The Past, the Present, the Future of Spoken Language Translation Evaluation

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What is IWSLT?

- **International Workshop Spoken Language Translation**
  - Annual event since 2004 (12 editions)
  - Evaluation Campaign + Technical Workshop
- **Organisers**
  - Chairs: KIT (Germany), FBK (Italy), CMU (USA)
  - International steering committee
- **Important activities**
  - WIT3.fbk.eu website with parallel data of TED talks
  - Evaluation methods

Core Tasks

➢ **Automatic Speech Recognition (ASR)**

    ➢ English *speech* → English *transcript*

➢ **Machine Translation (MT)**

    ➢ English text   → French text

➢ **Spoken Language Translation (SLT)**

    ➢ English *speech*   →   French text

    ➢ English *transcript* →   French text

Son of the STARs

from demonstrations to
open evaluations

1992 - 2006

demonstration systems +
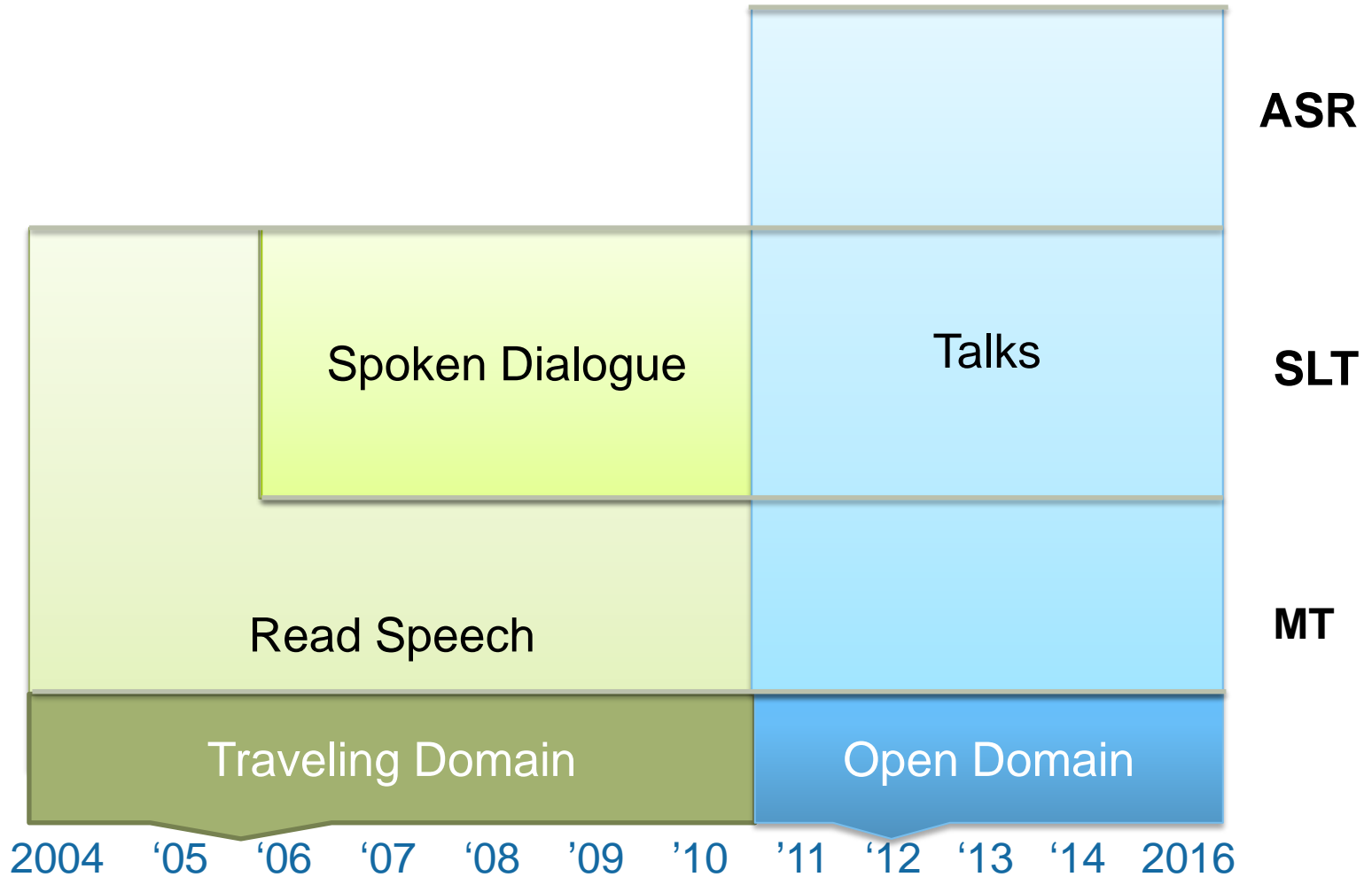internal evaluations

1993-2000

integration + open evaluations

2003-2007

C-STAR > IWSLT (Kyoto 2005)

Son of the STARs

from demonstrations to
open evaluations

1992 - 2006

demonstration systems +
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1993-2000

integration + open evaluations

2003-2007

TC-STAR – (Seville, 2003)

IWSLT Evaluation Scenarios

IWSLT participants

participants

from 70 different teams

13   18   15   23   18   17   19   12   15   18   21   16

2004   2005   2006   2007   2008   2009   2010   2011   2012   2013   2014   2015

TED Talks

- TED LLC is non-profit
- Two annual events
- Short talks
- Variety of topics
- Website with:
  - Videos
  - Transcripts
  - Translations
- CC License

Human task: subtitling and translating

e come sarebbero potuti essere automatizzati il più possibile.

et comment ils pourraient être aussi automatisés que possible.

and how they could be automated as much as possible.
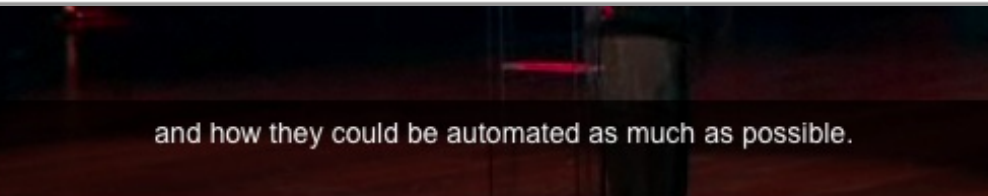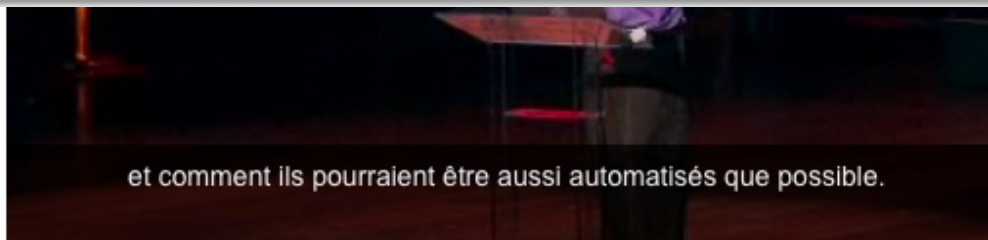
✓ segment audio

✓ transcribe and annotate

✓ split into captions

✓ translate captions

TED Talks Translations

	Nov '10	Nov '11	Nov '12	Nov '13	Nov '14	Nov '15
Talks (EN)	800	1,080	1,395	1,650	1,875	2,095
Languages	80	83	93	103	105	109
Translators	4,000	6,823	8,382	11,010	18,699	15,487
Translations	12,500	24,287 +94%	32,707 +34%	49,607 +52%	65,290 +32%	83,265 +28%

Challenges

- **Language modelling**
  - Limited in-domain training data
  - Variability of topics and styles
- **Acoustic modelling**
  - Speaker: accent, fluency, speaking rate, style, , ...
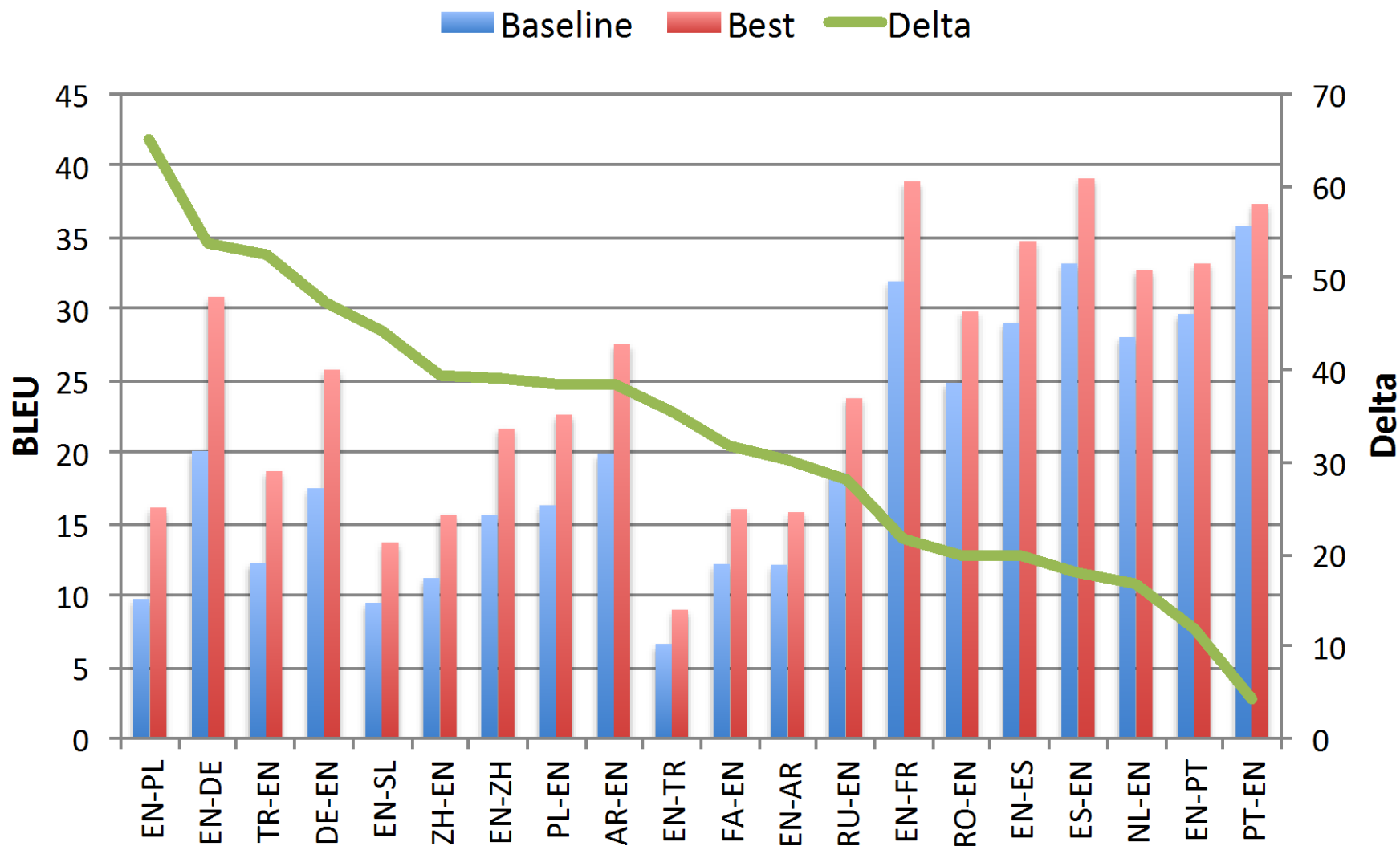 - Noise: some mumble, applauses, laughs, music, ...
- **Translation modelling**
  - Distant and under-resourced languages
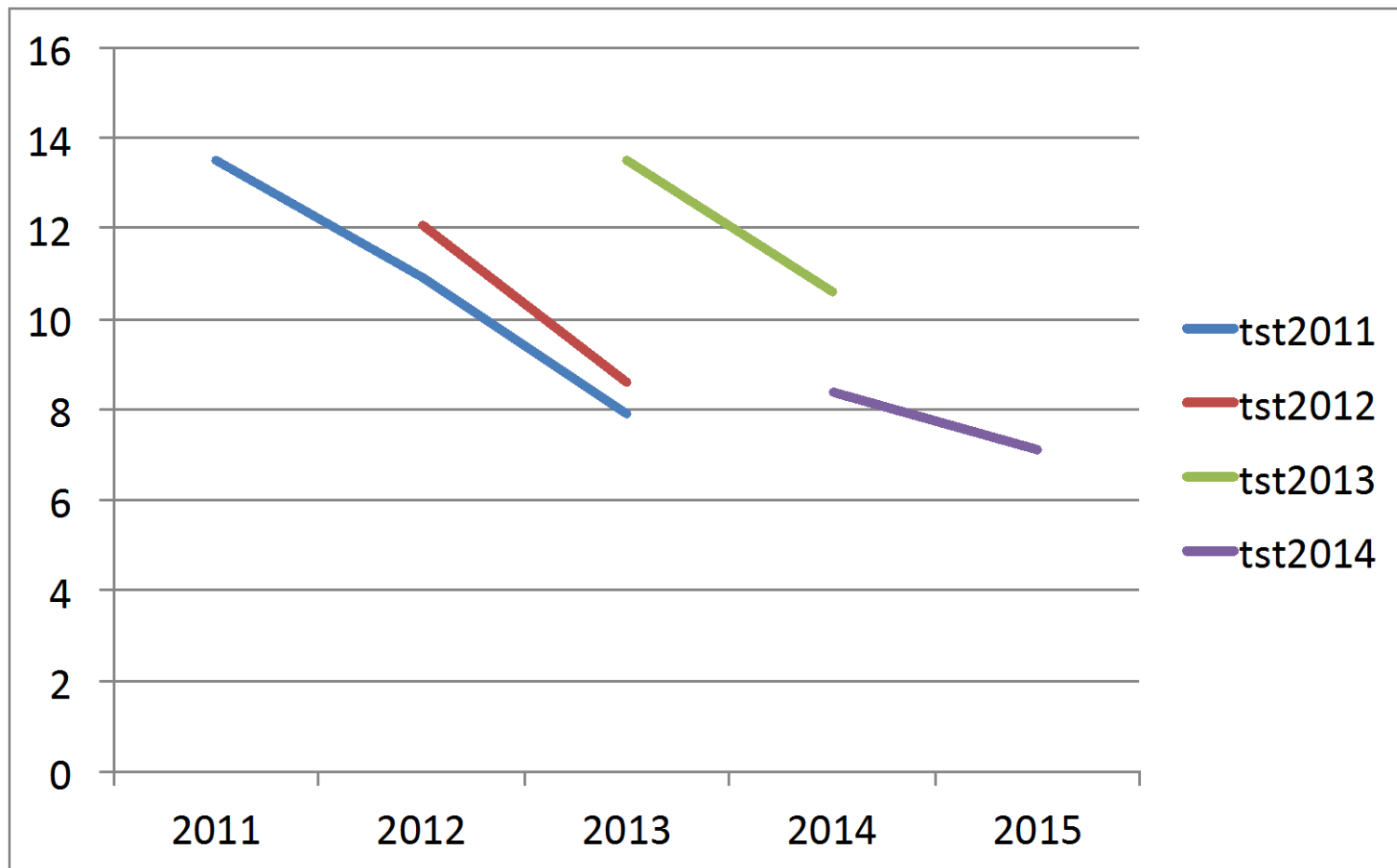 - Morphologically rich languages
- **Speech Translation**
  - Detection and removal of non-speech events
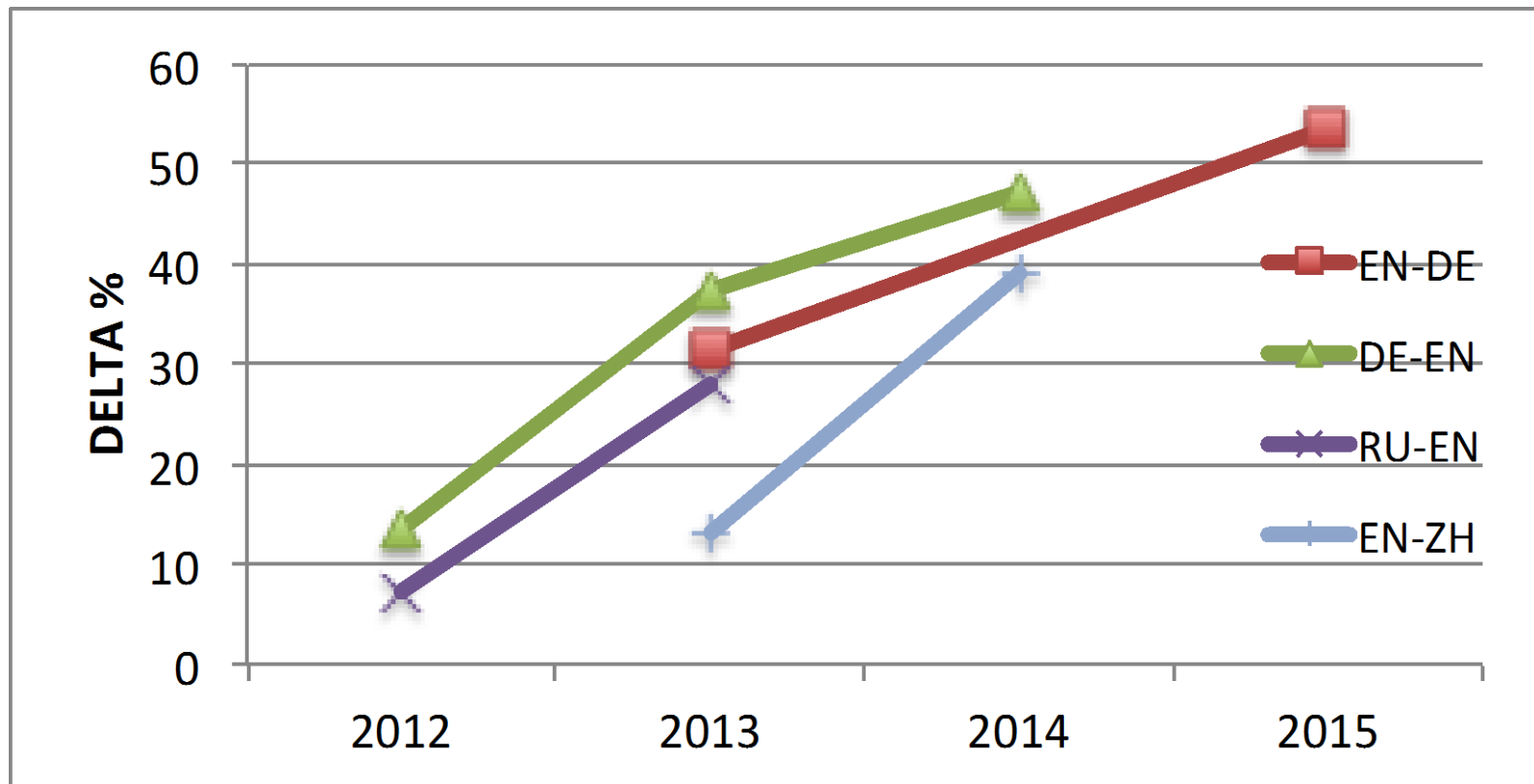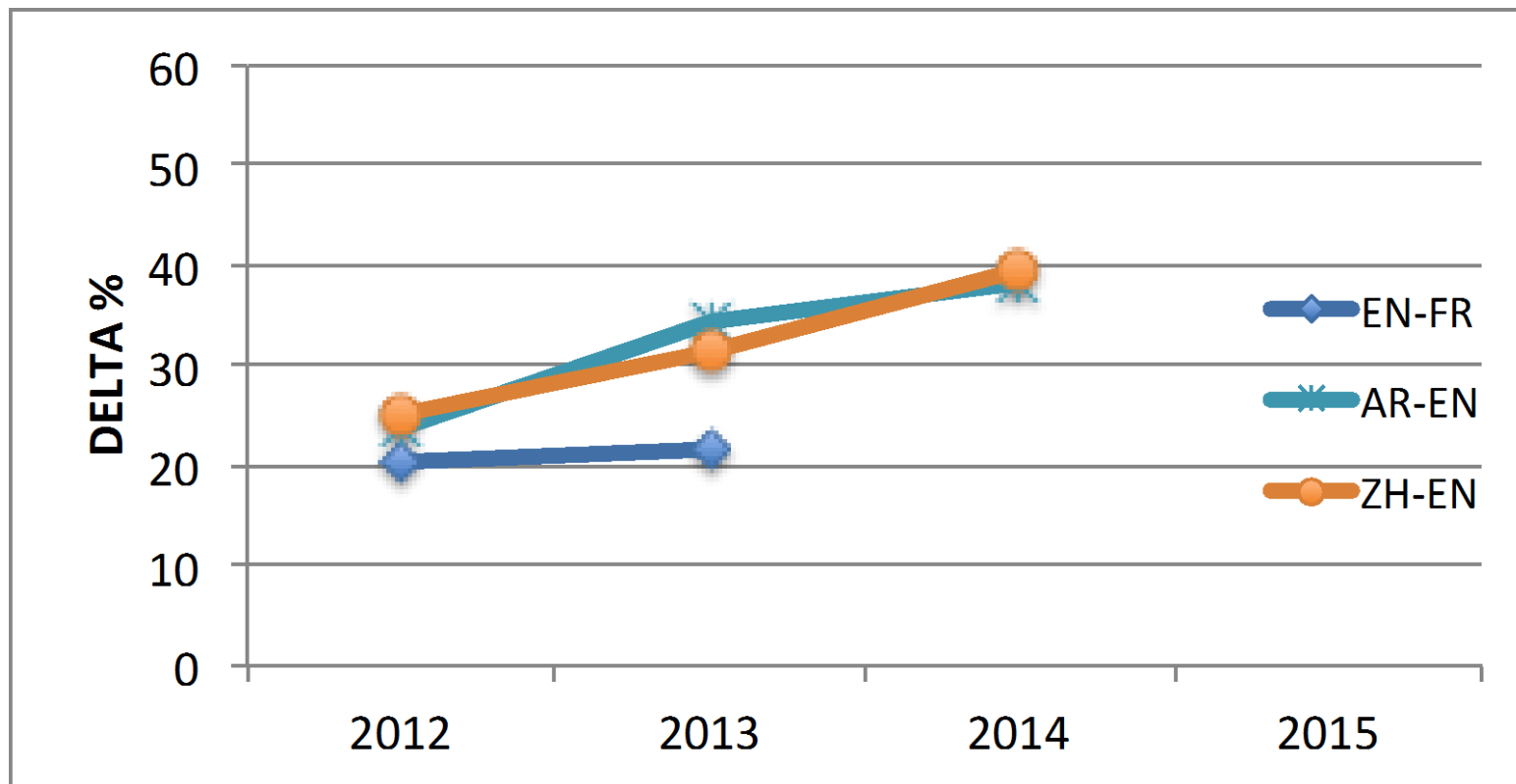 - **Subtitling and translating**

Best Measured MT Performance

Progress in ASR En (best systems WER%)

Best MT Performance over Time

Best MT Performance over Time

Human Evaluation

- **Pairwise ranking** [2010-2012]
  - *native volunteers judge quality of MT outputs*
  - pros: relatively cheap
  - cons: no re-use of data
- **Post-editing effort** [2013-2015]
  - *professional translators post-edit MT outputs*
  - cons: more expensive (~7 cents/word)
  - pros: multiple references as by product
  - pros: permits profiling of MT systems

Skype Translator Task

Challenges

- **Language modelling**
  - Limited in-domain training data
  - Variability of topics and styles
- **Acoustic modelling**
  - Speaker: accent, fluency, speaking rate, style, , ...
  - Noise: spontaneous speech, disfluencies
- **Translation modelling**
  - Morphologically rich languages
- **Speech Translation**
  - From spontaneous speech to polished text
  - **Simultaneous translation**

IWSLT 2016
Seattle, US
December 08-09, 2016
www.iwslt.org

International Workshop on Spoken Language Translation

Credits

- **Language resources**
  - TED LLC, USA (Talk data)
  - Workshop Machine Translation (Giga and news data)
  - DFKI, Germany (United Nations data)
  - Microsoft Research (Skype Translator Task)
  - Qatar Computing Research Institute (QED Lectures)
- **Funding**
  - H2020 CSA CRACKER
  - H2020 QT21

Questions?