ATLAS: Automatic Translation into Sign Languages

List of partners	
Politecnico of Turin, DAUIN	RAI Radiotelevisione Italiana S.p.A.
Turin University, Dep. of Computer Science	BEPS Engineering
Turin University, Dep. of Psychology	Lumiq Studios S.r.l.
CSP - ICT Innovation	Microsoft Innovation Center
Virtual Reality and Multimedia Park	University of Illinois at Chicago
Cooperativa GCS Global Communication	Alto Sistemi s.r.l.
Fondazione Bruno Kessler	

Project duration: January 2009 – July 2012

Summary

ATLAS is a three-year project, which exploits the convergence between cognitive sciences and ICT to build innovative services and tools to provide deaf people the possibility to follow and understand TV programme, media information, and entertainment channels, through the automatic translation into a sign language. This technology is a significant step toward the inclusion of deaf people in the global community and it may be considered a natural evolution of a process started by computers, internet, and mobile phones. Although the developed tools are applicable, in principle, to any broadcasted material and any language, ATLAS focuses on the Italian Sign Language (LIS - Lingua Italiana dei Segni), and on the weather forecast bulletins broadcasted by the Italian television.

The main objective of ATLAS is the distribution through various devices of the LIS animation performed by a virtual interpreter expressing the content of an Italian sentence in LIS. This goal is achieved through (i) the translation of the Italian text into the ATLAS Extended Written LIS (AEWLIS), representing the LIS into a written format, by either a statistical or a rule-based machine translation system; (ii) the conversion of the AEWLIS expression into an Animation Language (AL), able to drive the virtual actor; (iii) the generation of an AL-based animation sequence; (iv) and the delivery of the animation sequence on various user terminals (including DVB, web, mobile phones, and physical media), remotely controlled by local visualization engines and properly synchronized with audio/video contents.

Other notable outcomes of ATLAS are (i) the formal definition of the AEWLIS and AL languages; (ii) an Italian-LIS-AEWLIS parallel corpus of selected texts; (iii) an assisted editor for the AEWLIS annotation of Italian texts; and (iv) the set of developed tools distributed as open-source to allow their no-profit use by Deaf Communities.