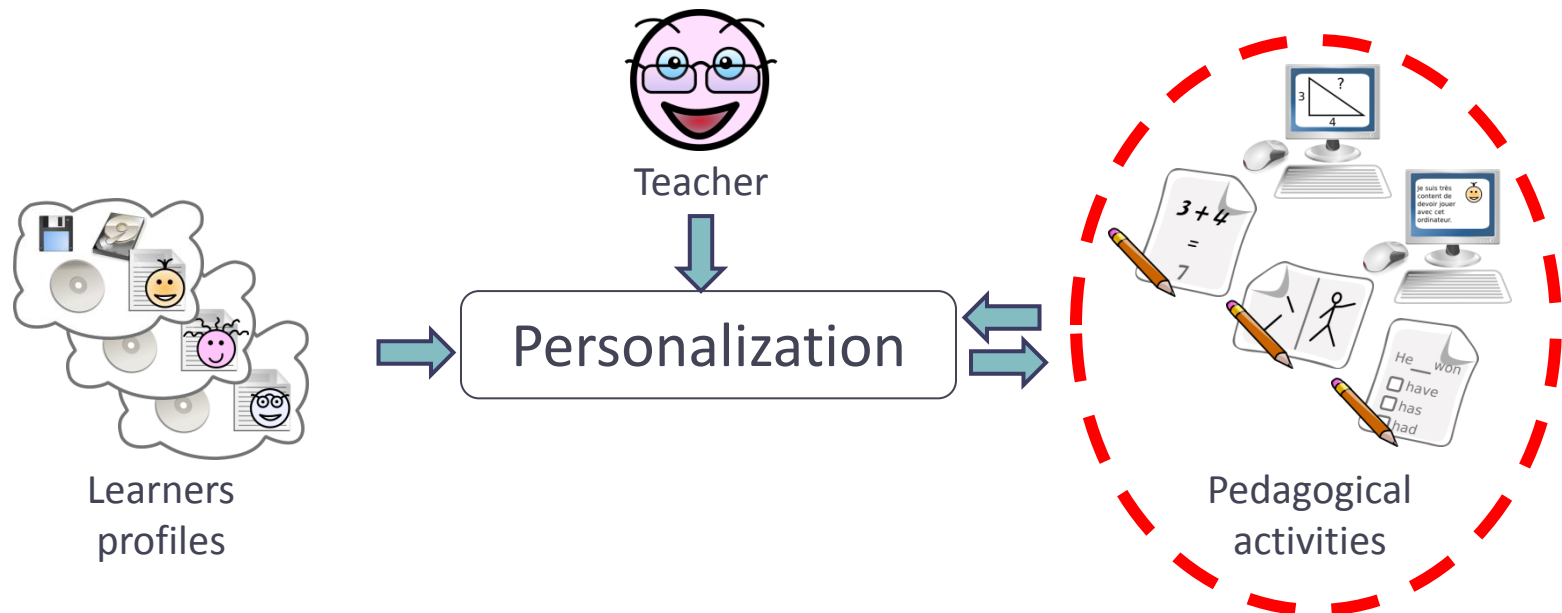


A Generic Approach for Assisting Teachers During Personalization of Learners' Activities

Marie Lefevre, Nathalie Guin, Stéphanie Jean-Daubias
LIRIS – Université Lyon 1

Context

- PERLEA project
 - Teacher-oriented tools
 - Exploitation of learners profile from various sources
 - Generic approach
- Personalization of learning



Adaptation of pedagogical activities to teachers' needs

- Authoring tool
 - Creation of resources by teacher
 - Time consuming using
- Configurable software
 - Part of software dedicated for teacher
 - Few software
- Pedagogical scenario
 - Definition of activities associated with use context, roles...
 - Use of existing resources

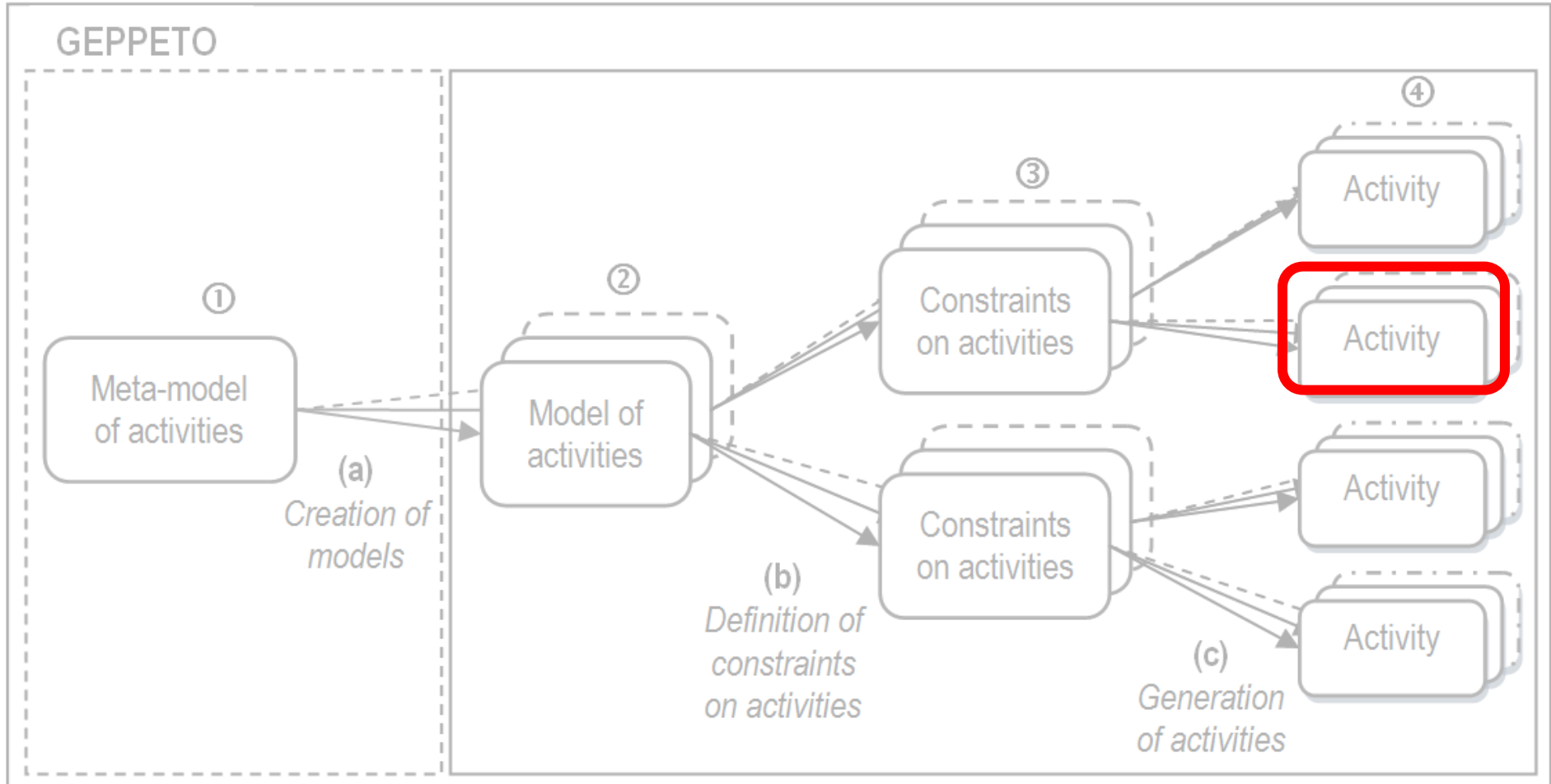
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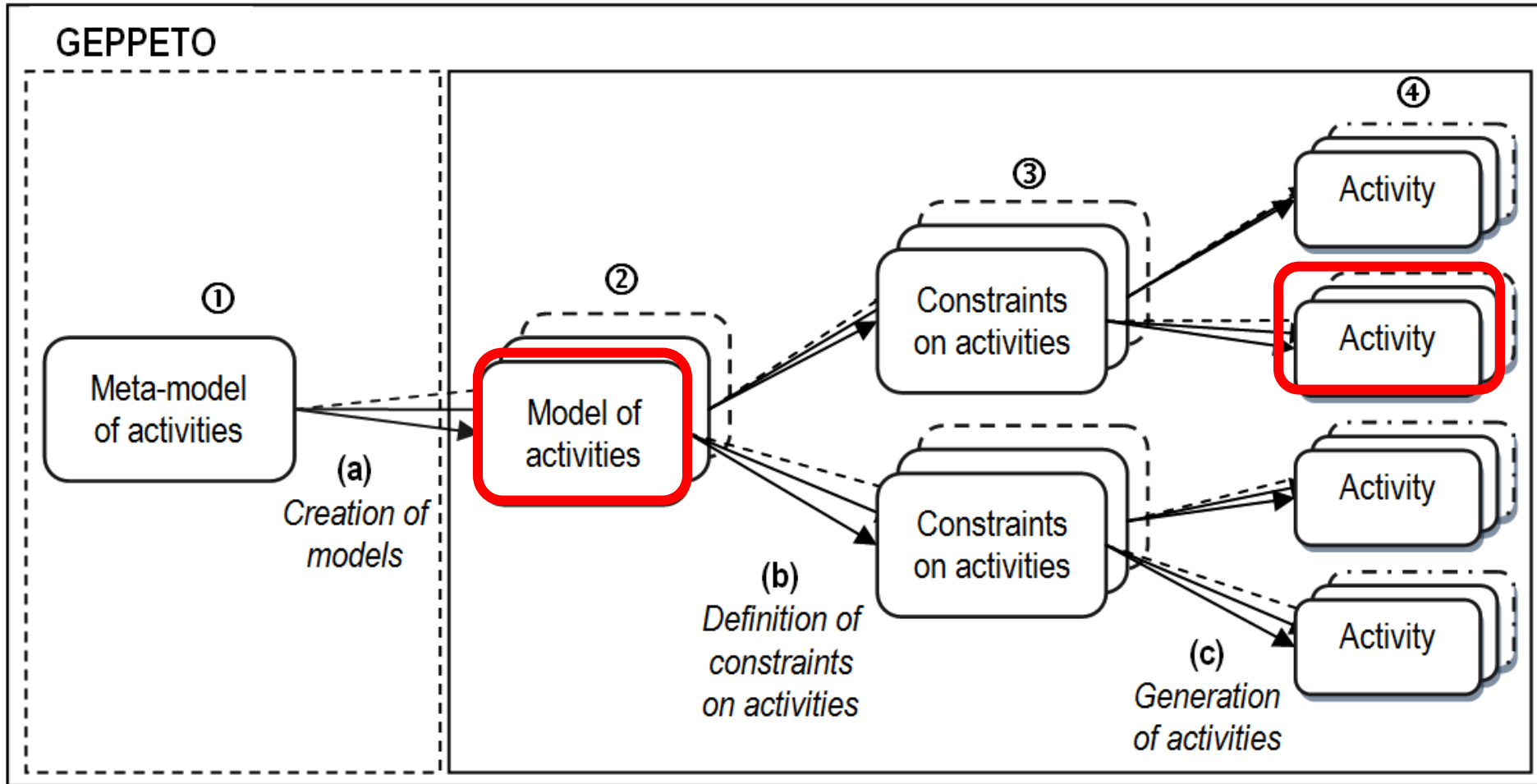
⇒ Heterogeneity of tools

⇒ No unified approach to adaptation of activities

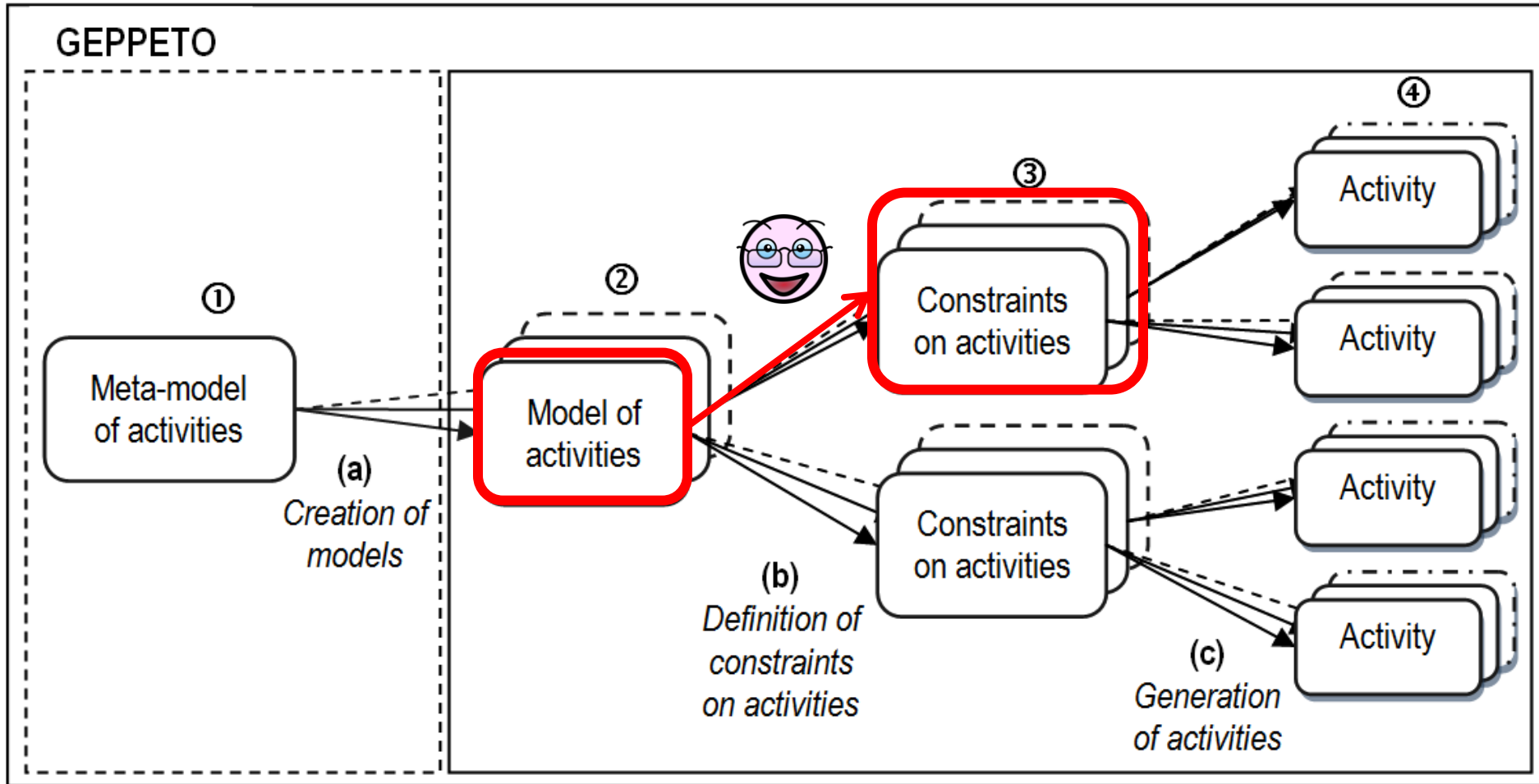
GEPPETO: models and processes to adapt pedagogical activities



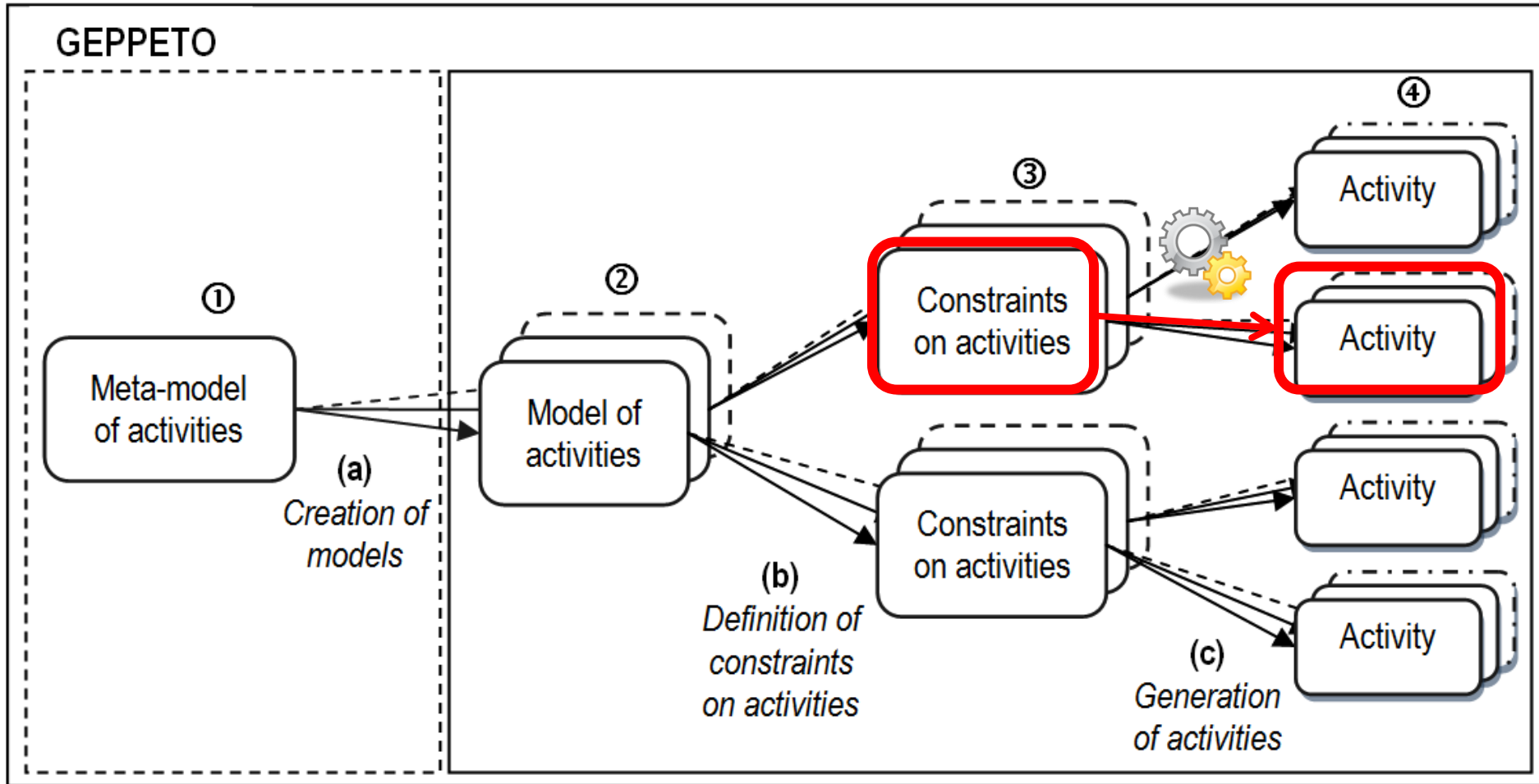
GEPPETO: models and processes to adapt pedagogical activities



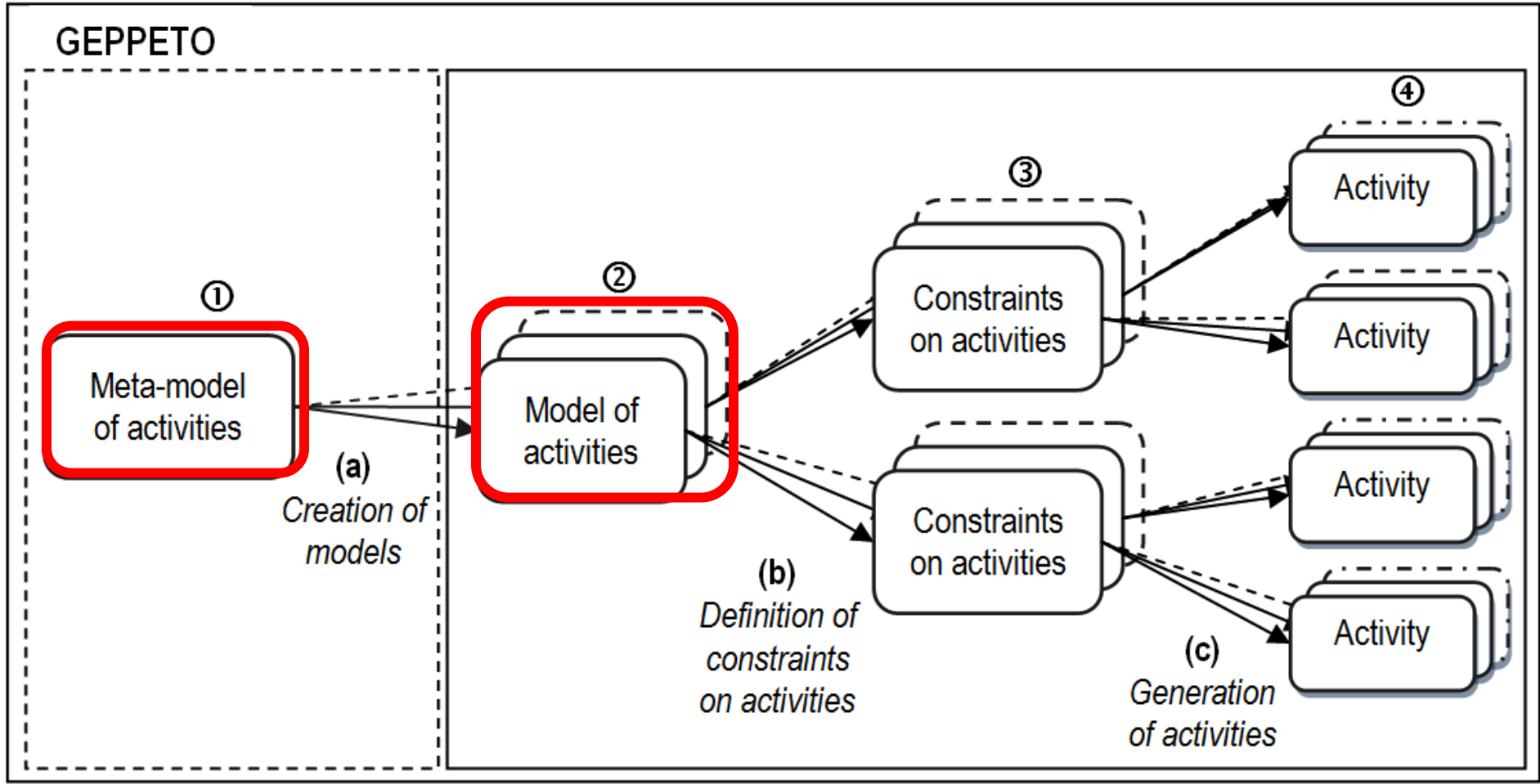
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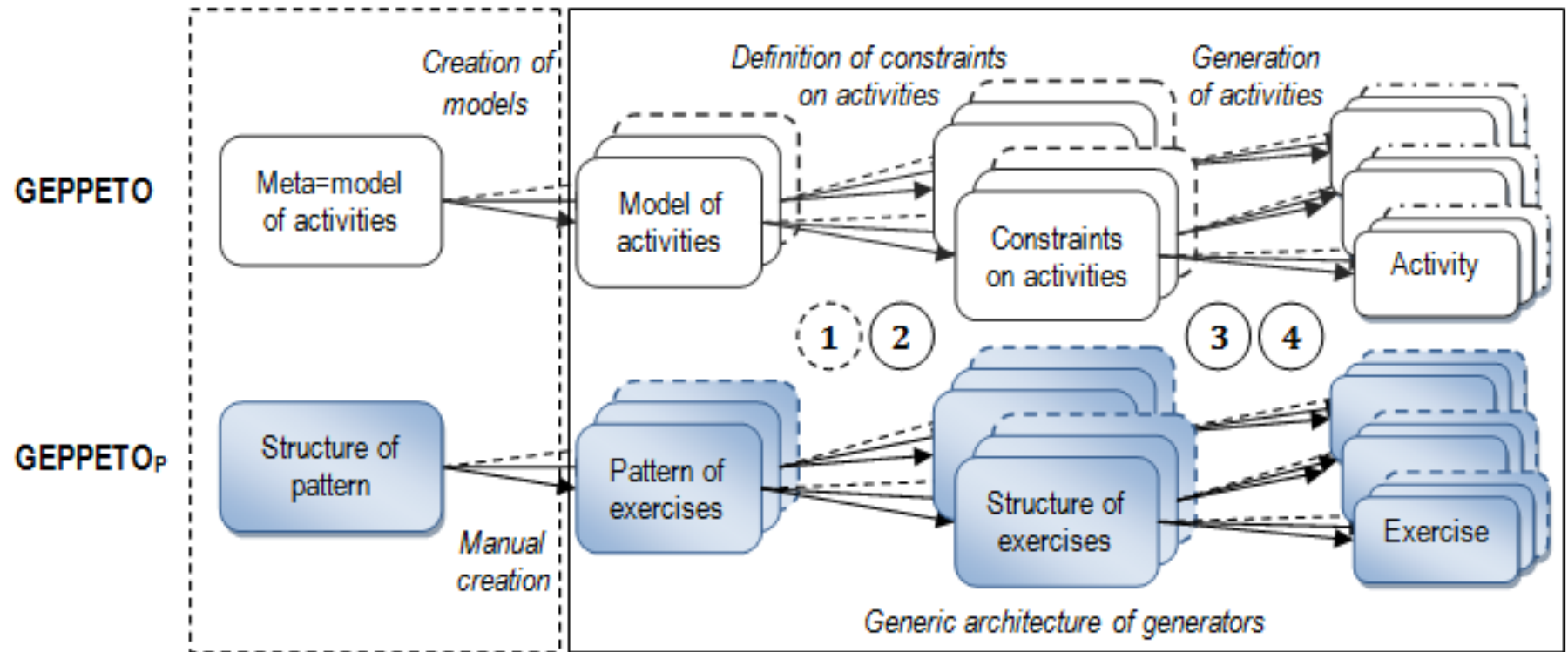
GEPPETO: models and processes to adapt pedagogical activities



GEPPETO: models and processes to adapt pedagogical activities



GEPPETO_p: adaptation of paper and pencil activities



GEPPETO_p: identification of structure invariants

- Corpus of paper and pencil activities
 - Levels
 - First degree at university
 - Domains
 - Reading, history, geography, languages ((French, Spanish and English), biology, mathematics, computer sciences...
 - Sources
 - Teachers, pedagogical books, exercise generators, Internet...

GEPPETO_p: examples of paper activities

theoretical theories theory theorizes theorists

1. Einstein's famous _____ that $E = mc^2$ has been shown to be true.
2. Efforts to solve global problems often require broad _____ understanding of cultural systems, as well as detailed understanding of specific local cultures.
3. The notion of the Big Bang _____ that the universe began as a huge explosion of matter.
4. Many _____ now believe that vocabulary development is even more important than grammar study for second language learners.
5. Current _____ trace our first human ancestor to Africa about 5 to 7 million years ago.

factor enroll harvest global immigrate

1. _____ in our classes has increased by 10% this year.
2. Many _____ contributed to my bad marks at school.
3. He teaches English to new _____ at the cultural centre.
4. _____, the tobacco industry is worth US\$400 billion.
5. Wild rice is expensive because it must be _____ by hand.

English in Europe

English has without a 1) _____ become the second language of Europe and the world. European countries which have most 2) _____ assimilated English into daily life are England's neighbours in Northern Europe: Ireland, the Netherlands, Sweden, Norway, and the 3) _____ of Scandinavia.

The situation is so 4) _____ that any visitor to the Netherlands will soon be 5) _____ of the pressure of English on daily life: television, radio and print 6) _____ it into every home and the schoolyard 7) _____ of children; advertisers use it to 8) _____ up their message, journalists take refuge in it when their home-bred skills 9) _____ them. Increasingly one hears the 10) _____ that Dutch will give way to English as the national tongue within two or three generations ...

1 a) question b) doubt c) problem d) thought

2 a) successfully b) victorious c) successful d) lucrative

3 a) rest b) additional c) remaining d) extra

4 a) plain b) open c) blatant d) marked

5 a) ignorant b) aware c) oblivious d) acquainted

6 a) guide b) bring c) shift d) haul

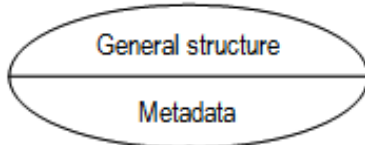
7 a) conversation b) head-to-head c) consultation d) dialogue

8 a) life b) energy c) enthusiasm d) pep

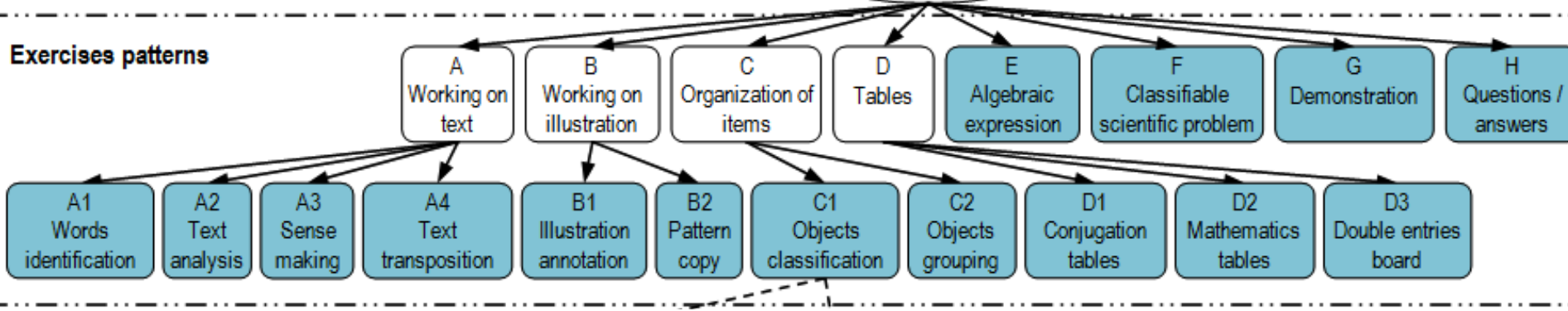
9 a) succeed b) fall c) fail d) fizzle

GEPPETO_p: typology of paper and pencil activities

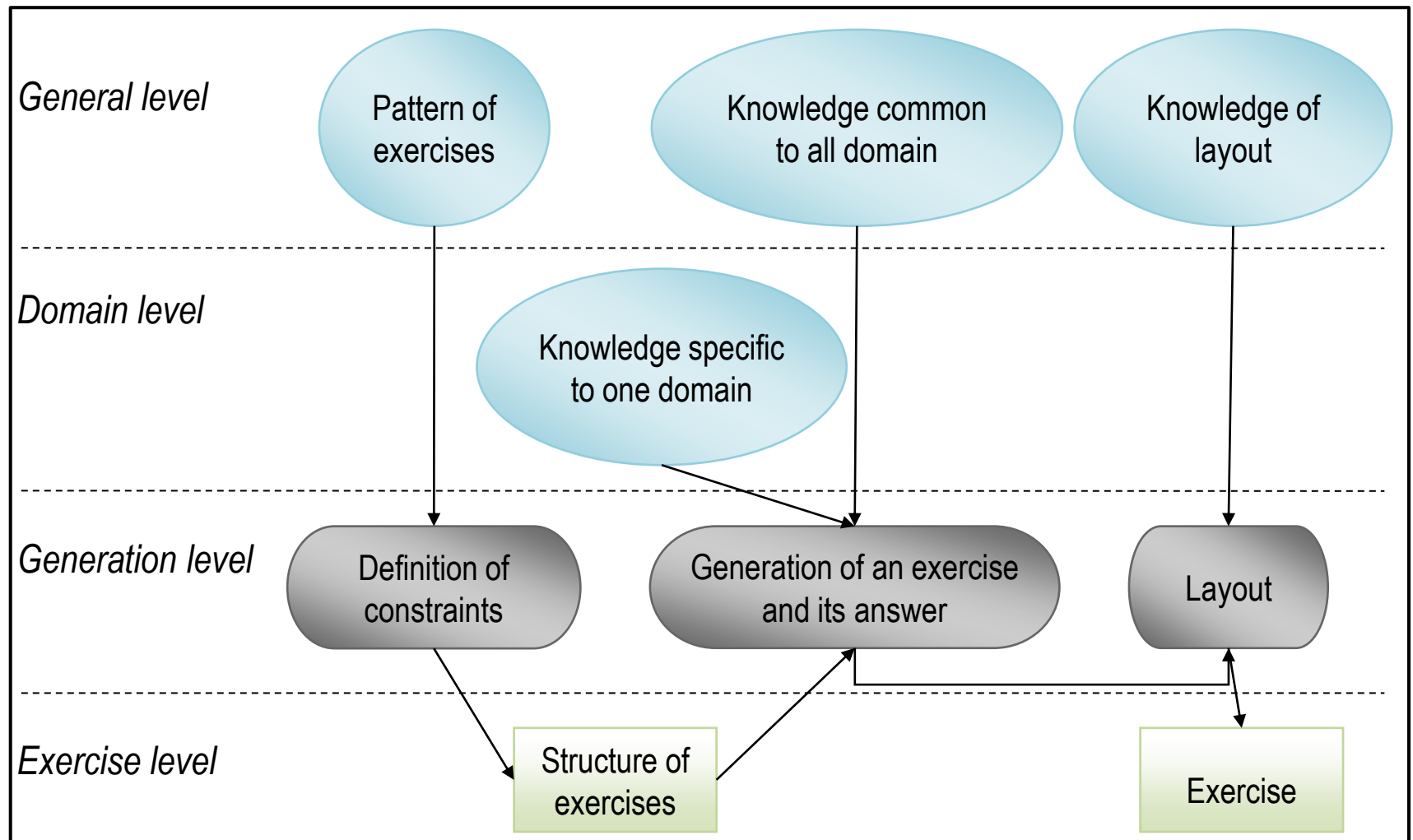
Pattern structure



Exercises patterns



GEPPETO_p: a generic architecture for generator of paper and pencil activities



GEPPETO_p: implementation

Exercises generator for the type "Tables"

Wording

Selection of a predefined wording
 Typing of a wording

Conjugate the following verbs for the given tense and person:

Constraints

Language: English

Tense: indicative_present

Group

Regular Irregular

Person

I he / she / one You All
 you we they

Priority verbs:

<input checked="" type="checkbox"/> to eat	<input type="checkbox"/> to be	<input type="checkbox"/> to paint	<input type="checkbox"/> to copy
<input checked="" type="checkbox"/> to play	<input type="checkbox"/> to finish	<input type="checkbox"/> to follow	<input type="checkbox"/> to have
<input type="checkbox"/> to become	<input type="checkbox"/> to dance	<input type="checkbox"/> to drink	<input type="checkbox"/> to think

Quota

Total number of verbs with verbs priority

GEPPETO_p: implementation

Exercises generator for the type "Tables"

Instructions

Selection of predefined instructions
 Give the multiplication tables of the following numbers: ▼

Key instructions

Constraints

Multiplication tables (from -100 to 100) Addition tables (from -100 to 100)

<input type="checkbox"/> Not the 1 table	<input type="checkbox"/> Not the 1 table
<input checked="" type="checkbox"/> No even-table	<input type="checkbox"/> No even-table
<input type="checkbox"/> No 10-multiple	<input type="checkbox"/> No 10-multiple
<input type="checkbox"/> Only squares	<input type="checkbox"/> Only doubles
<input type="checkbox"/> ...	<input type="checkbox"/> ...
<input checked="" type="checkbox"/> Tables in the interval: <input type="text" value="3"/> <input type="text" value="15"/>	<input type="checkbox"/> Tables in the interval: <input type="text"/> <input type="text"/>

Priority tables (one number per line) :

Total number of numbers with numbers priority

? Help ✕ Cancel << Previous step Next step >> 🏠 Quit

GEPPETo_p: implementation

The image displays two side-by-side screenshots of Mozilla Firefox browser windows. Each window shows a personalized exercise sheet for a specific user.

Left Window: Personalized exercises sheet for Florian

Exercise F94_27_tableMult:
Give the multiplication table for the following number: 5.

Exercise F93_28_tablesAddition:
Give the addition table for the following numbers: 7,3,5.

Exercise H106_28_AWP:
John has 25 marbles. John and Emily have 32 marbles together.
Calculate Emily's marbles number.

Exercise F86_4_English verbs:
Conjugate the following verbs for the given tense:
Tense: indicative present.
Person: 1st, 2nd, 3rd singular persons, 1st, 2nd plural persons.
Verbs: to play, to be, to become, to have.

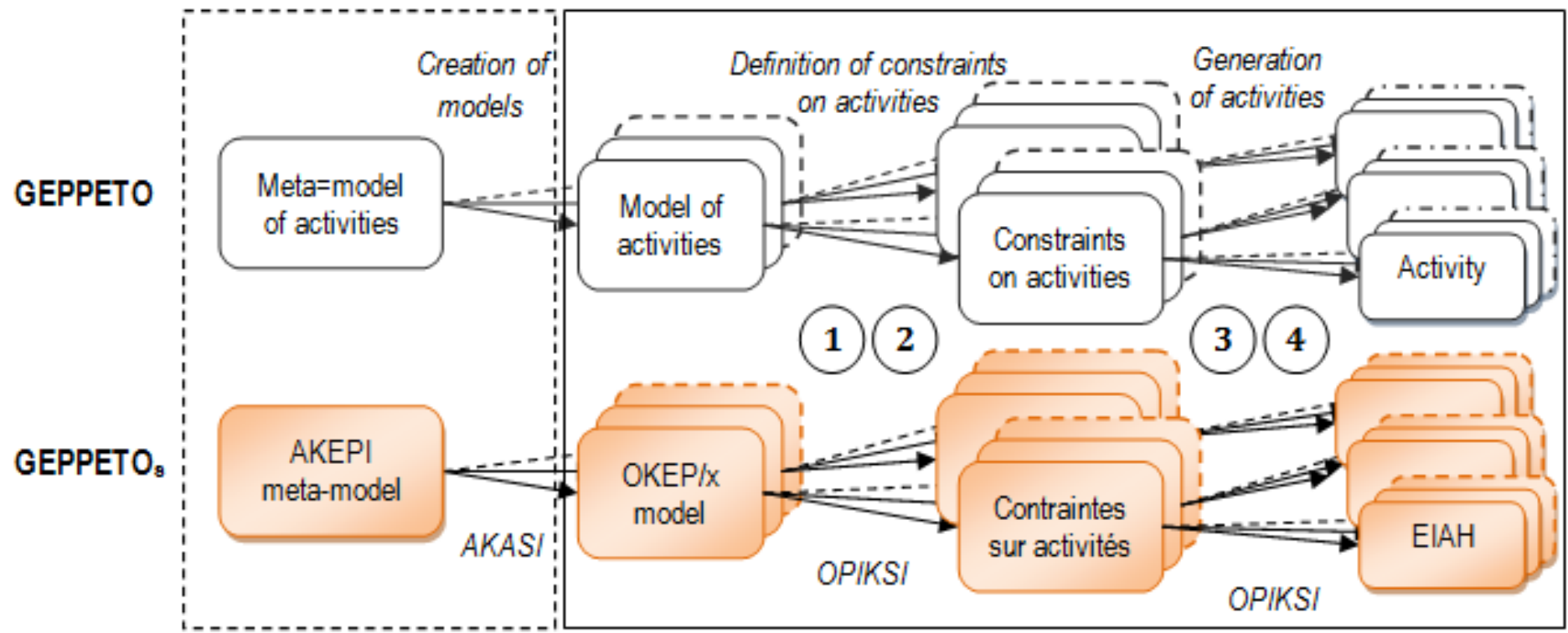
Right Window: Personalized exercises sheet for Kevin

Exercise F93_32_tablesAddition:
Give the addition table for the following number: 5.

Exercise F95_33_TablesAdd:
Give the addition table for the following numbers: 4,3,5.

Exercise H106_33_AWP:
It's 10 o'clock. Nathan had 20 red marbles. He has 29 after
playtime. Found the number of red marbles won or lost by Nathan
during the game with his friends.

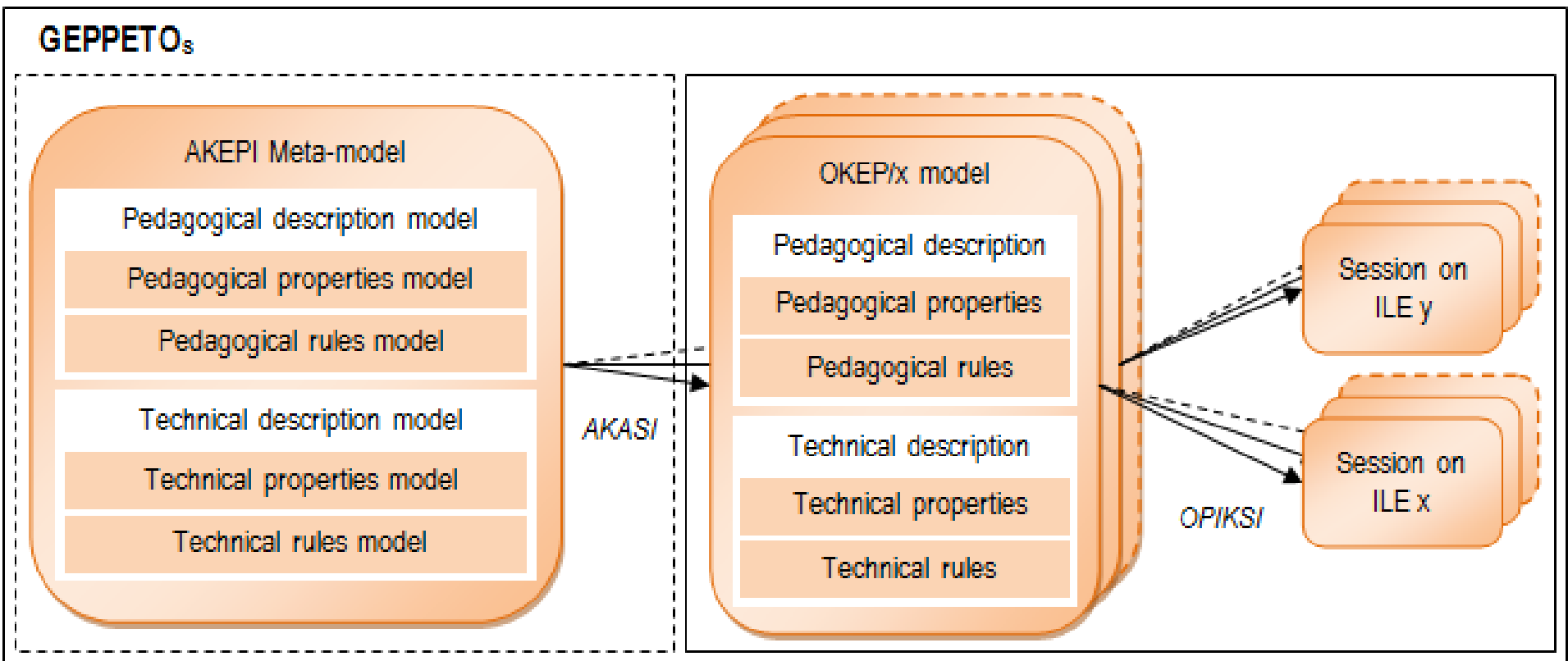
GEPPETO_s: adaptation of ILEs (Interactive Learning Environments)



GEPPETO_S: axis and ways to customize an ILE

- Corpus of ILE
 - Learning and individual use
 - Various types, origins, publics, domains
- What to customize?
 - Activities
 - Sequences of activities
 - Feedback
 - Features
 - Interface
- How to act on the ILE?
 - Directly on the configuration files
 - Via interface

GEPPETO_s: models



GEPPETO_s: implementation

Contraintes sur un logiciel pédagogique

Choix de la partie du logiciel sur laquelle vous souhaitez définir des contraintes ou charger une structure d'activité existante :

Contenu pédagogique

Definition de contraintes sur des activités de type :

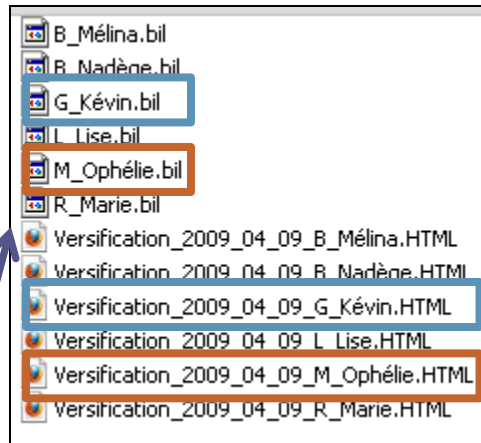
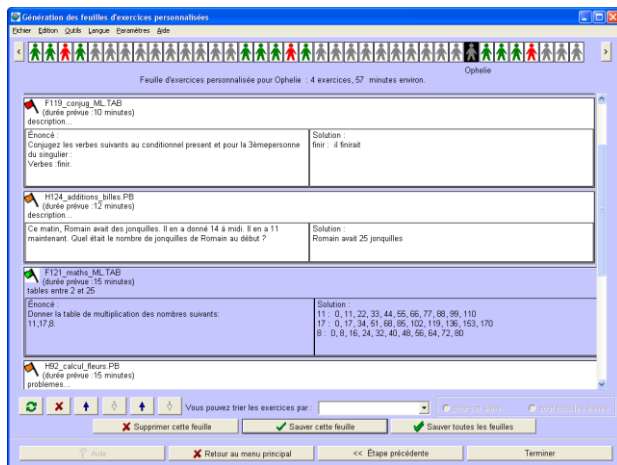
Niveau
Compétence associée : Classe de l'élève
Valeur :

Titre du texte
Valeur :

Type d'exercice
Valeur :

Nom de l'exercice
Valeur : Questionnaire 1
 Questionnaire 2
 Texte masqué

GEPPETO_S: implementation



Feuille d'exercices personnalisées pour Ophélie M.

Selectionner le menu Elève.
Choisissez votre nom dans la liste.
Pour le texte "L'anniversaire", faites les exercices suivants : "Closures".

Feuille d'exercices personnalisées pour Kévin G.

Selectionner le menu Elève.
Choisissez votre nom dans la liste.
Pour le texte "La mante religieuse", faites les exercices suivants : "Questionnaire".

Evaluations

- Theoretical evaluation
 - Generation paper and pencil activities of the corpus
 - Use the AKEPI meta-model to describe 11 ILE of the initial corpus
 - And to describe 5 new ILE (not in the initial corpus)
- Technical faisability
 - Implementation in Adapte

Future work

- Analysis of feedback
 - More teachers
- Validation of the typology of paper and pencil activities
 - Experts in educational sciences
- Take into account new types of ILE
 - Collective, collaborative learning

Conclusion

