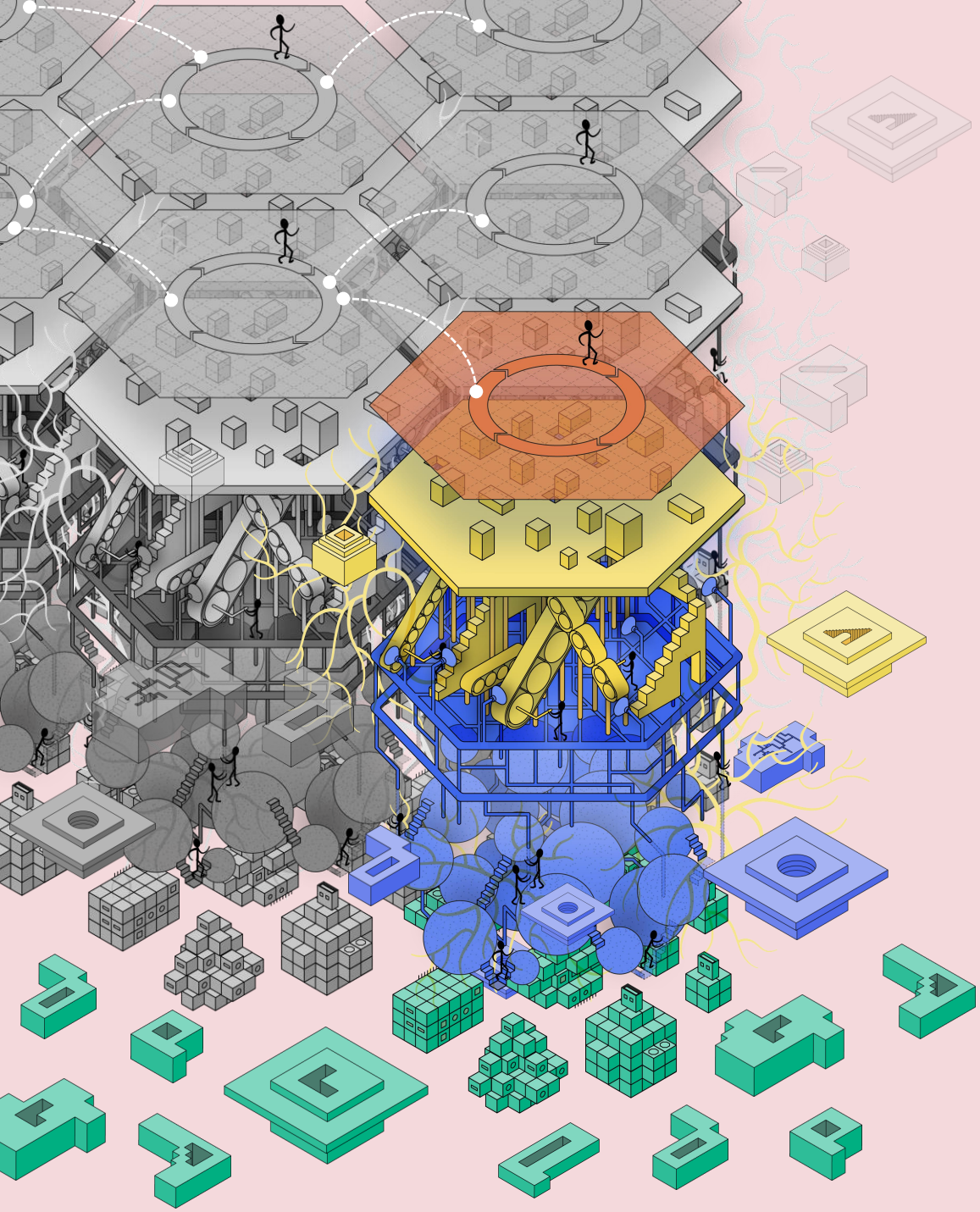
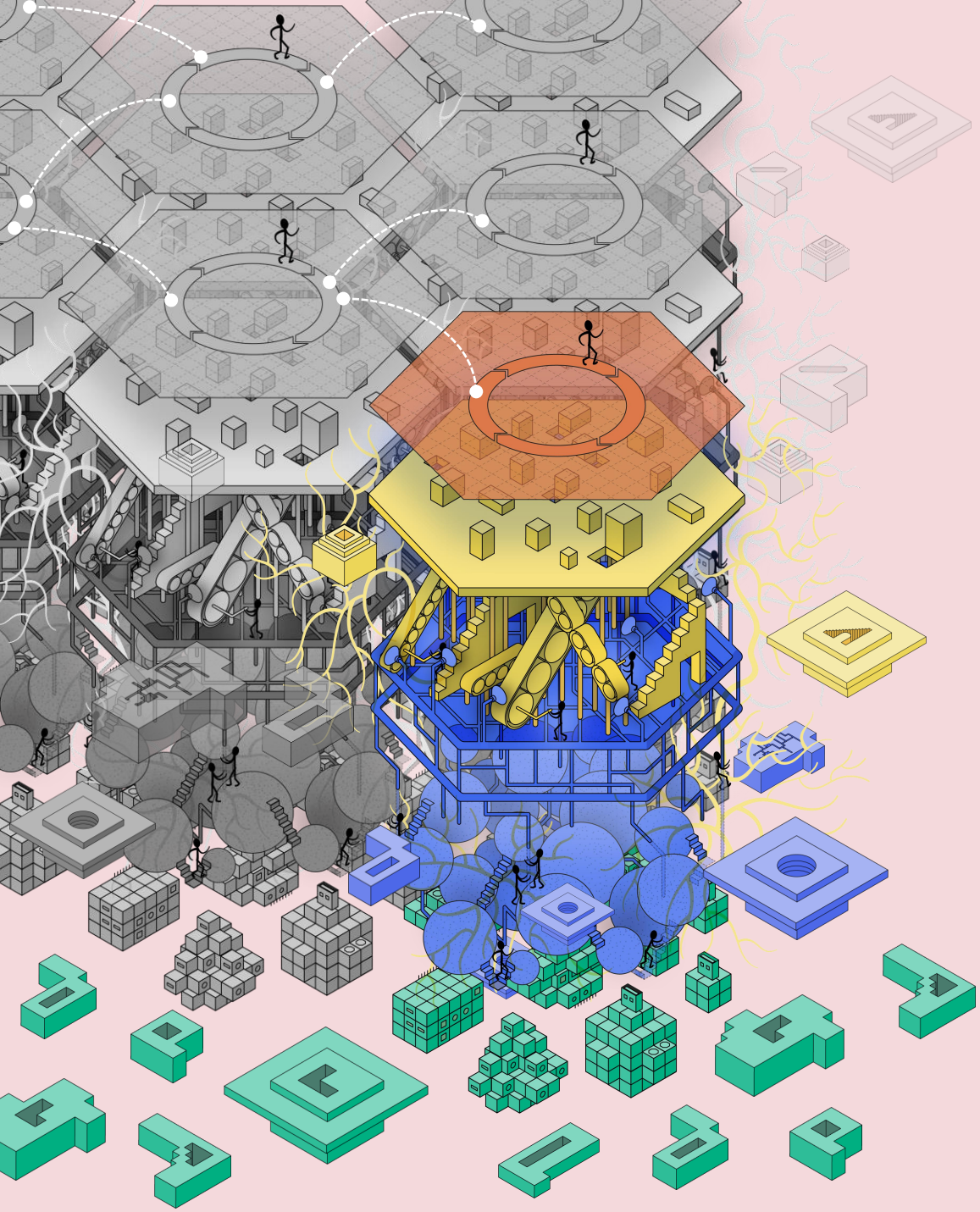


Educational Interoperability

A visual language

Version September 2024

SURF Npuls



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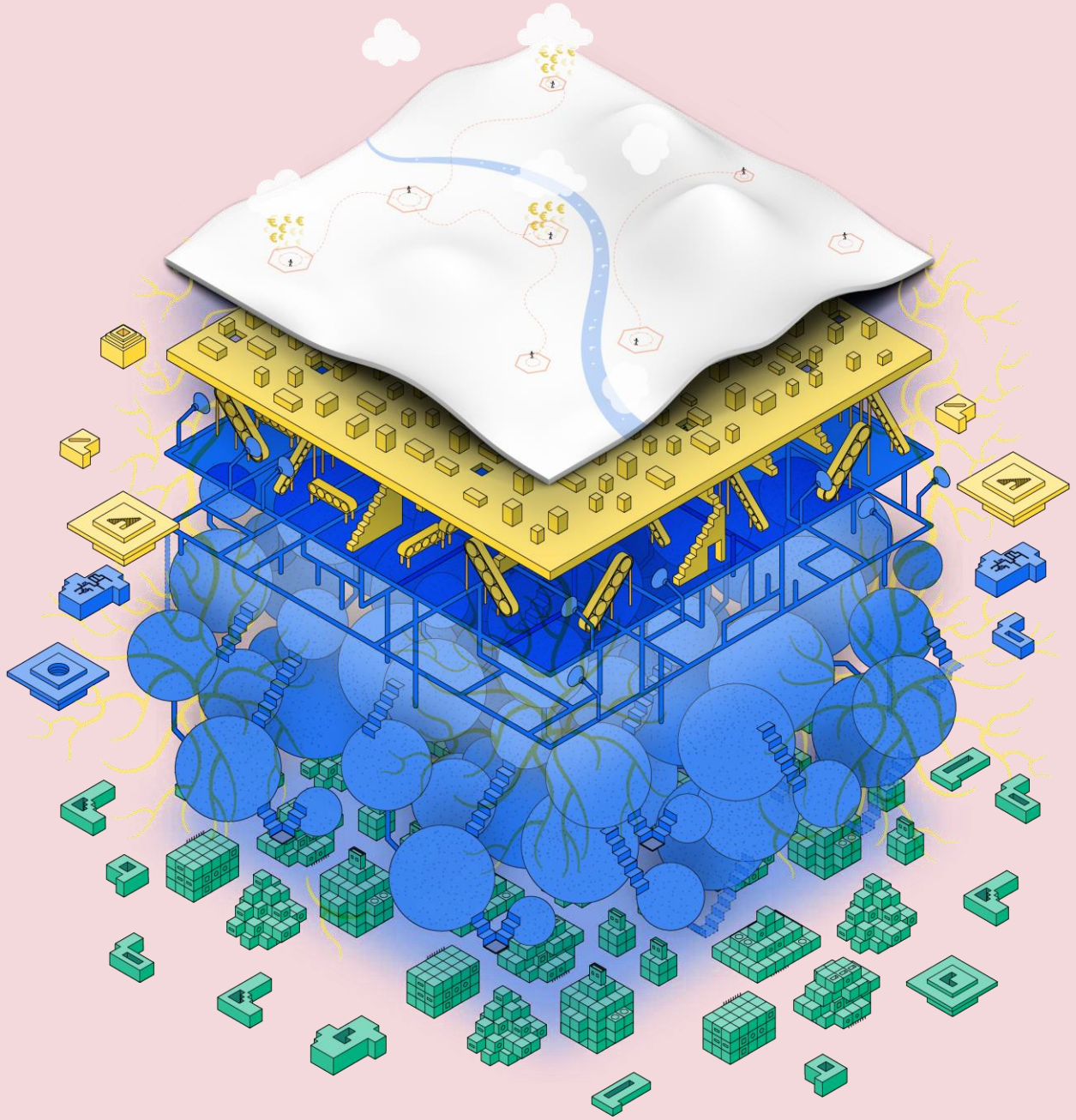
The ecosystem overview

- A planetary ecosystem is a biological community of interacting organisms and their physical environment
- The education sector functions within a dynamic ecosystem.
- Organismes: educational institutions, standardisation bodies, governmental organisations, and service providers (such as educational technology companies)
- Environment: all interacting within an environment shaped by economic, social, and technological factors.



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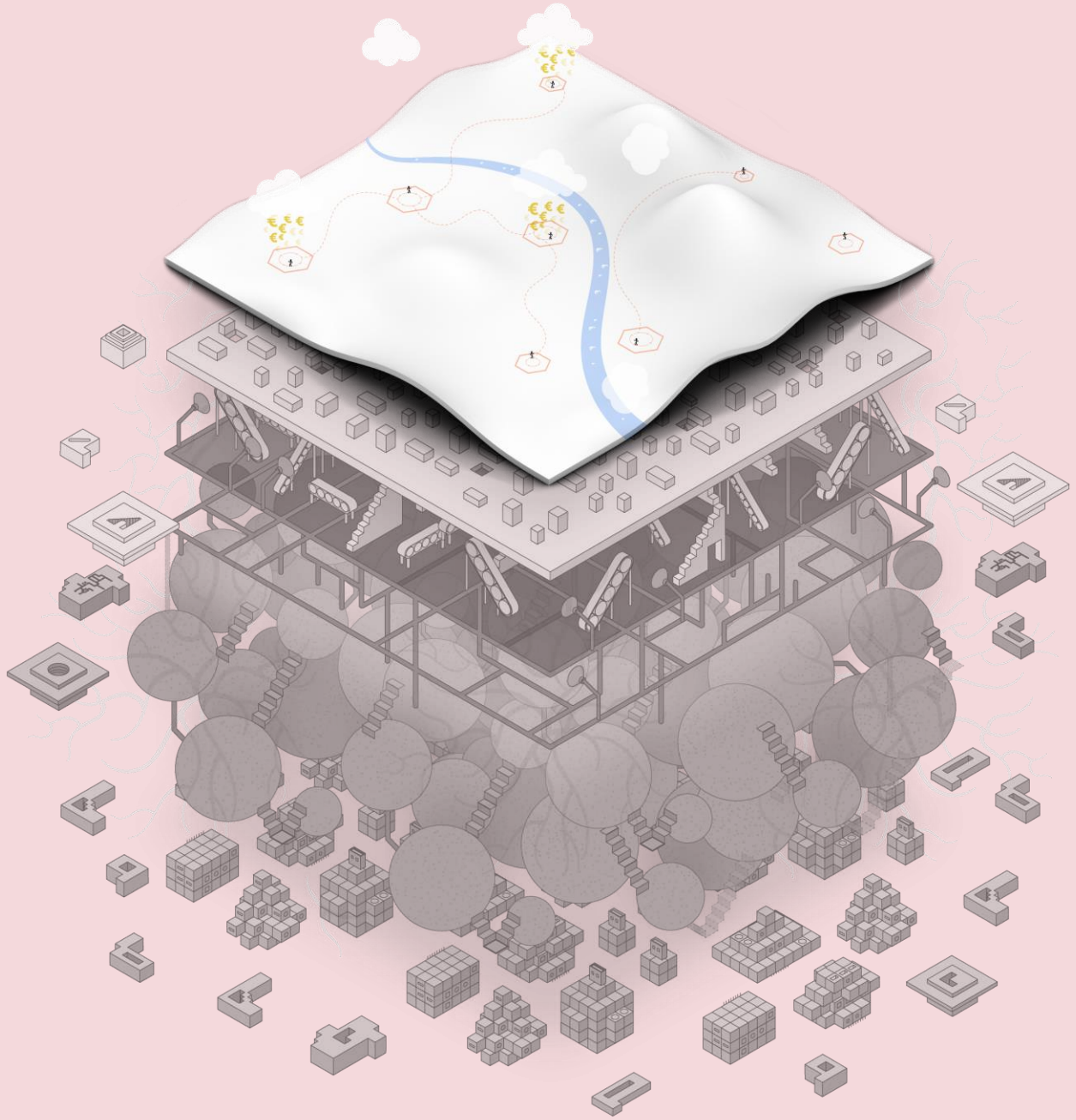
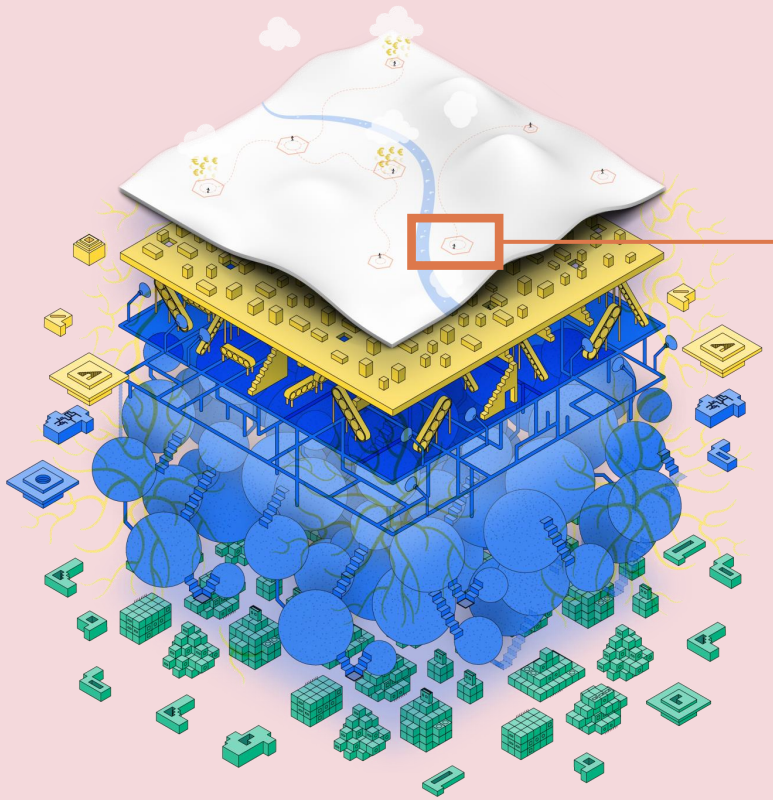
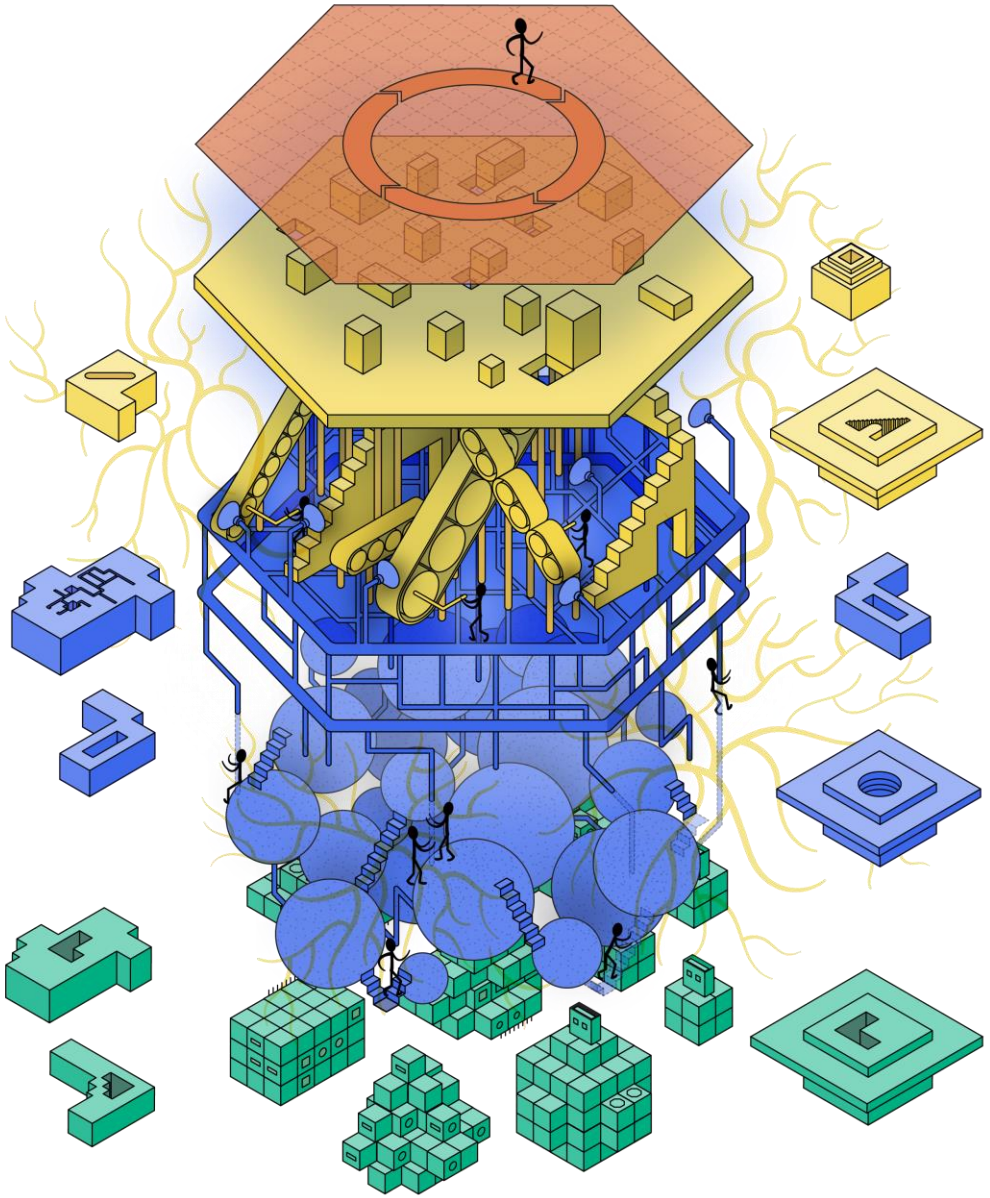
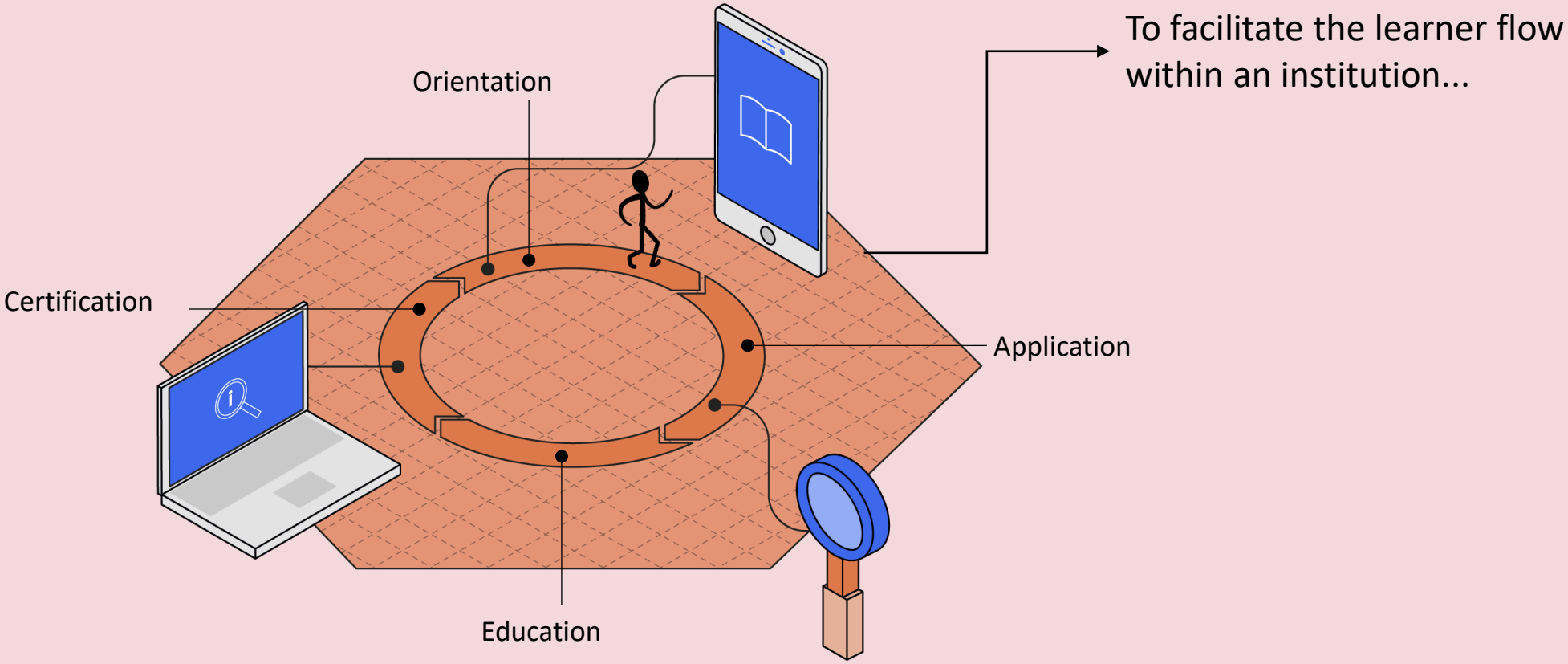


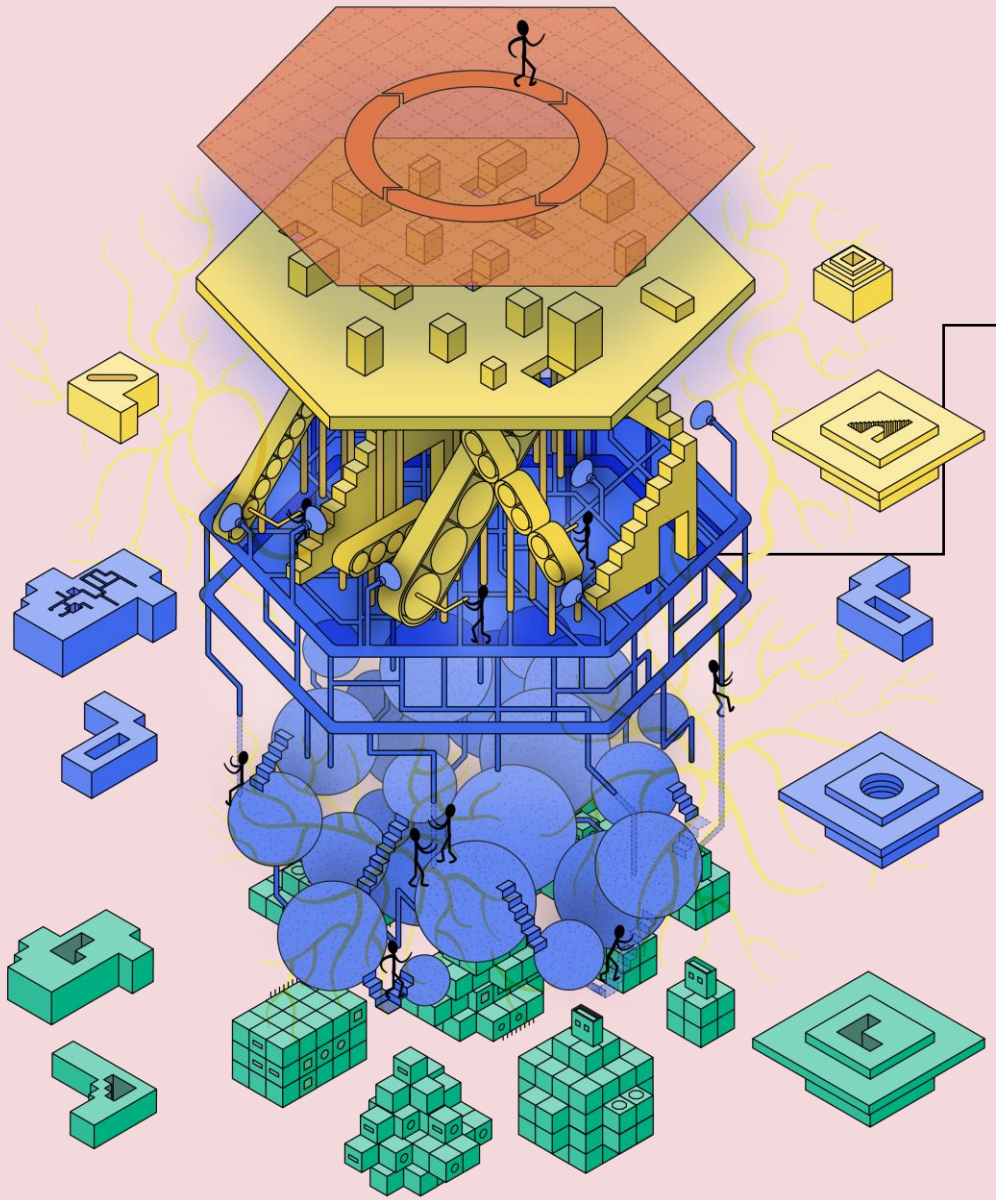
The institution



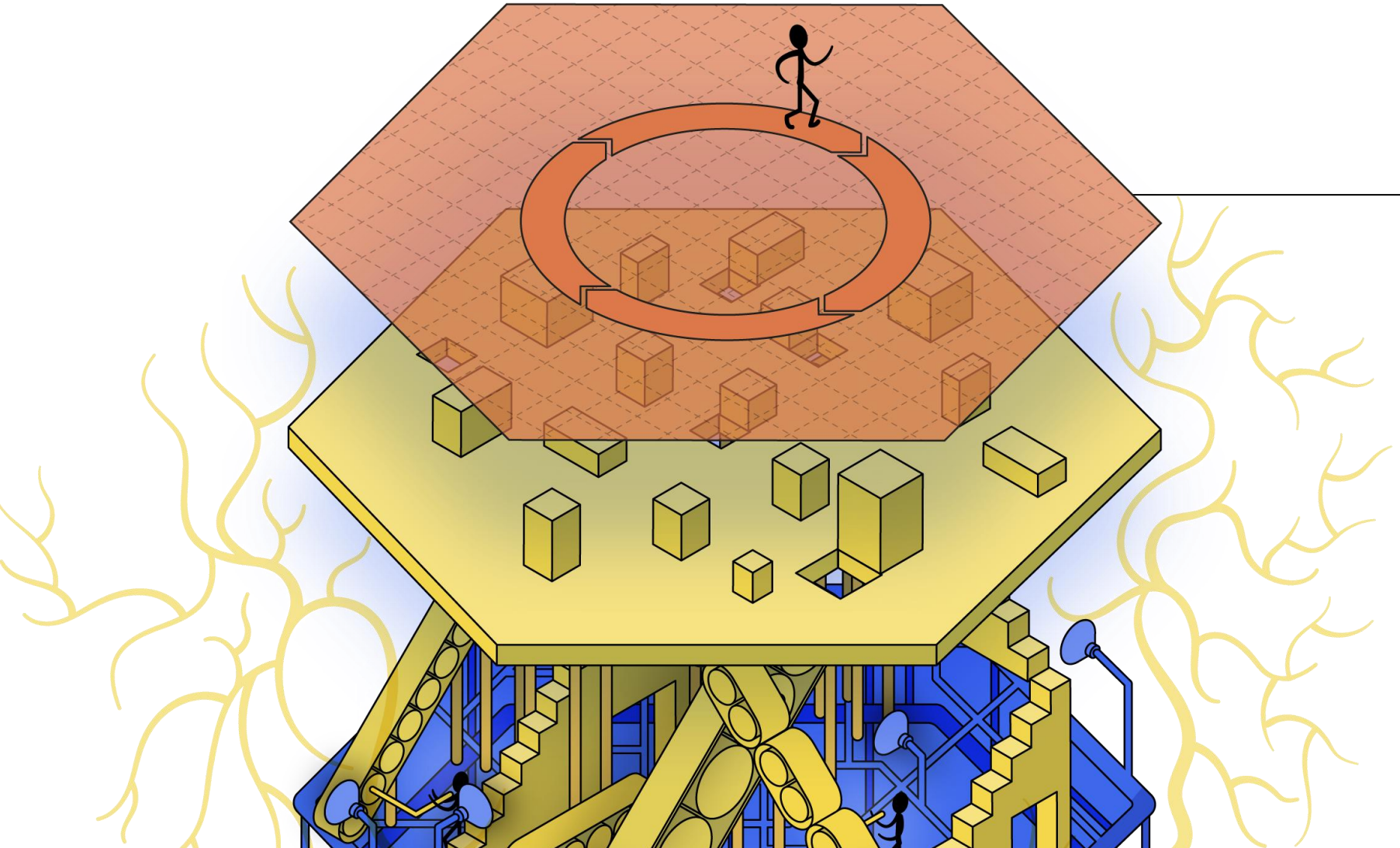




To facilitate the learner flow within an institution...



… a whole **invisible** ecosystem is needed. This ecosystem consists of four layers.

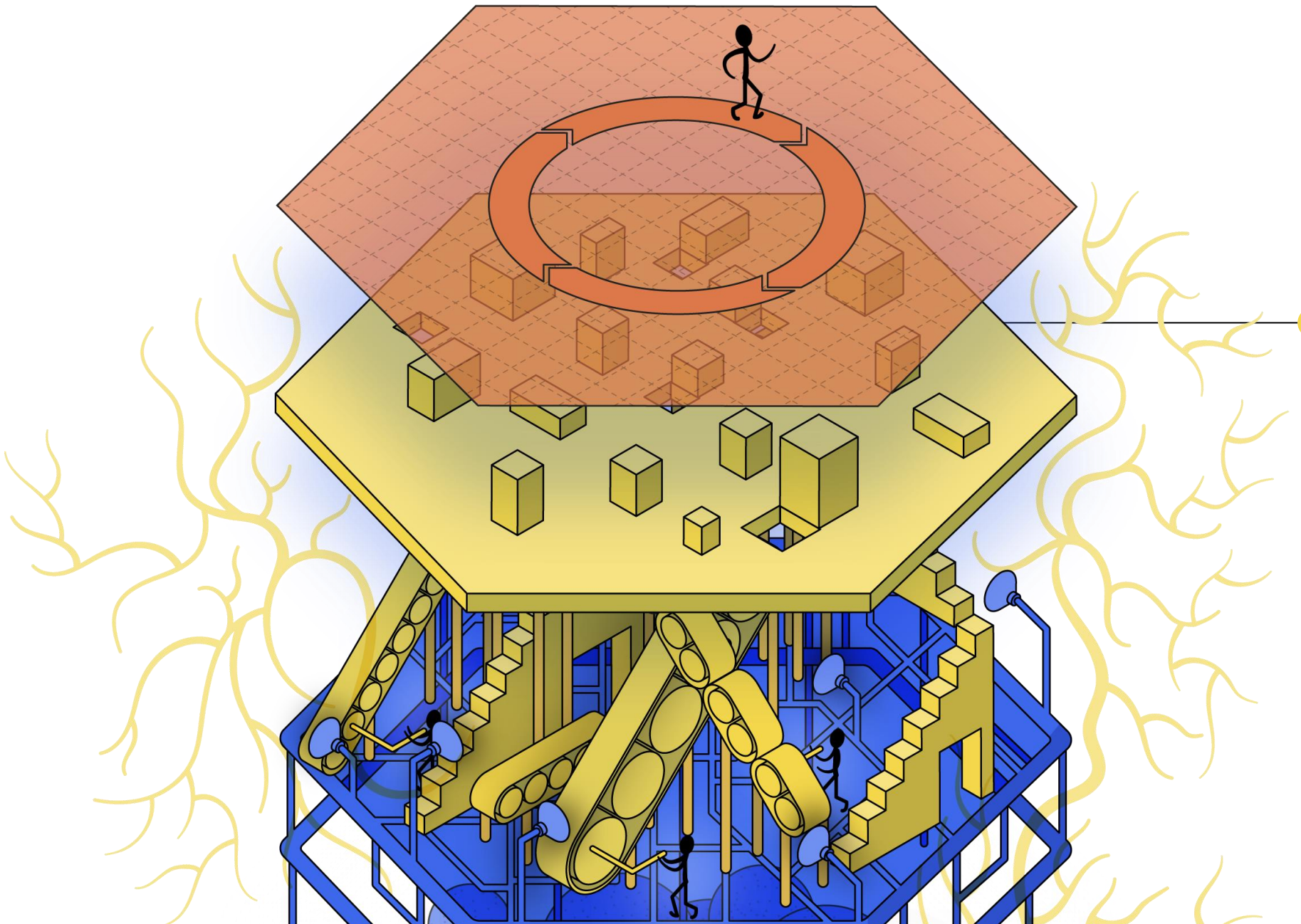


Users & Services

The top layer outlines the objectives of the users. Learner, teacher and staff want their needs to be fulfilled.

Examples:

- *The learner wants an education path that fits/satisfies their needs.*
- *The teacher can create courses that fit the learner's need and meet desired educational outcomes.*

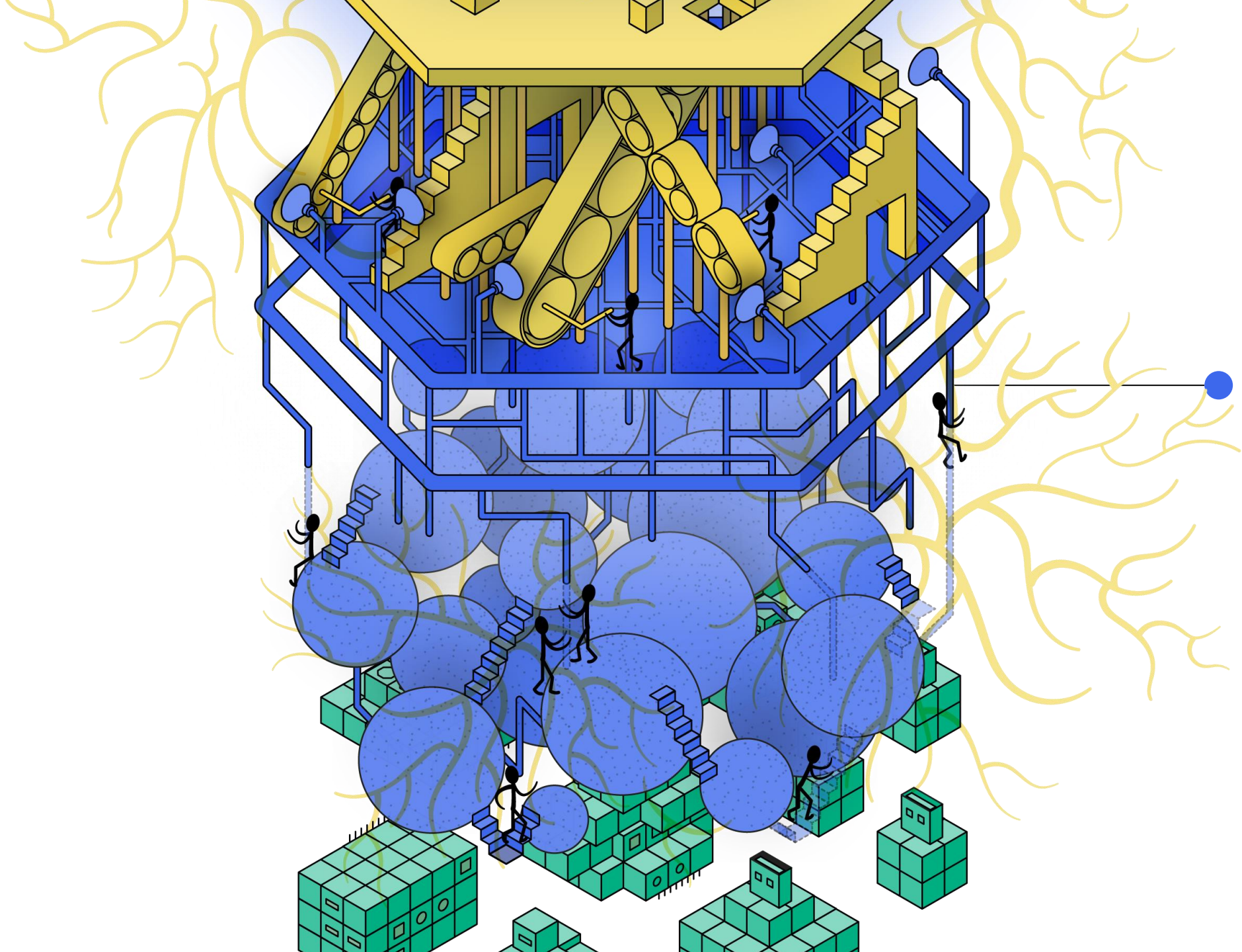


Organisation & Processes

Next, the ‘business’ layer is about designing and managing the education operations, to meet the goals set in the top layer. For example curriculum development, exam organisation or scheduling.

Examples:

- *The program director designs a program in collaboration with the teachers’ team.*
- *The CIO, in collaboration with educational experts and IT teams, oversees the procurement and configuration of the most suitable LMS.*

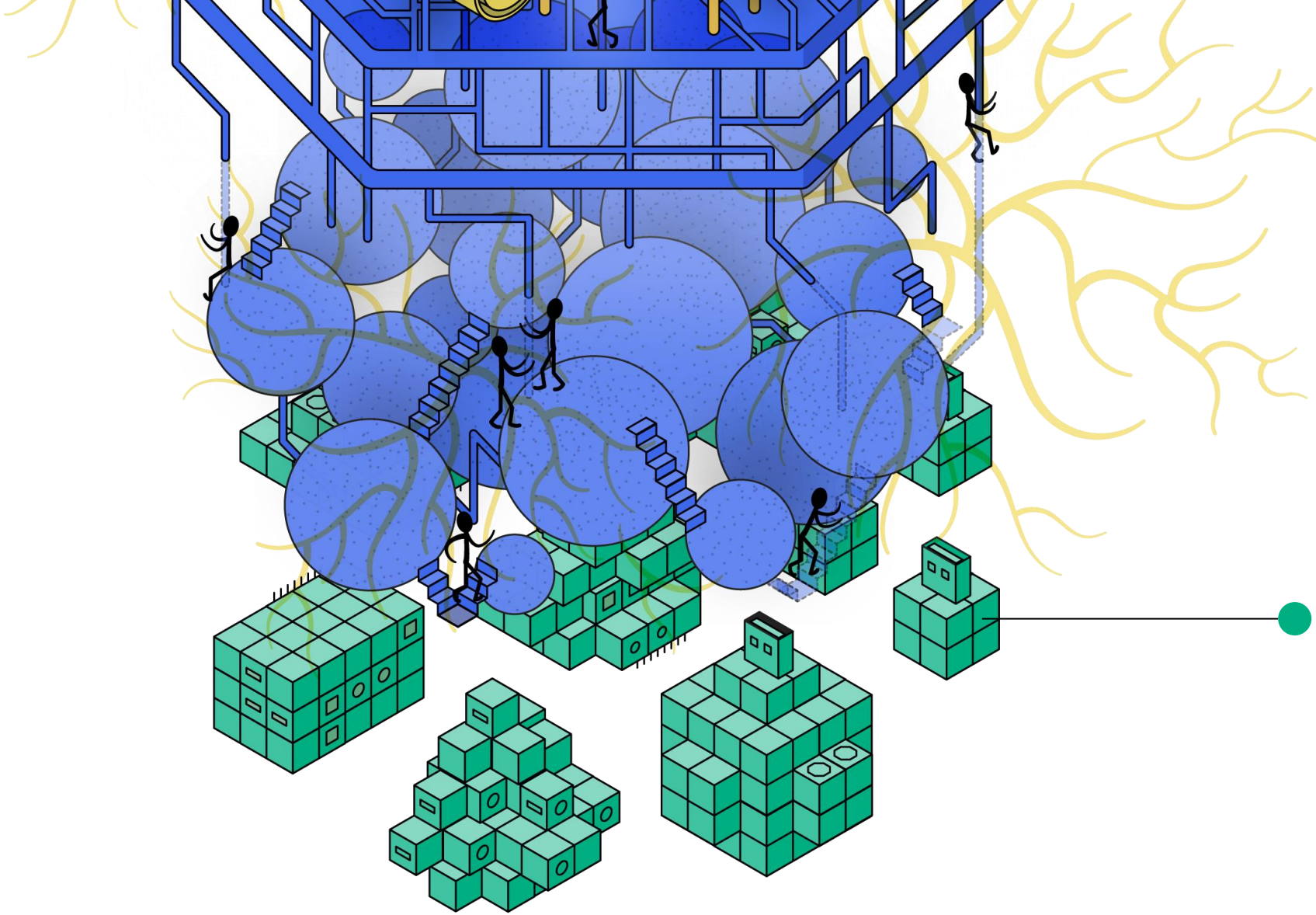


Applications & Information

This layer is about WHAT IT should do.

Examples:

- *Functional application managers find solutions that meet user needs. They define how to execute these within an application, following business processes.*
- *The International Exchange Officer can access student data for current exchanges. This helps them keep information up-to-date to manage and support international programs well.*

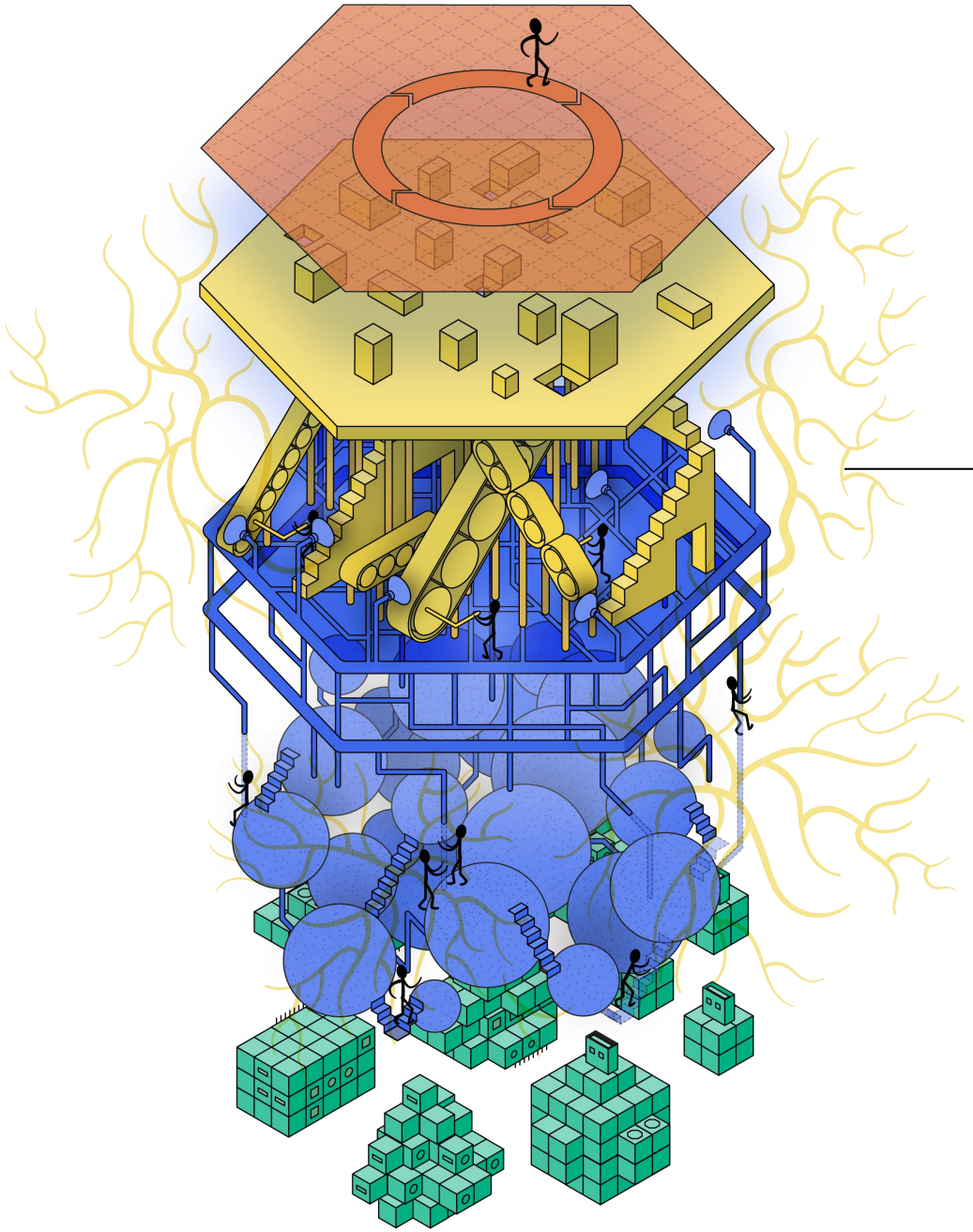


Technology

While this layer is about HOW IT is managed. IT staff handle identities, access and databases.

Examples:

- *IT managers and NRENs like SURF ensure secure connections and data exchanges between institutions.*
- *Integration specialists ensure standards for information exchange and storage are agreed upon and implemented (e.g. APIs).*



Policy & Legislation

Legislation is produced and implemented on different scopes:

Local

National

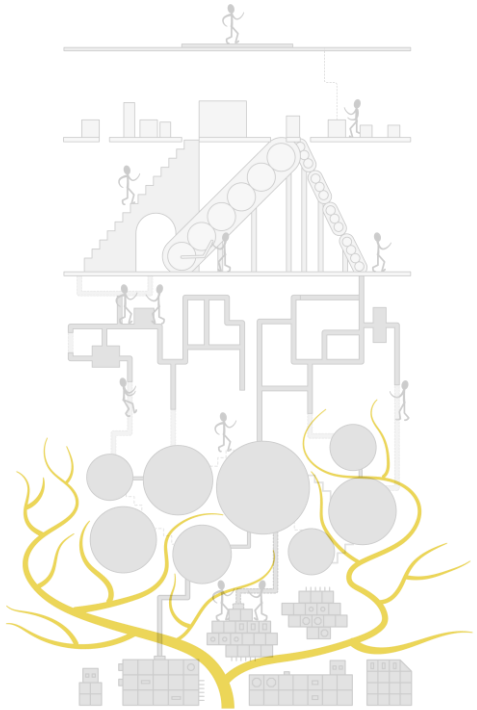
International

For example, GDPR is European legislation that has a global impact. It is translated into national legislation and fuels the local privacy policy of an institution.

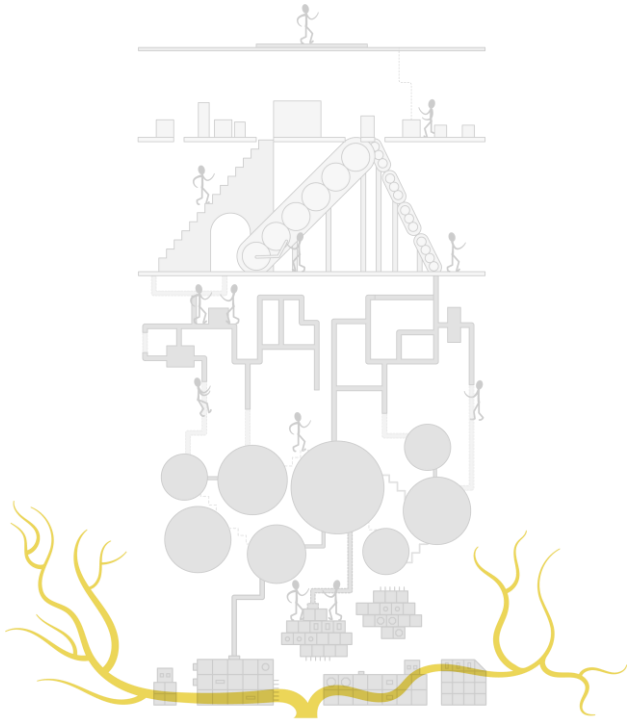
Policy & Legislation

Legislation can:

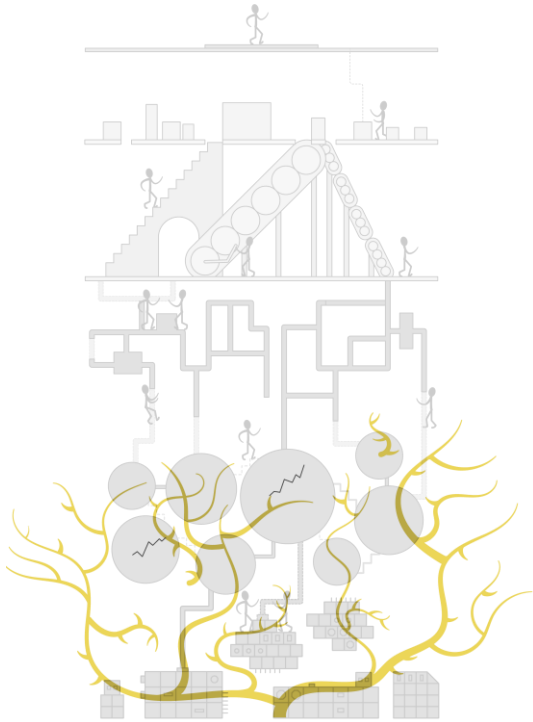
Support the ecosystem,

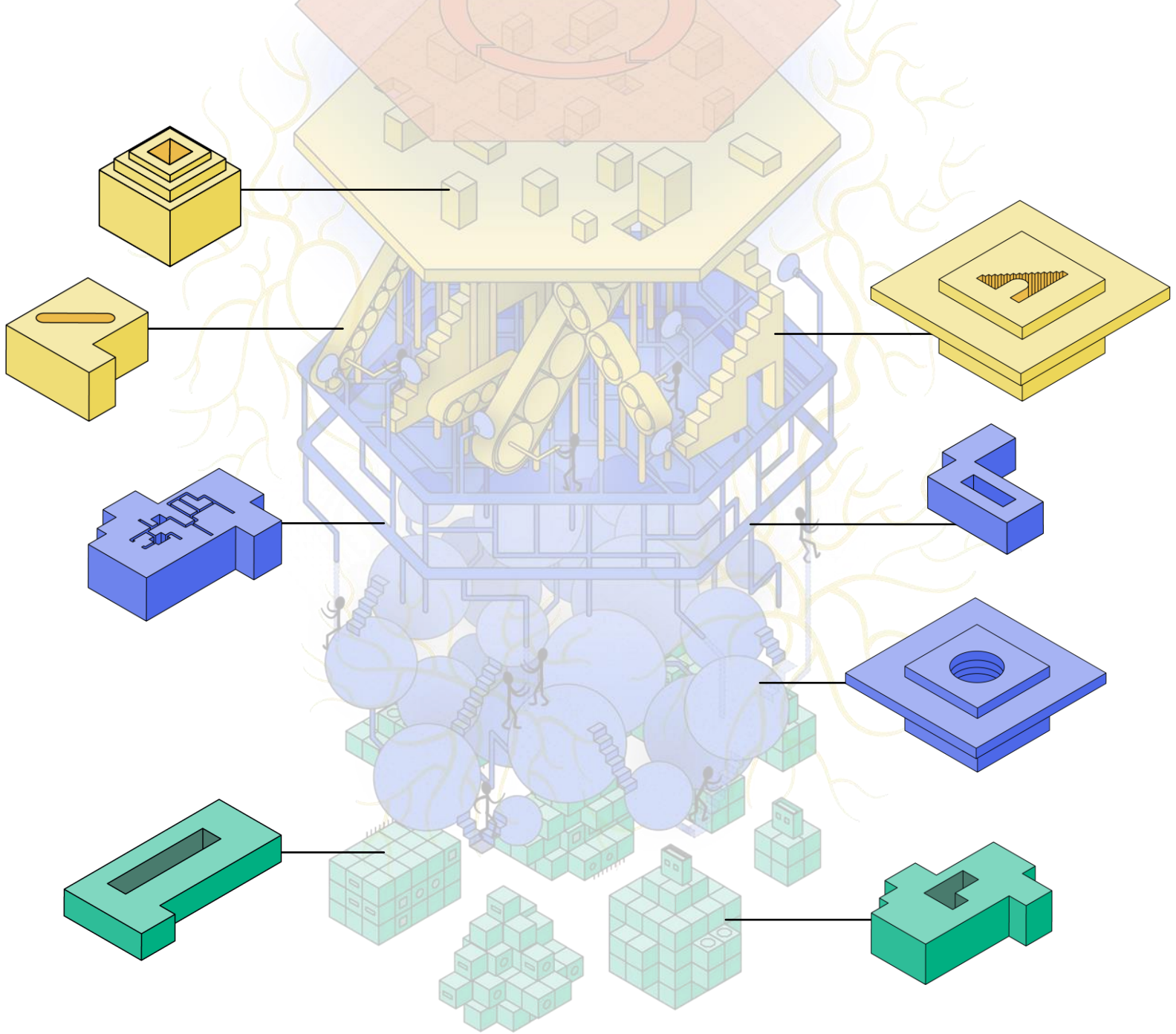


not support it,



it may even undermine it





Standards

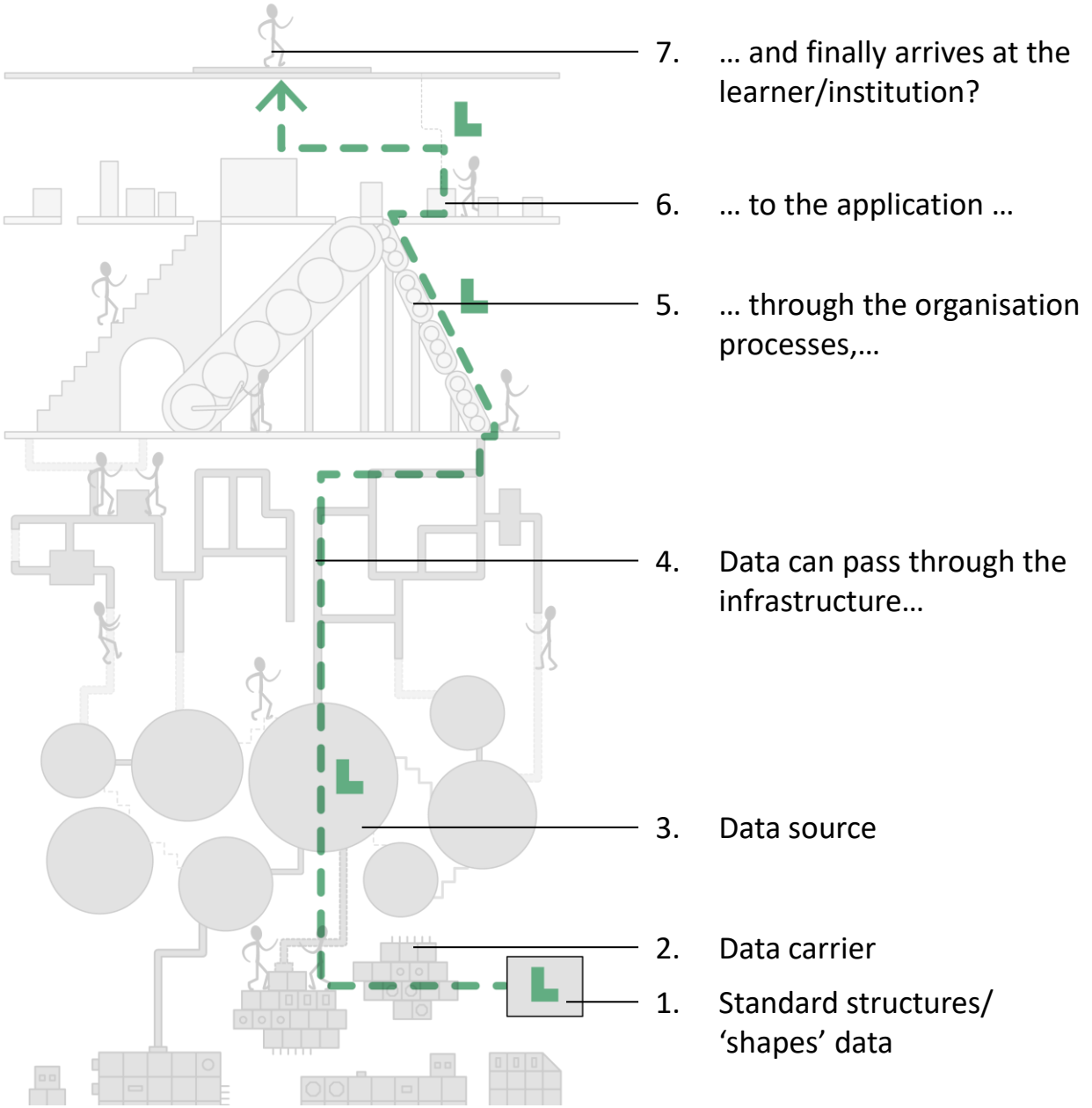
A standard is an agreement on information or a process, which can have various perspectives for consistent digitalisation and data exchange:

Examples:

- *Semantic standards: defining terms like ‘diploma’ or ‘teacher’.*
- *Metadata standards: enabling data to be placed in the right context.*
- *Standard processes, such as conducting a privacy impact assessment when making decisions about the collection and use of personal data.*
- *Technical standards, such as IPv6 for network communication.*

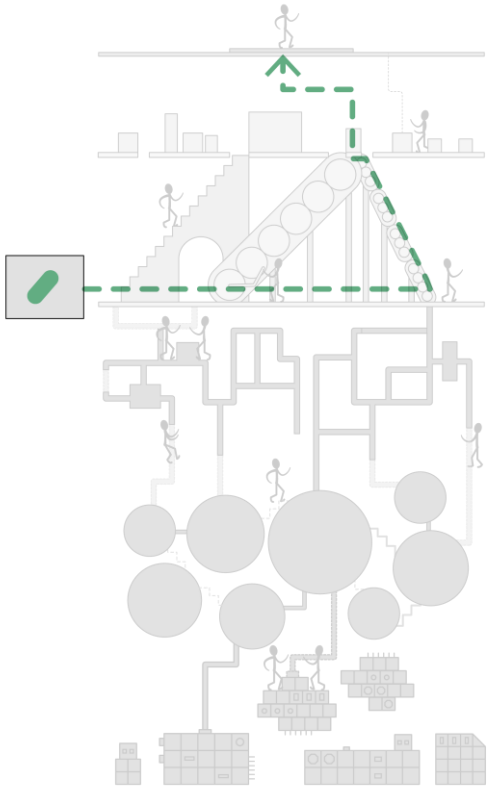
What do we mean with a standard?

- We don't mean 'broad definition': Agreement on how to work on information security (ISO 27001) is broad and mostly affects the business layer
- The green layer is about 'technology' and 'data standards'
- Standards are part of the IT vision, not based on it. And the IT vision is derived from or reflecting business vision and goals.
- An established norm or requirement about technical systems and protocols that ensure compatibility, interoperability, and quality across different digital platforms, software, and devices.

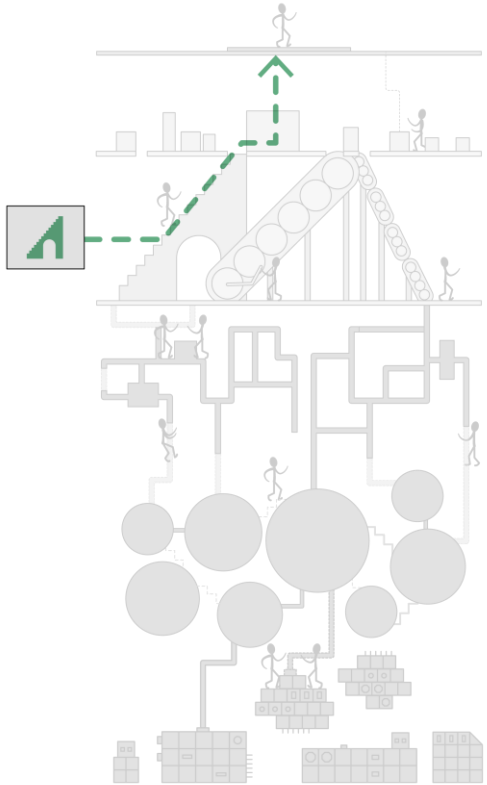


Variations of standards

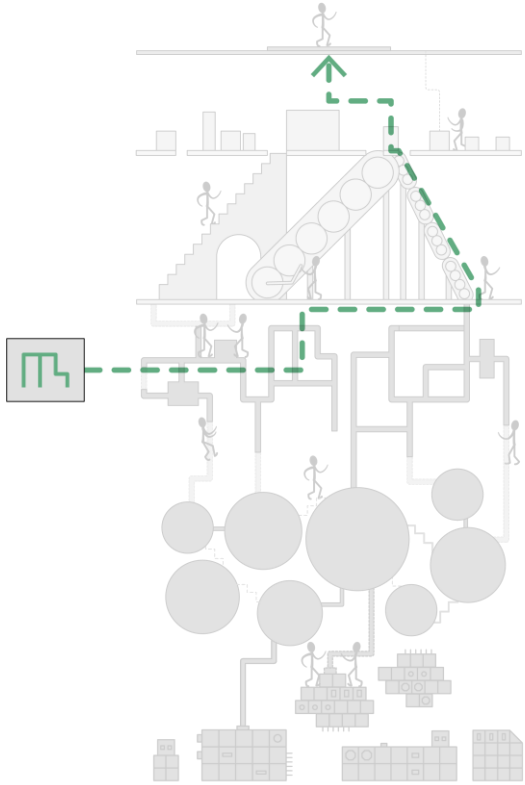
An ‘Organisation & Processes’ standard
For example […]



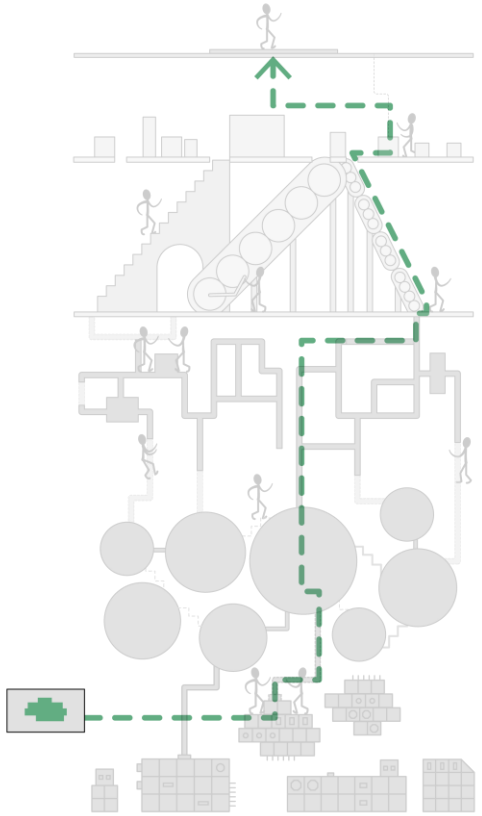
An ‘Organisation & Processes’ standard
For example […]



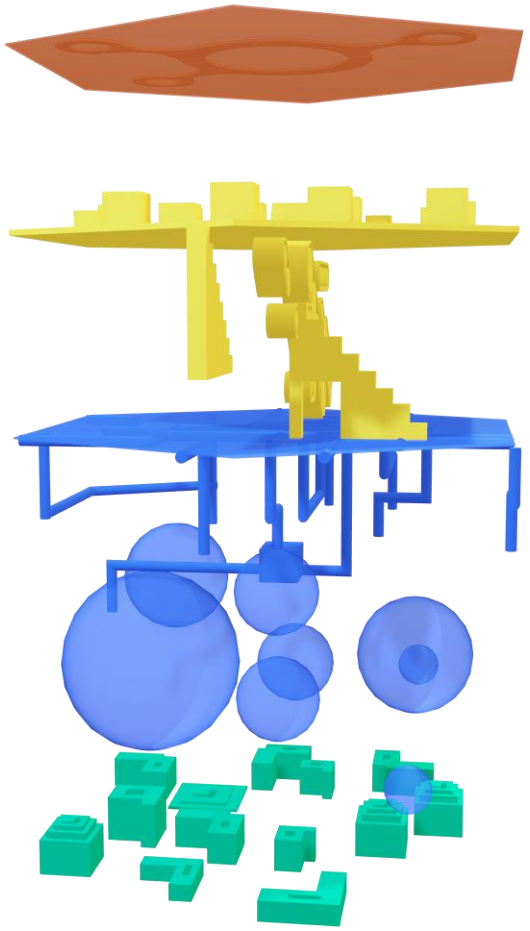
An ‘Organisation & Processes’ standard
For example […]



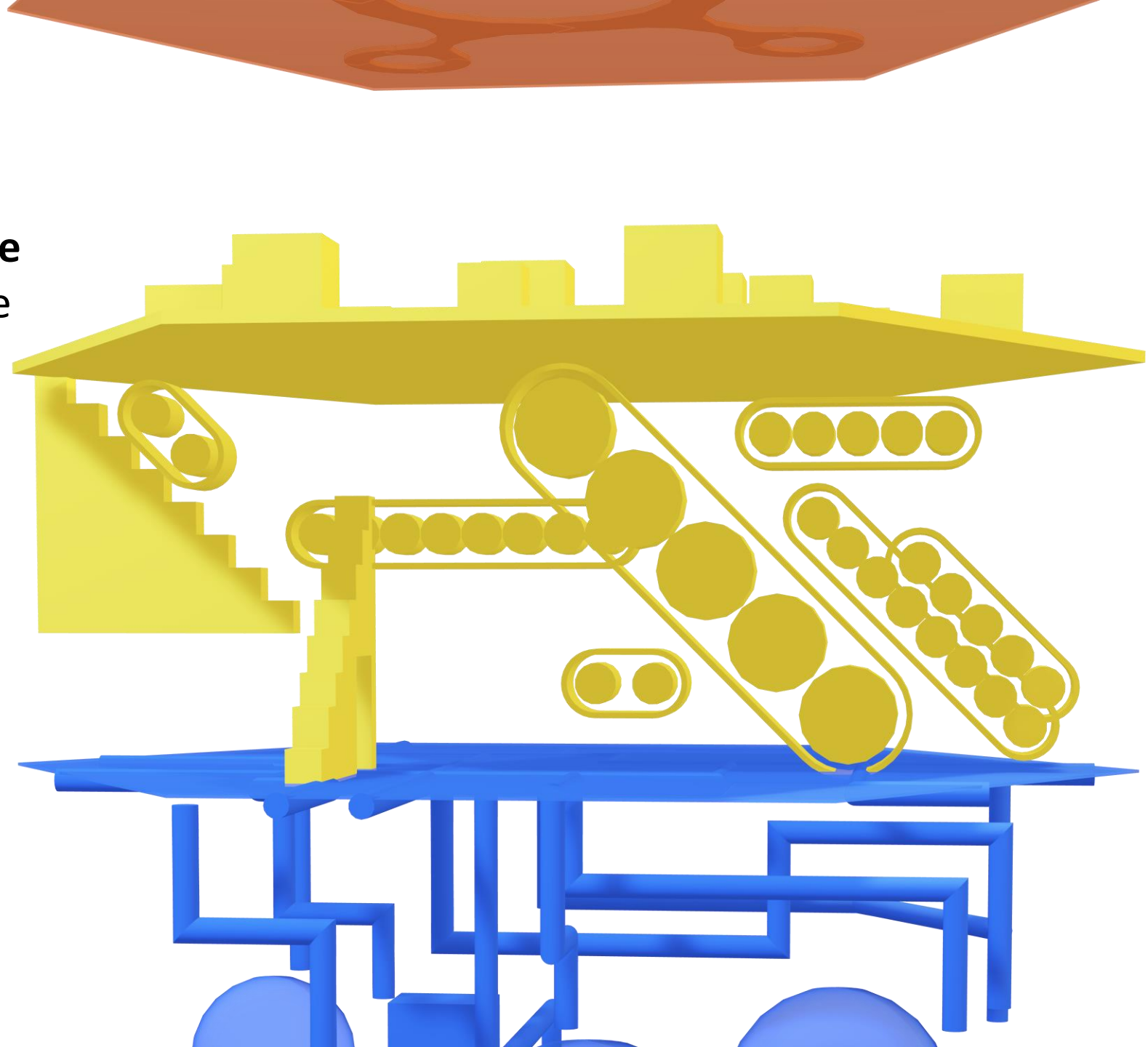
A ‘Technology’ standard
For example […]



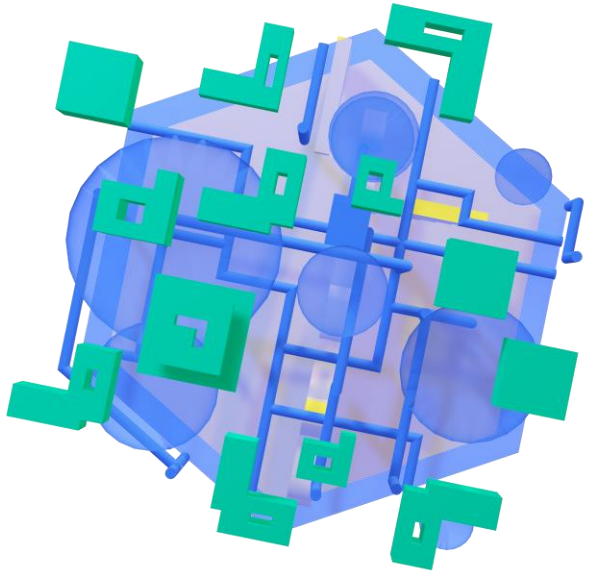
You and your colleagues look at this ecosystem from **different perspectives..**



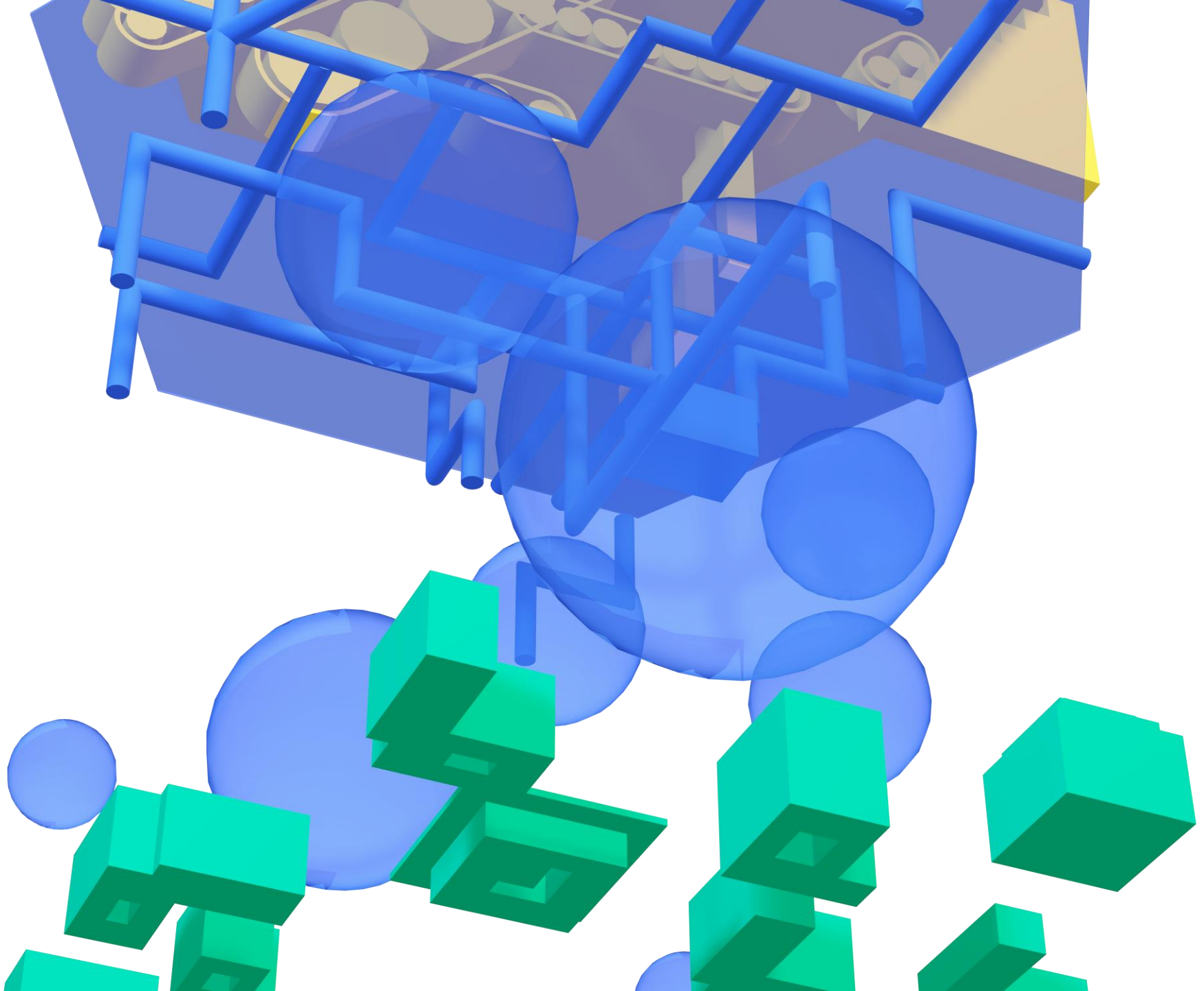
A **learner** will focus on the frustrating experience of trying to **find the right course** to take during their exchange period



A **CIO** will zoom out and look at the **bigger picture**, taking into account the budget and strategic priorities



The **Erasmus+ coordinator** will focus on the Learning Agreement and Grant **process**



The **Identity Management** colleague will look more closely into access management

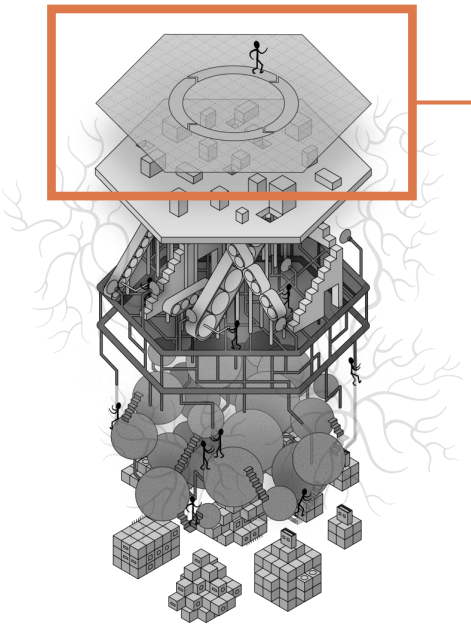
Database managers will look at how the data is structured

Integration architects will work on the service bus/data brokers

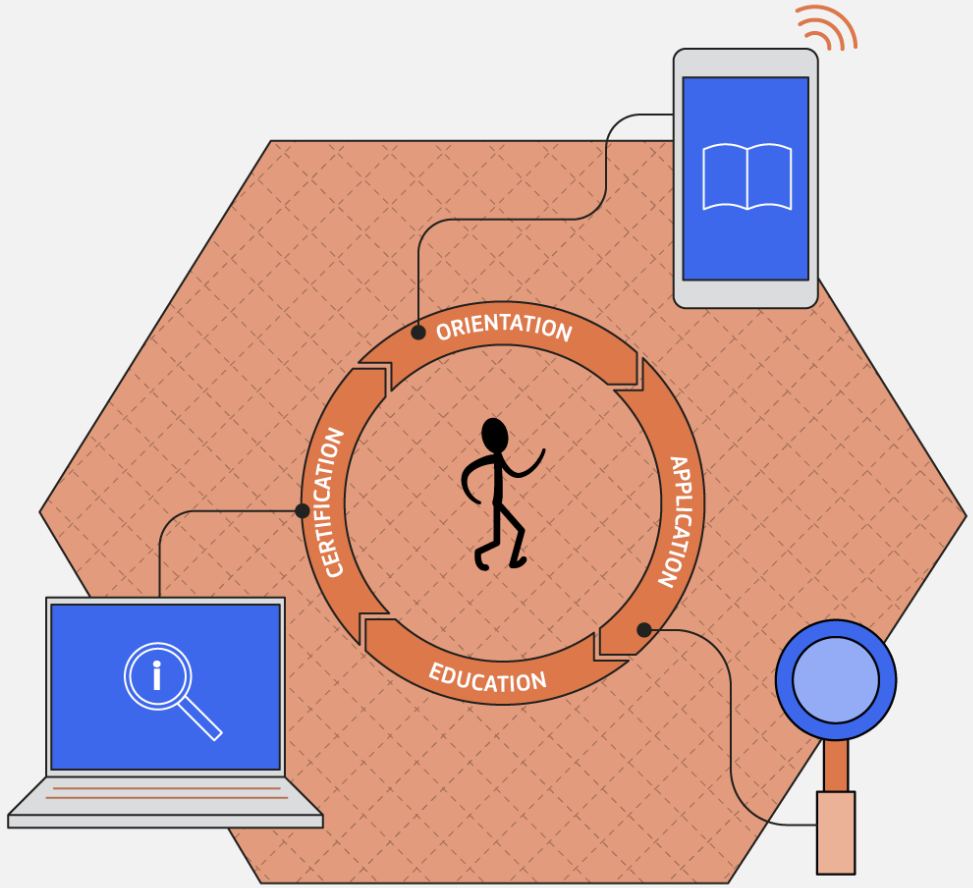
Enterprise architect will examine the coherence between the different layers and their relationship to strategic objectives

Which viewpoint are you looking from?

And can you still see the learner from there?

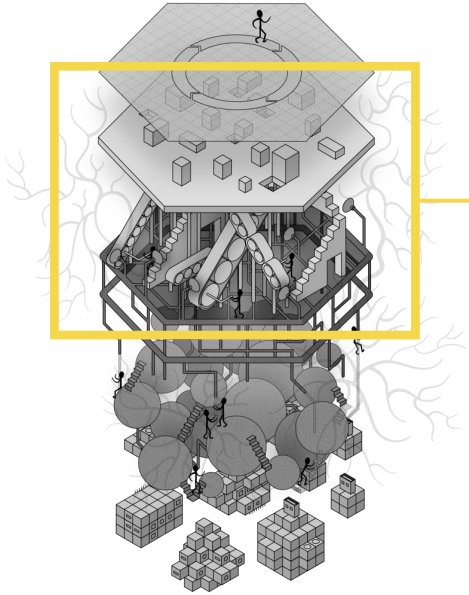


top view

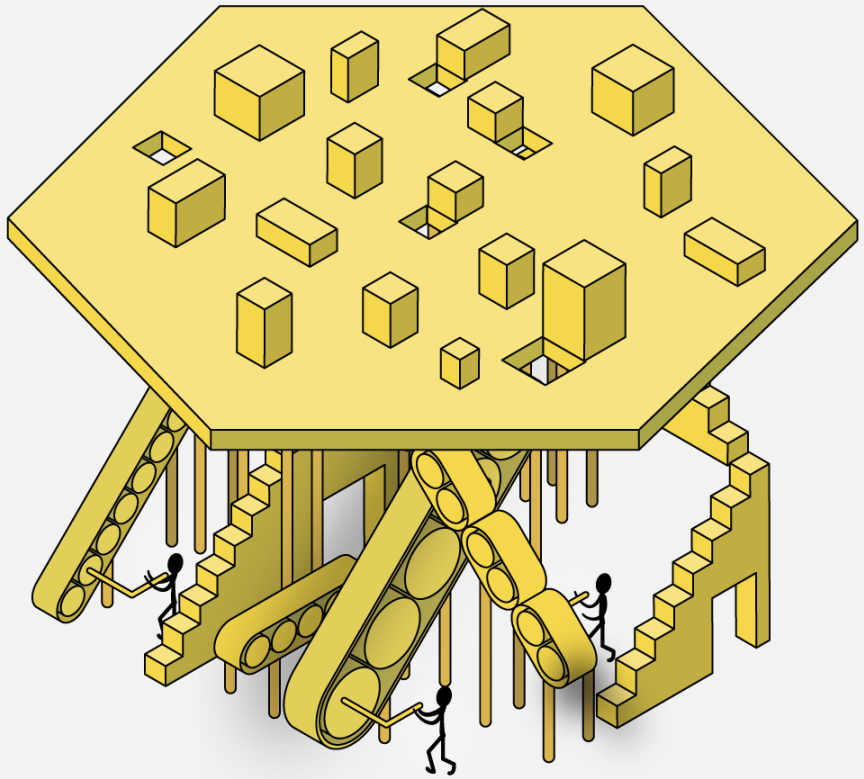


What challenge does the user face?

A learner wants to review courses offered by multiple programs.



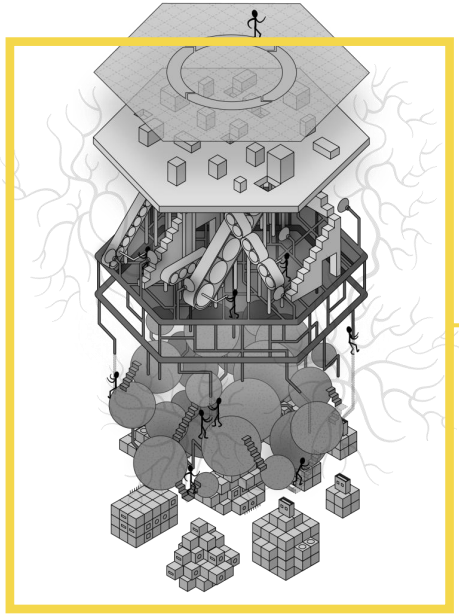
3d view



What processes are involved on organisation level?

At the institution's top level, agreements need to be made regarding necessary accreditation, fit in mutual curricula and costing.

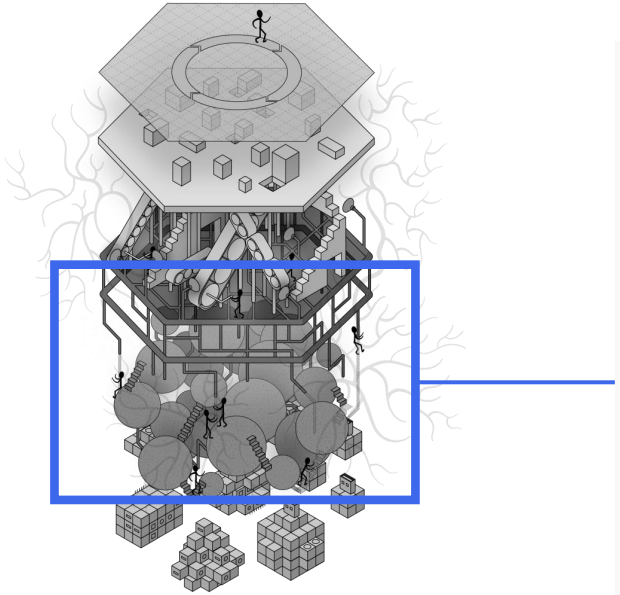
Educational services liaise with partners to determine which information can be obtained, and what types of applications are in use.



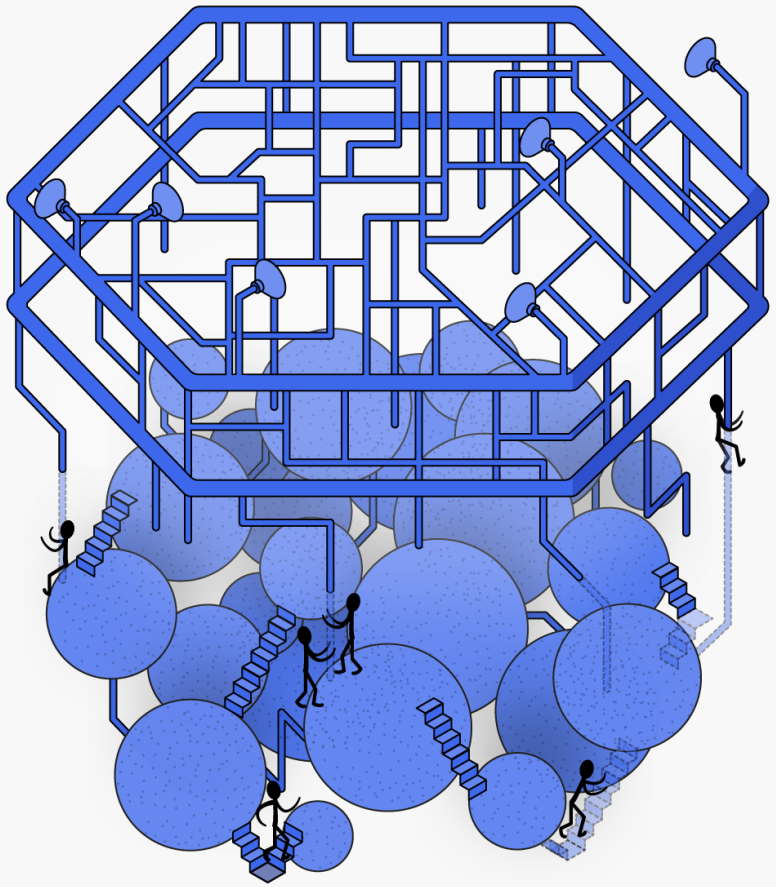
3d view

What policy and legislation is involved?

GDPR is European legislation that has a global impact. It is translated into national legislation and fuels the local privacy policy of an institution.



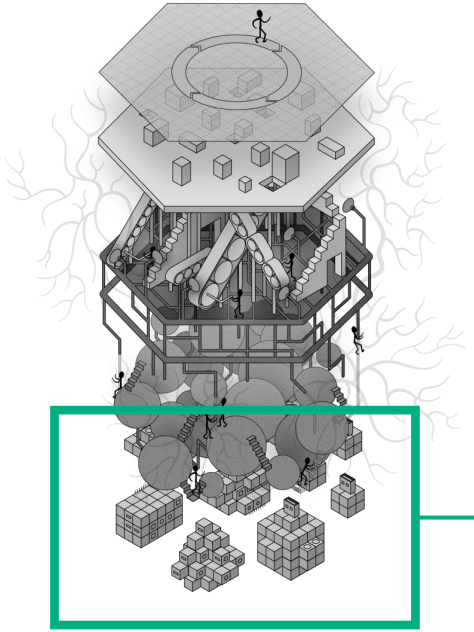
3d view



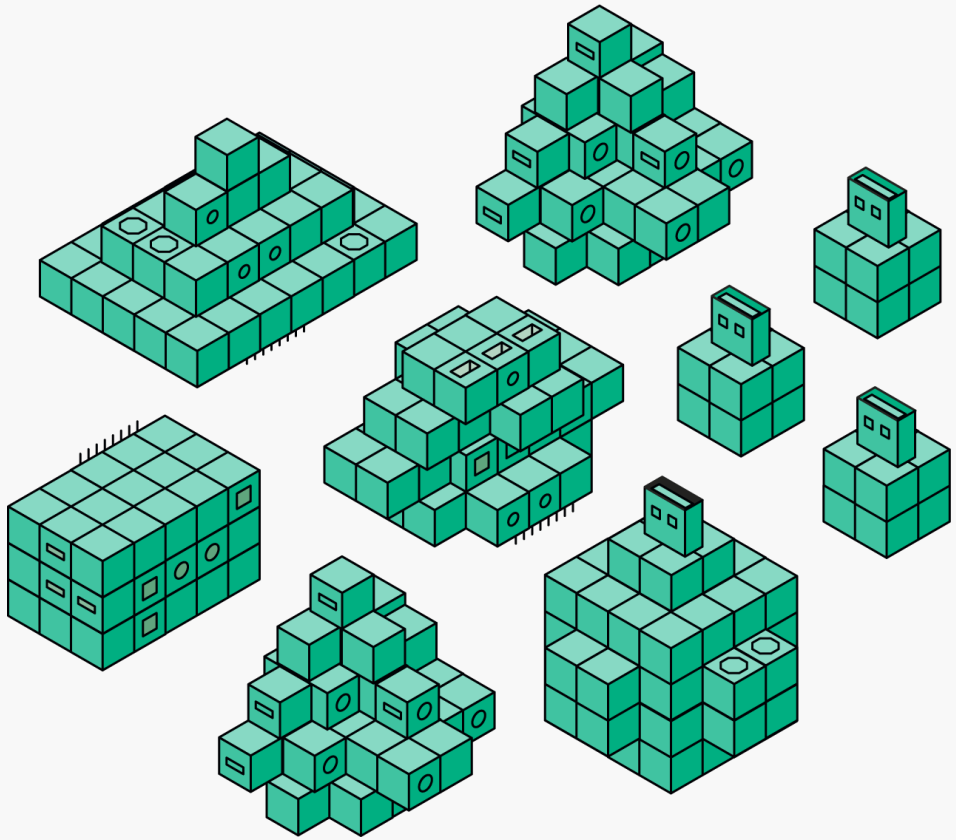
Which applications and information are involved?

Integration architects investigate how the different applications can work together and how information can be obtained through standardised APIs.

The system administrator indicates that the information is in the wrong format and therefore cannot be exchanged with other applications.

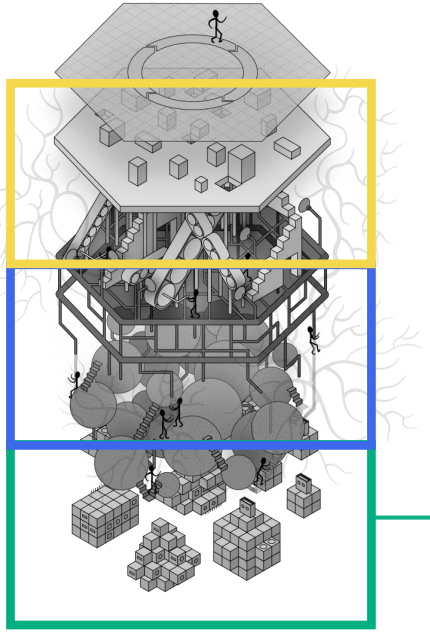


3d view

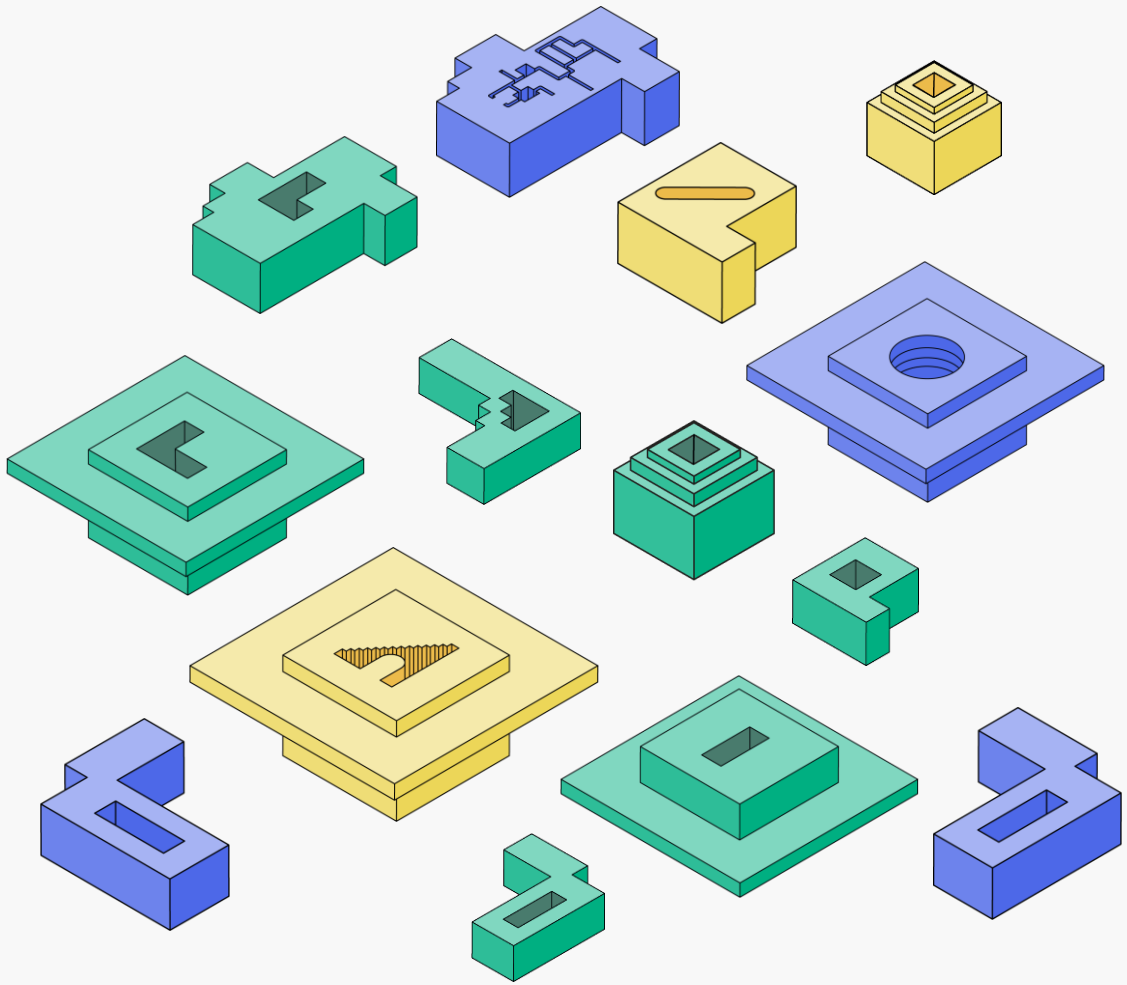


Technology

Together, they decide to implement a common data standard for the course information.



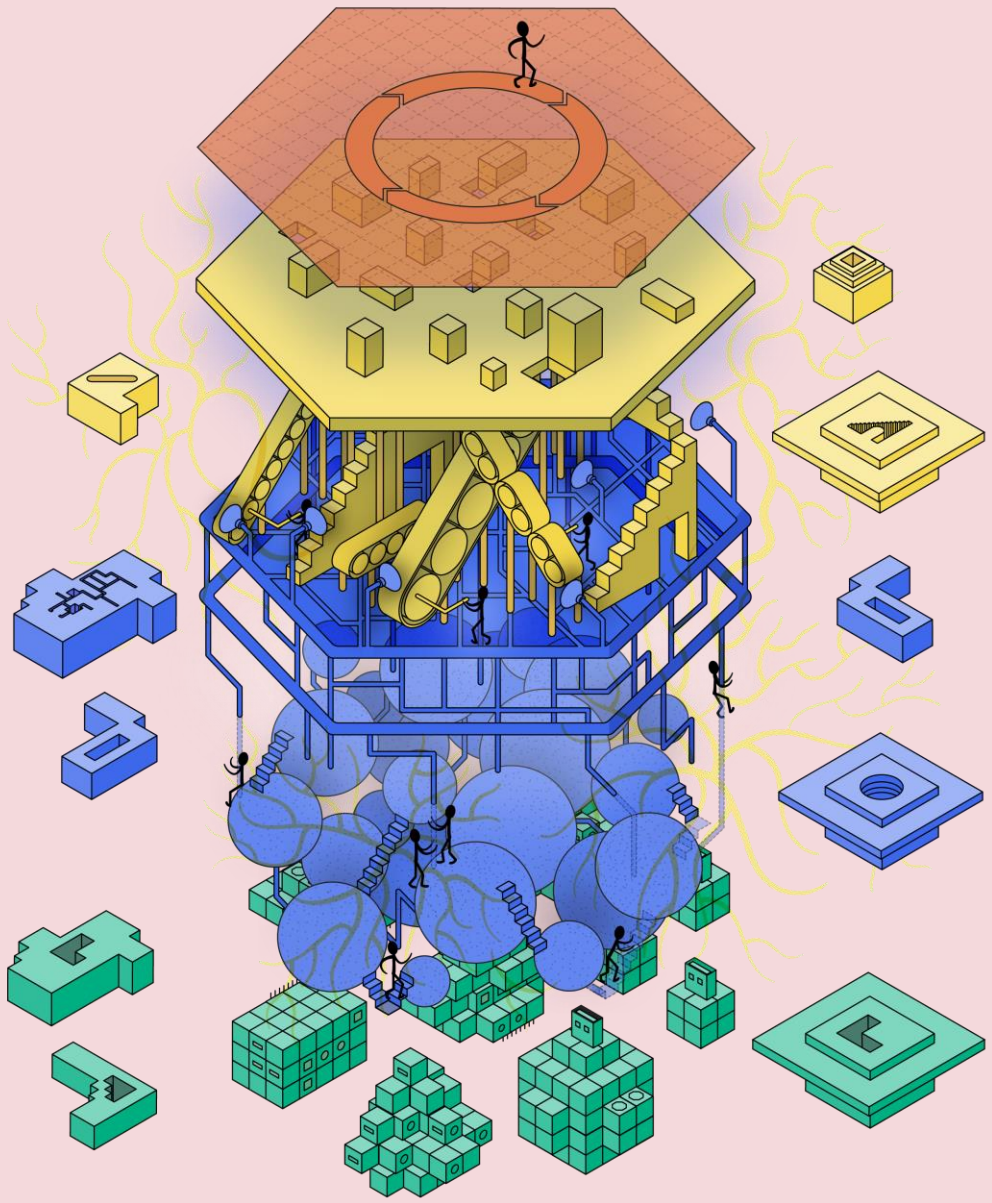
3d view



Is there a standard we could use?

Together, they decide to implement a common data standard for the course information.

Now it’s your turn!



Thank you!

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For questions or more information:
interoperability@surf.nl

Npuls

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