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*Advanced Training  
on Energy Efficiency  
in Historic Buildings*

# CONFERENCE ON ENERGY EFFICIENCY IN HISTORIC HERITAGE

Organiser: IRENA-Istrian Regional Energy Agency  
City library Labin, Rudarska 1, Labin

Arch.PhD. Maurizio Sibilla  
29 June 2016

## EH-CMAP (2014-2016)

The cognitive map - effective tool for organization and systematization of knowledge on energy efficiency in historic heritage

Meaningful learning theory

Meaningful activity

Cognitive Mapping

Mapping tool

WITH THIS PRESENTATION

WE WILL INTRODUCE

MEANINGFUL LEARNING\*

CONCEPT MAPPING

FOCUS QUESTION



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\*"Meaningful learning is opposed to rote learning and refers to a learning way where the new knowledge to acquire is related with previous knowledges" (Ausubel 2000)  
\_Ausubel, D.P. (2000), The acquisition and retention of knowledge: a cognitive view, Kluwer Academic Publishers, ISBN 9780792365051

ROTE LEARNING

IN CONTRAST TO



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MEANINGFUL LEARNING\*



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The nature of the task is completing standardized.

The university have become

examining factories

The students are prevented from

cooperating with others

The course represent only

single form of knowledge of representation

IN CONTRAST TO

MEANINGFUL LEARNING\*



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**MEANINGFUL LEARNING\***

EXPLAINS HOW

*\_knowledge is developed;*

*\_knowledge becomes automatic*

*\_new knowledge is integrated into an existing cognitive system;*

HELPS

TO LEARN HOW



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**MEANINGFUL LEARNING\***

EXPLAINS HOW

*\_knowledge is developed;*

*\_knowledge becomes automatic*

*\_new knowledge is integrated into an existing cognitive system;*

**HELPS**

TO RECOGNIZE AND SOLVE THE PROBLEMS

COMPREHEND NEW PHENOMENA

COSTRUCT MENTAL MODEL

GIVE A NEW SITUATION

REGULATE THEIR OWN LEARNING (LEARN HOW TO LEARN)

SET GOALS



REQUIRES  
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MEANINGFUL LEARNING\*

MEANINGFUL ACTIVITIES



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**MEANINGFUL LEARNING\***

**REQUIRES**

Active  
(Manipulative/Observant)

Constructive  
(Articulative/ Reflective)

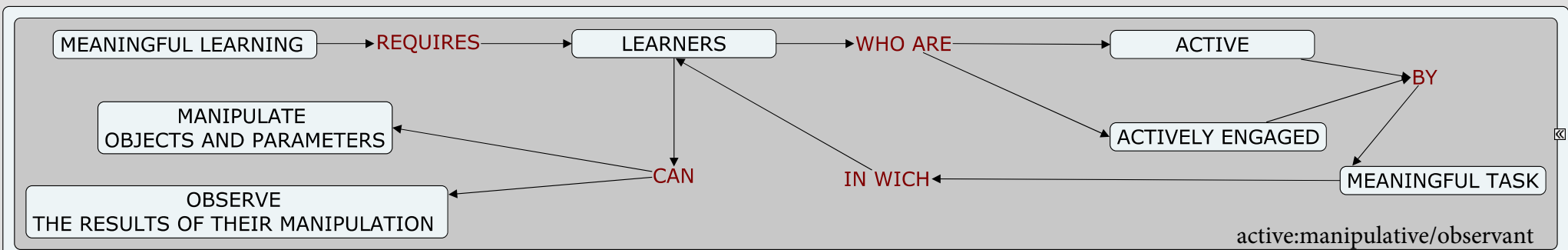
Intentional  
(Goal-Directed/Regulatory)

Authentic  
(Complex/Contextual)

Cooperative  
(Collaborative/Conversational)



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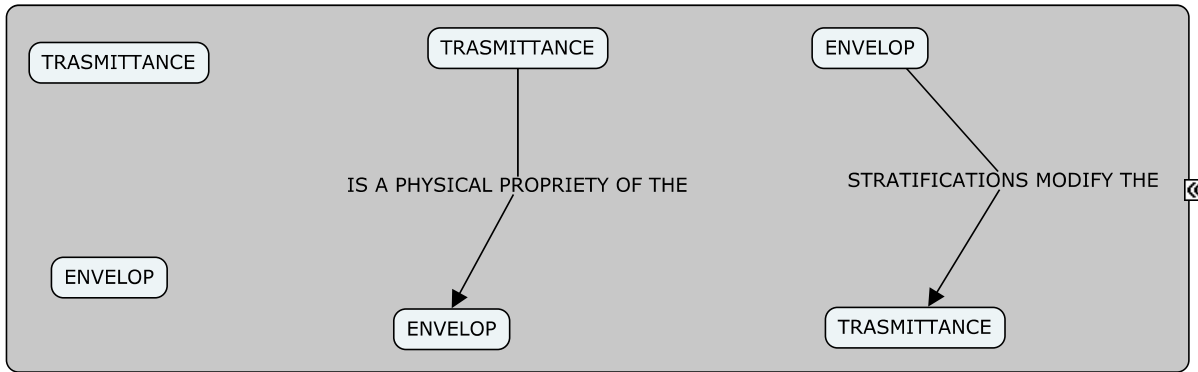
Constructive  
(Articulative/ Reflective)

Intentional  
(Goal-Directed/Regulatory)

Authentic  
(Complex/Contextual)

Cooperative  
(Collaborative/Conversational)

active:manipulative/observant



AUTHENTIC

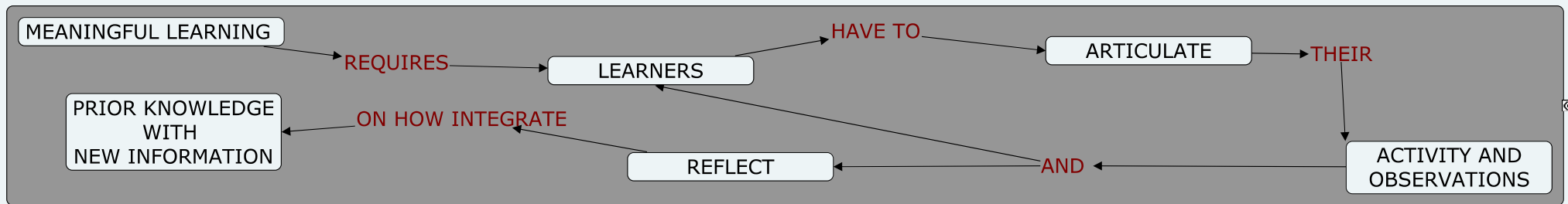
ARTICULATE

COOPERATIVE

INTENTIONAL

Active  
(Manipulative/Observant)

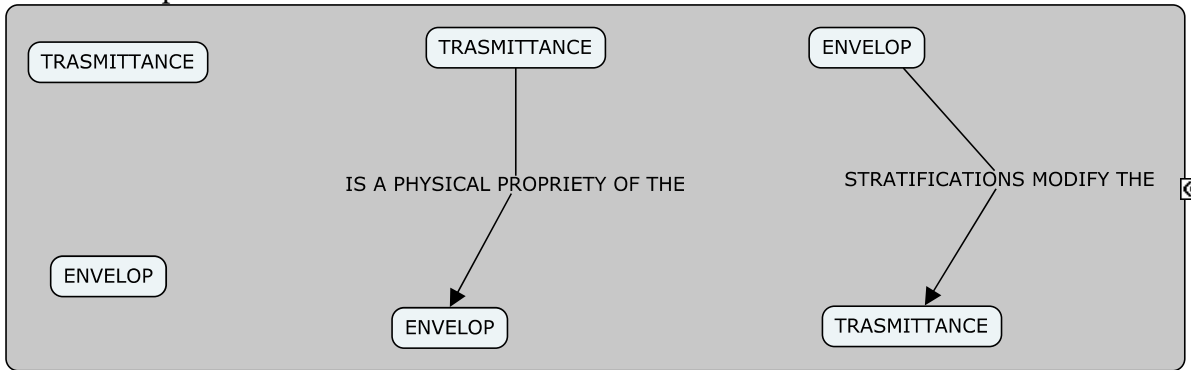
constructive:articulative/reflective



Authentic  
(Complex/Contextual)

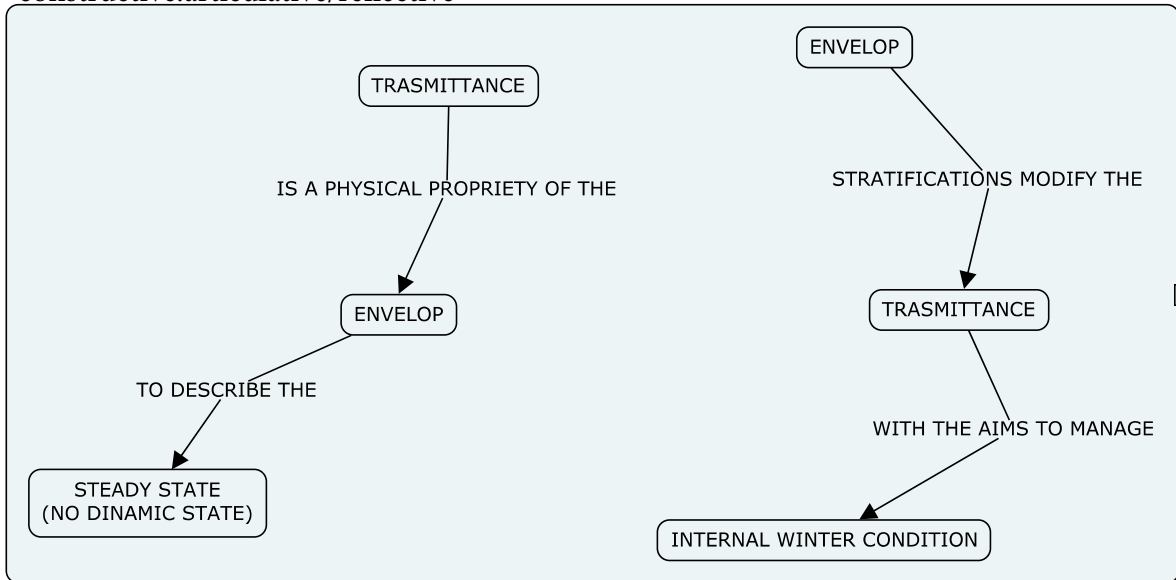
Cooperative  
(Collaborative/Conversational)

active:manipulative/observant



AUTHENTIC

constructive:articulative/reflective



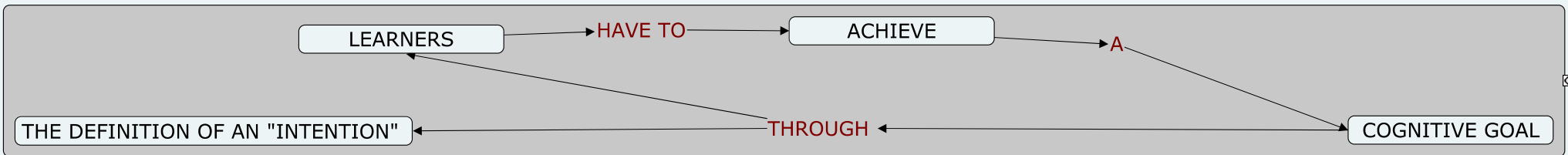
COOPERATIVE

INTENTIONAL

Active  
(Manipulative/Observant)

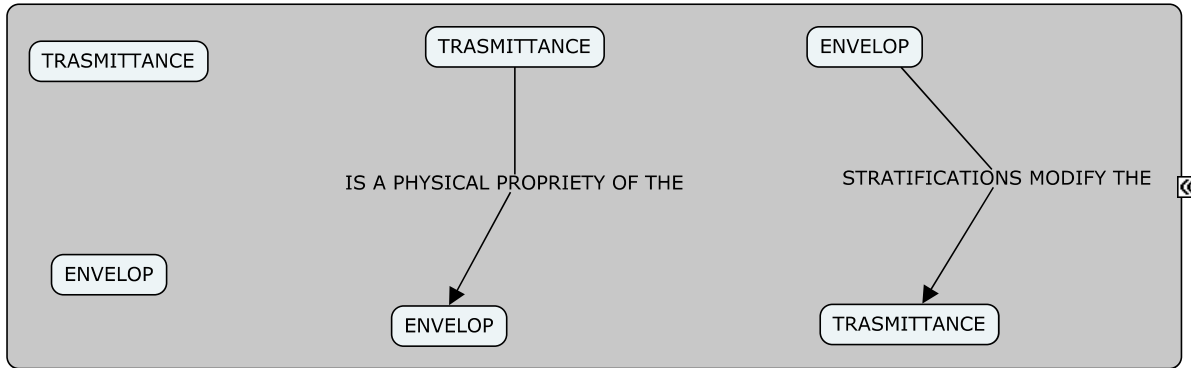
Constructive  
(Articulative/ Reflective)

Intentional :goal direct/regulatory



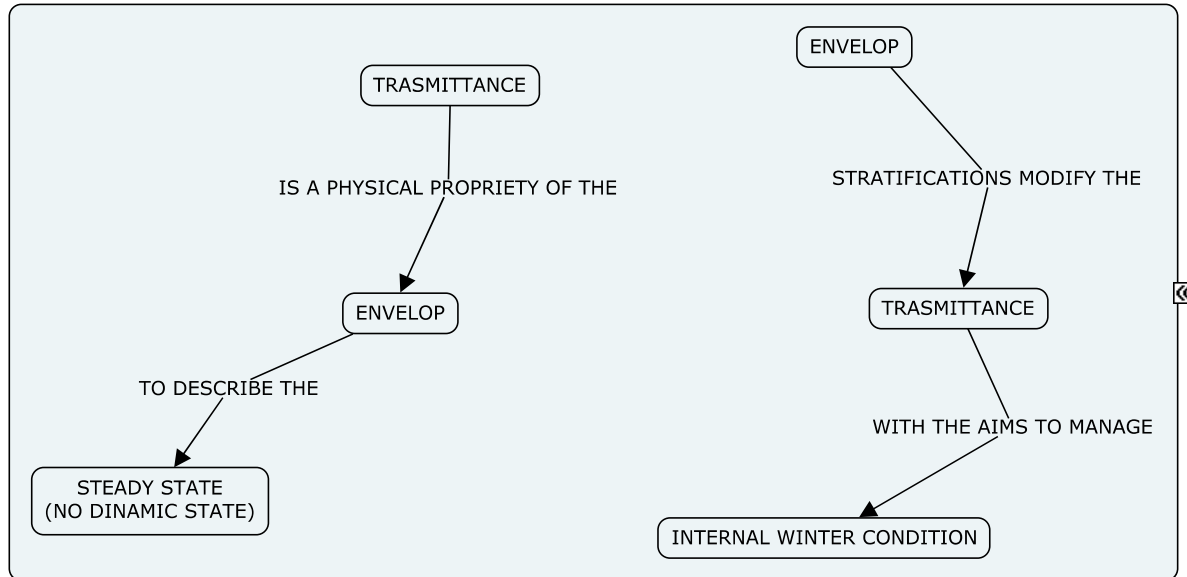
Cooperative  
(Collaborative/Conversational)

active:manipulative/observant



AUTHENTIC >>

constructive:articulative/reflective



COOPERATIVE >>



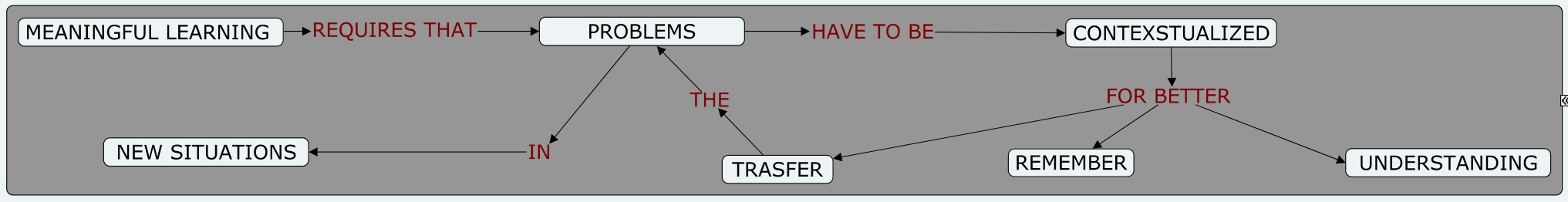
Intentional :goal direct/regulatory

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Constructive  
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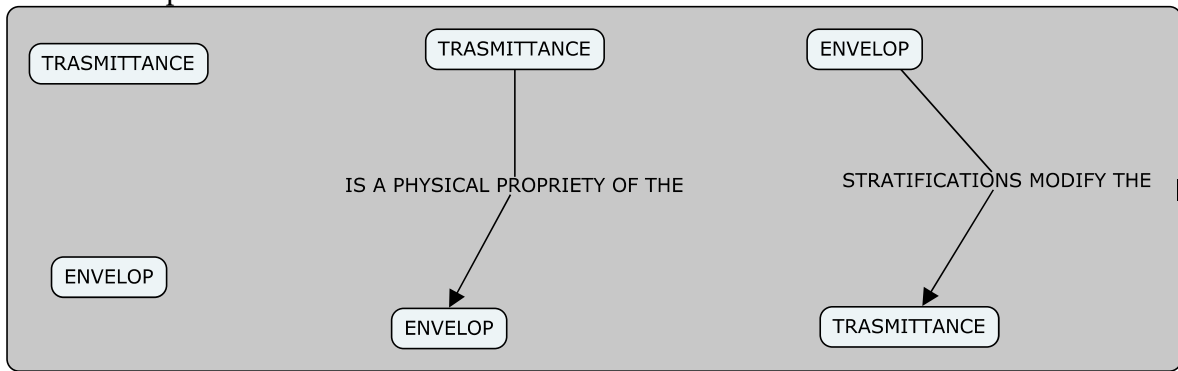
Intentional  
(Goal-Directed/Regulatory)

authentic:complex/contextual

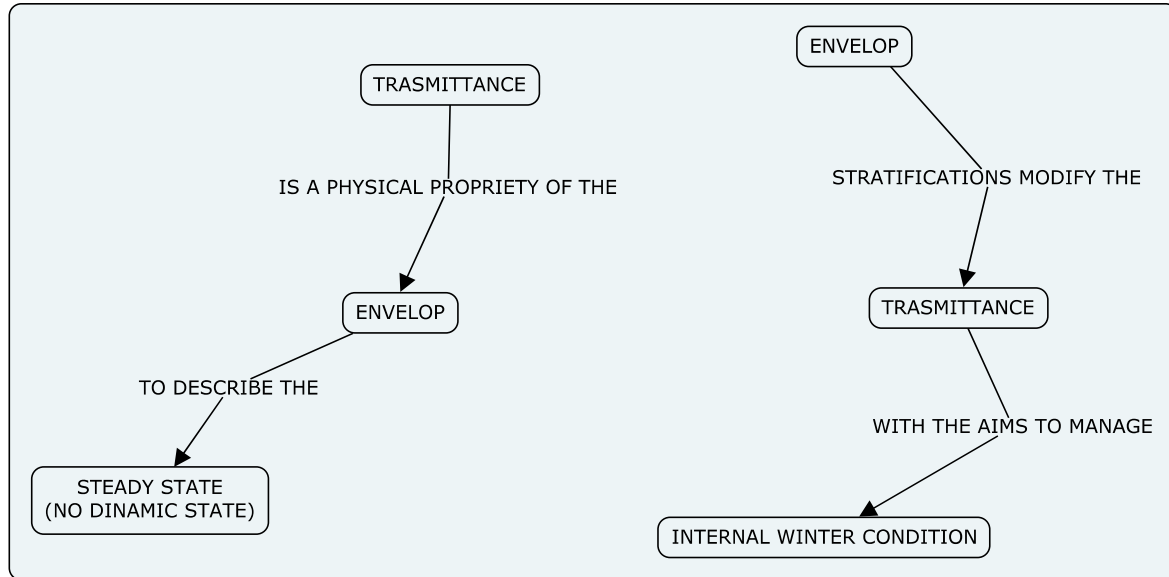




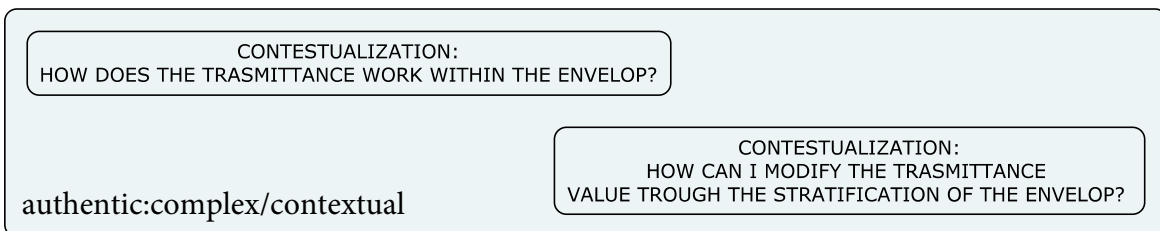
active:manipulative/observant



constructive:articulative/reflective



COOPERATIVE



Active  
(Manipulative/Observant)

Constructive  
(Articulative/ Reflective)

Intentional  
(Goal-Directed/Regulatory)

Authentic  
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cooperative:collaborative/conversational

MEANINGFUL LEARNING

REQUIRES

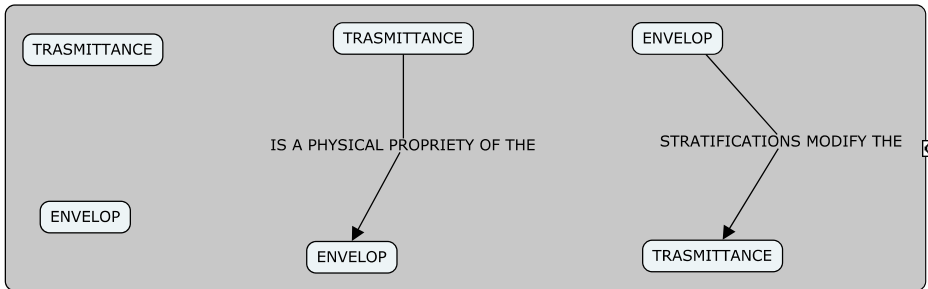
CONVERSATION AMONG  
PARTECIPATS\*

CAN SUPPORT

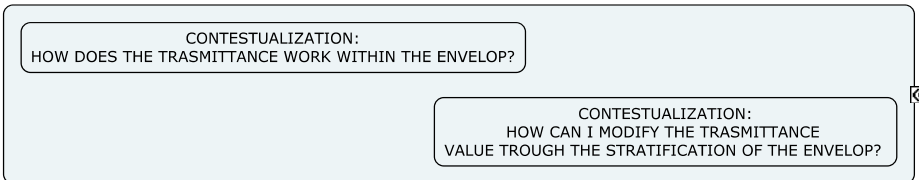
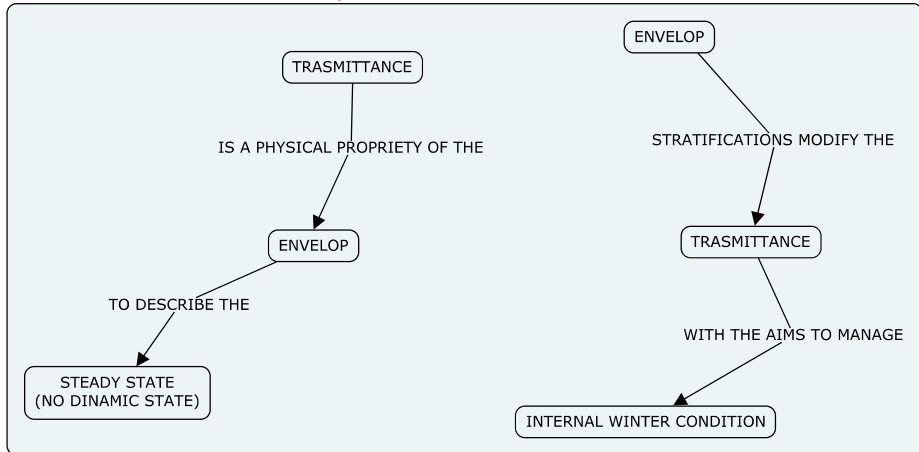
TECHNOLOGY

\*Conversation should be encouraged because it is the most natural way of making meaning.

active:manipulative/observant

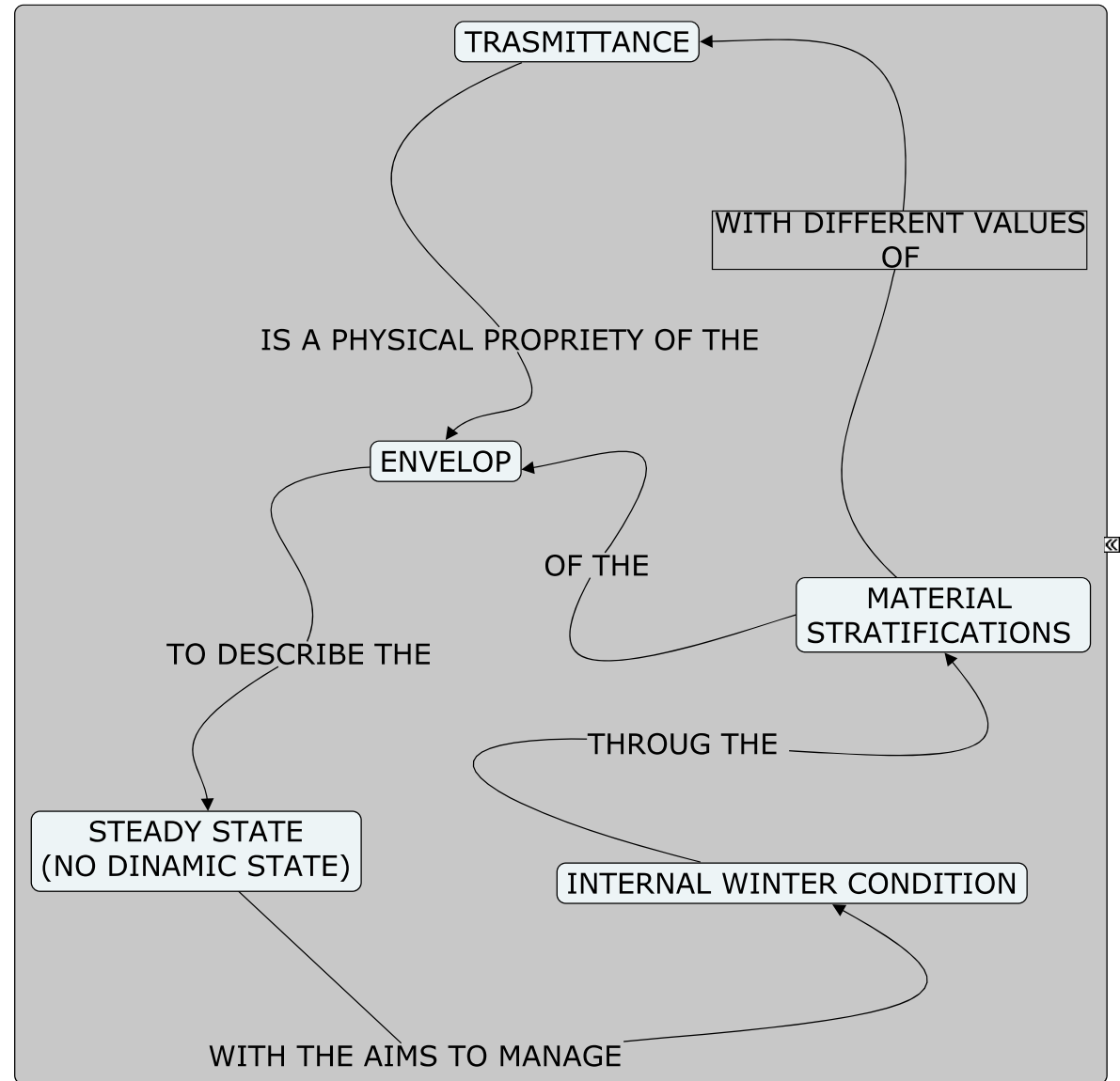


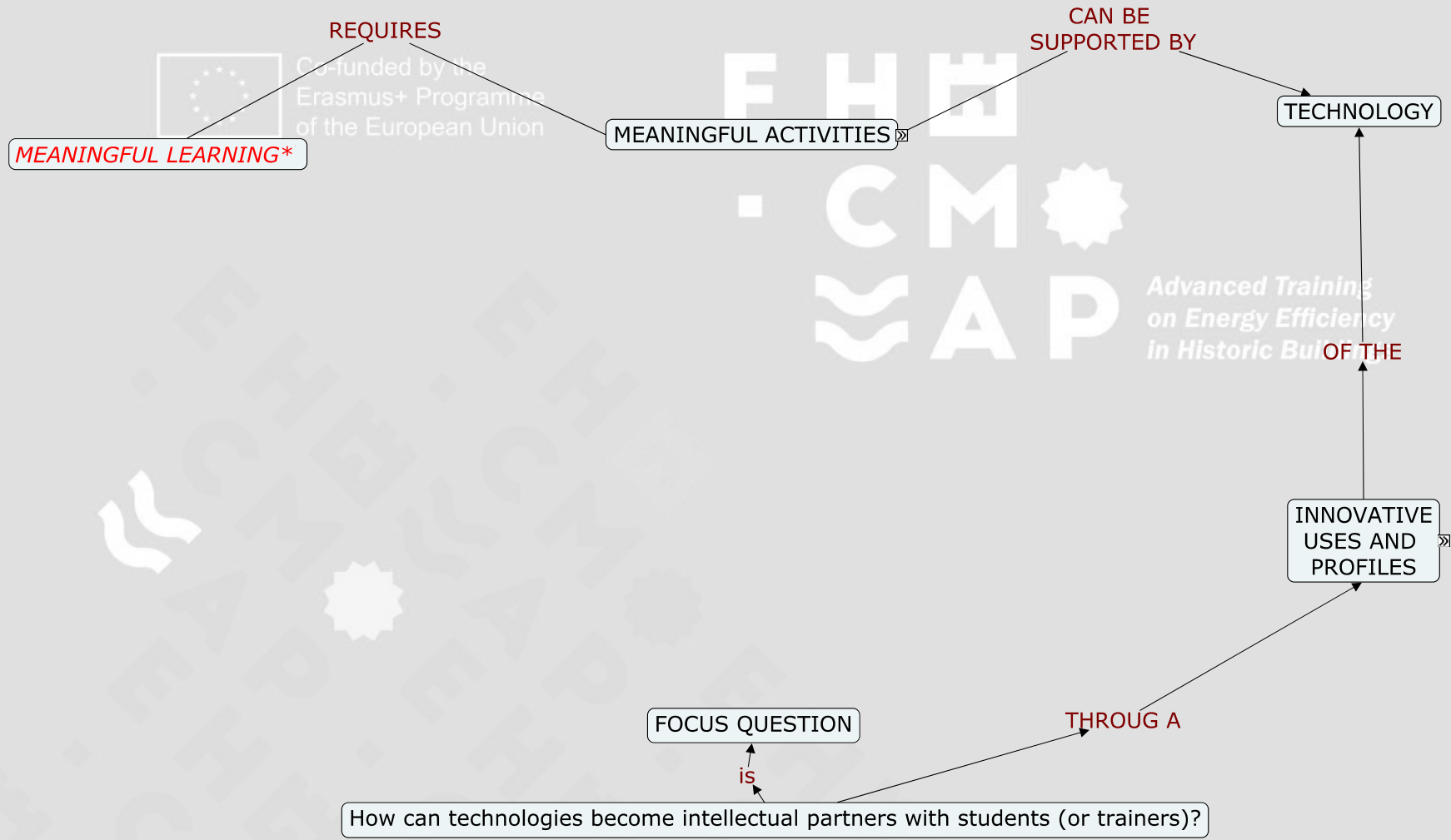
constructive:articulative/reflective



authentic:complex/contextual

cooperative:collaborative/conversational







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MEANINGFUL LEARNING\*

REQUIRES

MEANINGFUL ACTIVITIES

- Inquiring with Technologies/  
Information gathering
- Experimenting with Technologies/  
Predicting outcomes
- Designing with Technologies/  
Creative knowledge construction
- Communicating with Technologies/  
Meaningful discourse
- Community Building and Collaborating with Technologies/  
Social interactions and identity building
- Writing with Technologies/  
Constructing meaningful prose
- Modeling with Technologies/  
Building models for conceptual change
- Visualizing with Technologies/  
Constructing visual representations
- Assessing Meaningful Learning and Teaching with Technologies/  
Resources for assessment, for both teachers and students

FOCUS QUESTION

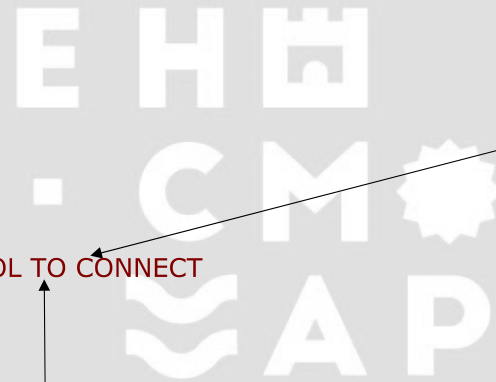
THROUGH A

is

How can technologies become intellectual partners with students (or trainers)?



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MEANINGFUL LEARNING\*

IS A TOOL TO CONNECT

CONCEPT MAPPING

IS BASED ON

TECHNOLOGY

INNOVATIVE USES AND PROFILES

OF THE



DIPARTIMENTO DI PIANIFICAZIONE DESIGN E TECNOLOGIA DELL'ARCHITETTURA

SAPIENZA UNIVERSITÀ DI ROMA

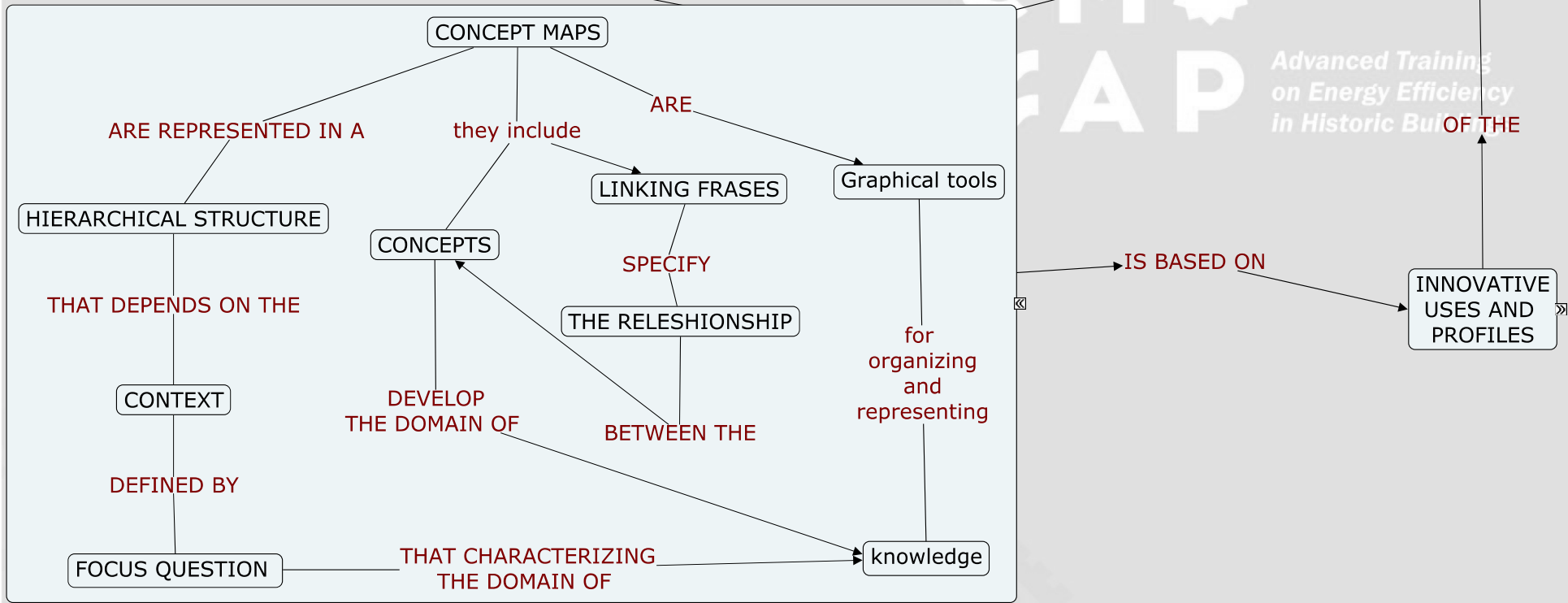


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E H O  
- C M  
A P

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MEANINGFUL LEARNING\*





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MEANINGFUL ACTIVITIES

WITH THE SUPPORT OF

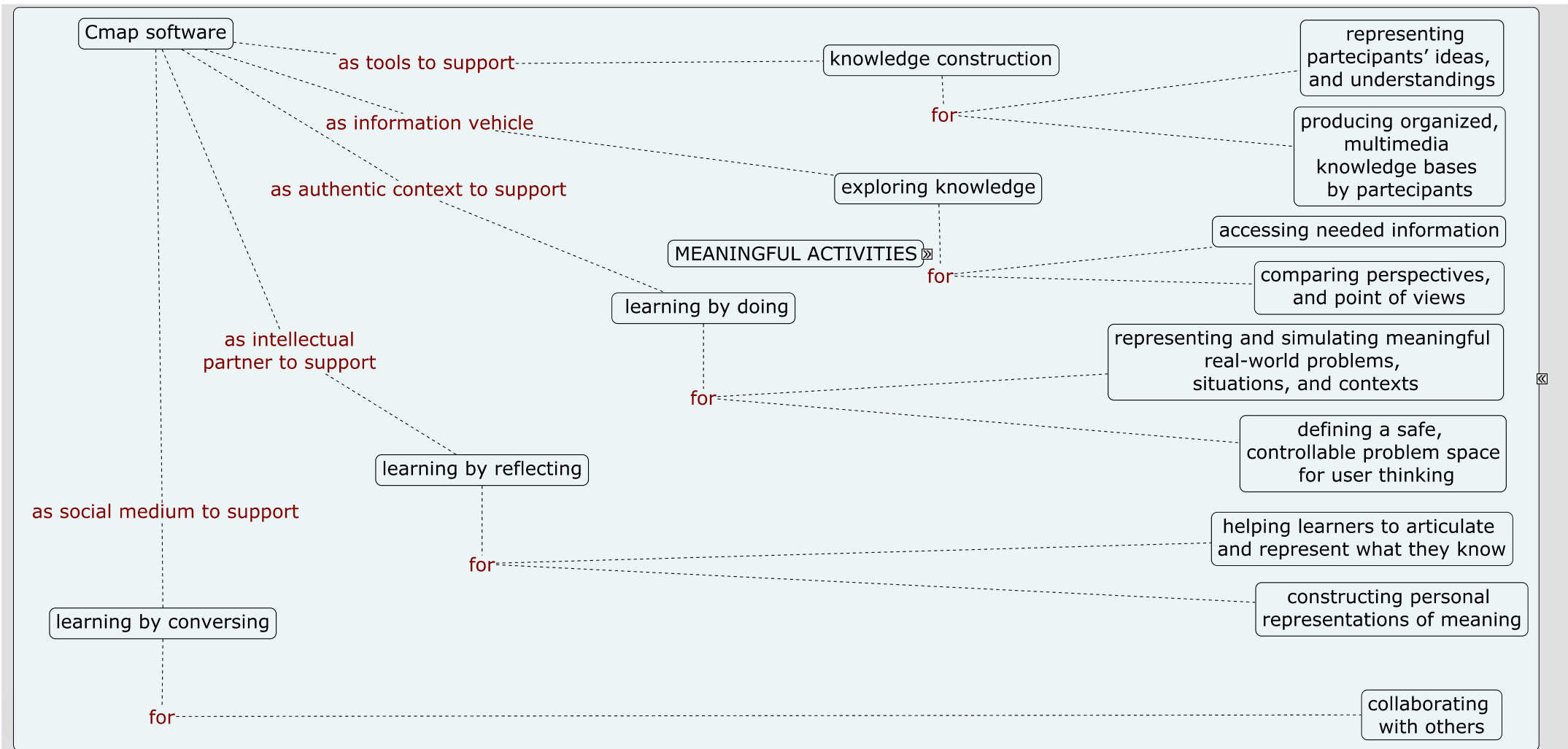
CMAP SOFTWARE



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# “What concepts and relationships should be included in the energy efficiency projects of historical heritage?”



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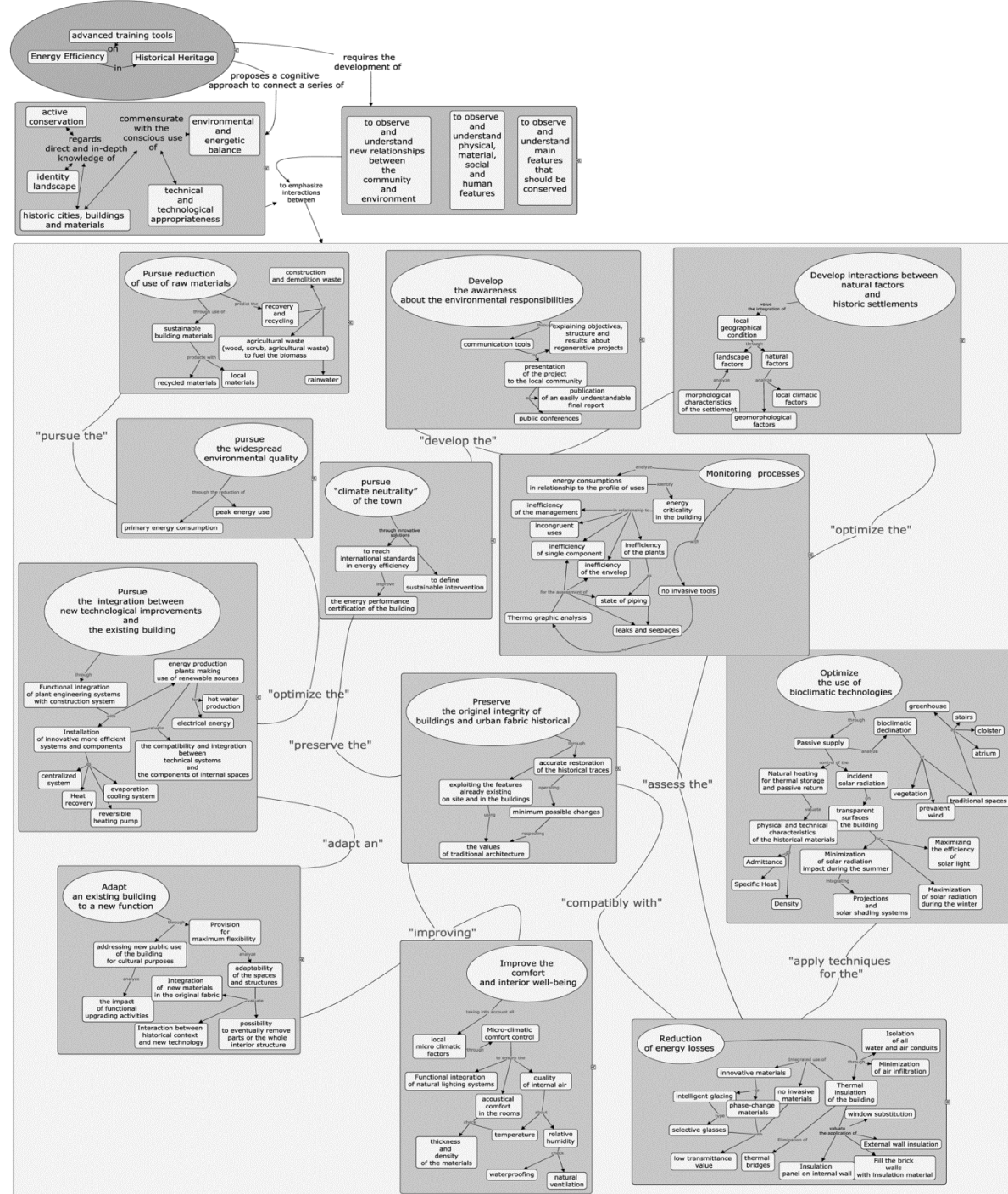


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CONCEPT MAPPING 

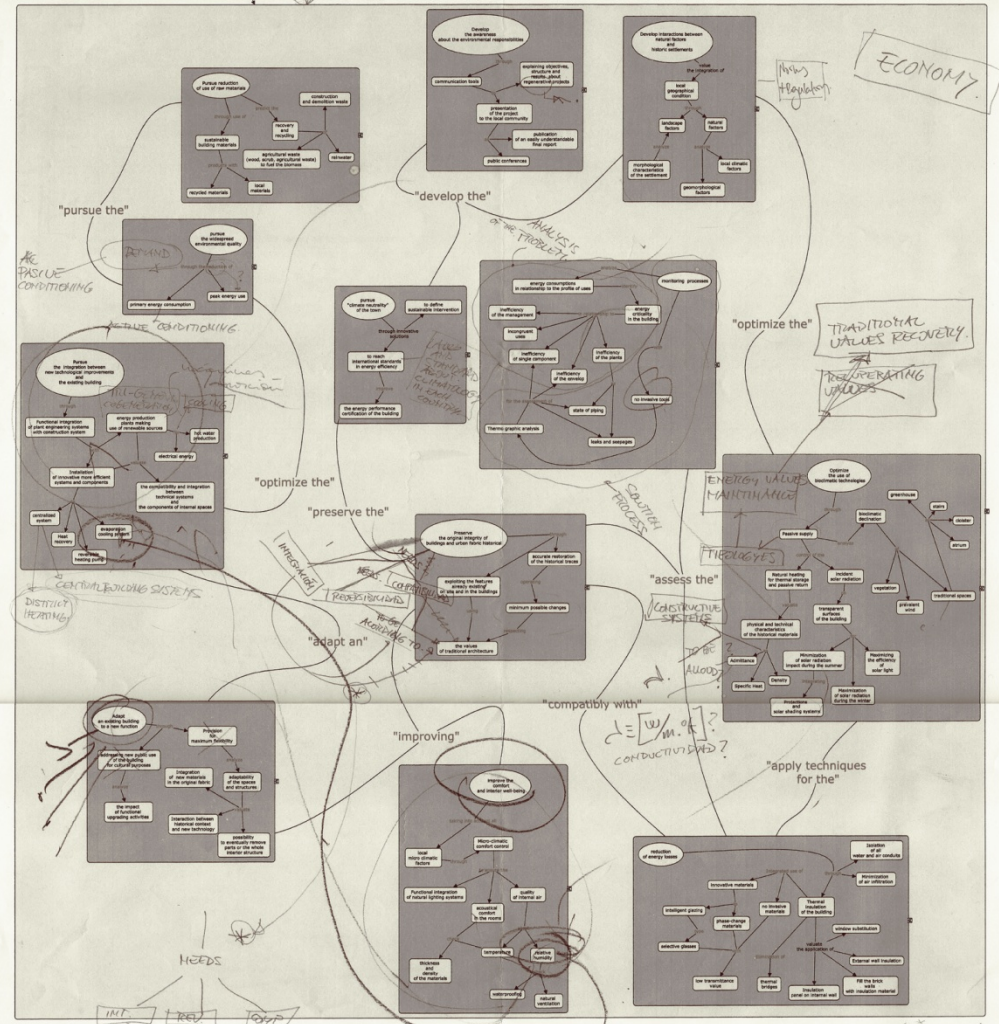
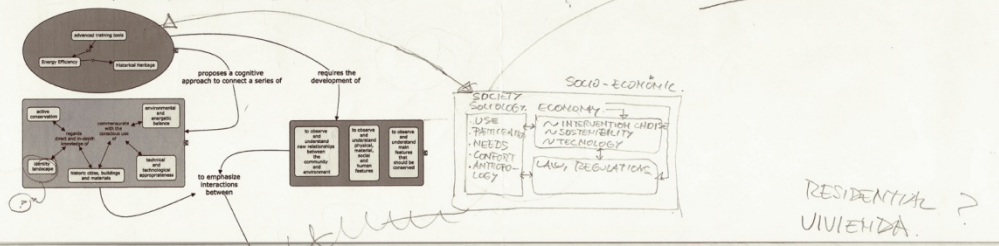
STARTING FROM

FOCUS QUESTION



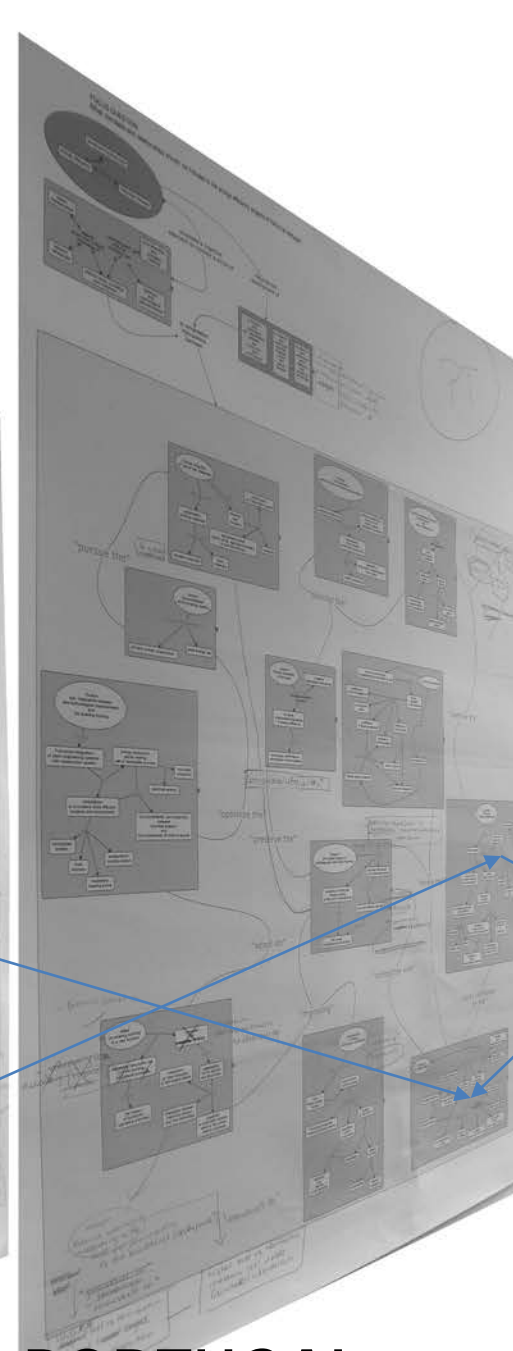
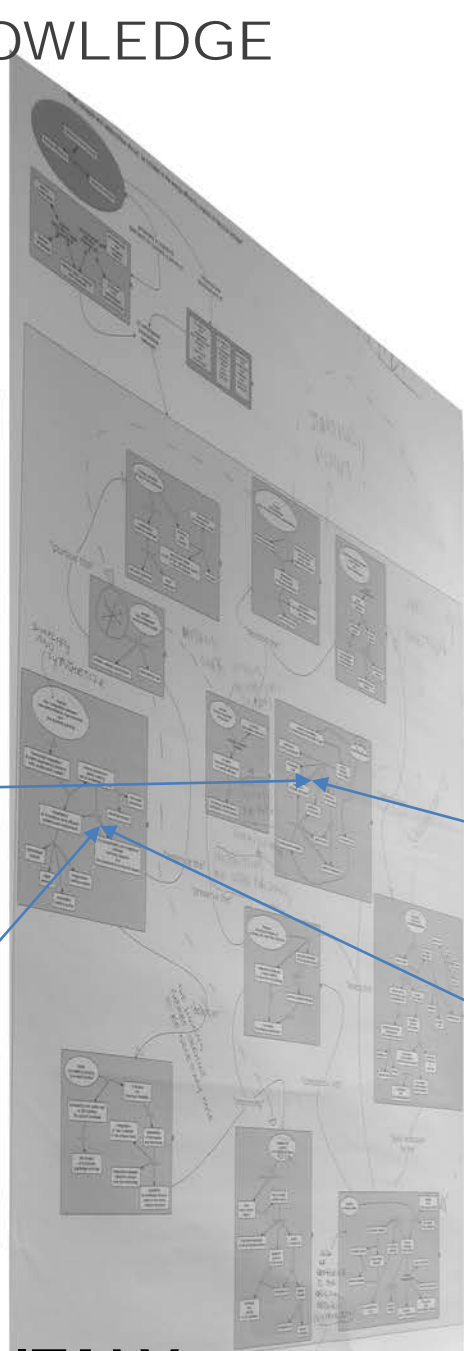
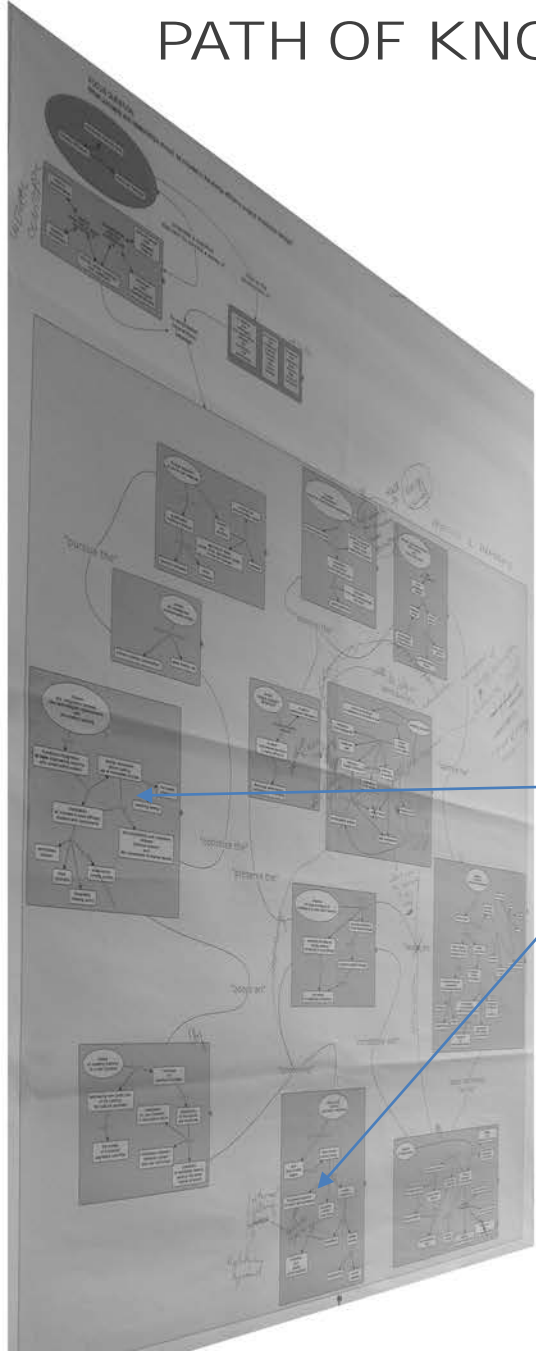
FOUR QUESTION  
What concepts and relationships should be included in the energy efficiency projects of historical heritage?

SPAIN



ACCORDING TO  
Requirements  
management  
to the values acquisition  
BASE CASE  
KHAU

# PATH OF KNOWLEDGE



**CROATIA**

**ITALY**

**MALTA**

**PORTUGAL**

**SPAIN**



## CONCLUSION

**In conclusion, we can highlight the following points about the use of EH-CMAP\_00 as a meaningful tool to face the issue of energy efficiency in historic heritage:**

- **proposed a general critical review**
- **introduced new concepts and relationships**
- **crystallized and shared the definition about technical concepts**
- **adapted domains of knowledge**
- **highlighted individuated disciplinary interests**