

PUBLIC SUMMARY

Title: *“Developing a knowledge base framework for the new IDE curriculum”*
Subtitle: *“Connecting ideas, courses, students and teachers towards a shiny programme”*

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The current IDE bachelor curriculum is considered to be outdated, fragmented and incoherent. From September 2024, a completely revised bachelor curriculum will be implemented, focusing on three main aspects:

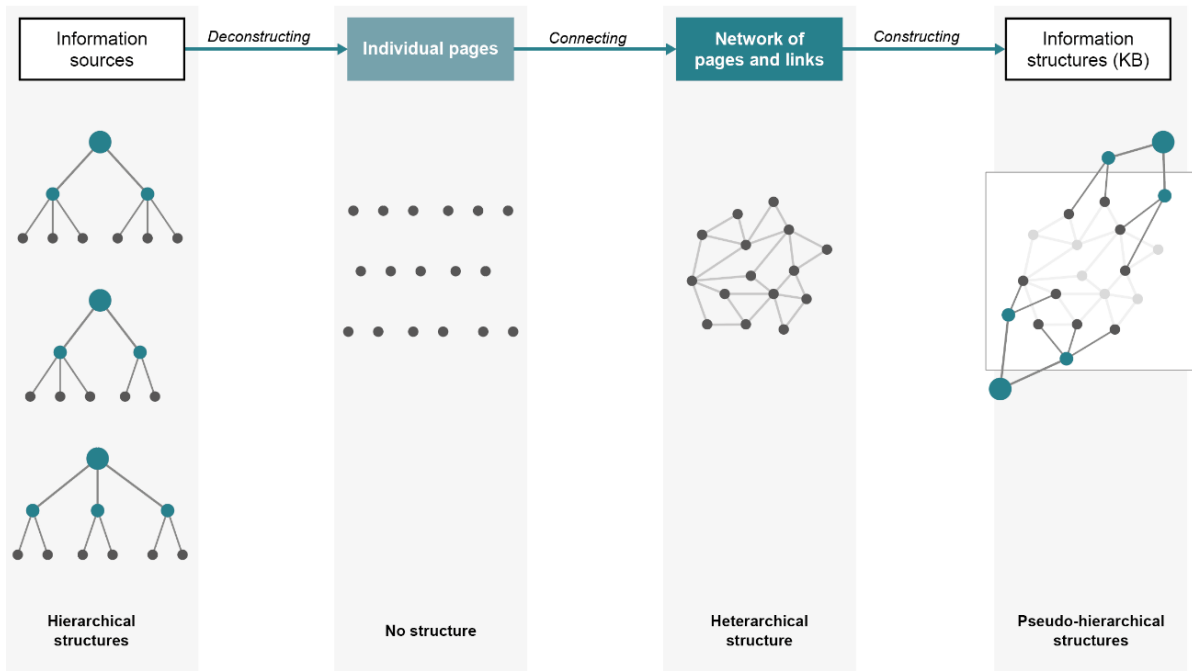
1. a cohesive structure of modules, courses and information in general;
2. a thriving Teaching and Learning Community;
3. freedom and encouragement for students to develop their personal identity as IDE'er.

With the implementation of the new curriculum, a lot of new knowledge will be created. During the development stages of the curriculum, teachers are constantly discussing, working out and combining ideas, leading to conceptual and systemic knowledge. Once the new curriculum is operational, discussions and evaluations within the envisioned Teaching and Learning Community lead to operational and sympathised knowledge. This knowledge leads to new discussions, ideas and adaptations, forming a continuous spiral of knowledge creation (Nonaka & Takeuchi, 1995).

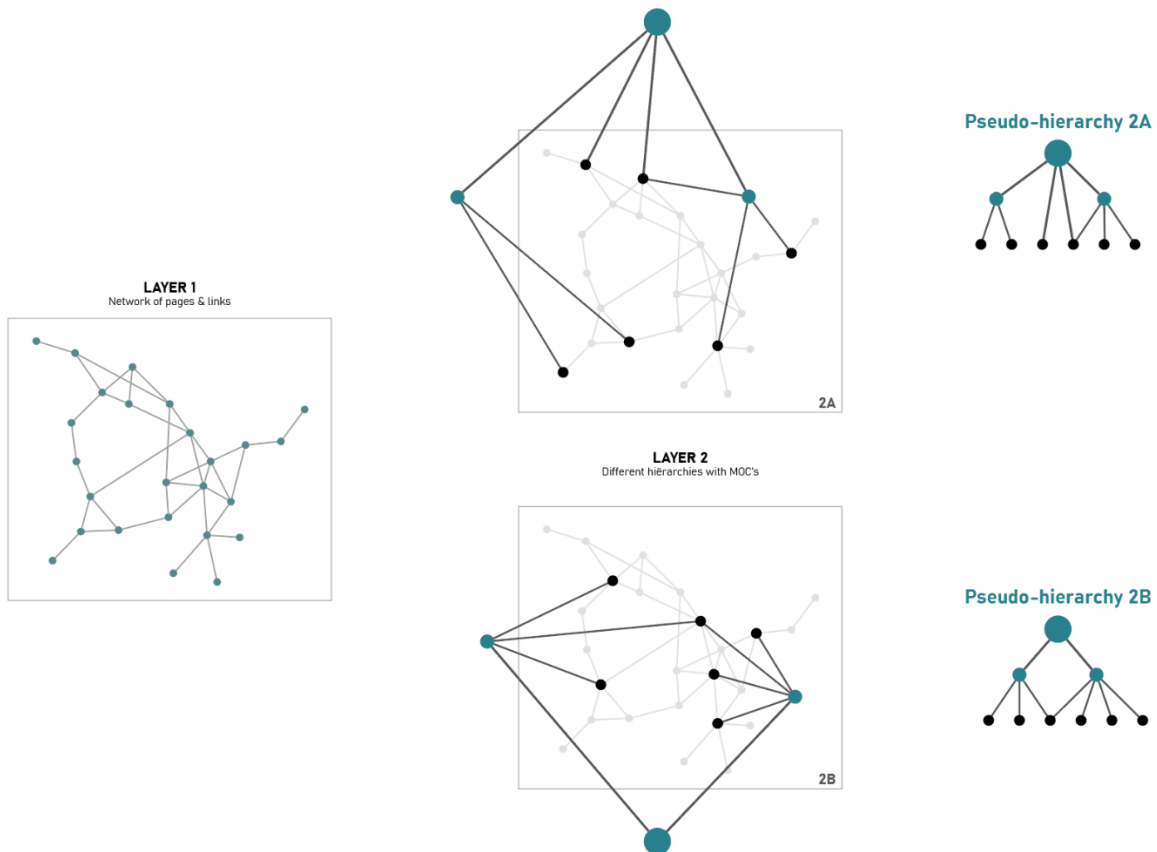
A central place to collect, connect and provide this new knowledge could be of great value to the programme. The working title of this project is: *“IDE Knowledge Base”*. The objective of this project is to *“develop the most optimal framework for an IDE Knowledge Base, that allows for multiple flexible structures to emerge”*.

This objective places a clear focus on accommodating multiple different perspectives within a single information network. Creating such an adaptive system requires an information conversion, as simply uploading existing sources will not suffice. First, hierarchical sources such as books, readers and lecture slides have to be deconstructed into separate segments. Next, these segments can be connected with other segments to form a heterarchical structure of interconnected pages. On top of this amorphous network, several “pseudo-hierarchies” can be constructed, which form the different information structures for the IDE Knowledge Base.

In the context of this project, a pseudo-hierarchy is a structure that appears to be hierarchical, but in reality is not. Ultimately, several different pseudo-hierarchies can be built on top of a single network of interrelated pages, creating a flexible system with adaptable interfaces. In order to determine what framework best supports this structure, experiments were conducted using the software of *“Obsidian”*: a personal note-taking system that uses hyperlinks to enable the creation of complex information networks.



Conversion from hierarchical information sources to pseudo-hierarchical information structures



Two different pseudo-hierarchies built on a single web of interconnected pages

Extensive experimentation with different information structures and different Obsidian features has led to two final prototypes of the IDE Knowledge Base. The general structure of both concepts is similar:

- Course contents are detached from courses, allowing multiple courses to link to the same content page. This prevents appropriation of course contents and ensures the creation of a strong heterarchical network first. This approach improves the connection between courses and leads to a more cohesive structure.
- A hybrid navigation system is used to set up the different interfaces for the IDE Knowledge Base. First, hyperlinks are used to build different pseudo-hierarchical structures into the heterarchical information network. Next, these pseudo-hierarchical structures are collected and neatly organised into a (hierarchical) folder structure. This approach improves the clarity and manageability of the system interfaces.
- The interfaces of the system are designed to suit two different approaches: (1) an educational approach, and (2) a design approach. Firstly, users can search for information on different courses via the designated bachelor and master folders. Secondly, users can search for different tools to be used in design projects via the toolboxes folder.

The main difference between the two final concepts is the way files are provided to the user.

Concept A collects all notes in a single folder without any sub-folders or other defined hierarchies. This concept is easier to implement and adapt, while also encouraging students to source their own information.

Concept B divides all notes into different “shells”, based on the intended learning order of the different contents. This concept allows for different levels of complexity, making the system less overwhelming for new users.

Concept A is the preferred concept of the two because of its flexibility and its focus on bottom-up knowledge creation. If concept A proves to be too overwhelming for new users, it is still relatively easy to switch to concept B at a later stage of the project.

The research, design process and results of this thesis are presented in an interactive Obsidian-based system, which can be read in multiple different ways, dependent on the perspective of the reader. Therefore, the thesis functions as a recursive prototype of the contents it explains.

References:

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press