programme Of Learning.

#### **Unit of Learning Group**

Describes the intention, rules, and composition of a group of related Units Of Learning which are to be completed as part of a wider curriculum. Provides the link between a Programme Of Learning and Units Of Learning.

#### **Unit of Learning Logic**

Describes logical groupings of Units Of Learning for curriculum design (through Unit Of Learning Groups) and Unit Of Learning Relationships.



## Curriculum Stages

Most Curriculum Components have a three-stage lifecycle, and thus these Components need three different entities to represent these phases. This structure currently applies to Programmes Of Learning, Units Of Learning, Assessments, and Placements.

This concept is not unique to Curriculum, and can be found elsewhere in the Data Standard, such as with Benefits.

#### Design

Describes the intention, defining what the Student is working towards, how this is accomplished, and outlining rules and conditions for enrolment and completion of the Curriculum Component, if relevant.

#### Instantiation

Makes a design Component available for Students to interact with at a specific time and place. Entities here may be called the "Offering / Availability / Instance" of their parent Design Component.

#### **Engagement**

Records an individual Student's interaction with the Curriculum Component, including their results and progress towards completion. Entities here are usually called the "Enrolment" of their grandparent entity (the Design Component).



## Applications

#### **Study Application**

The Study Application is an exclusive sub-type of "Application" specifically related to a Person's request to study at an institution. Relates to Applicant, Study Preferences, and Study Offers.

#### **Study Offer**

The Study Offer captures the details of what has been offered to an Applicant after assessment of their Study Application by the institution. Relates to the Programme Of Learning Offering and Study Application.

#### **Admission**

The Admission object records all information related to the admission of a Student to a Programme Of Learning at an institution. It is a precursor to the Student's Programme Of Learning Enrolment. Relates to the Study Offer.

#### **Placement Application**

The Placement Application is an exclusive sub-type specifically relating to an Applicant's request to enroll in a Placement Offering. Relates to Applicant and Placement Offering.

#### **Benefit Application**

The Benefit Application is an exclusive sub-type specifically related to a Person's request for a Beneift, either financial or otherwise. Relates to Applicant and Benefit Offering.



## Global Identifiers

#### **Global Identifier Scope**

- Ensuring that the ID's adhere to the Local Identifier Scope rules (previously raised) maintains schema validity, but will not be sufficient when exchanging data between systems within the institution application landscape, and certainly not when exchanging data with external institutions, partner organisations, or government reporting bodies. Below are example entities that will highly likely need to be identified as globally unique when being shared externally with other organisations, potentially across geographies:
  - o organisation,
  - o person (and all subtypes: prospect, applicants, student, graduate, staff etc),
  - o programmeOfLearning,
  - o unitOfLearning
- To ensure the records of these entities are globally unique, each entity will have an attribute that is an array of records of type "entityUniqueID" (for example the attribute "personUniqueIDs" is an array of "entityUniqueID" records).
- The structure of this record includes the following attributes:
  - The country that the organistion that is issueing the ID belongs to.
  - The organisationUniqueIDType is a code that defines the type of organisation. Examples:
    - "CRICOS Code"  $\rightarrow$  The Australian system for identifying education institutions, programmes of learning and units of learning.
    - "ABN" or "ACN"  $\rightarrow$  The Australian system for identifying businesses or companies.
    - "USI" (Unique Student Identifier)  $\rightarrow$  The Australian system for uniquely identifying students.
  - $\circ$  The organisation  $ID \rightarrow The$  external ID or code of the organisation that is created and managed by the owners of the associated identification system.
  - The systemID. The name of the system that mastered the ID.
  - The entityID. The final ID of the entity contained within the system. The combination of these fields should ensure that the record is globally unique.



## Reference Data: The Challenge

**Definition:** Reference Data in an interoperability standard refers to standardized, shared lists of codes or values (e.g., country codes, currency codes, course types, or status indicators) and the plain language meaning of the codes to be used consistently across systems to ensure accurate data exchange and interpretation.

Why it's important: It ensures consistency, reduces ambiguity, and enables seamless communication between systems by aligning on common meanings for key values.

#### What capabilities does an international, interoperability Data Standard needs regarding Reference Data:

- Region specific
- Multi-Language Support
- Extensible

#### Can we just use Strings or Enums?

- These data types sit at either ends of a spectrum.
- Strings are the ultimate in flexibility, but they canot be checked for valid values at design or runtime, which will result in the wild west!
- Enums are fixed (ergo inflexible) in their values and can be validated at any time, but we will never be able to agree on the universally used set of enum values, which will slow down development and present a significant impediment to adopting the data stanard.

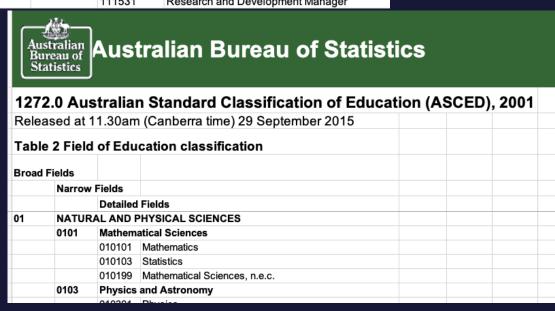


## Reference Data: The Solution

We've introduced a data definition that is the best of both the "string" and "enum" worlds, the *Classification* entity, which has the following behaviours:

- Region specific data, with the same "topics".
  - Eg: Canada and Australia can have different values for "Countries", but the schema is the same.
- Multi-Language Support.
  - Eg: Canada can deliver English "en" and French Canadian "fr-CA" translations of the same Country record.
- Versioned. The data within the reference data files can be versioned using a "published date", allowing bodies like the ABS or StatCan to deliver updates.
- Extensible. More data of the same "topics" can be added (appended) to existing reference data files without schema changes and without breaking compatibility.
- Values are not validated at design time but can be validated with scripting or otherise in a build pipeline or at runtime with code.
- Hierarchical. Supports complex, multilevel hierarchies of reference data.
  - Eg. The ABS has 5 levels to describe the topic "occupations".
- Supports mapping to other jurisdiction reference data lists. Eg, map Country Codes from one classification system to another jurisdictions Country Codes.







# How you can help

I. Speak to your vendors!

2. Get involved in a working group

3. Public Support



## **Meeting Structure**

#### \*All times in AEST Time

#### **Weekly Technical Meetings**

- Ihr session, twice a week
- Deep-dives on specific topics
- Decisions on technical details, enterprise architects encouraged to attend

#### **Monthly Executive Meetings**

- Ihr session, once a month
- Exec Sponsors from member institutions to attend
- Review and endorsement of work to date
- Set direction for month ahead
- Assistance with decision making and promotion of the standard

#### **Monthly Sub-Working Groups**

- TechnologyOne
- General Architecture
- AWS

#### **General Rule:**

• Avoid sessions that limit participation across timezones.

	Monday	Tuesday	Wednesday	Thursday	Friday
9					
10					
11			Monthly Executive Meeting		
12					
ı		Weekly Technical Meeting		Weekly Technical Meeting	
2					
3					
4					
5					



# Executive Responsibilities



#### Sign-off

At the end of each VI.X development cycle, we want this group to review and endorse the work done by the Technical Working Group.

#### **Direction**

We'll review the direction for the next version and highlight any focus areas that the Technical Working Group needs to be aware of or deep-dive into.

#### **Assistance**

We will assist with any decision making should the Technical Working Group reach an impasse.

Executive sponsors are also tasked with helping promote the standard to both vendors and the wider industry.



## How To Use MCDS

The following are serious of potential next steps towards leveraging MCDS in your organisation.

#### **Education Institution**

- I. Form a cross functional working group and define an overall roadmap.
- 2. Review MCDS for applicability to your environment.
- 3. Engage and feedback to the MCDS team where there are functional gaps in the schema and when new versions of reference data are published.
- 4. Choose a manageable scope and implement in a discrete, low impact area.
- 5. Gather intel from that implementation and update your overall roadmap.
- 6. Suggest piloting on internal systems first before integrating external parties.
- 7. Focus on the integration systems and adapt them to support the standard.
- 8. Use validation tools to check data against the schema and reference data.
- 9. Work with MCDS to define the common set of services/operations (API's).
- 10. Share your successes with the MCDS community.

The MCDS team can provide consulting services to assist institutions in their MCDS adoption journey.

#### **EduTech Vendor**

- I. Check Product Alignment by modelling your core entities against MCDS.
- 2. Engage and feedback to the MCDS team where there are schema gaps.
- 3. Focus initially on the integration layers and consider building connectors or adaptors from your core platform elements to support MCDS format payloads.
- 4. Work with MCDS team and the broader community to define and promote the common set of services or operations that would be used by other MCDS compliant products or platforms.
- 5. Update core platform by implementing services/operation (API's) that are aligned with MCDS schema elements.
- 6. Accelerate institution adoption of your products by providing libraries, templates, or tools.
- 7. Document and share use cases or success stories for those customers who have adopted MCDS using your products.





## Thank you!

Website

MCDS Introduction

www.mortarcaps.org