Quality Translation:
Addressing the Next Barrier to Multilingual Communication on the Internet

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A Concern: Language boundaries

☆ commerce
☆ technology
☆ education
☆ health
☆ social change
A Necessity: The Need for MT

☆ for the single digital market

☆ for the information and knowledge society

☆ for horizontal plus vertical mobility

☆ for e-participation and e-democracy
An Observation: Concentration of Research on Gist Translation

☆ Most of MT research has concentrated on in-bound content overview translation

☆ Reasons: Funding sources, new applications and opportunities for fast success

☆ Nearly all existing translation markets are for out-bound translation

☆ There is a lack of systematic research on quality obstacles and on shared quality metrics for MT and HT
A New Analytical Approach

good enough

almost good enough requires just a few editing steps

not usable for out-bound purposes
A New Analytical Approach

good  bad  ugly
A New Analytical Approach

5% - 75%  15% - 65%  5% - 75%

good  bad  ugly
A New Analytical Approach
A New Analytical Approach

Recognize the truly good
High Quality Estimation

help the translator to improve the bad:
Computer Assisted Translation

Make the nearly good truly good:
High Quality MT

help the end user to make the ugly at least understandable:
Improve Gist Translation
META-NET

★ META-NET - Network of Excellence 60 research centers in 34 countries
★ META, an alliance with 638 members (organizations) in 47 countries
★ Vision Process with three vision groups
★ 31 Language White Papers on 31 individual languages
★ A first version of META-SHARE, the infrastructure for sharing resources
★ A Strategic Research Agenda for Multilingual Europe
★ Inclusion of language communities - language policy bodies
★ Inclusion of industrial and professional associations
The Strategic Research Agenda

- a vision with a plan
- with more than 200 contributors
- drafts were discussed at 83 conferences, workshops and other meetings
- the prefinal draft was distributed, reviewed and revised in the Fall of 2012
- In the last discussion round of the prefinal draft, we again received and used more than 50 proposed pieces of textual input
- the SRA was finalised in December 2012
- it will be publicly presented next week

http://www.meta-net.eu
Set the stage and describe the European situation, the needs and the LT research and industry.

Discuss the state of IT, predictions and mega-trends.

Our technology vision for 2020.

Select and specify priority themes.

Suggest a model for speeding up innovation.

Outline proposals for the organisation of research and innovation.
Strategic Considerations

We decided on priority themes that

- ...support technology progress
- ...lead to solutions that European society needs
- ...to solutions from which European industry will benefit as users or as providers
SRA-Priority Themes

- Translingual Cloud – Understanding everything, everywhere, everytime
- Social Intelligence – Technologies for e-participation and better decisions
- Socially aware interactive assistants
SRA-Priority Themes

Translingual Cloud
- Translation Technologies

Core Technologies for Language Analysis & Production

Technologies for Knowledge Discovery and Analysis
- Social Intelligence

Technologies for Speech Recognition and Analysis
- Socially Aware Interactive Assistants
Translingual Cloud

Translation Technologies

Core Technologies for Language Analysis
What is it?

- A network of generic and special-purpose services combining automatic translation, language checking, post-editing, as well as human creativity and quality assurance where needed.
  - Free for small volume use and for high-volume base-line quality
  - Business opportunities for a wide range of service and technology providers

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Ingredients

- Systematic concentration on quality barriers
  - A unified dynamic-depth weighted-multidimensional quality assessment model with task profiling
  - Significantly improved automatic quality estimation

- Inclusion of translation professionals and enterprises in the entire research and innovation process
  - Ergonomic work environments for computer-supported creative top-quality human translation and multilingual text authoring
More Ingredients

- A Semantic translation paradigm by extending statistical translation by semantic data such as linked open data, ontologies including semantic models of processes and textual inference models.

- Exploitation of strong monolingual NL analysis and generation methods and resources.

- Modular combinations of specialized analysis, generation and transfer models, permitting accommodation of registers and styles and also enabling translation within a language (e.g. between specialists and laypersons).

http://www.meta-net.eu
European Service Platform

- creation of an ambitious large-scale sky-computing platform

*European Multilingual Service Platform for Language Understanding, Communication to be extended to Knowledge, Inference, Emotion...*

- central motor for research and innovation in the next phase of IT evolution

- ubiquitous resource for the multilingual European society (an idea suggested by several experts from industry in META-NET Vision Group meetings).

- The platform will be used for testing, show casing, proof-of-concept demonstration, avant-garde adoption, experimental and operational service composition, and fast and economical service delivery to enterprises and end-users.

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The Proposed Platform is …

- intended for a mix of commercial and non-commercial services.

- It would be cost-free for all providers of non-commercial services (cost-free and advertisement-free) including research systems, experimental services and freely shared resources but it would raise revenues by charging a proportional commission on all commercially provided services.

- In order to reduce dependence on individual companies and software products, the base technology should be supplied by open toolkits and standards such as OpenNebula and OCCI.
Translation Integrated in Many Services

e-Government Services
Information Services
e-Commerce Services
Publishing Services
Social Media Services
Communication Services
Education Services
Health Services
Entertainment Services
Financial Services
Translation Integrated in Many Services

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- Information Services
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Translation Integrated in Many Services
The support action will prepare the grounds for a new type of collaborative MT research dedicated to overcoming existing quality barriers.

To this end, QTLaunchPad will

- assemble and provide needed data and tools including specialised translation corpora, test suites and tools for quality assessment,
- create a shared quality metrics for human and machine translation, improve automatic translation quality estimation,
- extend an existing platform for resource-sharing to the needs of quality-MT research,
- define strategies and challenges and then plan and launch a large-scale research and innovation action (“QT21”) for a breakthrough in quality translation technology.
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QTLP Consortium

☆ DFKI
☆ CNGL DCU
☆ ILSP Athena
☆ U. Sheffield

☆ Subcontractor GALA
QTLP Planning Panel

☆ Jan Hajic of U. Prague,
☆ Stephan Oepen of U. Oslo,
☆ Philipp Koehn of U. Edinburgh,
☆ Alex Waibel of Karlsruhe KIT,
☆ Marcello Federico of FBK Trento,
☆ Mikel Forcada of U. Alicante,
☆ Hermann Ney and Volker Steinbiss of RWTH Aachen,
☆ Nuria Bel of U. Barcelona,
☆ Joseph Mariani of LIMSI Paris,
☆ Johann Roturier of Symantec Ireland,
☆ Spyridon Pilos of EC DGT Luxembourg,
☆ Serge Gladkoff, Kim Harris and Hans Fenstermacher of GALA.
☆ Andrejs Vasiljevs, Tilde
On the way to quality translation, MT will increasingly employ:

- morphological processing
- syntactic processing
- semantic processing
Semantics-Based Translation

★ Warren Weaver (1949): “Thus it may be true that the way to translate from Chinese to Arabic, or from Russian to Portuguese, is not to attempt the direct route, shouting from tower to tower. Perhaps the way is to descend, from each language, down to the common base of human communication – the real but as yet undiscovered universal language – and then re-emerge by whatever particular route is convenient.”

★ Kevin Knight (2012): “As long as we get the “who did what to who” wrong, we are optimizing with respect to the wrong metric (BLEU)!”
Where are the Semantic Resources?

They are growing fast:

- linked open data, FreeBase, DBPedia, YAGO
- WordNet, and the VerbNet, FrameNet, BabelNet, UWN, …
- PropBank, OntoNotes
Prediction

☆ A lengthy massive bootstrapping process involving at least the following communities:

- MT: structure-based approaches to MT
- Lexical semantics: WSD, VerbNet, FrameNet, WordNet, UWN/MENTA
- Knowledge: SW, linked (open) data, KDBs (Yago, Freebase, Dbpedia)
- IE, especially Relation/Event Extraction and evolving gold standards sets
- Textual Inference: RTE, paraphrasing
- NL Generation
Another dimension of the bootstrapping

Two main approaches to useful applications on the way:

- big powerful robust systems
- Much more restricted precision-centered systems for special purposes

Big (noisy) data vs. a truly Semantic Web with inference and plausibility filters
Back to the Multilingual Web

☆ The Web is becoming multilingual, but eventually it will have to be translingual

☆ The Web is THE medium for sharing, storing, accessing and using knowledge and information

☆ This mission includes transforming knowledge and information to the information needs – this is the core argument of the SW and at the same time the core argument for the translingual web

☆ Should translation ever have to go through semantics, how could it bypass the SW?