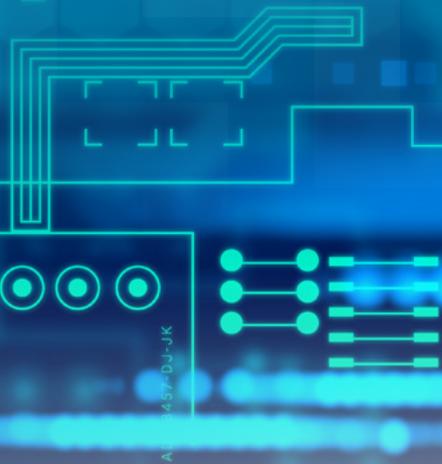




UNIVERSITY OF
AUCKLAND
Waipapa Taumata Rau
NEW ZEALAND

Te Rautaki Raraunga Data Strategy



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Strategic Context

Data reflect the vibrant life of our University. The activities, engagements, and interactions of our people and communities cast a rich field of data in their wake. In our increasingly digital world, every interaction people have with the University creates data, and the performance of our physical estate and our business operations also cast expansive data footprints.

It is our responsibility to respect and treasure, learn from, and weave stories from these data. We acknowledge the vital contributions data can make to achieving the University's desired outcomes for our world. The careful use and application of data facilitates stronger outcomes from our learning and teaching, greater impact from our research and innovation, and deeper relationships from our partnerships and engagement.

Taumata Teitei commits the University to achieve efficient, effective, prudent, transparent, and informed operations, supported by an institutional information framework to guide the ethical acquisition, structure, storage, and utilisation of institutional data assets. Our Data Strategy details actions needed to build upon our existing strengths and tools and spread a data capability across the University that ensures we acquire data ethically and sustainably, share data securely respecting privacy and legal frameworks. Our approach will recognise Te Ao Māori principles

and be founded in Waipapa Framework (Waipapa Toitū) and be informed by experts in the field.

Our vision is for the University to be data-driven in its decision-making and its approach to crafting mana-enhancing services for people. Becoming data-driven enables innovation and experimentation with new product offerings and business models, providing opportunities to optimise the efficiency and sustainability of our built environment and our business operations.

We signal the need to care for our data, use data ethically and respectfully, and generate actionable insights and business value from data. Our Data Strategy recognises the combined importance of data governance and information management, business intelligence and reporting, and analytics. The ability to prepare, engineer, and organise our data within frameworks that reflect the ethical use and appropriate security, is essential to the creation and delivery of analytical information products and to enable the benevolent use of artificial intelligence.

“Future-ready companies [take data seriously and] understand that data can continually empower decisions and the value agenda in unexpected, yet promising, ways.”

Through the implementation of this Data Strategy the University will acquire, manage, govern, and use data differently from how it does today. We will ensure data are accessible, staff are enabled and empowered to use data confidently, and that the fundamental contribution of data to tangible business value and individual experience is understood and appreciated fully.

¹De Smet, A., Gagnon, C., & Mygatt, E. (2021) Organising for the future: Nine keys to becoming a future-ready company, McKinsey & Company, available at <https://www.mckinsey.com/business-functions/organization/our-insights/organizing-for-the-future-nine-keys-to-becoming-a-future-ready-company>

Value Propositions

A University Utilising Data

Those who work with data should respond to business needs and provide value-added insights that support decision-making in a correct, prompt, and professional fashion. Access to data should be pervasive, instantaneous, and consumed much like a utility, respecting privacy and ensuring data is consumed ethically and sustainably.

Our people must understand the definitions, linkages, and relationships of the data they use and consume. They will have a developing understanding of Māori data sovereignty and practice ensuring Te Ao Māori principles are followed. They should also supply expert advice and guiding narratives using dynamic, intuitive, and innovative information products such as dashboards and visualisations.

We envisage a future where an always-available self-service model fulfils most data requests. To achieve this, we need quality data, expert people – data engineers and analysts, and suitable tools for presenting and sharing

information. Our tools and approaches will reflect a safe operating environment, a high-trust culture, and clarity over individual decision-making rights. Our data also populate the performance-and-accountability framework that helps the University better understand its impact and track progress toward achieving its strategic goals.

Providing appropriate and widespread access to data raises awareness of historical baselines, creates insights that anticipate the future, and strengthens our ability to evaluate and meet compliance requirements. The foundations that need to be in place include discoverable data-delivery services, well-described data, and a fleet of information products that satisfy the needs of stakeholder viewpoints. The people-related foundations must include increased data literacy and reliable data governance.

We will develop our Māori data sovereignty practice while advancing the University's utilisation of data by:

- *Expanding Data Availability:* Make data much more readily available to University people, as appropriate to their roles and needs. To achieve this expansion requires a broader range of data to be ingested into and made

available from the business intelligence and analytics ecosystem.

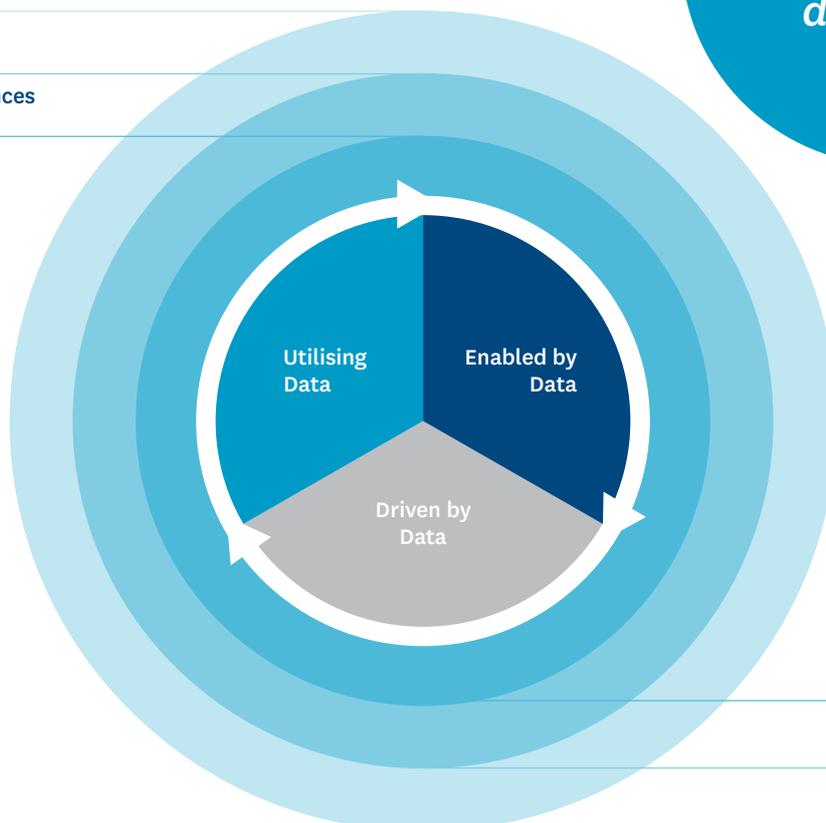
- *Providing Data Definitions:* Ensure good-quality and ready-to-use definitions must exist for critical data elements and should exist for all data elements. We will make use of a University-wide Data Catalogue that enables developers, analysts, data scientists and any users of data to better understand, search, and discover the meaning, context, applicability, lineage, and limitations of our data and their uses.
- *Creating Business Semantics:* Describe and publish business information models that help people understand the meaning of and relationships between core data entities.
- *Preparing Valuable Datasets:* Prepare and publish valuable datasets that allow people to drill, explore, and extract values to aid decision-making.



Waipapa Toitū

Mana-Enhancing Experiences

Increasing Data Maturity



Ethical and Sustainable

Increasing Personalisation

Māori Data Sovereignty



A University Enabled by Data

The availability of well-described and well-structured data throughout the University enables our people to make the right decisions every day. With the mature and focused use of data, the University will be better able to achieve the specific objectives and outcomes it desires. Upcoming decisions related to initiatives such as transforming the academic curriculum, further improving the research ecosystem, and gaining insights into the value of strategic partnerships all require a data-enabled University.

Achieving the desired results within a broad understanding of Māori Data Sovereignty principles and practices will require ethical and sustainable data harvesting and ingestion into the business intelligence and analytics ecosystem and into recognised research data services, augmenting our transactional view of the University with hitherto-unexplored data sources and datasets acquired from external partners. The substantial growth of our data-delivery services will accompany this augmentation.

These foundations will make possible the formation and benevolent use of more complete views of our people and their activities. The robust and sensitive use of equity data will

help foster success for all students and all staff. Customer Journey Mapping will also help identify and prioritise data gaps, data-quality limitations, and data-delivery issues affecting our stakeholders.

Data-enabled insights into the performance of our learning and teaching offerings, our research programmes, and our partnerships and engagements provide crucial feedback that allows ongoing and informed product-and-service adjustments in response to operational activity and stakeholder experience.

In the context of a maturing Māori Data Sovereignty organisation, this work is a precursor to shifting the University to becoming properly data-enabled by:

- *Creating Compelling Insights:* Activating cohorts of people using data and encouraging sharing and mentorship to create information products that communicate compelling and relevant stories enabled by connected datasets.
- *Expanding Transactional Datasets:* The University Data Warehouse contains large amounts of data, but its coverage is incomplete, resulting in visibility gaps. As the University introduces new and changes its existing information systems, their data must be ingested into the business intelligence and analytics ecosystem, completing transactional coverage.

- *Exploring New Datasets:* We will assess hitherto-untapped datasets for ingestion into the business intelligence and analytics ecosystem. These datasets may include richer contextual data from information systems, machine-readable log files, streams originating from sensors in the physical estate, and digital twins.
- *Introducing External Datasets:* Where there is potential value in doing so, we will continue to assess and integrate datasets from sources external to the University. Possible sources include benchmarking partners, government agencies, open-data repositories, and commercial brokerages.

**Guides
decisions about
individuals and
the university**

A University Driven by Data

The data-driven University expects and makes ubiquitous use of data to measure, understand, and refine continuously the quality and efficacy of the services it provides and the efficiency, effectiveness, and sustainability of its business operations. Advanced analytical techniques used ethically and sustainably create innovative information products that drive the University's decision-making and operational configuration. A data-driven University is nimbler and better able to seize new opportunities, and better-equipped to navigate unforeseen challenges.

Taumata Teitei commits the University to providing mana-enhancing and differentiated services while adopting Māori Data Sovereignty practices by building our internal capability through enduring relationships with experts. Within our collective environment, experiences will be personalised for individuals and cohorts. Only a data-driven approach will make it possible to understand and manage the performance of University services and enable the underpinning personalisation framework required.

New data-processing techniques go beyond describing the University at an aggregate level and now influence outcomes for individual people. The data-driven University will use personalised analytics to activate learning and teaching use-cases ranging from the application of adaptive learning techniques to next-best-action-based nudges that micro-orchestrate students through their journey to strengthen learning outcomes.

We can also use data about people, their activities, interests, and enquiries to anticipate their needs and respond more effectively to their requests. Powerful scenarios exist throughout the University, particularly in the research value chain, for people and culture, and across partnerships and engagement.

Substantial and progressive change must occur in the data culture throughout the University and how people work with and value data. A Māori Data Sovereignty organisation with an active data culture increases the ambition and ability of our people to expect and to be data-driven in their work and in their design and operation of service-delivery models. We will activate a data-driven University by:

- *Deploying Innovative Technology:* Continuing to invest in innovative technologies to provide robust analysis platforms.
- *Enabling Our Staff:* Pursuing aspirational training relevant to level, role, and responsibilities, we will ensure staff are updated with emerging techniques and practices and are aware of and empowered to explore new opportunities.
- *Ensuring Accessibility and Discoverability:* Alongside the deployment of innovative technology and the training and development of our staff, data and information products must be accessibility, discoverable, and able to be used frictionlessly within appropriate security and ethical frameworks.
- *Furthering Advanced Analytics:* Creating new metrics through predictions, algorithms, and analytics to identify and extract powerful insights.

Enables individuals to make decisions about their actions



Scope of the Data Strategy

The University must catalogue and manage, throughout the life-cycle, its data consistently and appropriately for the strategic domains of Education & Student Experience, Research & Innovation and Partnerships & Engagement and the underpinning domains of People & Culture and Enabling Environment.

The Data Strategy encompasses and applies to all University data. We acknowledge the commonality of data governance and data literacy needs shared across all three of the high-level domains, and we recognise the significant preparations already achieved for research data management.

Beyond that commonality, specific practices and expectations apply to the underpinning data-governance requirements and operating models of each high-level domain.

Waipapa Toitū

Te Rautaki Raraunga I Waipapa Taumata Rau The University Of Auckland Data Strategy

- Policy Framework
- Data Governance
- Digital Ethics
- Data Culture
- Data Literacy
- Roles and Responsibilities

Data Governance Operating Model Domains

Education & Student Experience

Research & Innovation

Institutional & Administrative

Taumata Teitei

Education & Student Experience

- Curriculum Delivery
- Teaching Resources
- Student Coursework

Research & Innovation

- Research Data

Partnerships & Engagement

- Partnerships
- Communities
- Alumni
- Engagements
- Relationships
- Communications
- Marketing

People & Culture

- Positions and Jobs
- Organisational Structure
- Employee Records
- Talent Management

Enabling Environment

- Student Records
- Financial Information
- Research Management
- Asset Management
- Identity Information
- Estate & Facilities
- Environmental Sustainability
- ...and more

Scope of High-Level Operating Model Domains

Education & Student Experience Domain

The Education & Student Experience domain holds data related to curriculum delivery, and its scope includes learning resources and learning activities. The high-level domain of Education & Student Experience is distinct from the Enabling Environment concerns for data about student administration, student services, and student management.

Research & Innovation Domain

The Research & Innovation domain holds data that are from research activities. We also acknowledge the substantial activity occurring in the Research Data Management Programme to mature and continue progression towards the University becoming a Māori Data Sovereignty organisation. The core scope of the Research & Innovation high-level domain is *research data* — data of all kinds that are created, captured, or generated by research activity.

Institutional and Administrative Domain

The institutional and administrative operating domain includes the data that the University collects, stores, and processes in the course of or in support of its business operations, the

cultural environment within which the people who deliver services within the University and the positions they hold operate. This scope comprises the operational and transactional data related to such things as identity and access management, study application management and student recruitment, scholarships and accommodation, enrolment and employment, learning and teaching, finances and funding, facilities and the physical estate, alumni and partnerships, and information technology.

Data related to research management (e.g., research opportunity management, research funding, grants management, research infrastructure, and research outputs, outcomes, and impacts) are also considered to be Institutional & Administrative. The University has a keen interest in the performance of its research ecosystem, and that interest is reflected in our Data Strategy. It is essential that we create meaningful insights and establish robust performance metrics for the research ecosystem to gain better strategic understanding of research opportunities and planning, research funding, and research outputs, outcomes, and impact. In particular, the Data Strategy supports the implementation of naturally-integrated persistent unique identifiers create a joined-up research ecosystem.

The People & Culture data include personal information about the people who deliver services to the University, the nature of their relationship, the qualifications held and training undertaken as well as positions held and remuneration.

Datasets acquired from external sources such as benchmarking partners, government agencies, open-data repositories, and commercial brokerages also fall within this scope.

Content and Information Management

Beyond the realm of structured and transactional data, core activities that help fulfil the University's purpose require the creation, aggregation, curation, and publication of semi-structured and unstructured digital content, including films and sound recordings, documents and images, and website content. We acknowledge digital techniques will advance the sharing, curation, and preservation of our distinctive content and valuable collections, and expect that unstructured and semi-structured data will be subjected to advanced interpretation and assessment through analytics.

The metadata and the paradata that describe collections of unstructured and semi-structured content are invaluable to their discoverability and upkeep. Data generated by people accessing those content collections are crucial to understanding their relevance and value. However, information-, records-, and collections-management practices applicable to content are beyond the scope of a Data Strategy.



Framework for Action

Supporting the profound changes digitalisation brings to learning, teaching, and research requires new approaches to sourcing, curating, managing, and using data. In the accompanying Framework for Action we detail the actions needed to change data culture, raise data literacy throughout the University, and empower our people with greater access to core data. These essential actions are required to bring this Data Strategy to life, and to create a data-driven University able to achieve the goals of Taumata Teitei.

*For more
information visit:
auckland.ac.nz*

HIGHER EDUCATION DATA REFERENCE MODEL



DESCRIPTION

The Higher Education Data Reference Model describes a standard set of Data Architecture elements relevant to Higher Education. It identifies the business nouns that define a common language for Business Stakeholders, Enterprise Architects, and Technology Strategists to communicate clearly. The primary component of the Data Reference Model is the embedded conceptual data model, which captures these nouns as high-level data entities, grouped into topics.

UNDERSTANDING DATA

Data are a set of facts, representing a specific concept or concepts. Value is added to data when they are combined and presented to users within a context, turning them into meaningful information to support business decisions and enable operational activities.

DATA + CONTEXT = INFORMATION

USAGE

There are three established levels defined in data modelling: conceptual, logical, and physical. This conceptual data model focuses only on the data entities to describe the language of the organisation and has an enterprise-wide scope to provide a strategic view of information.

The purpose of the model is to define the agreed terminology and key concepts that are important to the business. The model can be used to identify which data entities are assembled or reused in various information assets, data quality risks, who is responsible for governing the data, and where data are stored. The top-level conceptual data entities also provide the basis for more-detailed conceptual, logical, and physical data models that further specify relationships and attributes as inputs to business technology solutions design.

MAJOR CONCEPTS

A topic is a collection of data entities that share a common theme. This is not the same as a subject area. In a modelling context, a subject area (e.g., Research) may contain data entities from multiple topics (e.g., a Researcher (Person Topic) is working on a Research Project (Research Topic)).

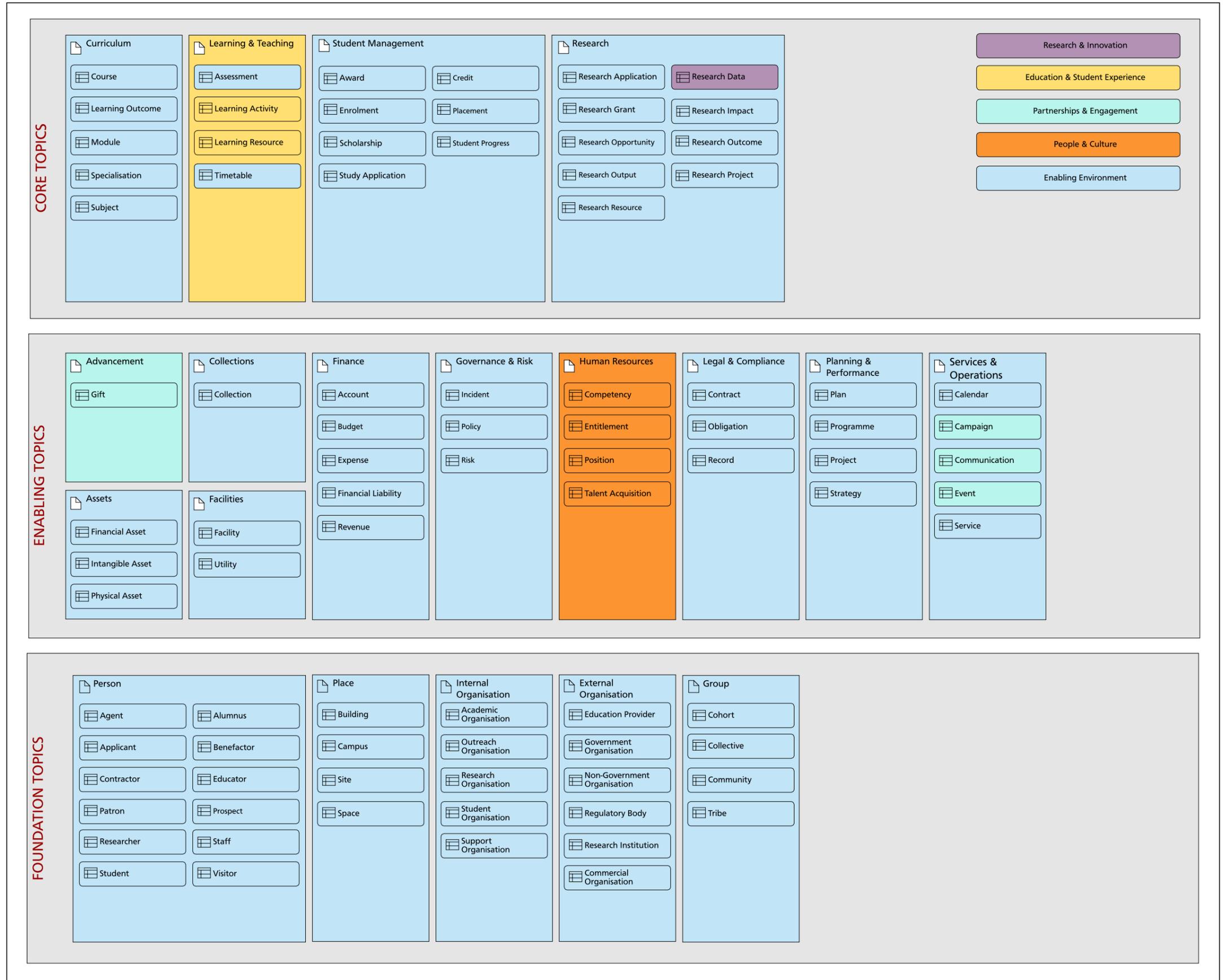
CORE TOPICS contain data entities that typically support the core business capabilities as defined in the CAUDIT Higher Education Business Reference Model.

ENABLING TOPICS contain data entities that typically support the enabling business capabilities as defined in the CAUDIT Higher Education Business Reference Model.

FOUNDATION TOPICS contain commonly found data entities that typically support the core and enabling topics (e.g., a Student (Person Topic) is admitted to a Course (Curriculum Topic)).

LEGEND

- Topic
- Data Entity



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