

# MOLTO Multilingual Online Translation

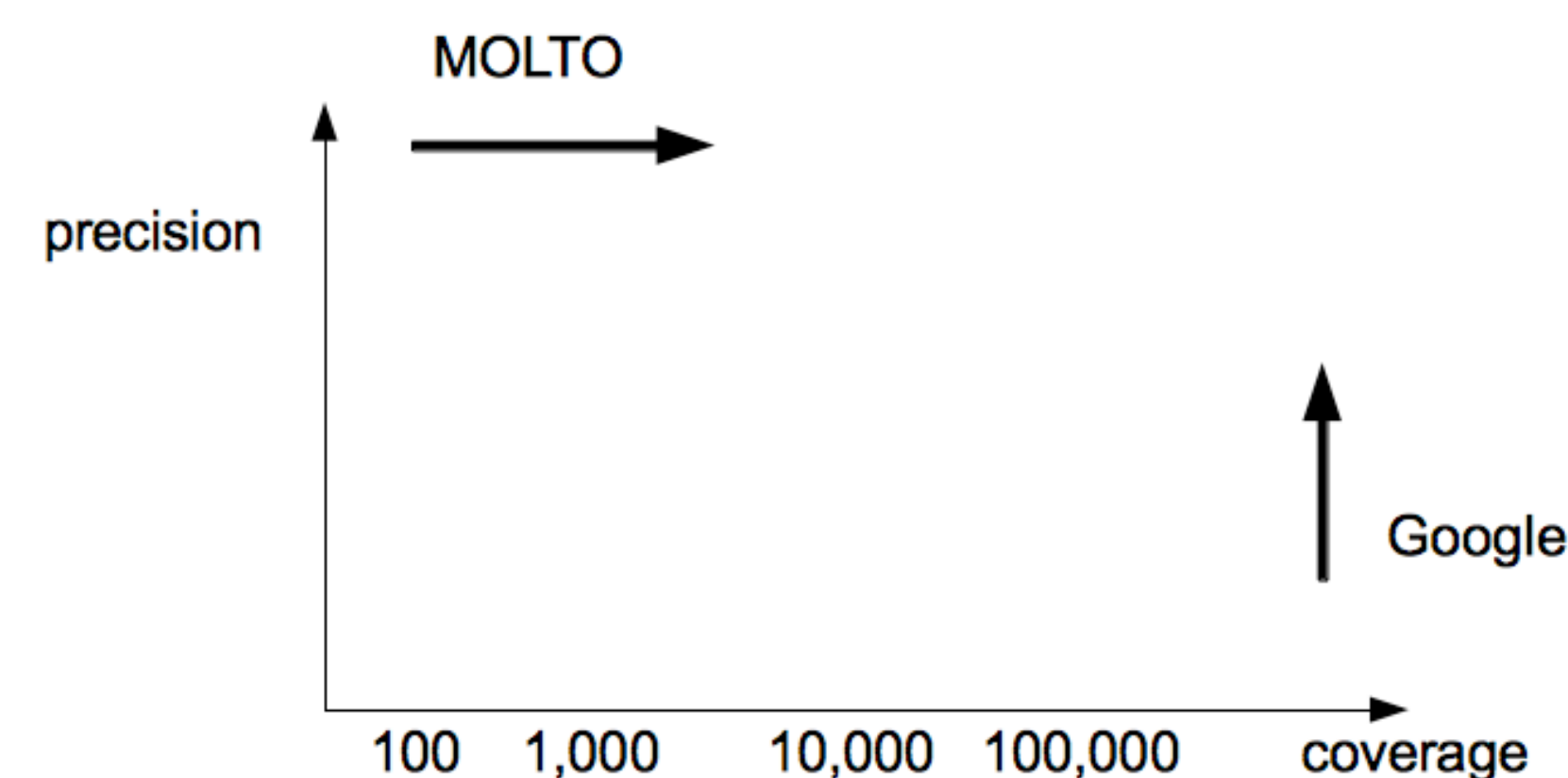
Non multa, sed multum not quantity but quality

MOLTO's mission is to develop a set of tools for translating texts between *multiple languages in real time with high quality*. MOLTO will use multilingual grammars based on semantic interlinguas.

[www.molto-project.eu](http://www.molto-project.eu): U Gothenburg, U Helsinki, UPC Barcelona, Ontotext AD, 2010-2013, FP7-ICT-247914.

In the trade-off between **coverage** and **precision**, MOLTO opts for precision. Our tools target the **producers** of information, as opposed to **consumers**. This means greater demands on quality, but fortunately the coverage can be limited. MOLTO builds on the idea of **controlled language**, making it more general and scalable.

Tool	Consumer	Producer
Quality	browsing	publishing
Input	unpredictable	predictable
Coverage	unlimited	limited

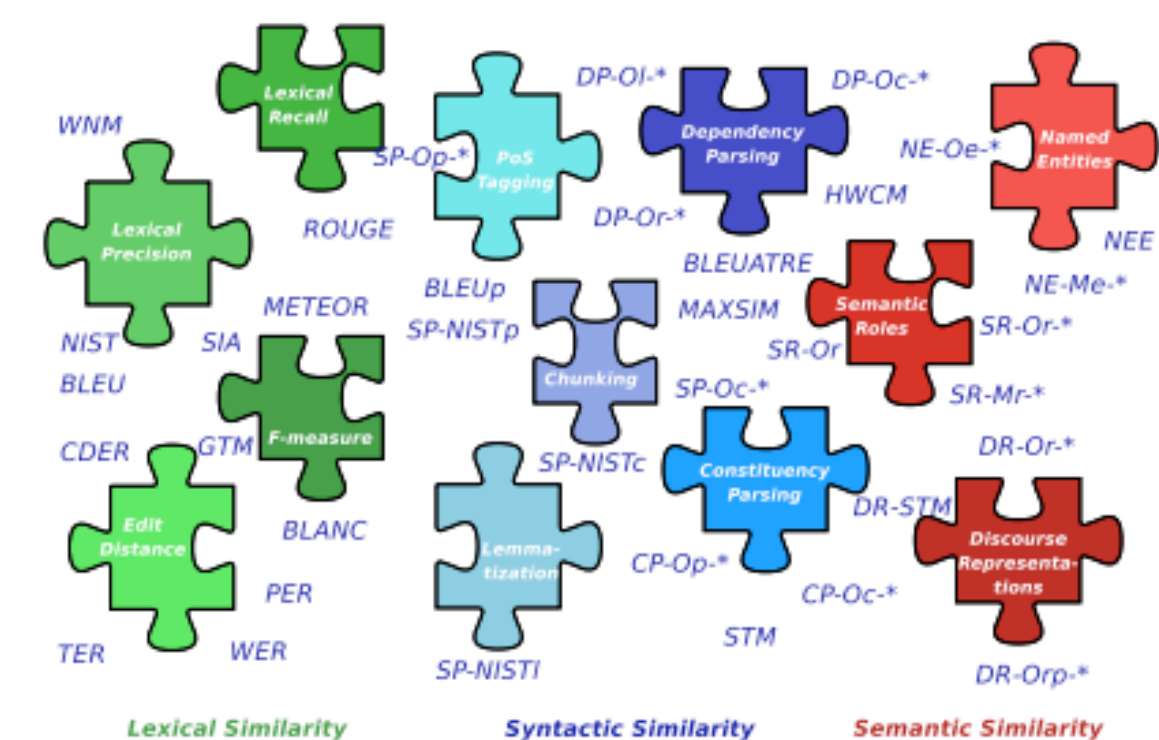
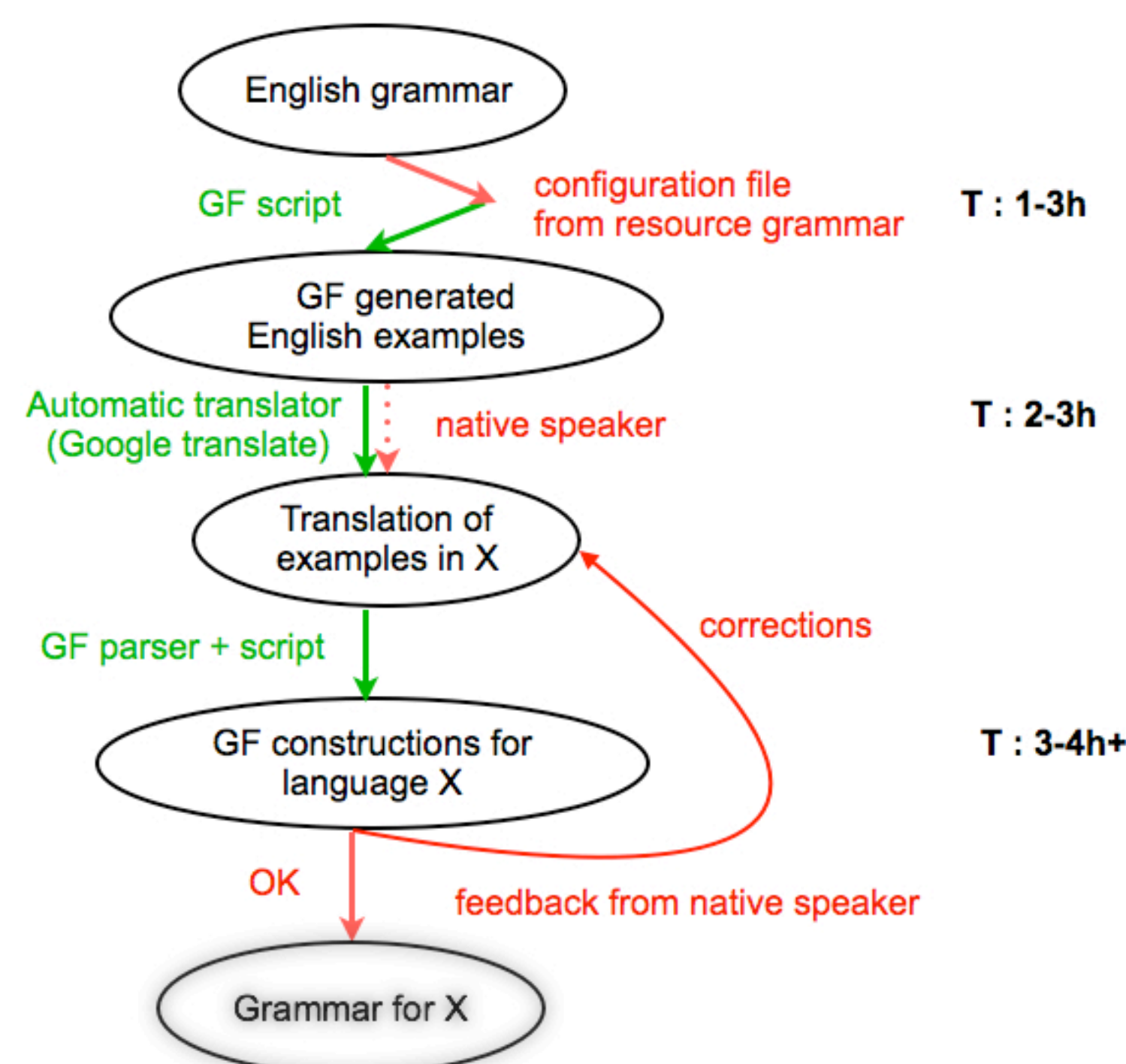
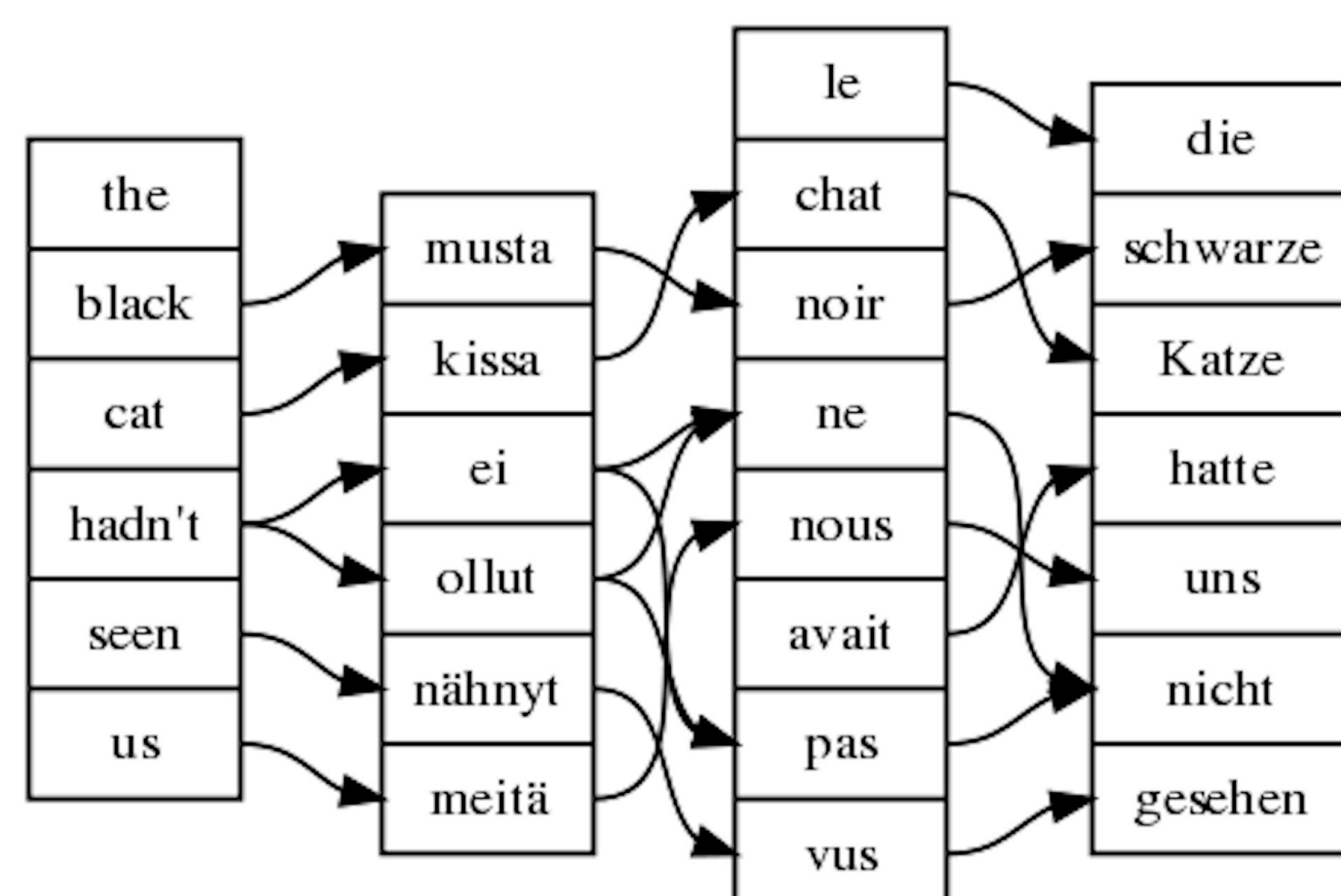


The MOLTO approach is orthogonal to consumer tools like Google Translate.

Google deals with millions of concepts, whereas we aim to scale up from 100's to 1,000's of concepts without losing precision.

**Technology:** (1) multilingual GF grammars as translation programs (2) domain ontologies as basis of domain interlinguas (3) statistical methods to add robustness and help automate grammar production.

**Languages:** Bulgarian, Catalan, Danish, Dutch, English, Finnish, French, German, Italian, Norwegian, Polish, Romanian, Russian, Spanish, Swedish.



MOLTO explores several aspects of hybrid GF-SMT methods. We already have:

(1) grammar-based phrase alignments (2) learning grammars from SMT models (3) rich evaluation metrics (IQMT).

**Case studies:** (1) mathematical exercises (2) patents in pharmaceutical domain (3) museum object descriptions (4) traveller's phrasebook.

**Tools produced:** (1) translator plug-ins for web pages and for mobile devices (Android) (2) grammar development tools on desktops and in the cloud (3) GF-OWL two-way translation (4) hybrid GF-SMT components.

GF online editor for simple multilingual grammars			
Abstract	English	Swedish	German
<b>concrete</b> FoodsSwe of Foods = <b>open</b> SyntaxSwe, ParadigmsSwe <b>lincat</b> Comment = Utt Item = NP Kind = CN Quality = AP Color = AP <b>lin</b> Pred item quality = mkUtt (mkCl item quality) AnyWine = wine Wine color = mkCN color wine Fish = mkCN (mkN "fisk") Fresh = mkAP (mkA "färsk") This kind = mkNP this_Det kind That kind = mkNP that_Det kind Red = mkAP (mkA "röd") White = mkAP (mkA "vit")			

mkCl	NP -> V2 -> NP -> CI	she loves him
mkCl	NP -> V3 -> NP -> NP -> CI	she sends it to him
mkCl	NP -> VV -> VP -> CI	she wants to sleep
mkCl	NP -> VS -> S -> CI	she says
mkCl	NP -> VQ -> QS -> CI	she won
mkCl	NP -> VA -> A -> CI	she becomes
mkCl	NP -> VA -> AP -> CI	she becomes
mkCl	NP -> V2A -> NP -> A -> CI	she paid
mkCl	NP -> V2A -> NP -> AP -> CI	she paid
mkCl	NP -> V2S -> NP -> S -> CI	she answers
mkCl	NP -> V2Q -> NP -> QS -> CI	she asks
mkCl	NP -> V2V -> NP -> VP -> CI	she begins
mkCl	NP -> A -> CI	she is old
mkCl	NP -> A -> NP -> CI	she is old
mkCl	NP -> A2 -> NP -> CI	she is married
mkCl	NP -> AP -> CI	she is very
mkCl	NP -> NP -> CI	she is the woman

MOLTO engineering tools already available: (1) grammar IDE in the cloud (2) the Resource Grammar API for 18 languages