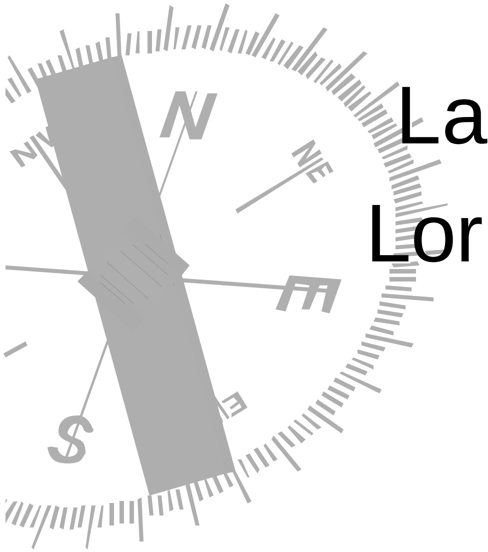
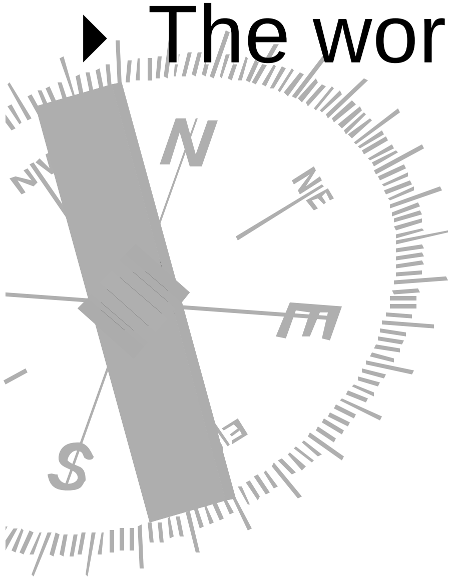
Towards a roadmap for standardization in language technology



Laurent Romary & Nancy Ide
Loria-INRIA — Vassar College

Overview

- General background on standardization
- Available standards
- On-going activities
- The work ahead of us

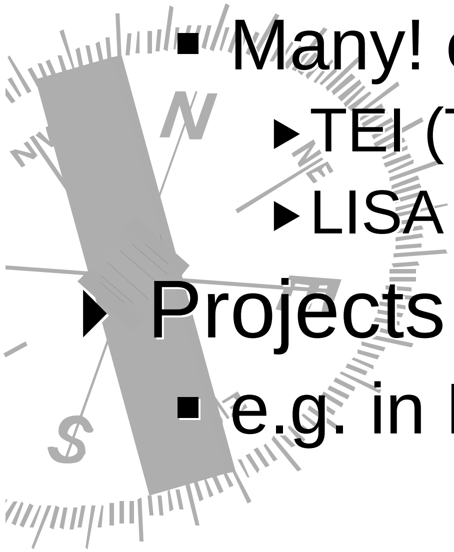


Standardization

- Defining methods or models to facilitate
  - Exchange of data
  - Interoperability between software components
  - Comparability of results
- Involves
  - From a technological point of view
    - Stabilizing existing practices
    - Looking ahead for potential roadblocks
  - From an organizational point of view
    - International consensus, long term availability and maintenance
- Vertical vs. horizontal standardization

Standards: a complex picture

- Official standardization bodies:
  - National: AFNOR, ANSI, DIN, BSI, MSA
  - International: ISO, IEC, CEN, W3C, OASIS
- Specific fora:
  - Many! e.g.:
    - TEI (Text Encoding Initiative)
    - LISA (Localization Industry Standards Association)
- Projects with a pre-normative purpose:
  - e.g. in EU: EAGLES, Multext, MATE, ISLE

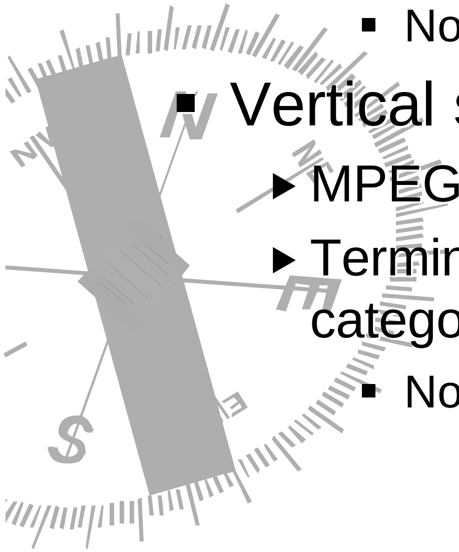


Existing standards (1)

- W3C (World Wide Web consortium); horizontal standards
  - Basic building blocks:
    - XML, XML Schemas (Note: growing importance of alternative RelaxNG schemas), XSL
  - Web services activity
    - WSDL, SOAP
  - Semantic web activity
    - RDF, RDFS, OWL
  - Specific (vertical) activities with little critical mass
    - VoiceML, EMMA, etc.

Existing standards (2)

- Relevant standards in ISO (partial view)
  - Basic infrastructural (horizontal) standards
    - Character encoding (cf. IPA): ISO 10646/Unicode
    - Language codes: ISO 639 (e.g. ‘fr’) and ISO 639-2 (e.g. ‘fra’/’fre’)
      - Note: under ISO/TC 37/SC 2
  - Vertical standards
    - MPEG7 for multimedia information — hardly implementable :-(
    - Terminology standards: ISO 12200 (Martif), ISO 12620 (Data categories), ISO 16642 (Terminological markup framework)
      - Note: under ISO/TC 37/SC 3



Existing standards (3)

- Looking at other fields
  - ISO-IEC/JTC 1/SC 36: education
    - Collaboration on language aspects
  - ISO-IEC/JTC 1/SC 32: databases
    - Strong basis provided by ISO 11179
  - ISO-IEC/JTC 1/SC ??: evaluation of software
    - ISO/IEC 9126-1 [2 & 3 in progress]
    - ISO/IEC 14598-1 to 6

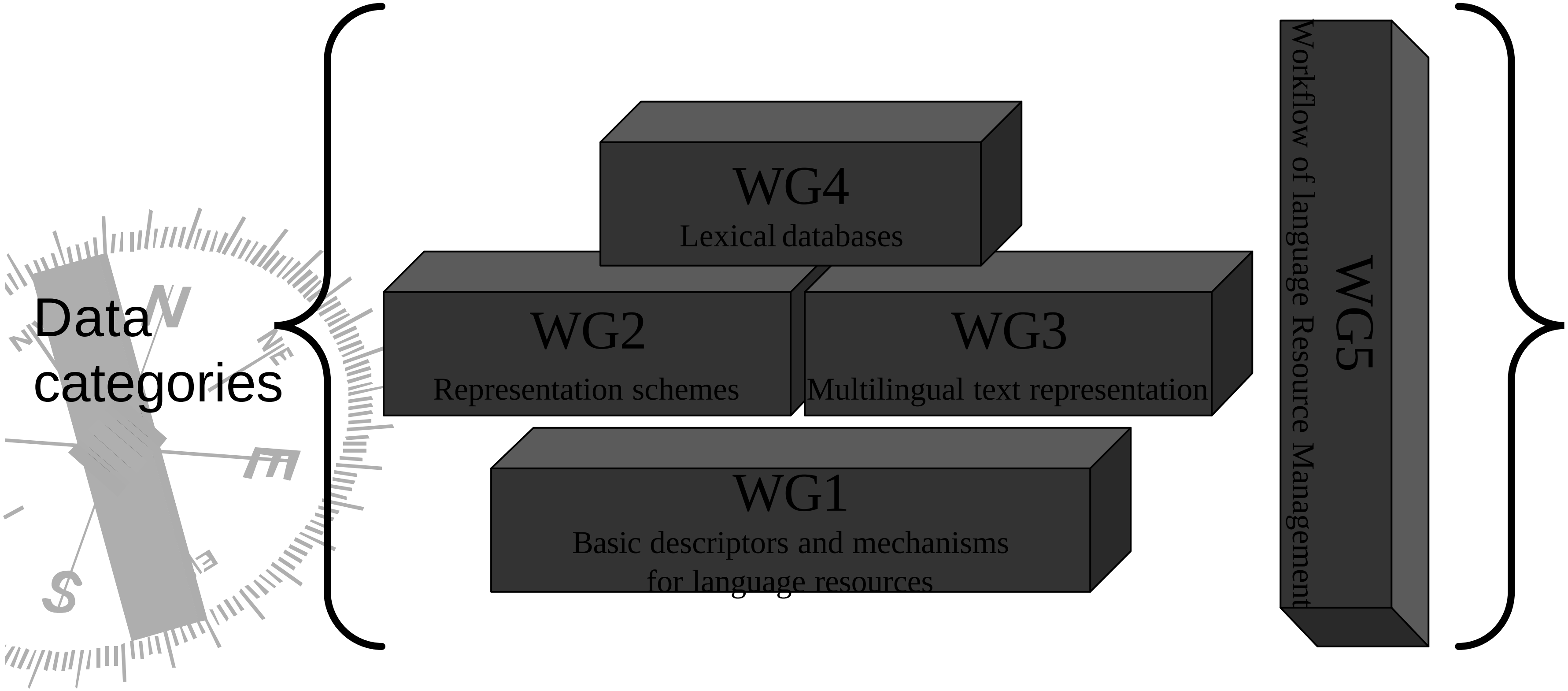
Existing standards (4)

- TEI proposals relevant for our field:
  - TEI header: seminal work to evolve in collaboration with IMDI and OLAC
  - Basic representation of texts: prose, poetry, drama, etc.
  - Transcription of speech
  - Print dictionaries: under revision in collaboration with ISO/TC 37/SC 4 (cf. LMF)
  - Terminologies: under revision to make it compatible with ISO 16642

ISO committee on language resources

- **ISO TC37 -** Terminology and other language resources
  - **SC3 -** Computer applications in terminology
    - ISO 12200 - Martif
      - Latest version of TEI Terminology chapter
    - ISO 12620 - Data categories (under revision)
    - ISO 16642 - TMF (Terminological Markup Framework)
  - **SC4 -** Language Resource Management (May 2002)
- Sec.: K.-S. Choi, Chair.: L. Romary
- http://www.tc37sc4.org

ISO/TC 37/SC 4 overall rationale


Data
categories
WG4
Lexical databases
WG2
Representation schemes
WG3
Multilingual text representation
WG1
Basic descriptors and mechanisms
for language resources
WG5
Workflow of language Resource Management
N
NE
E
S

On-going activities within ISO/TC 37/SC 4 (1)

- Feature structure representation
  - Joint activity with the TEI; CD document almost acheived; planned project on FS declaration
- Linguistic Annotation Framework
  - E.g. principles of annotation scheme specification and representation, pointing mechanisms for stand-off mark-up; draft document available
- Morphosyntactic annotation framework
  - Stable working draft under diissemination for evaluation
- Lexical Markup Framework (LMF)
  - A general specification platform for lexical structures
  - Preliminary proposals: core model + lexical extensions

On-going activities within ISO/TC 37/SC 4 (2)

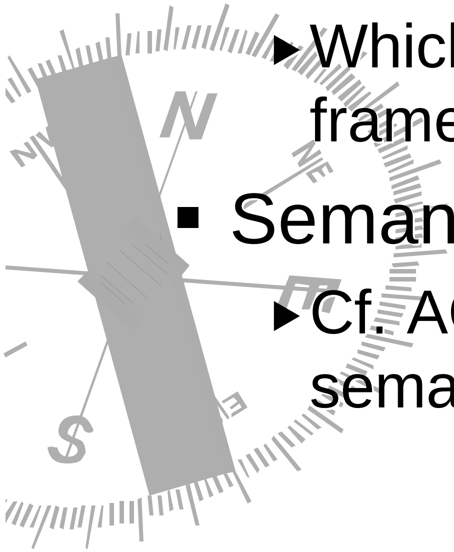
- The central role of the Data Category Registry
  - Objective: market place of descriptors for all types of language resources and annotation schemes
    - E.g.: /grammatical gender/, /paucal number/, /ablative case/, etc.
  - On-line tool available: http://syntax.loria.fr
  - Three ad hoc groups created
    - Metadata for language resources
      - cf. TEI, IMDI, OLAC
    - Morphosyntactic descriptors (SC4 plenary last Tuesday)
      - Cf. Morphosyntactic Annotation Framework
    - Semantic content descriptors
      - Exploratory: discourse relations, dialogue acts, referential links, etc.

Priorities for the future (1)

- Stabilizing and disseminating
  - Wide dissemination of existing standards
  - Two priorities in ISO/TC 37/SC 4: morphosyntax and lexical structures
    - Validation of on-going documents by our community
      - Feedback on documents, reference implementations
    - Gathering up samples and/or test suites (manpower needed)
  - Organizing the work on the Data Category Registry
    - Which additional topis should be addressed?
    - How to involve a wide variety of experts?
  - Specific publication and information days

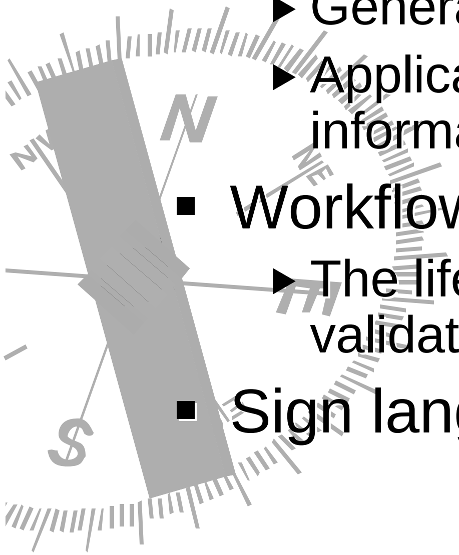
Priorities for the future (2)

- Filling in the gaps:
  - Syntactic structures: cf. Treebanks, (Chunk, deep) Parsers
  - Application specific lexica
    - Which formats should be ‘frozen’ within the LMF framework
  - Semantic content representation
    - Cf. ACL/SIGSEM working group on Multimodal semantic content representation



Priorities for the future (3)

- Open fields
  - Multilingual information representation
    - How to relate on-going activities on translation memories, localization, iTV, multimedia information (e.g. sub-titling)
  - Evaluation of NLP components
    - General principles: linguistic coverage, metrics
    - Application specific evaluation methods: machine translation, information extraction
  - Workflow of language resources
    - The life cycle of language resources: creation, enrichment, validation, dissemination
  - Sign languages…



Conclusion

- Importance of dissemination of existing standards (in academia…)
  - Standards as the identification of stable concepts in a field
  - Introduction in academic curricula
- Importance of wide involvement of experts (academia and industry)
  - Defining priorities
  - Contribution to technical work
- Linking main milestones in the roadmap with the underlying standardization efforts
  - E.g. Evaluation related standards