What are the new applications of Machine Translation in 5-10 years?

- What is currently not doable, but on the horizon?
- What applications will improved MT performance make possible?
- What research has to be carried out to get there?
- What lines of research are currently neglected but are essential?
- Who will make these new applications a reality (academia / commercial)?
- Do we have to change the way we do research (e.g. are systems becoming too big for individual researchers or small teams)?
What is currently not doable, but on the horizon?

- Reliable translations
  - We see many good translation, but also many bad ones
  - Human translators are more consistent

- Translation in everyday application
  - Tourism (very close)
  - Webchat (moving target)
What applications will improved MT performance make possible?

- All those applications we dream of
  - Ordering vegetarian food in a local Japanese restaurant (well, there may be no vegetarian food ;-)
  - Reading and understanding that sign at the shop in Thailand
  - Communicating with the doctor in England about some health problems my little son has (9 years of school English didn’t prepare me all that well for this kind of situation!)

- All those applications others dream of
  - Simultaneous translations in the European parliament
  - Translating news, conversations, blogs, emails, etc for intelligence
  - Communicating with the local people in a disaster area, or even with the immigrant family in desperate need of help
Are we doing the right thing?

- What research has to be carried out to get there?
- What lines of research are currently neglected but are essential?

- That’s a strange thought:
  - We neglecting something, which might be essential?
  - No way!!!
Continued progress

What DARPA wants

Tougher Task ahead of us
Who will make these new applications a reality (academia / commercial)?

- Applications, not just demos – that’s need to be done by companies
- Academia needs to push the field
  - New ideas, which are shared (in meetings like this one)
  - Comparison between techniques (in open evaluations)
Do we have to change the way we do research?

(Are systems becoming too big for individual researchers or small teams)

- Our research is just fine
  - Progress over the last 10 years was good
  - Comparative evaluations and dedicated workshops (IWSLT, SMT-Workshop, NIST evaluation) are pushing the field

- But we need predictable funding
  - 3++ years per project
  - Not DARPA style: terminate project in the middle of the funding period

- Yes, some systems become too large for small teams
Some Changes

- Large system need a lot of engineering
  - Parallel computing
  - Tools for processing data
  - Incremental training

- Covering many more languages
  - Esp. minority languages
  - Data collection: bring the (potential) user into the pipeline

- Looking into usability (rather then Bleu Deltas)
  - Are translation systems trained on small corpora useful at all?
Some Worries

- **Surprising results**
  - Increasing training corpus by <2% gives 6-8 Bleu points improvement
  - Merging sentences into one line gives up to 2 Bleu points

- **Randomness**
  - What works for one language doesn’t work for another
  - What worked last year does not help anymore this year
  - Tuning on different dev sets can give very different performance

- **Large impact of heuristics**
  - Viterbi alignment combination

- **“Manual” restrictions needed**
  - Lattice pruning, smaller beam, less reordering gives better results