A Computer Assisted Vocabulary Learning Program

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First Workshop on Collaborative and Automatic Methods for the Multilingualisation of Lexica and Ontologies

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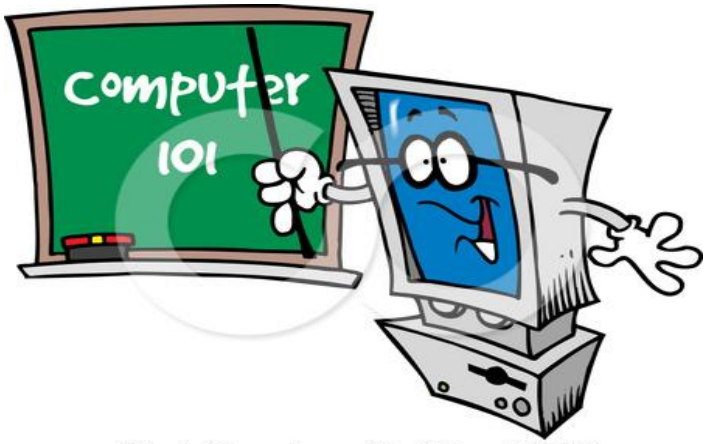
CALL – Computer Assisted Language Learning

- Using technology to help language learning
- ICALL – the “I” makes all the difference



Learning

> *Learning is and enduring change in behaviour, or in the capacity to behave in a given fashion, which results from practice or other forms of experience.*
>
> SCHUNK 2011

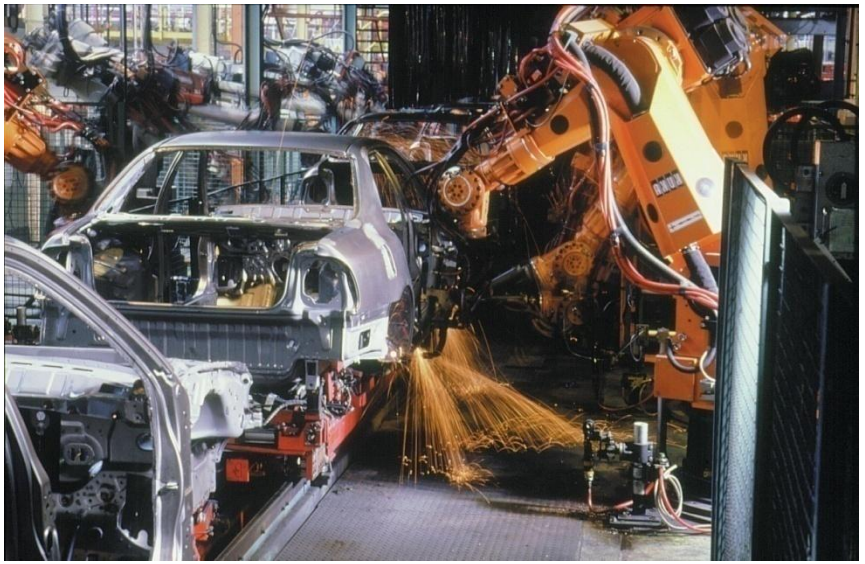
- Learning involves change
- Learning persist with passage of time
- Learning occurs through experience

Skill Acquisition Theory

Declarative Memory x Procedural Memory

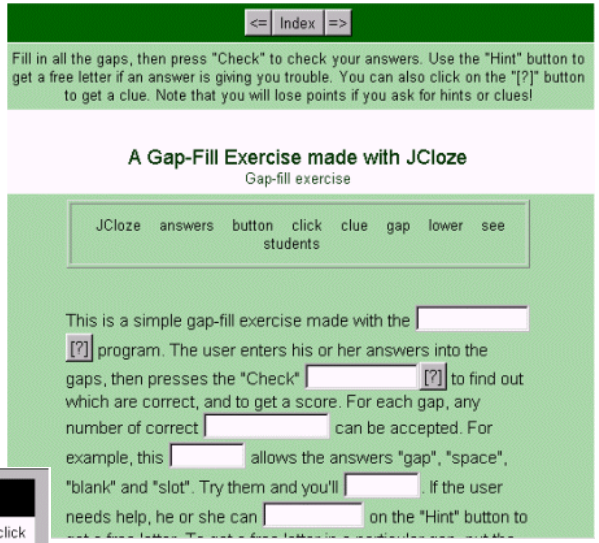
Skill Acquisition Theory

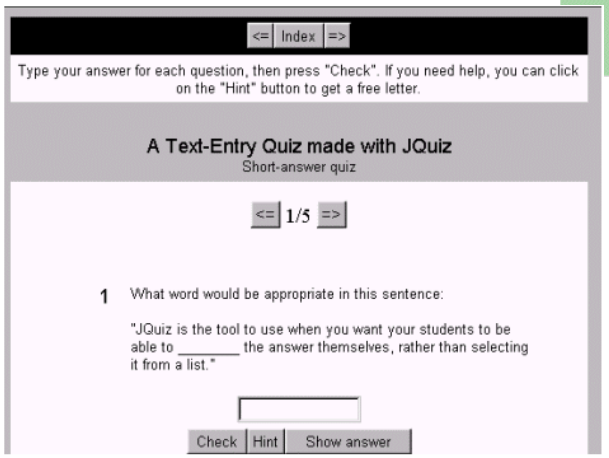
- Declarative memory → controlled performance
- Procedural memory → automatic performance
- Language learning occurs through **automatization**



Manual CALL

- Teacher use Authoring tools such as Hot potatoes
  - + Small entry cost
  - - Static selection
  - - Manial creation
  - - Few exercise types
  - + Instant feedback





Livemocha

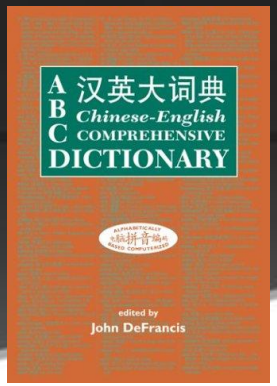
- Learning social network
  - + Tries to put non-natives in contact with native speakers
  - + Motivational
  - - Dubious quality
  - - No feedback sometimes

Tagarela

- Focus in providing informative feedback in free text tasks (AMARAL et al. 2011)
- - Manual creation
- - Static selection
- + Instant feedback
- + More complex exercises

Putting the “I” in ICALL

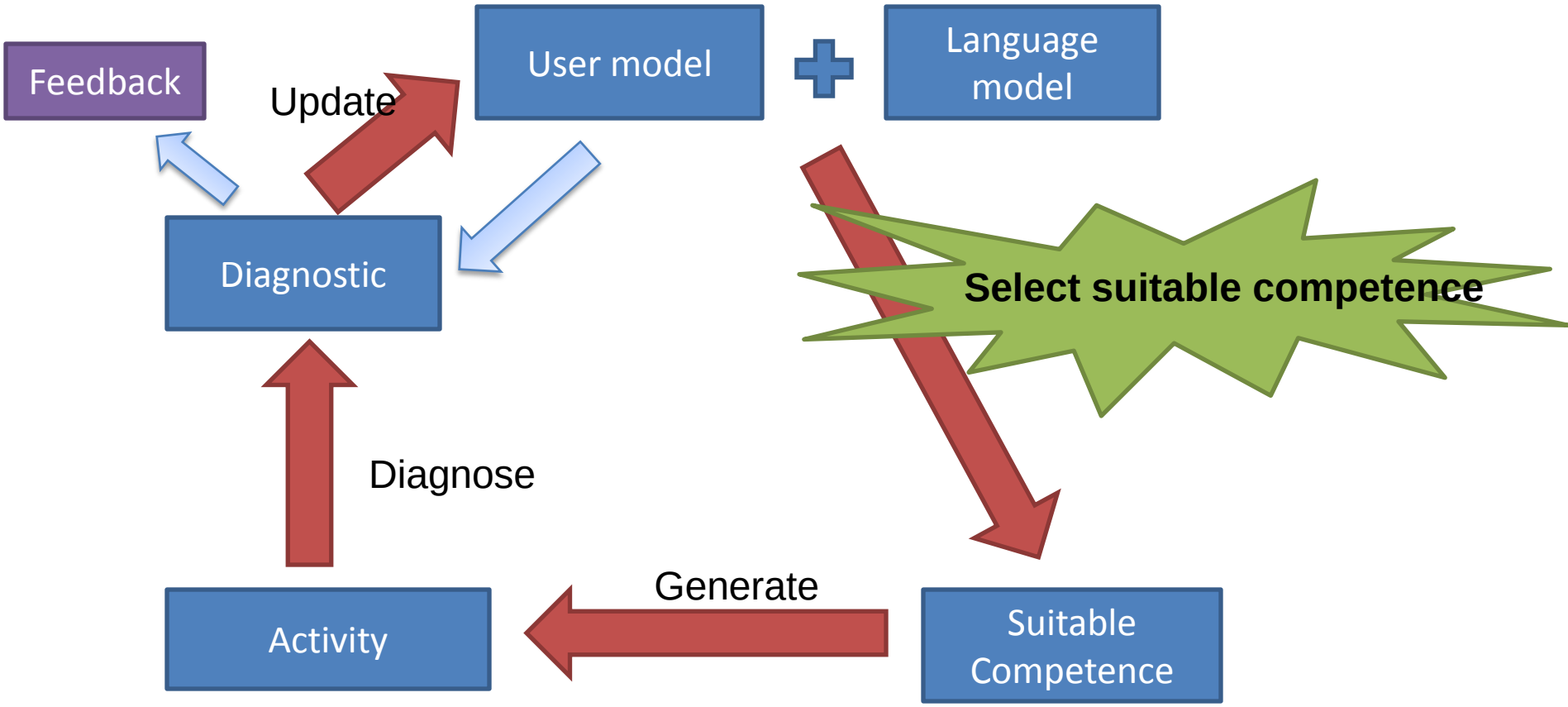
- Historicamente, pouca interação PLN/CALL (NERBONNE 2003)
- CALL system are usually the same for each and every learner
- Users don´t choose activities effectively (BARR 2008)
- Dynamic exercise selection and generation
  - According to user skills
  - According to user interests
- NLP Resources
  - Wordnet, Framenet, Dictionaries, Corpora
  - Parsers, taggers



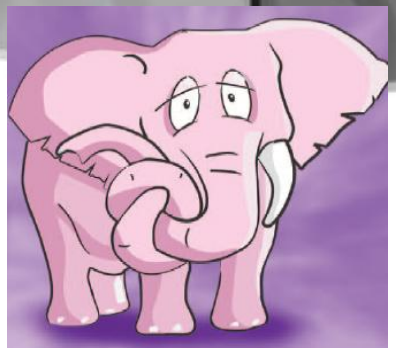
Aprendizado Léxico

- Vocabulary knowledge is the best predictor of text comprehension (LANDAUER et al. 2009)
- Reading + explicit training is the more efficient than just reading (WESCHE; PARIBAKHT, 2000)
- Many types of basic activities (GORJAN et al. 2008)
  - flashcards, insert translation, fill the blanks, etc
- More advanced learners can use Hypertext glosses (YUN 2011)
- Computer assisted vocabulary training improves long term retention (ZAPATA & SAGARRA 2007)

An intelligent language learning program

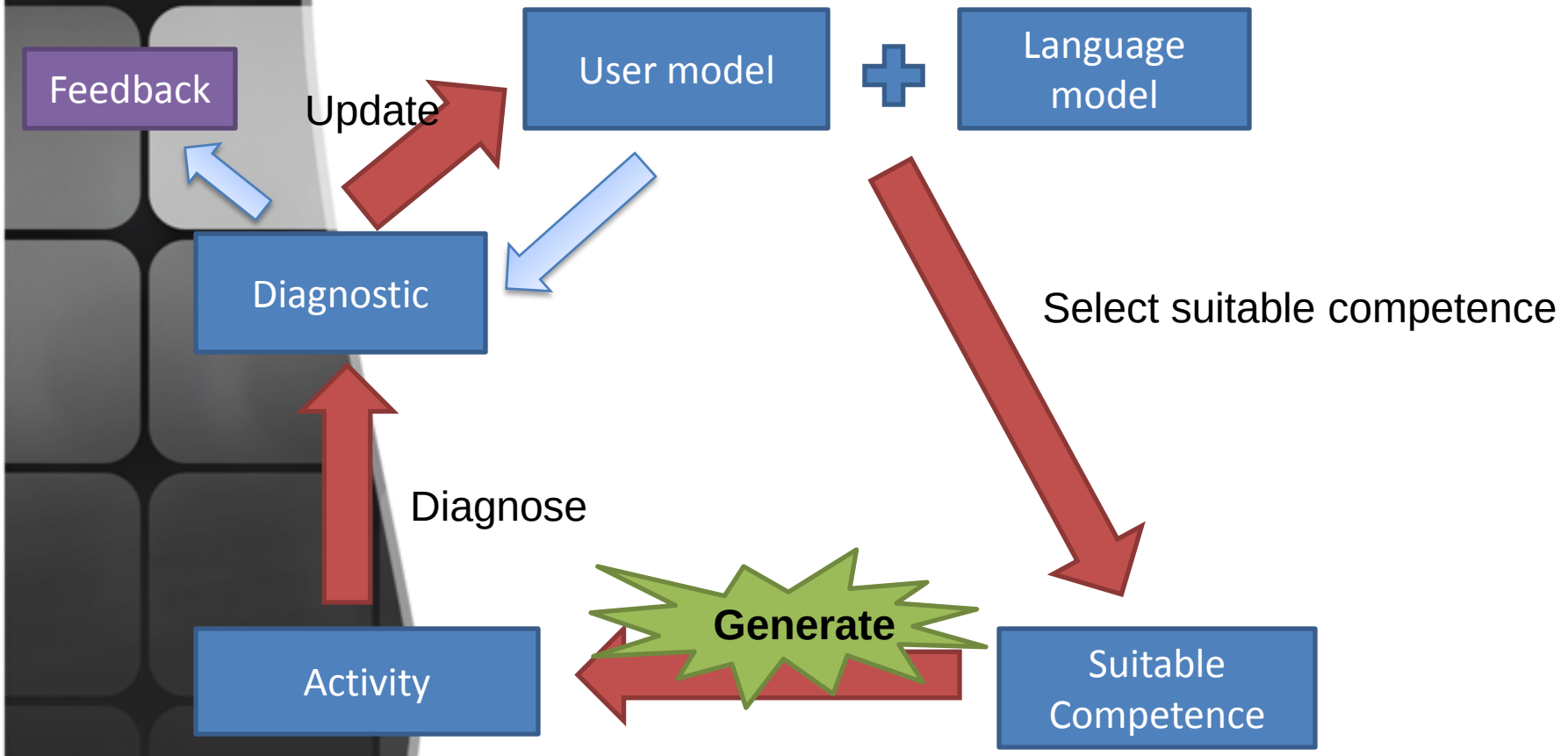


Select suitable competence



- Objetive: maximise learning over time
- Competence can´t be “too hard”
- Spaced Repetition, optimal timing (PAVLIK & ANDERSON 2008)
  - Improve long term retention
- Implemented: Spaced repetition vocabulary retrieval
- Open question: does spaced repetetion apply to form oriented tasks?

An intelligent language learning program

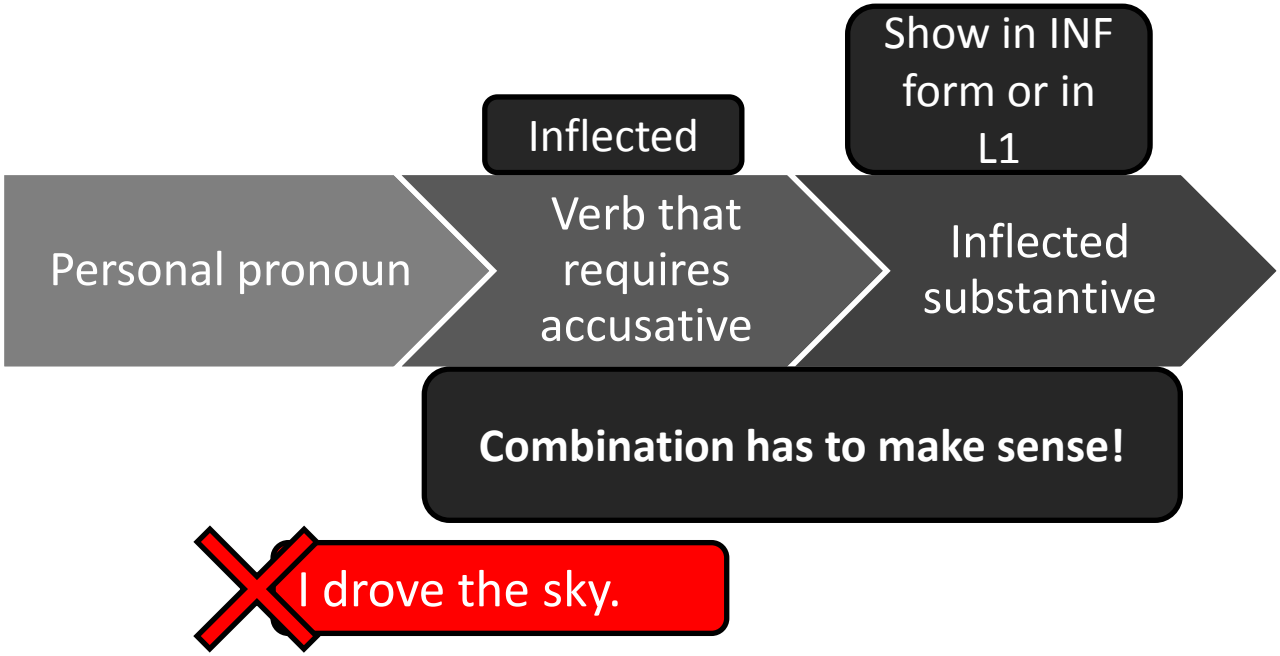


Generate

- Ranges from very simples to very complex
- Implemented: simple passive vocabulary training
- Great opportunity for application of NLP!!
  - Automatic cloze creation
  - Automatic text gloss creation
  - Use o NLP resources

Example: morphological learning

- Generation from templates (GALLOWAY & PETERSON-BIDOSHI 2008)



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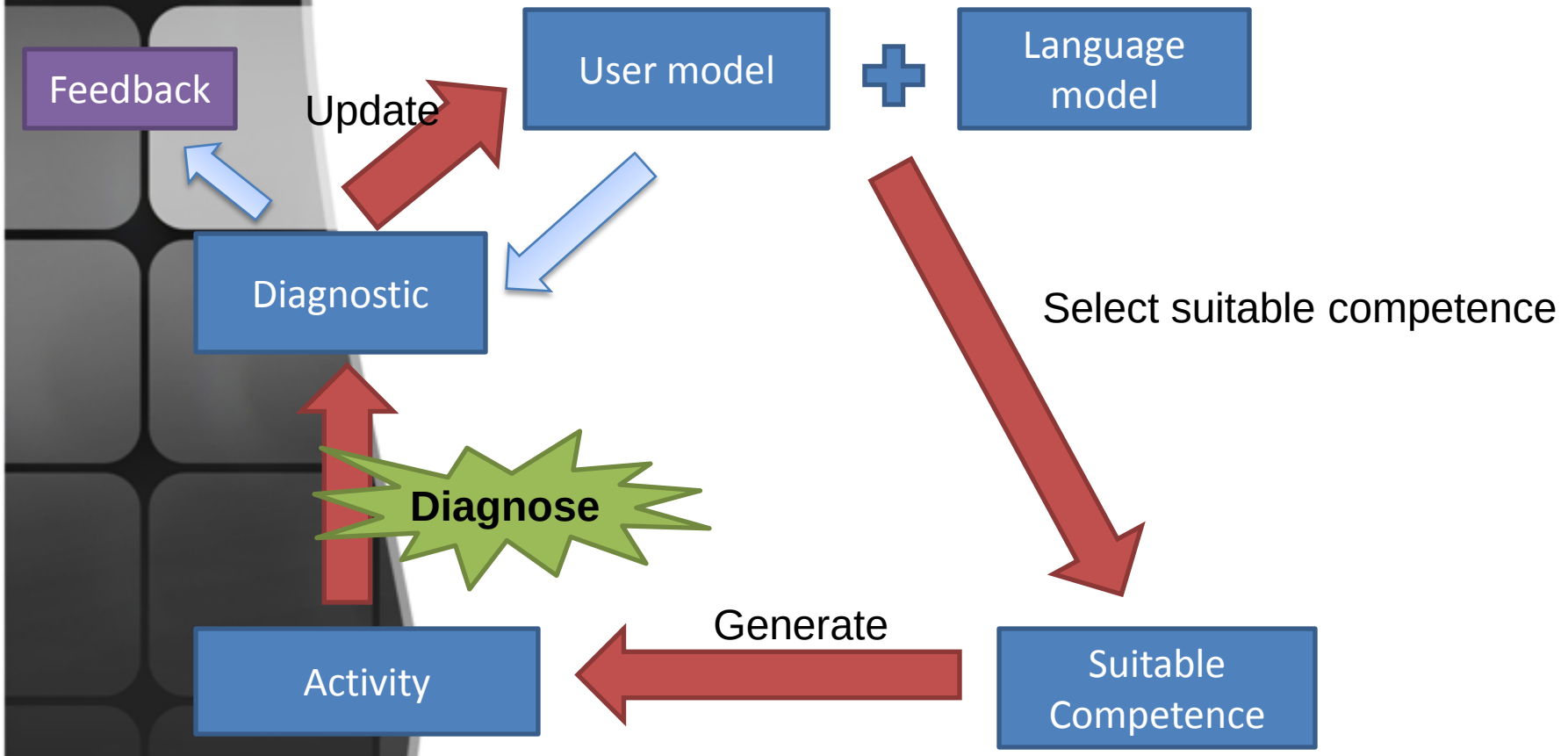
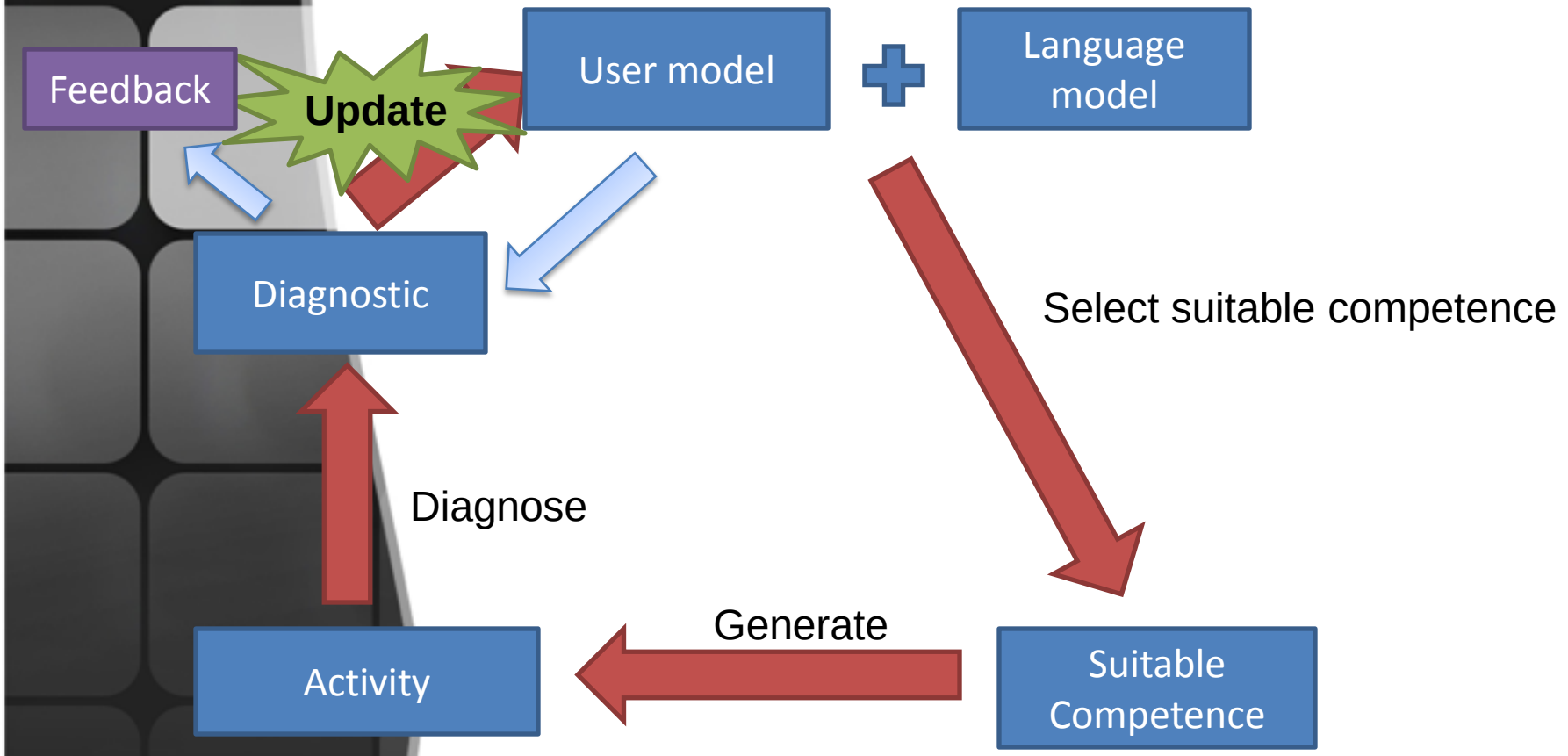


Diagnose

- Simple exercises -> simple diagnostics
- More complex exercies
  - May involve many competencies at the same time
  - May be more or less open form
- Implemented: exact match for one competency
- Oportunity: use current user model to infer which competency had the greater probability of causing a mistake

An intelligent language learning program



Update user model

- Users following the same course and with similar backgrounds may have very different competencies developed, i.e, user ability can´t be captured by a single number (HEIFT 2008)
- *Very* fine grained
- Model each competency separately
  - Each word is divided into productive and receptive competencies
- Each user action changes the model
- Based on the diagnostic, update affected competencies

Conclusion

- Preliminary tests show improved retention of passive vocabulary in Russian
- Many opportunities to use NLP techniques and resources

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Thank you!
Questions?

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