

# wp6

Jordi Saludes, 3d progress meeting, Helsinki

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# What we promised?

- D6.1: Grammar library for simple mathematical exercises
- D6.2: Commanding a CAS
- D6.3: Assistant for solving word problems



# Who we are?

- D6.1: Ares Ribó, Sebastian Xambó, J
- D6.2: Ares, J
- D6.3: Sebastian, J
- language experts at Molto



**Where are we?**

# D6.1: Grammar library for mathematical exercises

## ☀ Done for:

Bulgarian, German, Catalan, Italian, English, Romanian, Finnish, Spanish, French, Swedish, Polish, Urdu.

**LogicIX, QuantIX, RelationIX, SetIX, SetNameIX; ArithIX, Arith2X, IntegerIX, Integer2X, CalculusIX, ComplexIX, FnsIX, IntervalIX, LimitIX, MinMaxIX, NumsIX, RoundingIX, TranscIX; LinAlgIX, LinAlg2X, PlanGeoIX, SDataIX.**

Krasimir, Ares, Sebastian, Olga, Aarne, Ramona, Inari, Lauri A., Thomas, Adam, Shafqat,...

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# Mathbar demo.

# Tested/Cleaned

- For 3 languages: Eng, Ger, Spa.
- Using treebanks
- Managing tool developed
- Changes needed in RGL?

# Dissemination

- Presented at THedu'11 (a satellite of CADE23, Wrocław)

- Find it at:

`svn://molto-project.eu/mgl`

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# D6.2: Commanding a CAS

- Working on Sage concrete
- Geogebra?

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# D6.3: Assistant for solving word problems

*A farm has ducks and rabbits. There are  $N$  animals and they have  $M$  legs.*

*How many rabbits and ducks are in the farm?*

*David and John are father and son. David is now three times older than John but in 10 years, he will be only twice older.*

*How old are David and John now?*

# D6.3: Assistant for solving word problems

- Attempto Controlled English → GF
- Small ontologies
- Solver/CAS

yices?

sage?

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- A duck has 2 legs:  $l_{duck} = 2$
- A rabbit has 4 legs:  $l_{rabbit} = 4$
- A set of  $C$ s with cardinality  $N$  has  $lC^*N$  legs
- the cardinality of a union of disjoint sets is the sum of its cardinalities.

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●  $\text{age} : \text{Time} \rightarrow \text{Person} \rightarrow \text{Number}$

●  $\text{age}(t+dt, p) = \text{age}(t, p) + dt$

●  $\text{father}(\mathbf{John}) = \mathbf{David}$

$\Rightarrow \text{is\_son}(\mathbf{John}, \mathbf{David})$

$\Rightarrow \forall t: \text{age}(t, \mathbf{John}) < \text{age}(t, \mathbf{David})$

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