Background and Mission

MediaTeam, in its present form, came into being in 1999 when the thriving Machine Vision and Media Processing unit of the Information Processing and Computer Engineering Laboratory in the University of Oulu was divided into two closely collaborating but independent research groups, MVIS and MediaTeam, in order to facilitate efficient research in terms of focus and resources.

The mission of MediaTeam is to carry out leading edge long-term research, which produces new scientific knowledge and novel technological solutions to distributed multimedia and communications.

MediaTeam carries out research in the fields of multimedia, mobile computing and value adding services, and is positioned on the overlap between information technology and telecommunications. Our interdisciplinary approach to research manifests itself in our connections with various departments and universities in different fields. Another example of our unconventional approach is our personnel, which consists of engineers and natural scientists as well as linguists.

Three core areas of research have been identified: multimedia understanding, multimedia transmission, and multimedia services. **Multimedia understanding** is concerned with a variety of issues ranging from media types and formats to the refinement of analysis information. **Multimedia transmission** focuses on transmission-related topics such as content-based transmission, networked computing, and the quality of the provided services. Our final core area of research, **Multimedia services**, combines the results obtained from the two previously mentioned entities in order to produce efficient, scalable applications and services for the benefit of distributed, mobile environments.

MediaTeam comprises of five competence teams, corresponding to the five themes which have been identified as pertinently focusing our research:

- Content-based Multimedia Retrieval, CMR
- Computer-Telephone Integration, CTI
- Wireless IP and Media Telephony, MET
- Mobile Information Systems, MIS
- Multimedia Signal Processing, MSP

The activities of the MediaTeam research group are led by Professor Jaakko Sauvola (Director), Dr. Timo Ojala (Associate Director) and Professor Tapio Seppänen (Scientific Director).
Scientific Progress

The main emphasis has been put on the further development of service platforms that provide the framework for ongoing and future algorithm and application level research. The platforms are as follows:

- CMRS (Content-based Multimedia Retrieval System)
  A modular and efficient client-server architecture for content-based retrieval of multimedia databases.
- DAN (Distributed Agent Network)
  A software agent-based distributed processing architecture for computer-telephony integration which provides ubiquitous service access. This is being developed in collaboration with VTT Electronics.
- Beethoven
  An architecture which offers a generic interface and gateway components for implementing open standards applications between an H.323 compliant IP telephony network and multimedia clients.
- Princess
  An architecture which produces scalable end-to-end services to mobile users by adapting the presentation according to the properties of the terminal type and the underlying network in question. This is being developed in collaboration with VTT Electronics.

Our research has brought forth a total of approximately 50 publications.

Exploitation of Results

The results of the algorithm level research and the functionality of the service platforms have been demonstrated with a number of successful pilots, for example the following:

- A visual surveillance service built on top of the Princess architecture
  The service monitors the live input of surveillance cameras, performing real-time motion detection. In case motion is observed, an alarm is stored into the alarm database and the clients who have subscribed to the service are notified by for example SMS or email.
- IVCC (Internet Video Call Center) realized with the DAN architecture
  The IVCC is based on the functionality provided by the DAN terminal and protocol abstraction, call control, data sharing, intelligent routing, video conferencing, and so on. The IVCC offers users with different terminals ubiquitous access to services provided either by IVCC agents or by human attendants.

Collaboration with partners

We value close collaboration with our various partners as an essential factor in the realization of research results into practical solutions. The most important partners of MediaTeam are the following funding bodies, companies, and research organizations:

The National Technology Agency; The Academy of Finland; Nokia; Acta; CCC; Sonera; OPOY/Finnet group; Sampo; Kesko; VTT Electronics; Mobile Forum Oulu; Language and Media Processing Laboratory, Univ. of Maryland, USA; Creative Media Lab, Univ. of Gävle, Sweden; National Institute of Standards and Technology, USA; and CEC Karlsruhe, SAP, Karlsruhe, Germany.

Future Goals

Media Team will continue to further develop its present status as a specialist and leading authority in multimedia research. We will pursue our goals of providing practical, easily adaptable solutions to the multimedia application industry and of performing eminent research in our fields of expertise. We will remain in active contact with the industry as a whole, as well as our existing partners, and strengthen and develop our international contact network which we regard as one of our essential assets. We will further look into our innovation process, to ensure an even more efficient manner of transforming research results into the practical applications of our customers.