An Evaluation Infrastructure for HLT in Europe

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Presentation Outline

1. Quick (over)view of/on ELRA/ELDA Evaluation Activities
2. Evaluation Projects & Campaigns & Packages
3. ELRA Evaluation Services
4. ELRA's HLT Evaluation Portal
5. ELRA Evaluation Services
6. What's Next ?

Role of ELRA

- Carrying out evaluation campaigns: further involvement at:
  - European (CLEF, TC-STAR, CHIL, etc.)
  - International (CHIL-NIST-AMI Cooperation) and
  - French (Technolangue/Evalda) levels.
- Producing or commissioning the production of needed LRs for evaluation, Validation of the “reference data
- Distributing evaluation packages

Role of ELRA

Permanent infrastructure that focus on:

- **R&D on (all) Evaluation issues**
- **Elaborations of Evaluation protocols, assessment tools,**
- **Production of Language Resources and Validation**
- **Coordination team for the management and supervision of projects**
- **Logistics and support**
- **Capitalization on the outcome of each and every project (evaluation resources, tools, methodologies, protocols, best-practices AND Results)**

Need for a Permanent Infrastructure

- Problem with Call for Proposals mechanism
  - Limited duration (FPs) / Share of cost by participants
- Permanent organization
  - General policy / Strategy / Ethical aspects
  - Label attribution / Quality insurance & control
  - Production of Language Resources (dev,test)
  - Distribution of Language Resources
  - Capitalization on a large number of specialized centers (Evaluation Network)

Levels of Evaluation (ELSE)

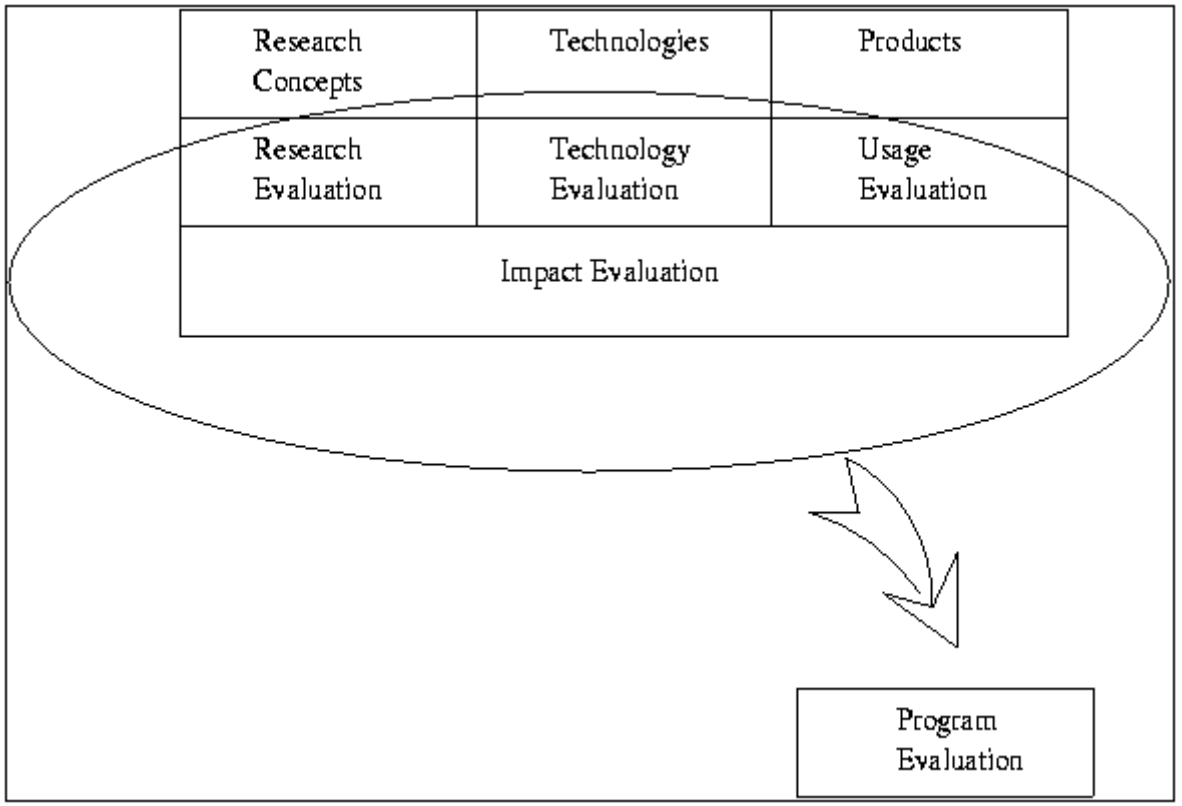
-Basic Research Evaluation (validate research direction)

-Technology Evaluation (assessment of solution for well defined problem)

-Usage Evaluation (end-users in the field)

-Impact Evaluation (socio-economic consequences)

-Programme Evaluation (funding agencies)



Examples of Evaluation Campaigns – Capitalization

- **Speech & Audio/sound**
  - ✓ **ASR: TC-STAR, CHIL, ESTER**
  - ✓ **TTS: TC-STAR, EVASY**
  - ✓ **Speaker identification (CHIL)**
  - ✓ **Speech 2 Speech Translation**
  - ✓ **Speech Understanding (Media)**
  - ✓ **Acoustic Person tracking**
  - ✓ **Speech activity detection, …..**
  - ✓ **……**

Examples of Evaluation Campaigns – Capitalization

➢Multimodal --- Video – Vision technologies

- ✓ Face Detection
- ✓ Visual Person Tracking
- ✓ Visual Speaker Identification
- ✓ Head Pose Estimation
- ✓ Hand Tracking

Examples of Evaluation Campaigns – Capitalization

- **Written NLP & Content**
  - ✓ **IR, CLIR , QA, (Amaryllis, EQUER, Shortly CLEF)**
  - ✓ **Text analysers (Grace, EASY)**
  - ✓ **MT (CESTA, TC-STAR)**
  - ✓ **Corpus alignement & processing (Arcade, Arcade-2, Romanseval/Senseval, …)**
  - ✓ **Term & Terminology extraction**
  - ✓ ***Summarisation***

Evaluation Projects with ELDA

- **Technolangue/Evalda**: the Evalda platform that ELDA coordinates consists of 8 evaluation campaigns with a focus on the spoken and written language technologies for the French language:
  - **ARCADE II**: evaluation of bilingual corpora alignment systems.
  - **CESART**: evaluation of terminology extraction systems.
  - **CESTA**: evaluation of machine translation systems.
  - **EASY**: evaluation of parsers.
  - **ESTER**: evaluation of broadcast news automatic transcribing systems.
  - **EQUER**: evaluation of question answering systems.
  - **EVASY**: evaluation of speech synthesis systems.
  - **MEDIA**: evaluation of in and out-of context dialog systems.

Evaluation Tasks … Illustration via TC-STAR Project

TC-STAR: Speech to speech translation:
Packages with Speech recognition, speech translation, and speech synthesis
Development and Testdata, metrics & results. e.g.

2 categories of transcribing and translating tasks

- European Parliament Plenary Sessions: **(EPPS)**: English (En) and Spanish (Es),

- Broadcast News (Voice of America VoA): Mandarin Chinese (Zh) and English (En)

ASR Tasks

- ✓ **2 Tasks**
  - **EPPS:**
    - **English 3 hours (~ 34 K words)**
    - **Spanish 3 h (~32 K words)**
  - **BN**
    - **Zh : 3 hours of VoA recorded in Dec 1998 (~42 K characters)**

- ✓ 3 Conditions
  - **Restricted** training condition (ie TC-Star data)
  - **Public data condition** (ie data available through ELDA and LDC)
  - Open condition (any data before the cutoff date)

SLT Tasks

- **3 Tasks**
  - **ASR:** translate automatic transcripts from a combination of ASR engines (ROVERed). No case, no punct.

    ASR-limsi: translate output of Limsi's ASR, with case. (UPC)
  - **Verbatim:** translate manual transcripts, with case, no punct.
  - **Text:** translate Final Text Edition (FTE) documents,
    - » with case and punct.

Language Resources

- **Development and test resources taken from the same original sets for ASR and SLT**

- **EPPS (English, Spanish): data from European Parliament satellite broadcast, usage rights negotiated**
  - ASR: audio files + manual transcripts ~4h
  - SLT: subset of manual transcripts ~25000 words + 25000 words taken from corresponding FTE documents
- **VOA (Mandarin): original data available at LDC, packaged by ELDA**
  - ASR: audio files + resegmented and corrected manual transcripts ~3h
  - SLT: subset of resegmented manual transcripts ~15000 words

Off-the-shelf comparison

- MT system available for the language pairs of TC-STAR
- All acknowledge the good performance of Systran
  - a large number of Languages,
  - used within SdT ?
  - Available off-the-shelf
- Use of **Systran Premium 5.0 Global Pack (800€),**
  - **Acquired via Internet**
  - **No customization**

To sum up … Results

- Evaluation packages to be made available
  - ASR
    - EPPS train, dev and test set
    - Scoring packages for En, Es and Zh
  - SLT
    - EPPS English-to-Spanish: EPPS training, development and test (incl. ref. translations) sets
    - EPPS Spanish-to-English: EPPS training, development and test (incl. ref. translations) sets
    - VOA Mandarin-to-English: VOA development and test sets (incl. resegmented transcripts and ref. translations)
  - TTS: See the project web for details

How to Increase Synergies

Synergies within EVALDA

	ARCADE-II	CESART	CESTA	EASY	EQUER	ESTER	EVASY	MEDIA
ARCADE-II			■					
CESART			■					
CESTA								
EASY						■		
EQUER		■		■				
ESTER				■				
EVASY			■	■				
MEDIA								

■ Re-use of LRs

How to Increase Synergies

Synergies between EVALDA, TC-STAR, CHIL, ….

	TC-STAR	CHIL	Amaryllis
ARCADE-II			
CESART			
CESTA			
EASY			
EQUER			
ESTER			
EVASY			
MEDIA			

Use of same LRsar

Re-use of LRs

Re-use of tools, metrics, etc.

ELRA Evaluation services

- Capitalize on its expertise to extend the evaluation activities towards:
  - new technologies
  - new languages
  - new environments
- Cooperation with a network of specialized centers
- Services on demand

ELRA Evaluation services

- Services on demand

Bring in our expertise

(Observer)

Produce data

Run Evaluation

Turn key

ELRA Evaluation services

- Do it yourself .. Evaluation à la TC-STAR (WP5)..
- Web-service Evaluation

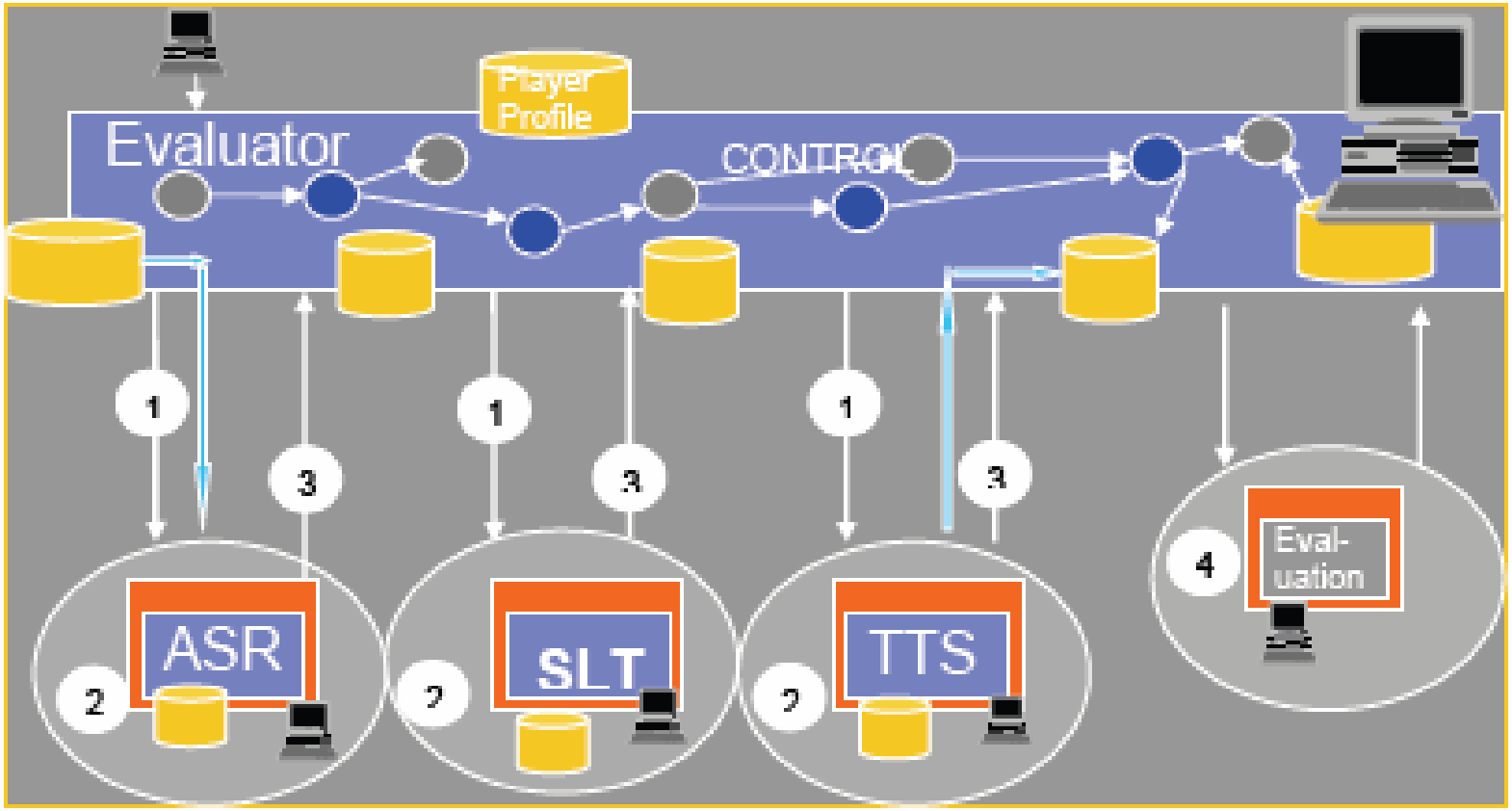


Figure 1: Automatic Evaluation of TC-STAR Components

HLT Evaluation Portal

http://www.hlt-evaluation.org/

- Overview
- HLT Evaluations
- Activities by technology
- Activities by geographical region
- Players
- Evaluation resources
- Evaluation Services
- Site map

Questions ?

- Is Evaluation a business … a Niche Business?
- Profitability ROI ? 50%