



Q&A with Luciano Piovano - VP, Government Intelligence Solutions, Loquendo

TMCnet: Could you start off by giving us a little company history?

Luciano Piovano:

Founded in 2001 as a spin-off from CSELT, the former R&D center for the Telecom Italia Group, Loquendo has a background in research into speech technologies which dates right back to 1977. Loquendo remains a member of the Telecom Italia Group and, as a provider of speech technologies, boasts a complete product range: ASR (automatic speech recognition), TTS (text to speech), and, more recently, speaker identification, language identification and gender identification technologies which make use of voice biometrics. We offer a full portfolio for the Intelligence community, as well as complete solutions for various application fields.

All our technologies are also available in compact versions for mobile devices, enabling the company to gain significant market penetration into the embedded space.

TMCnet: Which technologies can be found in the Loquendo product range?

Luciano Piovano:

I will start out with the market under my jurisdiction – Intelligence Solutions, focused on security.

LVSL - Loquendo Voice Security Library – is an enabling technology suite intended for third party integration. We also offer turn-key solutions, the most well-known of which is LVIS - Loquendo Voice Investigation Systems. This range of products serves two different customer needs: first, LVIS Master is a voiceprint creation tool which is used for comparing the unique characteristics which make up a voice, and which has various applications; and second, LVIS SOLO is a complete post-processing tool for investigations where the scope is more restricted.

VARs - Voice Analysis Runtime Server- on the other hand, is a new run-time product for use in Lawful Interceptions.

Regarding the Loquendo product range in general, the company is best known for its text-to-speech technology, Loquendo TTS, primarily for third party integration. Loquendo TTS is currently available in over 60 different voices and more than 25 different languages, both female and male.

Loquendo ASR is automatic speech recognition technology for large vocabularies, currently available in 24 languages. It is speaker independent and optimized for IVR (Interactive Voice Response) applications.

Loquendo has also developed the MRCP Server, facilitating integration into more complex applications through the MRCP (Media Resource Control Protocol) protocol. The MRCP Server is simply a different way of accessing Loquendo TTS and ASR technologies by means of a complete and user-friendly interface with the speech engines.

The Loquendo VoxNauta platform, on the other hand, enables carriers, enterprises, service providers and emerging technology companies to develop speech-enabled applications which follow the Web-based architecture enforced by VoiceXML and CCXML standards. CCXML is for highly flexible call control, while VoiceXML facilitates voice interactions within an application. The Loquendo VoxNauta platform is shipped stand-alone, or with Loquendo ASR and Loquendo TTS optionally integrated.

In the embedded field, we have small footprint versions of all our technologies for use in portable appliances like personal navigation devices and smartphones, as well as optimized for noisy, in-vehicle environments.

TMCnet: How is Loquendo involved with W3C (World Wide Web Consortium) standards bodies? Does the intelligence and security sector feature in this work?

Luciano Piovano:

Loquendo is member of the Board of Directors of the VoiceXML Forum, and an active participator in the standardization activities of the W3C Voice Browser and Multimodal Interaction Working Group and IETF SpeechSC.

All these bodies are pursuing activities on speech biometrics, for example: the next release of VoiceXML (version 3.0) will include support for Speaker Identification and Verification, enabling the industry to exploit voice biometrics by means of a standards-based approach. In W3C Multimodal Interaction, work is being done on representing Speaker Verification and Identification results in the EMMA 1.0 language - a language for interpreting inputs via speech, touch, pen, etc, to facilitate the development of multimodal applications.

Loquendo is also contributing its technologies to the "bio-sig" group, within the VoiceXML Forum. Group members are working hard for the adoption of voice biometrics, such as in "ISO/IEC JTC 1/SC 37 N 3053".

TMCnet: Which industry awards has Loquendo won over the last year?

Luciano Piovano:

We are very pleased with the number and quality of awards which we have picked up over the year, including the '2008 IP Contact Center Technology Pioneer Award' from the Technology Marketing Corporation's (TMC) Customer Interaction Solutions magazine, as well as, for the second time, 'Market Leader- Best Speech Engine' at SpeechTEK. Loquendo achieved the highest scores in Customer Satisfaction and Ability to Customize and Integrate, while the number and choice of languages and voices we are able to offer our clients was also singled out for praise.

The '2008 Frost & Sullivan European Telematics and Infotainment Emerging Company of the Year Award' was also given to Loquendo for the company's "new market penetration, strategy innovation, technological innovation and leadership, revenue and market share growth".

TMCnet: Could you give tell us a little more about your Law Enforcement solution?

Luciano Piovano:

Loquendo has developed an accurate and extremely reliable speaker verification technology which is used for authentication purposes, and also for applications for government security.

It employs highly efficient algorithms to enable a single voice recording to be compared, in real-time, with a large number of stored voice prints. This is a 'one-to-many' (1:n) identification, and is extremely time-consuming for investigative personnel to perform without the assistance of technology.

A voice print does not retain any part of the original recorded speech that was used to create the voice print but, instead, is a mathematical representation of the particular characteristics that identify a voice and make it unique. During investigative analysis a comparison is made of the voice under investigation, independently of the spoken language, with a collection of identified voice prints. This helps law enforcement personnel with their investigation by filtering non-matching voice prints out of the process, saving human resources.

So, the solution developed by Loquendo is an automatic parametric filter that identifies all those telephone calls where the suspect is absent, and subsequently discards them. There are no privacy issues with this technology because it is carried out automatically and without human intervention: computer software is not biased by the content of the conversation it is listening to, whereas this clearly *is* an issue when the filtering process is carried out by human personnel.

TMCnet: Can we expect a bright future for Loquendo Intelligence Solutions?

Luciano Piovano:

Loquendo is one of just a few players in the speech technology field, and there are even fewer in the sector for biometrics-enabled applications. Our Speaker Identification and Verification technology has been benchmarked for its recognition accuracy by the American NIST (National Institute for Standards and Technology). We invest continually in research and development to advance our security technologies - for accuracy and for the speed and functionality of our solutions. Our intelligence solutions and technologies have shown their worth with investigative agencies and government security bodies right across the world. Such agencies are dealing with criminal and terrorist elements which are increasing their level of sophistication and technological knowledge year on year, and advancements in technology often assist such elements in masking their identities to make tracking them ever more difficult. Law enforcement agencies must exploit the latest tools available to get ahead in this war against crime, and we firmly believe that our technology is one of the very best on offer, at a global level, at the current time.

A new area of interest in this field is the embedding of these technologies into solutions that, for example, are capable of combining voice and other data to make such intelligence sources legally actionable. Loquendo is seeking to forge new partnerships with companies working in this space to realize such a solution. This would represent a very significant step forward, and we can expect it to be an important growth area for Loquendo in the future.