

## **MT Summit III**

### **Executive briefings**

#### **Introduction to MT: Issues and Survey**

John Hutchins, University of East Anglia, UK  
Harold Somers, UMIST, UK

This session aims to give an overview, for the benefit of those new to the field, of the basic scientific issues in MT research and development, and to give a brief general survey of the history of MT from the 1940s to the present. The briefing will be in four parts: (1) Introduction and general history — definition of some terms; historical overview of trends in research, development and commercial production, (2) Basic design issues - - 'direct' versus 'indirect' system design; separation of algorithms and linguistic data; modularity and stratification. (3) Practical aspects — role of human user in MT systems: pre- and postediting, interactive vs. non-interactive systems; use of 'raw' output. {4} Linguistic aspects of MT — need to represent structural analysis or 'meaning'? lexical and structural ambiguities in analysis; contrastive lexical and grammatical problems; stylistic considerations in the target language text.

#### **How Your Organization Can Use MT**

Zenshiro Kawasaki, Hitachi, Ltd., Japan  
Joann Ryan, SYSTRAN, USA

Successful use of machine translation depends on the successful integration of the machine translation system or service into the document production process of your organization and the achievement of the mix of human and machine translation skills that best meets your organization's needs. Today a wider selection of MT options is available to both individual and corporate users, ranging from submitting your document on a disk to a service bureau that utilizes MT, to accessing an on-line machine translation service, to purchasing or leasing machine translation software to be run on your own computer. Choosing the right option depends on careful evaluation of a number of factors, including the type and volume of texts to be translated, type of hardware available, purpose of the translation, access to a suitable terminology source and, above all, the availability and degree of commitment of the personnel who will be directly involved in the translation process. This briefing will provide guidelines to help you to determine the areas where MT will be useful to your organization, to choose the most appropriate type of MT system or service, to design a cost-effective translation process for your organization, and to plan for the commitment of resources required for successful WIT use.

#### **Knowledge-Based MT**

Jaime Carbonell, Carnegie Mellon University, USA  
Sergei Nirenburg, Carnegie Mellon University, USA

This briefing will describe an approach to machine translation research and development which relies on extracting and representing the meaning of the source language text as a prerequisite for successful translation. To achieve this goal, MT systems of this kind rely not only on information about grammar and the lexicon of the source and target languages but also on extensive collections of knowledge about the world and the field of translation {e.g., mechanical engineering or contract law}. We will describe computational architectures for knowledge-based MT systems and discuss the requirements for their various knowledge bases. With respect to the processing algorithms, we will describe the processes of syntactic and semantic analysis as well as target text planning, lexical and syntactic selection and final realization. We will also discuss the environment for machine-aided knowledge-based translation systems.

#### **MT: The Japanese Experience**

Makoto Nagao, Kyoto University, Japan

This session will describe the MT state of the art in Japan. Practical machine translation systems have been more successfully deployed in Japan than anywhere else. Several Japanese-to-English and English-to-Japanese systems are available on workstations (some on portable WSs). Japanese researchers and developers know well that natural languages are so complicated that an elegant and simple theory in linguistics is not enough to conquer language complexity. They have pursued a good balance of basic linguistic theories and ad hoc treatment of the 'dirty' parts of languages. They have also developed user-friendly interfaces for pre-editing and post-editing texts, which tasks are inevitable in the present-day systems. With these efforts, many system users have achieved a cost reduction of 30% to 50%, as well as a speed-up of translation. Vast resources, both financial and human, were invested in Japanese MT development; this cannot, of course, be recovered by sales of a few hundred or a thousand MT systems. However, top managers know very well that R & D will be the basis for natural language processing technology — definitely a key technology in the next century.