


Skiis  
4 eosC

- Skills for the European
- Open Science
- Commons

# FAIR-by-Design Methodology: How to Develop FAIR Learning Materials

Sonja Filiposka, UKIM

 [orcid.org/0000-0003-0034-2855](https://orcid.org/0000-0003-0034-2855)

Supporting

 eosC



Funded by  
the European Union



# Why FAIR Learning Materials?

## **Enhanced discoverability**

- Learners can easily find what they need

## **Improved accessibility**

- Makes learning more inclusive

## **Increased reusability**

- Saves time and resources

## **Facilitates collaboration**

- Promotes sharing and adaptation

## **Supports open education**

- Contributes to a global learning community

# FAIR for ALL



## FAIR for Learners

**Find** training content that can be easily **accessed** using **common applications**. Come back and **revisit** whenever needed.



## Instructors

**Find** existing training materials, access their **editable** versions, fully understand the **context** and **reuse** according to the licensing terms.



Skillis  
4 eosc

Supporting

eosc



Funded by  
the European Union

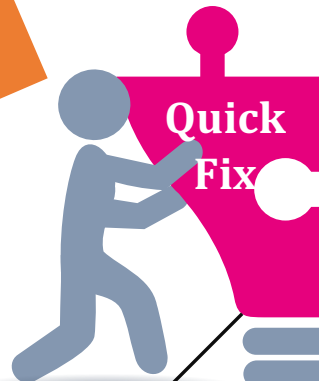
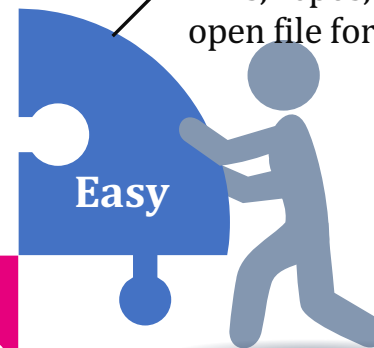
# FAIR requires commitment

## **Time, Time, More Time**

Needed to provide full context and improve reusability.

## **New skills**

Know about metadata schemas, PIDs, repos, licensing, attribution, open file formats



## **By design**

FAIRification may require substantial redo



## **Devil is in the details**

For full reuse materials should be accompanied with an instructor kit



**Skills**  
4 eosc

Supporting

**eosc**



Funded by  
the European Union

# FAIR-by-Design Methodology

## Backward Instructional Design Empowered with FAIR principles

focusing on both learners and peer instructors



Skills  
4 eosc

FAIR-by-design Methodology for Learning Materials

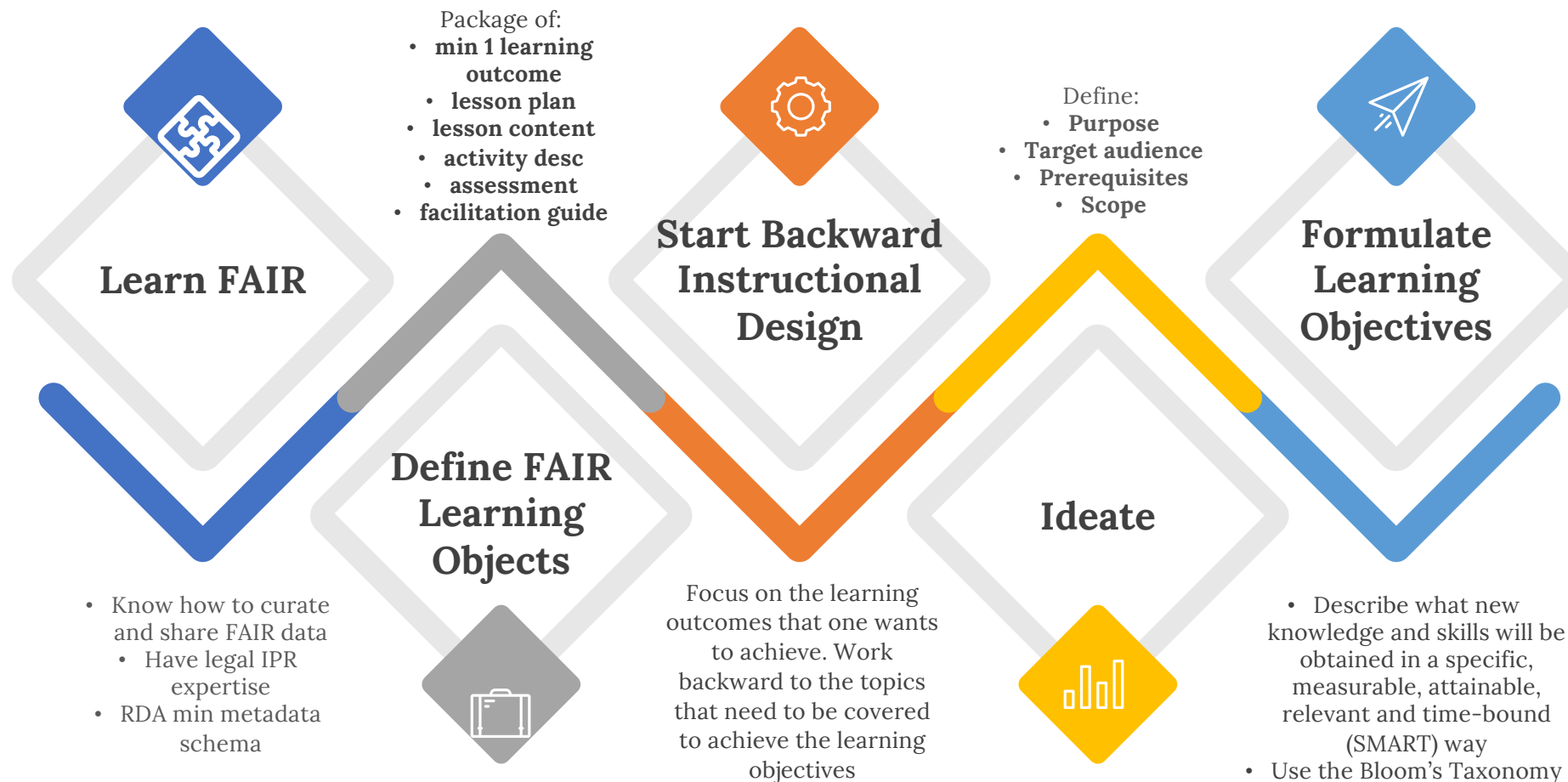
Supporting

meosc



Funded by  
the European Union

# 1 - Prepare



**Skills**  
4 eosc

Supporting

**eosc**



Funded by  
the European Union



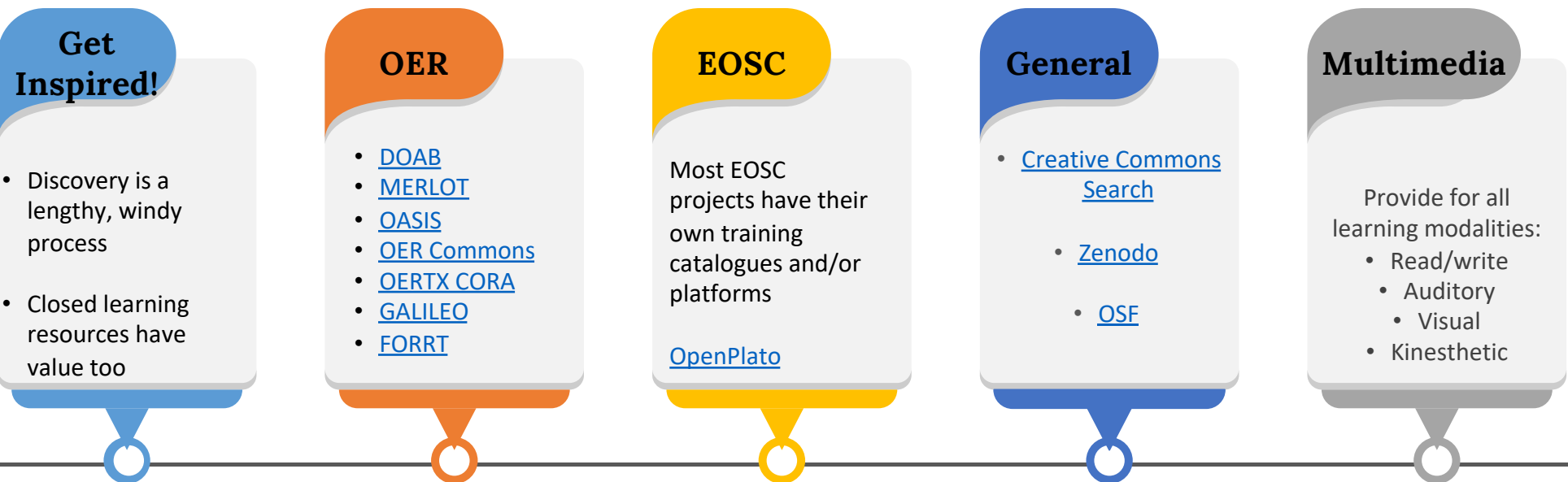
# The RDA Minimal Metadata for Learning Resources



Image: Minimum set of metadata for learning resources

Taken from Hoebelheinrich, Nancy J, Biernacka, Katarzyna, Brazas, Michelle, Castro, Leyla Jael, Fiore, Nicola, Hellström, Margareta, Lazzeri, Emma, Leenarts, Ellen, Martinez Lavanchy, Paula Maria, Newbold, Elizabeth, Nurnberger, Amy, Plomp, Esther, Vaira, Lucia, van Gelder, Celia W G, & Whyte, Angus. (2022). [Recommendations for a minimal metadata set to aid harmonised discovery of learning resources](#) on Zenodo licensed under [CC BY 4.0](#)

## 2 - Discover



**Skills**  
4 eosC

Supporting

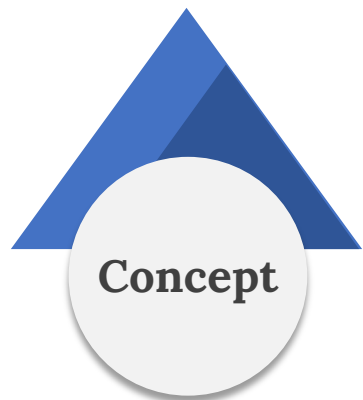
**meosc**



Funded by  
the European Union

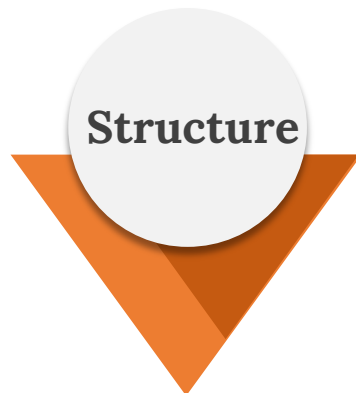


# 3 - Design



- Sketch a content concept map
- Prepare a **syllabus**

- Create **granular** learning resources that can be easily reused
- Mix and match while respecting licensing rules



- Learning unit plan
- Content
  - Notebook
  - Slides
  - Activities
- Assessment

A document that represents **the trainers view** and aims to enable a smooth and efficient organization



Learners should be able to provide feedback on what worked well and what should be improved in the training and learning materials



Skills  
4 eosc

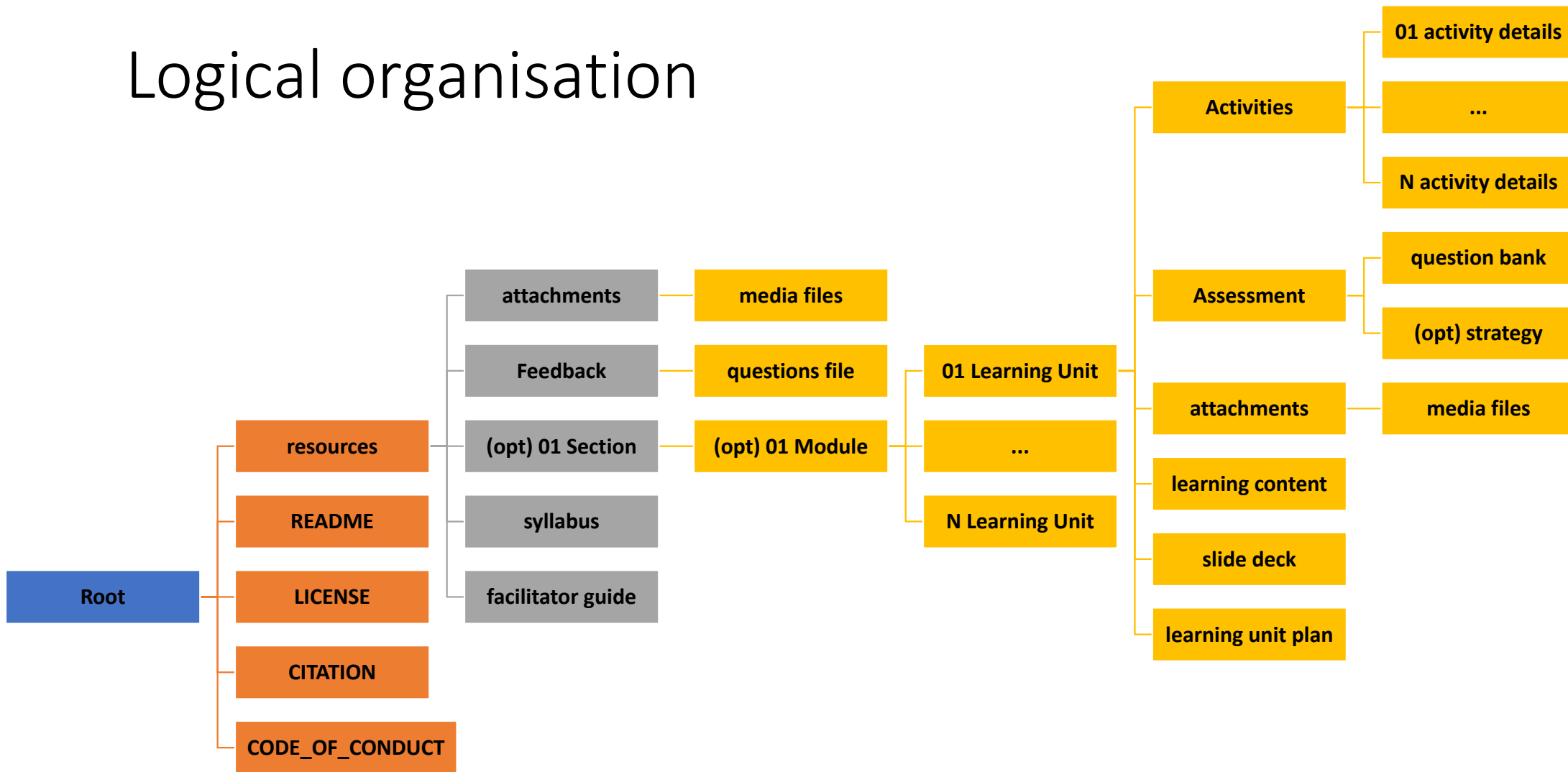
Supporting

meosc

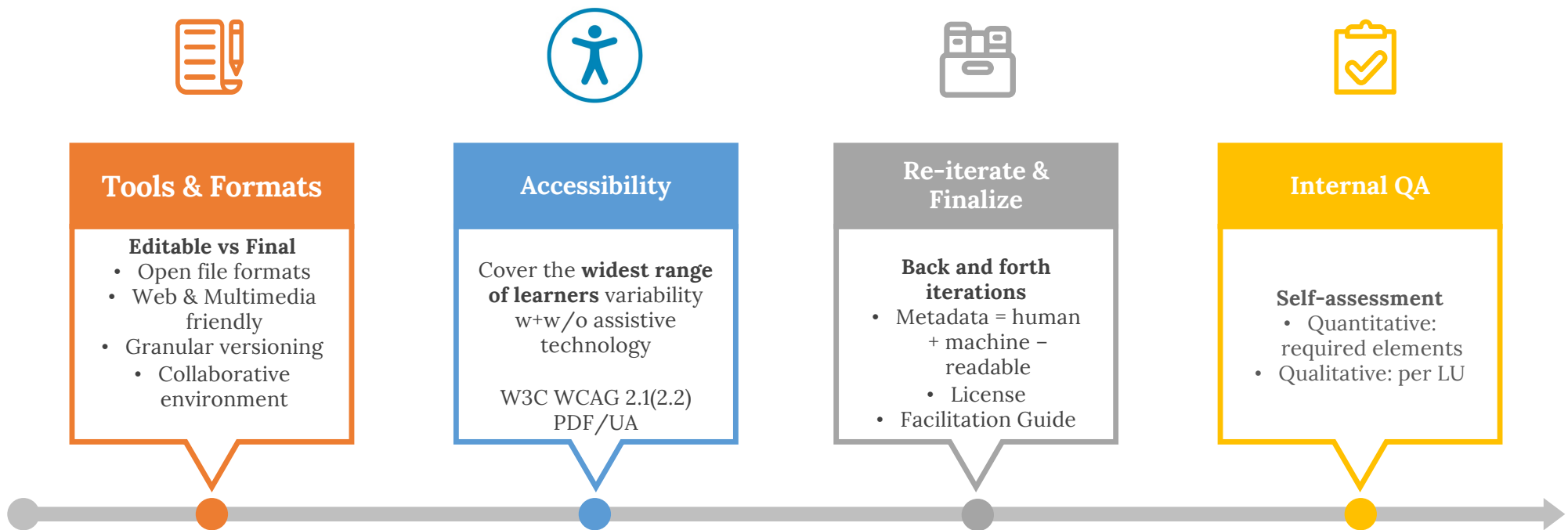


Funded by  
the European Union

# Logical organisation



# 4 - Produce



# Accessibility tips

present the  
information in  
multiple ways and  
formats

use simple  
language

- option to provide  
additional resources

use headings

use table of  
content

provide alternative  
text for images

use equation  
editors for math  
expressions

use a high contrast  
colour palette

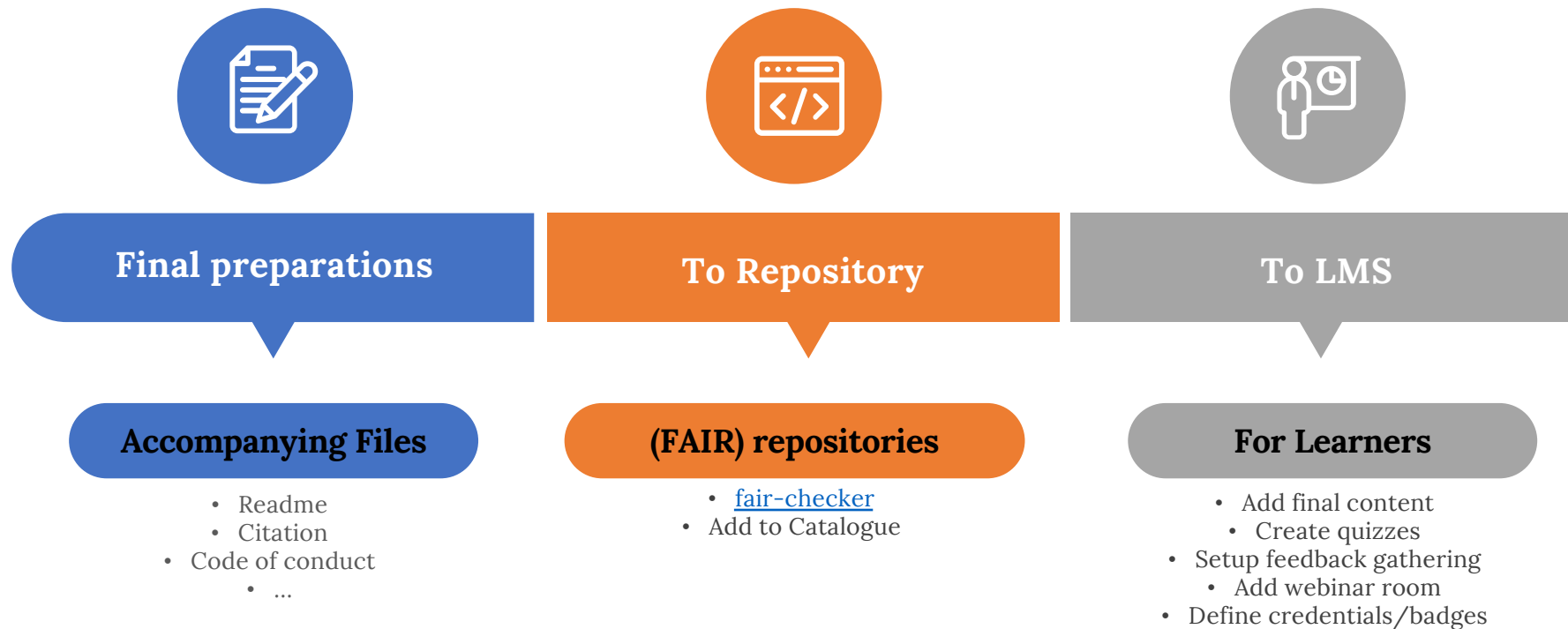
don't use colour as  
the only way to  
convey information

use descriptive  
links

use tables only  
when required

provide closed  
captions and  
transcripts

# 5 - Publish



# 6 - Verify

FAIR-by-Design QA  
checklist

Required vs optional

Review w/o cognitive  
bias

From a new learner  
perspective

Setup gathering from  
both perspectives



Skillis  
4 eosc

Supporting

meosc



Funded by  
the European Union

# Minimum FAIR Requirements

F

- Metadata is provided in human- and machine-readable format
- Resource is indexed in at least one searchable repository

A

- Accessibility of all learning resource files checked
- Access rules (authentication & authorisation) defined for the learning resource

I

- The RDA minimal (or domain specific) metadata schema is used
- Resource is available in open file formats

R

- Clear attribution is provided for all reused resources with compatible licenses
- Resource has a permissible license that allows derivations



# Continuous Improvement



# FAIR-by-Design Methodology Details

## Up-to-Date Methodology

- [https://fair-by-design-methodology.github.io/FAIR-by-Design\\_Book/](https://fair-by-design-methodology.github.io/FAIR-by-Design_Book/)

## ToT course on Skills4EOSC LMS

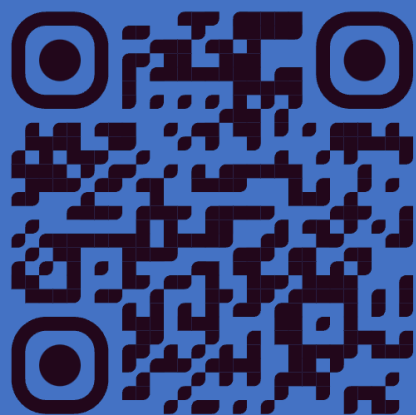
- <https://learning.skills4eosc.eu/course/view.php?id=19>

## Training Gitpages

- <https://fair-by-design-methodology.github.io/microlearning/latest/>
- [https://fair-by-design-methodology.github.io/FAIR-by-Design\\_ToT/latest/](https://fair-by-design-methodology.github.io/FAIR-by-Design_ToT/latest/)



# SCAN ME



Skills  
4 eos

- Skills for the European
- Open Science
- Commons

[www.skills4eos.eu](http://www.skills4eos.eu)

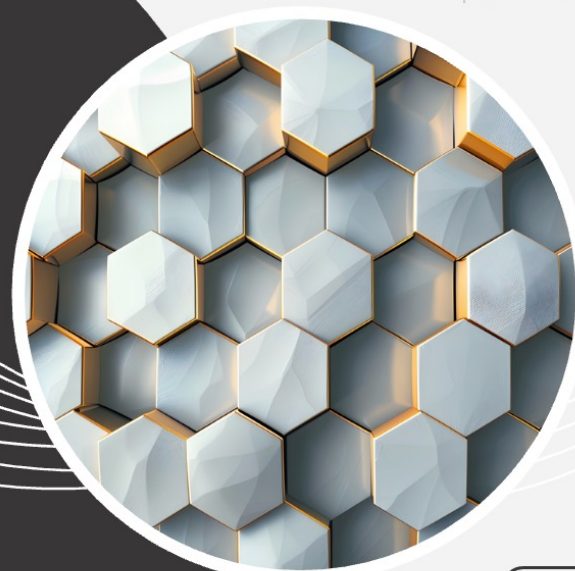
Supporting



Funded by  
the European Union



co-funded by



QUICK GUIDE



## FAIR-by-Design Methodology for learning materials

# Help us improve

- We are very interested in your thoughts and ideas
- Let us co-create and make a new, improved, version of the FAIR-by-Design materials together
- [EC Survey](#) is always open



Skillis  
4 eosc



- Skills for the European
- Open Science
- Commons



Supporting



Funded by  
the European Union

Skills4EOSC has received  
funding from the  
European Union's Horizon  
Europe research and  
innovation Programme  
under Grant Agreement  
No. 101058527.

# Thank you! Questions?

Credit: Some of the slides in this presentation were created by [SlideEgg](#)

Sonja Filiposka – [sonja.filiposka@finki.ukim.mk](mailto:sonja.filiposka@finki.ukim.mk)





# Now It's Your Turn!

- **Hands-on Activity**
  - Apply what you've learned about FAIR-by-Design by working on a realistic scenario
- **Your Mission**
  - Design key components of an Open Access training module for researchers.
- **Focus Areas**
  - Learning objectives, target audience, reuse resources, outline learning activity, create a concept map, and plan for an instructor kit.
- **Next Steps**
  - After the design phase, we'll do a self-review quiz to help solidify your understanding.



# Scenario

- You are an instructional designer creating a **training module *about* Open Access publishing**, intended for researchers at your institution.
- This module will be designed *using* the FAIR-by-Design methodology.



Skill  
4 eosc

Supporting

eosc

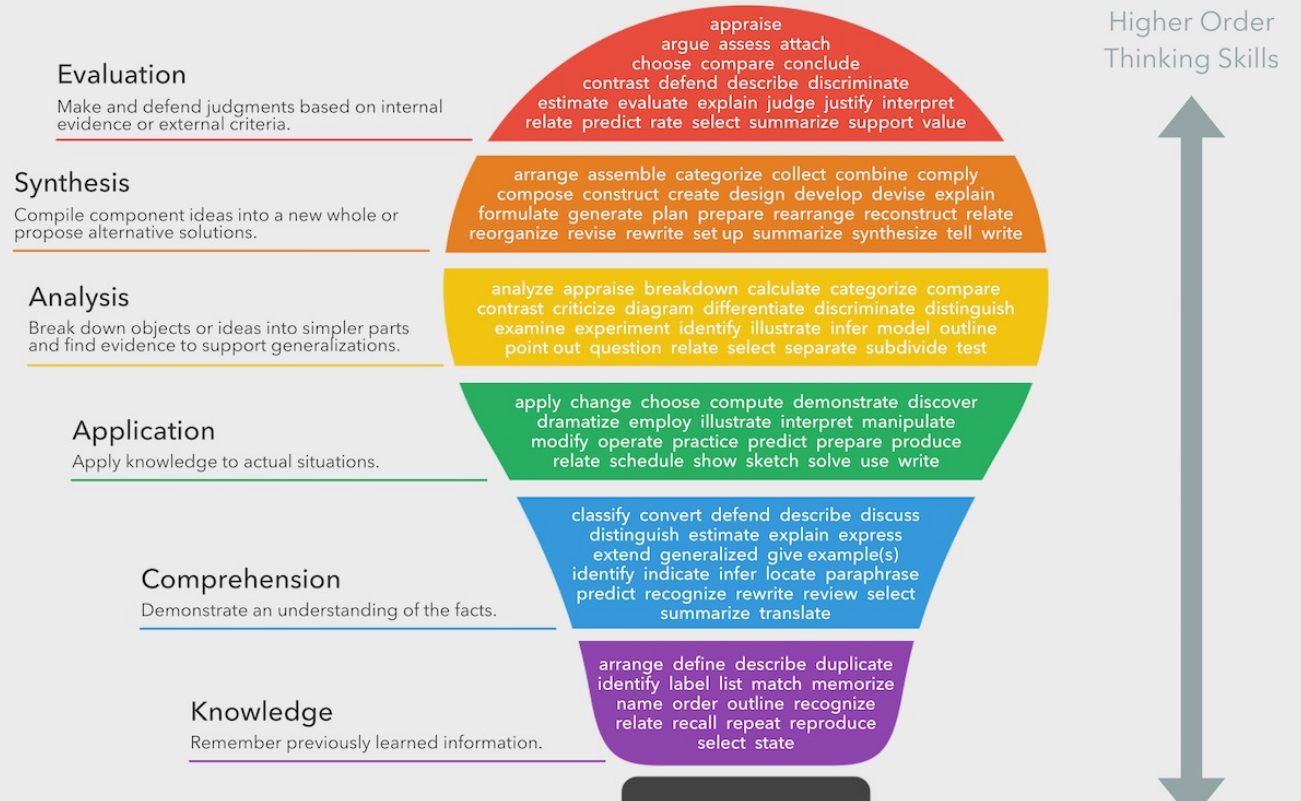


Funded by  
the European Union



# Learning Objective

## Bloom's Taxonomy Verbs



Bloom's taxonomy by [Fractus Learning](#). (2023, July 10). In [Wikipedia](#) licensed under the terms of [CC BY-SA 4.0](#).



Skills  
4 eosc

Supporting

meosc



Funded by  
the European Union

# Discover & Reuse



This Photo by Unknown Author is licensed under [CC BY-SA](#)



Skills  
4 eosc

Supporting

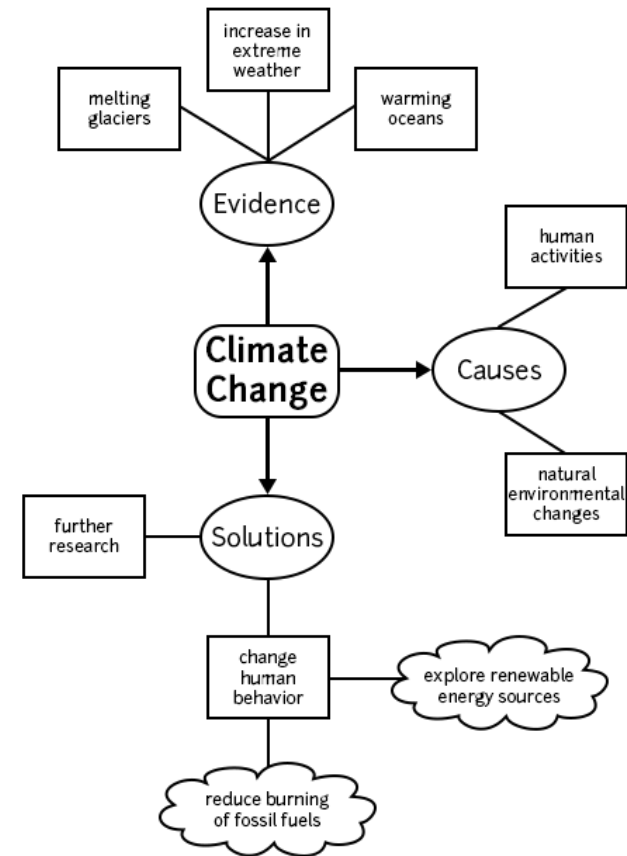
eosc



Funded by  
the European Union

# Design

Start with a **Concept Map**



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)



Skills  
4 eosc

Supporting

eosc



Funded by  
the European Union

## Open formats, what for?

### So that users might read my documents unhindered

Users exchanging reports.



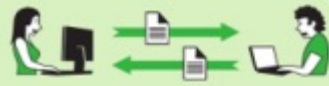
CLOSED FORMAT, IDENTICAL SOFTWARE

Alice uses the software program "Caracal". She records her report in a closed format (one that does not permit interoperability), then sends it to Bob, who has the same software program. He can read the document, modify it and send it back to Alice.



PROGRAMS WITH CLOSED FORMATS, DIFFERENT SOFTWARE

The following day, Alice sends her report to Albert. He doesn't have the same software program, which refuses to open the document. Albert has no other choice than to acquire the Caracal software used by Alice, with the hope it is compatible with his computer.



PROGRAMS WITH OPEN FORMATS, DIFFERENT SOFTWARE

Carole, another user, chooses to record her report in open format (allowing for interoperability) and sends it to David. David can read the document, modify and record it, either by using the same open format software or by using another interoperable software.

So that your documents might be read more easily by other people, without you having to worry about which software they use, choose open formats.

### To ensure the longevity of my documents

Alice and Carole use text editors to write, save, and preserve a novel.



CLOSED FORMAT

Alice buys an initial text-editing program, "Caracal". She saves her novel in a closed format that only that software program will be able to read.



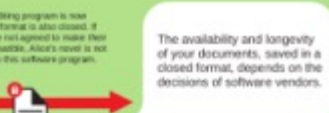
OPEN FORMAT

Carole downloaded a Free Software text-editing program, which saves her novel in a free format (which allows interoperability).



OPEN FORMAT

A new Free Software program is available. If it is compatible with the format, it can be used to edit and modify the novel Carole archived.



The availability and longevity of your documents, saved in a closed format, depends on the decisions of software vendors.

In your interest, choose software programs that save your documents in open formats. They are not dependent on any particular software program.

Learning Everest

## VARK LEARNING MODEL

Visual learning  
(pictures, movies, diagrams)



Auditory learning  
(music, discussion, lectures)



Kinesthetic learning  
(movement, experiments, hands-on activities)



Reading and writing  
(making lists, reading textbooks, taking notes)



LEARN MORE AT [WWW.LEARNINGEVEREST.COM/BLOG](http://WWW.LEARNINGEVEREST.COM/BLOG)

# Produce learning content

## Accessible Designs for everyone



Cognitive & Learning Disabilities



Blindness  
Low Vision  
Colorblindness



Speech Inputs



Hearing Impairment



Motor & Dexterity

Interaction Design Foundation  
[Interaction-design.org](http://Interaction-design.org)



# Define an Instructor Kit

What another instructor would need to effectively deliver the module?



Skillis  
4 eosc

Supporting

eosc



Funded by  
the European Union

# Great Job!

- Now it is time to do some self-check... and try to win a prize 😊



[partici.fi/91596121](https://partici.fi/91596121)



Skillis  
4 eosc

Supporting

eosc



Funded by  
the European Union