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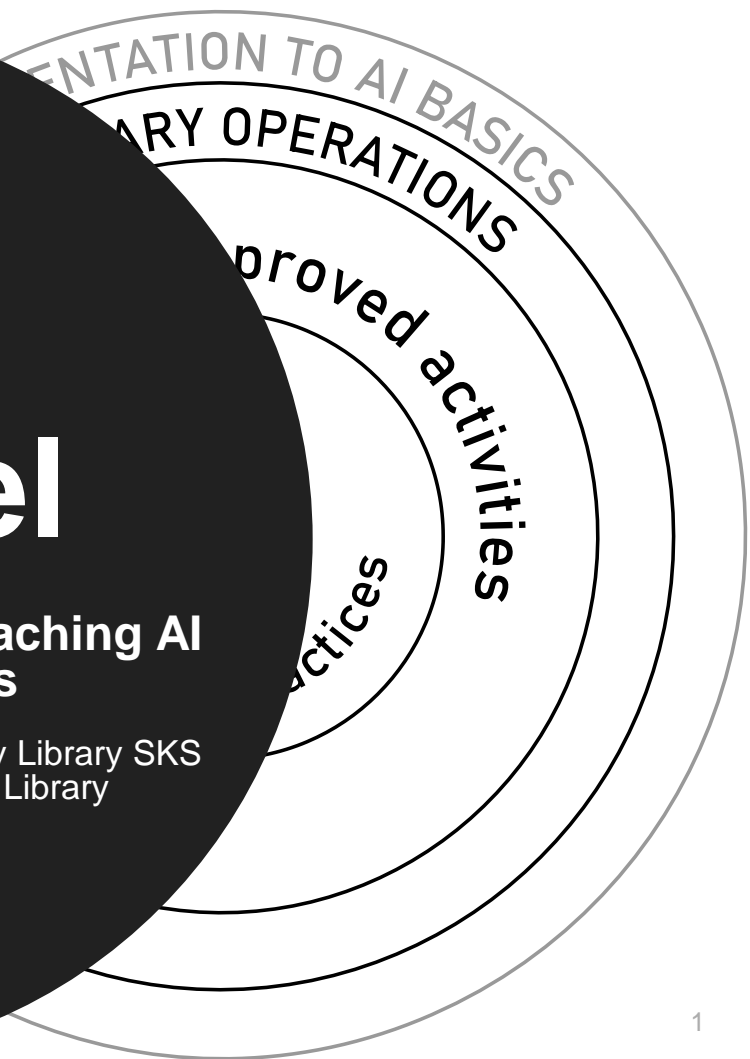
B-Wheel

A Process Model for approaching AI in research libraries

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Reference (if you wish): Kautonen, H. and Gasparini, A.: *B-Wheel*. [Online material]. 2023



Introduction

- Purpose of the B-Wheel process model is to help libraries **approach** the emerging Artificial Intelligence (hereafter: AI) technologies and tools from a more **holistic viewpoint**, taking into consideration the **existing library operations**.
- How to use the B-Wheel model?
 - You are free to share and adapt the model and these slides following the guidelines of [CC BY 4.0 licence](#). We appreciate if you give us credit for introducing the model (see footer).
 - We have given step-by-step instructions on the following pages.
 - NB! The example lists are reflecting the moment when we created this document. More tools and reports of best practices emerge every day...
 - Your feedback is very welcome via email to heli.kautonen@finlit.fi.
- We have developed the B-Wheel process model for librarians (incl. ourselves) and with librarians in several workshops during 2021–2023
 - (Drawing on the results of our literature review: Gasparini & Kautonen, 2022).

Design approach

- The model proposes a combination of Design Thinking (Brown, 2009) and Transition Design (Irwin, 2028) approaches that utilises visualisations, and collaborative problem solving, such as *backcasting*.
- Why design approach? We need to support, as libraries usually do, democratic and inclusive activities! In addition, the aforementioned approaches involve the competences and practices librarians have cultivated during centuries.



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Elements of the B-Wheel

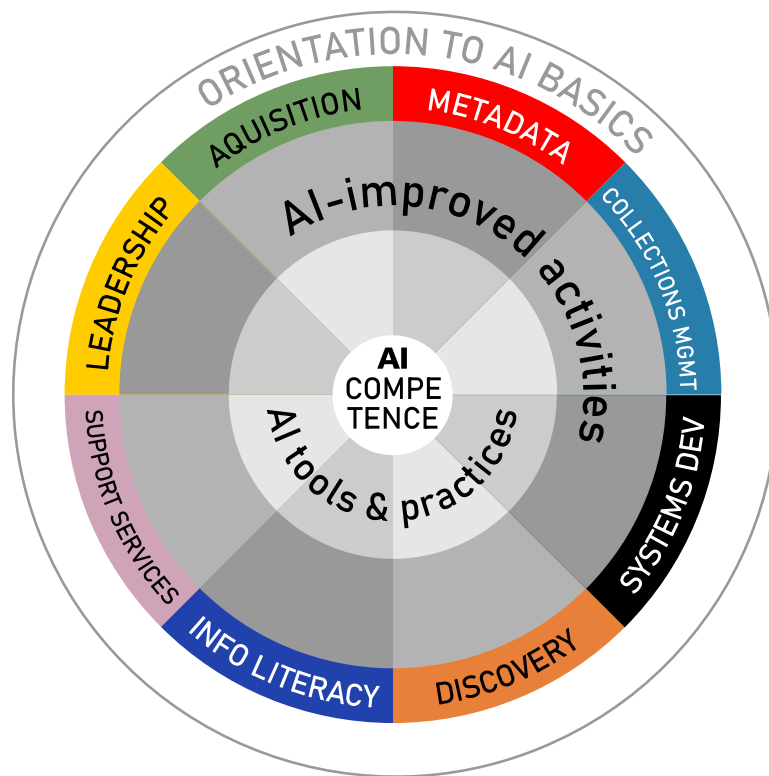


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Overview of the B-Wheel

Five levels:

- Outmost circle = **orientation** to AI basics
- Coloured circle = existing fields of **library operations**
- Middle circle = AI-improved **activities** or tasks (i.e., motivation to implement AI)
- Inner circle = AI **tools and practices** that enable the operations and activities
- Centre of the circle = unified **competence** building through sharing of experiences and knowledge.



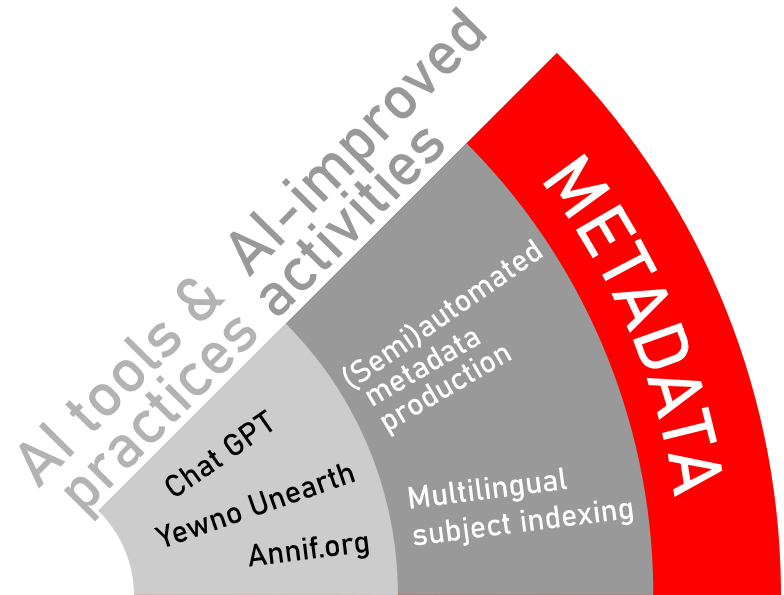
B-Wheel: METADATA production and validation

Activities, for example:

- (Semi)automated metadata production (MARC records, DC records, etc.)
- Multilingual subject indexing (terms from a LOD ontology)
- Etc.

Tools and practices, for example:

- [Annif.org](https://annif.org), automated subject indexing
- [Chat GPT](https://openai.com), AI chatbot
- [Yewno Unearth](https://yewno.com), semantic categorisation (for academic publishers)
- More to be found on ai4lams list: [ai4lam - Activities/Projects \(google.com\)](https://ai4lam.org/Activities/Projects)



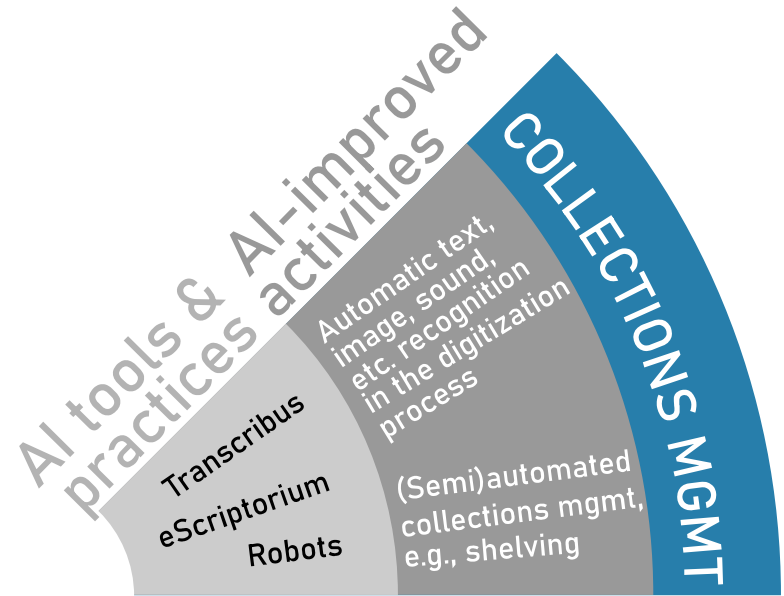
B-Wheel: COLLECTIONS MGMT incl. digitization

Activities, for example:

- Automatic recognition of text, images, sound, video, etc. in the digitization process
- (Semi)automated collections management
- Shelving robots
- Etc.

Tools and practices, for example:

- [Transcribus](#), handwritten text recognition
- [eScriptorium](#), digital paleography
- Robots in [Oodi library](#)
- More to be found on ai4lams list:
[ai4lam - Activities/Projects \(google.com\)](#)



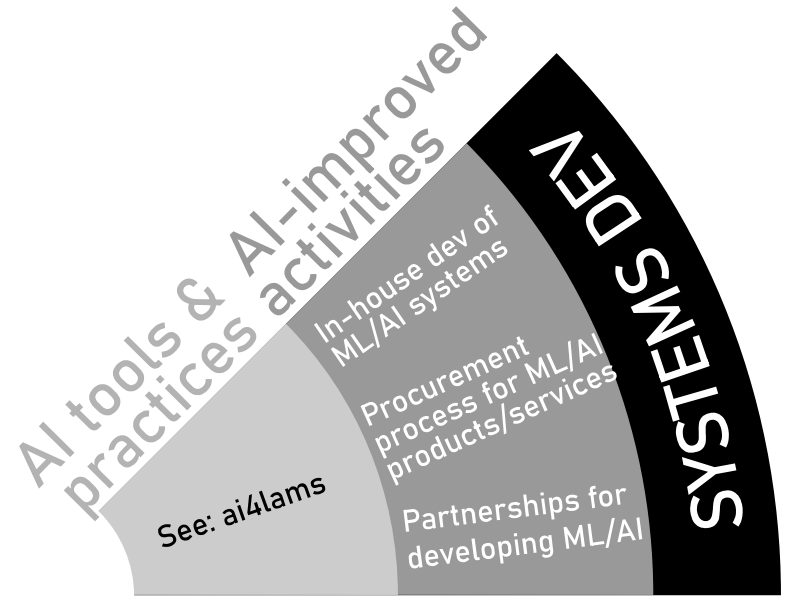
B-Wheel: SYSTEMS DEVELOPMENT or procurement

Activities, for example:

- In-house development of machine learning (ML) and AI powered systems
- Procurement process of ML/AI products or services
- Partnerships for developing ML/AI systems
- Etc.

Examples or best practices:

- Examples to be found on ai4lams list:
[ai4lam - Activities/Projects \(google.com\)](https://ai4lam.org/Activities/Projects)



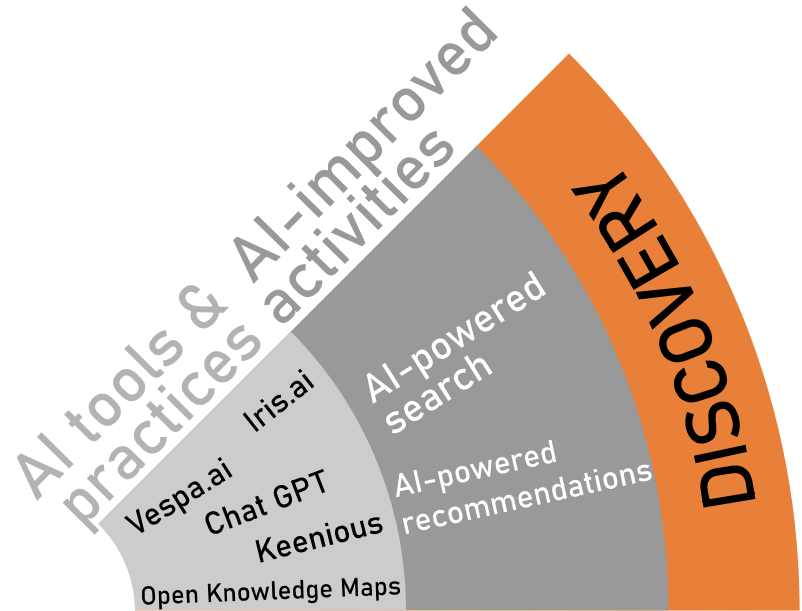
B-Wheel: DISCOVERY and information retrieval

Activities, for example:

- Algorithm-powered search
- Algorithm-powered recommendation
- Data-based logistics
- Etc.

Tools:

- [Iris.ai](https://iris.ai), smart search
- [Vespa.ai](https://vespa.ai), text search engine
- [Keenious](https://keenious.com), literature recommendations
- [Yewno Discover](https://yewno.com), explore scientific resources
- [Chat GPT](https://chatgpt.com), AI chatbot
- [Open Knowledge Maps](https://openknowledge.com), visual search engine
- More to be found on ai4lams list:
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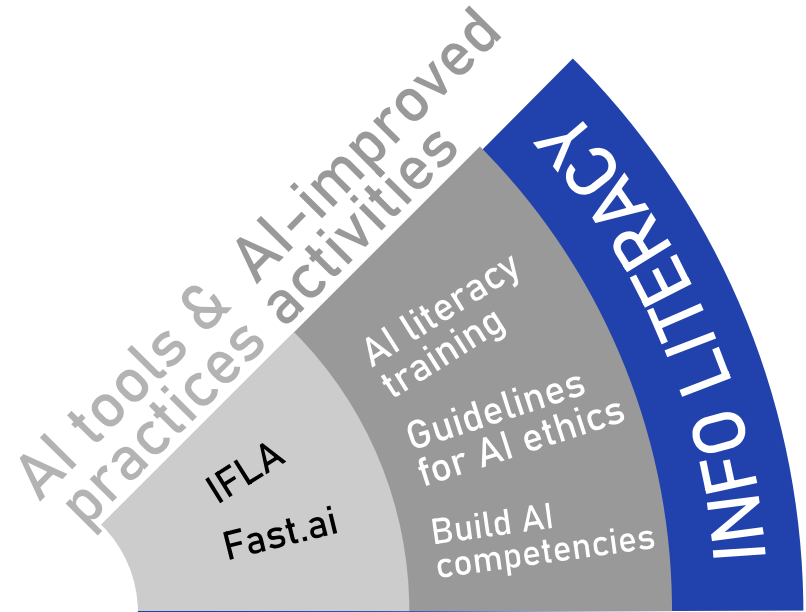
B-Wheel: INFORMATION LITERACY for library staff and patrons

Activities, for example:

- Provide AI literacy training
- Provide guidelines for AI ethics
- Increase AI competencies through education and training
- Etc.

Examples and best practices, for example:

- [IFLA statement](#) on libraries and AI (PDF)
- [Fast.ai](#), training for practical data ethics



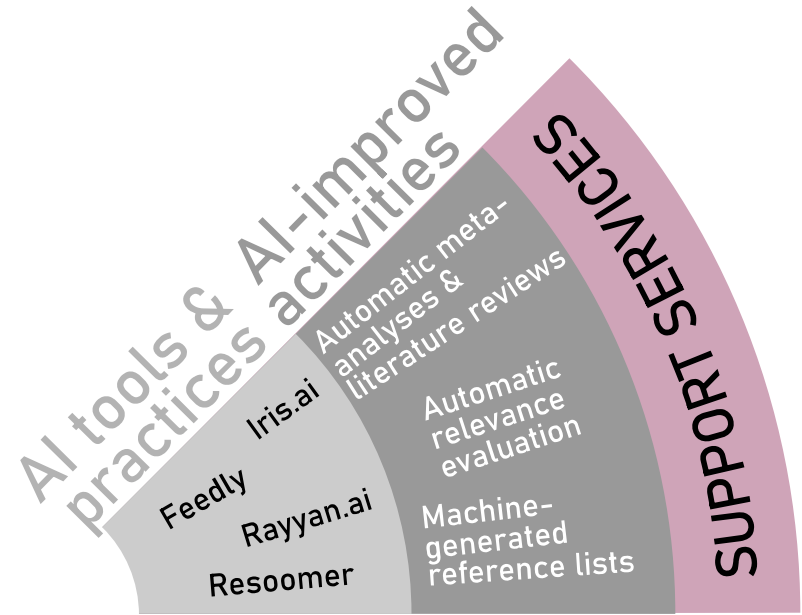
B-Wheel: SUPPORT SERVICES for research and education

Activities, for example:

- Automatic meta-analyses and reviews
- Relevance evaluation for publications
- Machine-generated references
- Workshops, courses, etc. provided by the library
- Etc.

Tools and practices, for example:

- [Iris.ai](#), automated analysis, summary, and systematisation of publications
- [Feedly](#), news aggregator
- [Rayyan.ai](#), automatic systematic reviews
- [Resoomer](#), automatic text summaries
- See also:



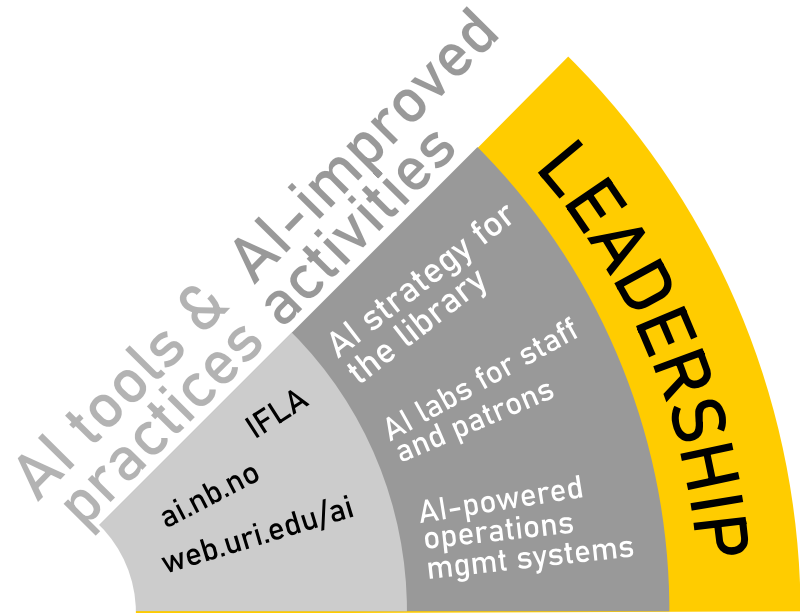
B-Wheel: LEADERSHIP and administration

Activities, for example:

- Formulate a AI strategy for the library
- Establish AI labs for staff
- Establish AI labs for students
- Adopt algorithm-powered operations management systems
- Etc.

Examples and best practices, for example:

- [IFLA statement](#)
- AI lab in Norway <https://ai.nb.no/>
- AI lab in USA <https://web.uri.edu/ai/>
- More to be found on [IFLA AI SIG list](#)



B-Wheel: AQUISITION of information resources

Activities, for example:

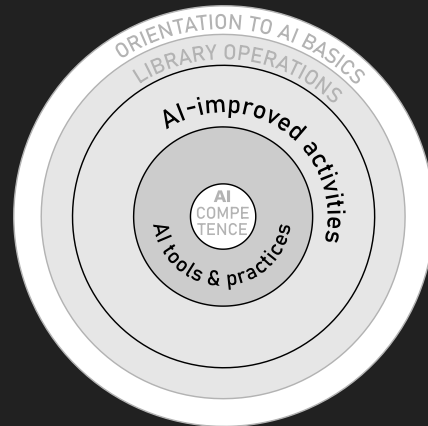
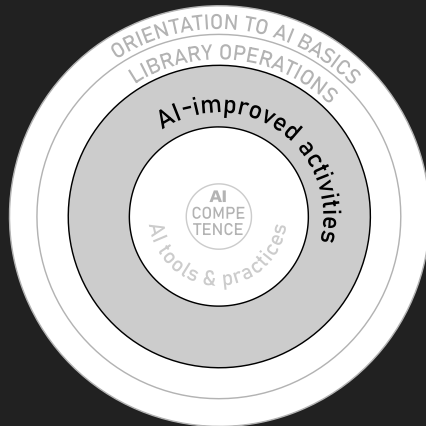
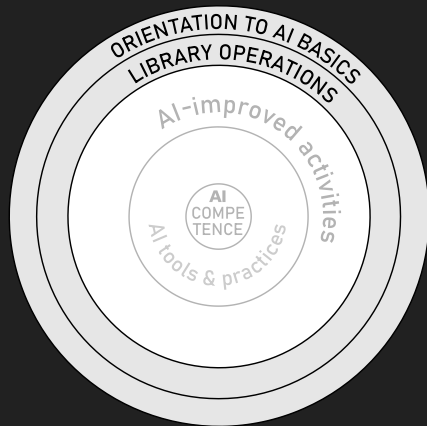
- Prediction of use of information resources
- (Semi)automatic selection of new materials (based on data about use)
- Etc.

Tools and practices, for example:

- ExLibris Alma
- AI-powered licencing in Florida Virtual Campus (FLVC) (Erb, 2022)



PROCESS



Phase 1: Orientation and identification



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Methods for orientation

Aim: To orientate to the phenomenon of AI and its basic concepts.

1. Hands-on experience of AI technology and concepts (vocabulary)
 - Elements of AI <https://www.elementsofai.com/>
 - AI demos to explore: <https://exploreai.jisc.ac.uk/>
 - Tools for everyday activities: <https://theresanaiforthat.com/>
 - Tools for library and research activities: <https://urn.fi/URN:NBN:fi-fe2023032933862>
2. Personal AI strategy at the moment
 - Visualise using, for example, New Metaphors cards <http://imaginari.es/new-metaphors-introduction-to-the-toolkit/>



Photo: Heli Kautonen, 2022, CC BY 4.0

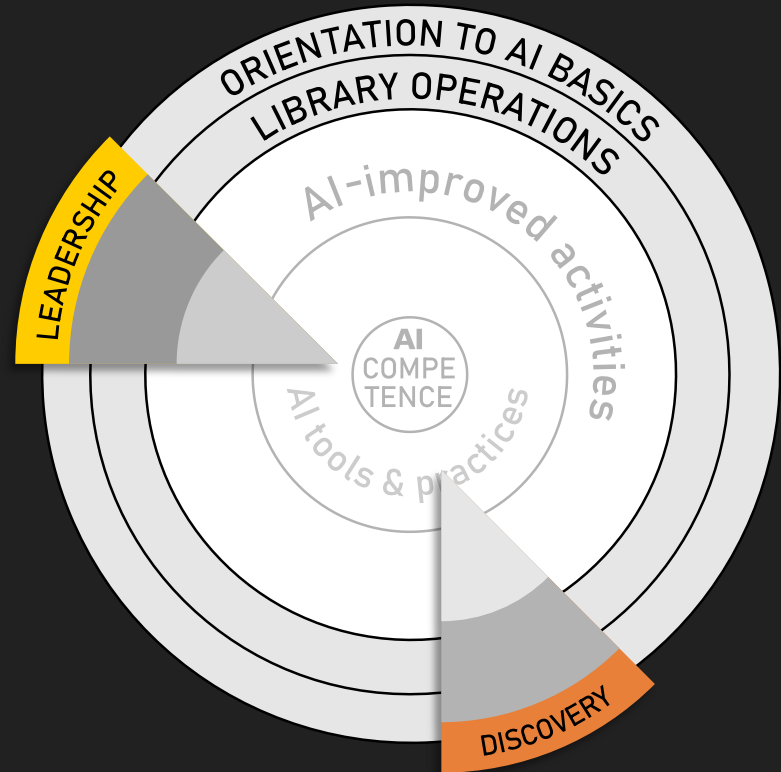
B-Wheel: Identification of operations

Aim: It is too overwhelming to try and grasp all possible AI tools and practices at the same time. Solution: focus on the area that is most familiar or interesting to you.

- **Identify and select the existing fields of operations in your library**

Include fields that you would like or need to improve or extend to using the new AI technologies.

You may choose only those that are relevant to you or your library.



Phase 2: Goal setting



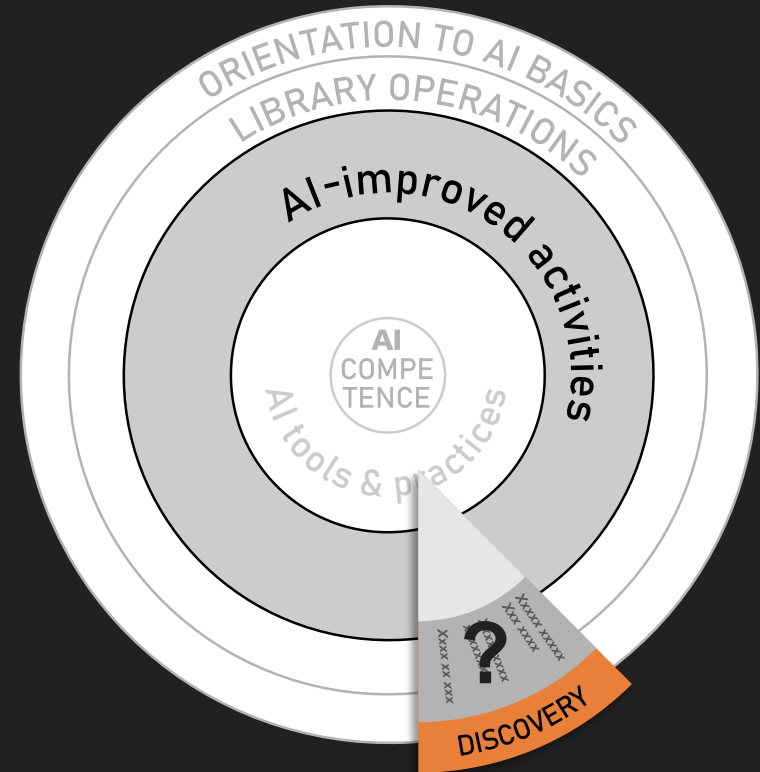
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B-Wheel: Definition of goals

Aim: Every library (or librarian) has their own needs for improvement. Also, the level of ambition must be adjusted to the available resources – and to the available AI technologies.

- For the selected field (sector of the wheel), define the goals:

What is the desired outcome or improvement that you expect to achieve by utilising AI?



Methods for goal setting and elaboration

- Elaborate your goals by using methods that expand your viewpoints and add ethical thinking, for example:
 - Sabotage method (What your library should do to *fail* addressing AI?)
 - Backcasting (Irwin, 2018; <https://en.wikipedia.org/wiki/Backcasting>)
 - IDEO Ethics cards: <https://www.ideo.com/post/ai-ethics-collaborative-activities-for-designers>
 - UX-tasks giving an understanding of user needs
 - Service design to map out core activities in the library



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Phase 3: Roadmap



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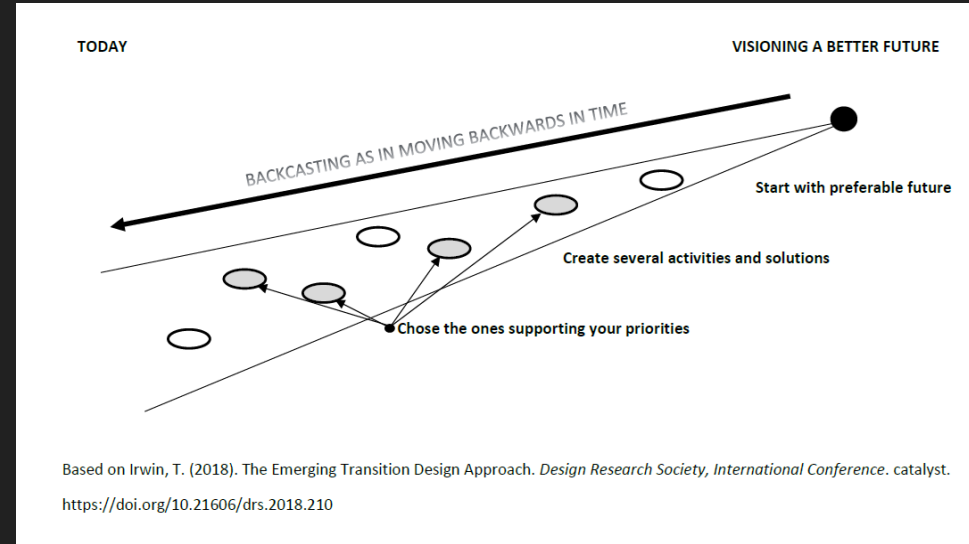
Methods for defining a roadmap

Aim: Transitional times call for a new mind-set as well as new methods of planning the future library operations and activities.

- To **track your way from vision to practice**, use a suitable method to define the needed steps, for example backcasting (see image, <https://en.wikipedia.org/wiki/Backcasting>)

Draw from the collective power and organise group workshops.

- Set deadlines for individual tasks, as well as follow-up sessions.



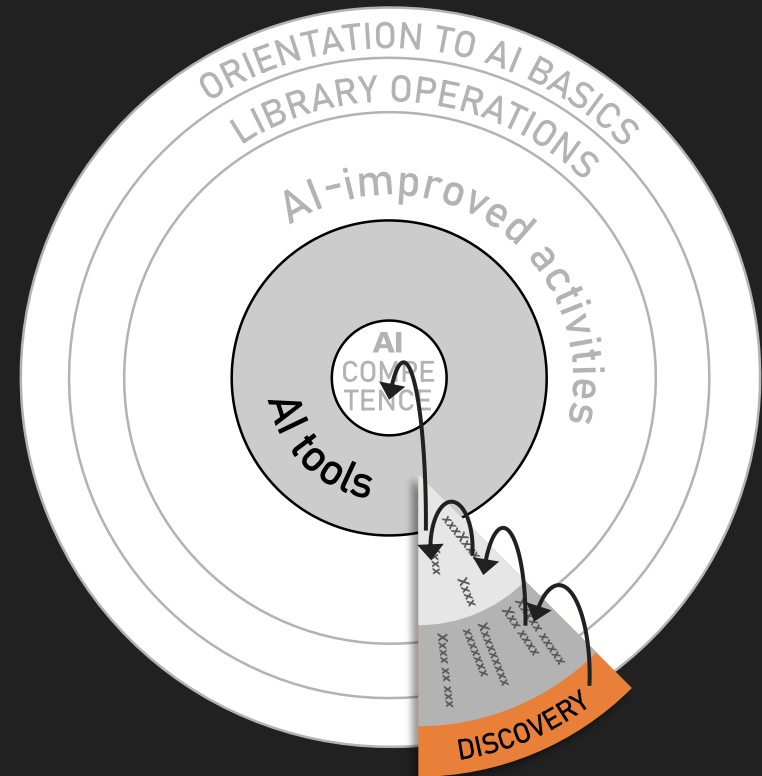
B-Wheel: Roadmap

Aim: The time for talking and pondering about the effects of AI is over. Now, it's time for action!

- **Learn by doing.**

Test, exercise with available tools or adapt the existing best practices to your individual and your organisation's needs.

- Learn from others, for example:
 - An AI toolkit for libraries (Upshall, 2022).



Phase 4: Competence building



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B-Wheel: Build competence by sharing

Aim: To build, not only individual competence but competence of the organisation and the entire library community – for our patrons and the society.

- **Share experiences**

Organise events and workshops, encourage communication so that all relevant findings and lessons learned from one experiment or elaboration feed the other fields.

Pay attention to values and rights, for example by using the Ethical Decision Making approach:

<https://www.scu.edu/ethics/ethics-resources/ethical-decision-making/>

Share also across the wider library community via national and international networks.



References

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