AIM@SHAPE

Advanced and Innovative Models And Tools for the development of Semantic-based systems for Handling, Acquiring, and Processing knowledge Embedded in multidimensional digital objects

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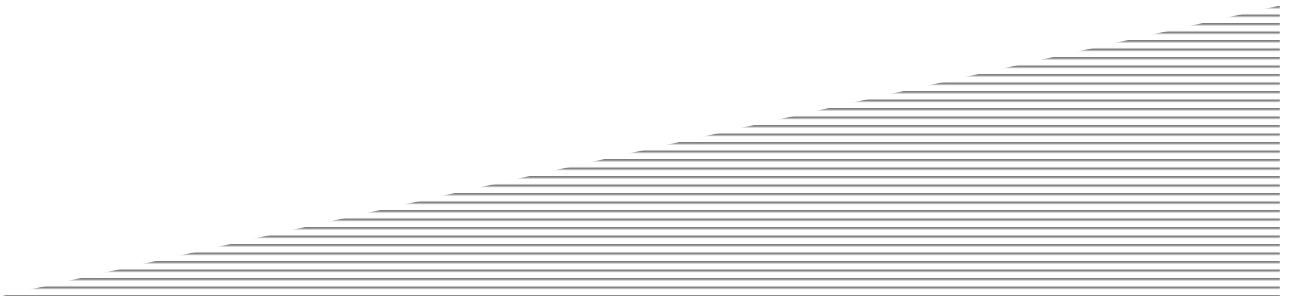

Report on the editorial activities

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CNR-**IMATI**-GE	C.N.R. – Istituto di Matematica Applicata e Tecnologie Informatiche Dept. of Genova, Italy
DISI	Università di Genova – Dipartimento di Informatica e Scienze dell'Informazione, Italy
EPFL	École Polytechnique Federale de Lausanne, Switzerland
FhG/**IGD**	Fraunhofer Institut für Graphische Datenverarbeitung, Germany
INPG	Institut National Polytechnique de Grenoble, France
INRIA	Institut National de Recherche en Informatique et Automatique, France
ITI-CERTH	Informatics and Telematics Institut – Center for Research and Technology Hellas, Greece
UNIGE	Université de Genève, Switzerland
MPII	Max-Planck-Institut für Informatik, Germany
SINTEF	Stiftelsen for industriell og teknisk forskning ved Norges Tekniske Høgskole, Norway
TECHNION	Technion – Israel Institute of Technology, Israel
UU	Utrecht University, Netherlands
WEIZMANN	Weizmann Institute of Science, Israel

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1	25 June 2006	35%	Initial draft for the deliverable and content structure.
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3	15 July 2006	75%	Second draft version. Details on books added. Details on special issues added. First draft of conclusions.
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Executive Summary

This document contains a description of **deliverable D 8.9.1** (former **D 8.4.2.1**) of the IST NoE AIM@SHAPE. Please, note that Task 8.4.1 became Task 8.9 since Month 28.

Deliverable **D8.9.1 – Report on the Editorial Activities –** is intended to provide a report on the editorial activities carried on by the partners the IST NoE AIM@SHAPE during January 2005 – June 2006 within Task 8.9. Task 8.9 focuses on the preparation of books, of survey papers published in book collections or in scientific journals, of STAR and tutorial presentations at the major international conferences in the field, and on the organization of special issues in the major scientific journals in the field.

The deliverable is organized as follows. In **Section 2.1**, we describe the status of an edited book on shape analysis and structuring collecting the contributions of all partners involved in Work Package 6, which originates from a complete rewriting, organization and enhancement of the state-of-the-art report produced at the end of the first year of the project for that work package. In **Section 2.2**, we report on a book on geometric techniques for curves and surfaces edited by INRIA and published by Springer Verlag, focusing on topics of Work Packages 5 and 6. **Section 3** reports on various special issues of journals organized by the partners, by mentioning the title and the content of the special issue when available, and their publishing status. **Section 4** reports on survey papers published, or planned by the partners, except for those which are already part of the edited books mentioned above. Finally, **Section 5** reports on tutorials and state-of-the-art reports presented by the partners at the top international conferences in the field.

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1 INTRODUCTION

This deliverable provides a detailed report on the editorial activities carried on by all the partners of the AIM@SHAPE NoE from January 2005 to June 2006. These editorial activities are grouped in Task 8.9 of the AIM@SHAPE JPA, which focuses on the preparation of books, of survey papers published in book collections or in scientific journals, of state-of-the-art reports and tutorial presentations at the major international conferences, and on the organization of special issues in the major scientific journals in the field. All the partners have actively contributed in this task. The activities in the task show a high level of integration among the partners, who have actively collaborated in all such activities, thus resulting also in a considerable number of joint publications. Moreover, the partners have involved major scientists outside the Network in the editorial dissemination through co-authored survey papers, collaborations in the two edited books, joint organization of special issues of scientific journals and joint organization of tutorials at international conferences.

2 BOOKS

2.1 Shape Analysis and Structuring

The book on "*Shape Analysis and Structuring*" arises from the efforts of most of the partners and of some leading scientists outside the Network. The book originates from the state-of-the-art report for Work Package 6 (deliverable D6.1) produced as the result of the first year of activity. It will be published by Springer Verlag in the series "*Mathematics and Visualization*" (a contract has been signed in November 2005). The foreseen publication date should be at the beginning of 2007.

During Spring/Summer 2005, the editors, **Leila De Floriani** (DISI), leader of Task 6.1, and **Michela Spagnuolo** (IMATI), leader of Work Package 6, carried out a critical revision of the content of the STAR. New chapters were added, as well as some of the leading researchers in the field were invited to participate in the process. By the end of 2005/beginning of 2006, the various chapters were submitted to the editors by the authors, and in the first six months of 2006, the chapters have been undergoing a thorough review by leading experts in the field. Most of the reviews have been received and some of the chapters have already been revised of the authors.

In the remainder of this section, we provide the summary of the content of the book and a summary of each chapter.

Summary of the content

Several techniques have been developed in the literature for processing different aspects of the geometry of shapes, for representing and manipulating a shape at different levels of detail, and for describing a shape at a structural level in a concise, part-based, or iconic model. This book covers a variety of topics related to preserving and enhancing shape information at a geometric level, and to effectively capturing the structure of a shape by identifying relevant shape components and their mutual relationships.

The book is organized into *nine* chapters. The first two chapters survey geometry-based techniques for enhancing a shape description with information which can be effectively used to attach semantics to the shape, namely *shape interrogation* and *re-meshing* techniques. Chapter three, four and five survey techniques for shape representation at different resolutions, and, specifically, they cover *multi-resolution analysis*, for efficiently

representing functions at multiple levels of detail, *subdivision surfaces*, to define the basis for generating a smooth surface from a coarse mesh, and *Level-Of-Detail (LOD) shape models* for surfaces and volumes, based on meshes or implicit representations. The next three chapters survey structural shape representations. Chapter six reviews structural representations of a shape based on *skeletal structures*. Chapter seven and eight review *morphology-based descriptions* for scalar and vector fields, respectively. Finally, Chapter 9 deals with structural models and LOD techniques for applications representing the virtual human. Each chapter provides a state-of-the-art description and a classification of the techniques developed in the literature, and it identifies open problems.

Chapter 1: Shape Interrogation

Shape interrogation is the process of extracting information from a geometric model. It is of central importance in modern Computer Graphics and Computer Aided Design (CAD) systems. Wherever geometrical models are used, they often need to be analyzed with respect to different aspects like, for example, visual pleasantness, technical smoothness, geometric constraints or surface intrinsic properties. The various methods, which are presented in this survey, can be used to detect surface imperfections, to analyze shapes, or to visualize different forms. We do not restrict the shapes to be investigated to free-form surfaces, but we include polygonal meshes and algebraic surfaces. Special attention is paid to stable numerical and symbolic solving of algebraic systems of equations, a problem that arises in most shape interrogation methods. In this chapter, we first review interrogation methods for polygonal meshes, and then second-order shape interrogation and visualization techniques focusing mainly on free form curves and surfaces. We then discuss the use of robust symbolic computation methods for shape interrogation. Interrogation of algebraic curves is considered and, in particular, we describe the transversal problem of solving algebraic systems of equations .

- **Authors**: *Stefanie Hahmann (INPG), Alexander Belayev (MPI), Laurent Buse (INRIA), Gershon Elber (Technion), Ioannis Ivrissimtzis (MPII), Bernard Mourrain (INRIA), Christian Roessl (MPII)*

Chapter 2: Recent Advances in Remeshing of Surfaces

Remeshing is a key component of many geometric algorithms, including modeling, editing, animation and simulation. As such, the rapidly developing field of geometry processing has produced a profusion of new remeshing techniques over the past few years. In this chapter, we survey recent developments in remeshing of surfaces, focusing mainly on graphics applications. We classify the techniques into five categories based on their end goal: structured, compatible, high-quality, feature and error-driven remeshing. We limit our description to the main ideas and intuition behind each technique, and a brief comparison between some of the techniques. We also list some open questions and directions for future research.

- **Authors:** *Pierre Alliez (INRIA), Giuliana Ucelli (GraphiTech and IGD), Craig Gotsman (Technion), Marco Attene (IMATI)*

Chapter 3: Multi-resolution Analysis

Multi-resolution analysis has received considerable attention in recent years by researchers in the fields of computer graphics, geometric modeling and visualization. Its attraction is its utility as a powerful tool for efficiently representing functions at multiple levels-of-detail with many inherent advantages, including compression, LOD display, progressive transmission and LOD editing. A plethora of publications is easily found on these topics. This survey attempts to provide an overview of the recent results on the

topic of multi-resolution, with special focus on the work of researchers who are participating in the AIM@SHAPE project. Sections are presented on hierarchical freeform representations, multi-resolution methods for freeform spline spaces, possibly in conjunction with linear and non-linear constraints, and intrinsic multi-resolution decomposition. Variational design that aims at optimizing and/or fairing the shape is discussed in the context of multi-resolution representations and finally, multi-resolution representations for piecewise linear and triangular meshes are considered as well.

- **Authors:** *George-Pierre Bonneau (INPG), Gershon Elber (Technion), Stefanie Hahmann and Basile Sauvage (INPG)*

Chapter 4: Subdivision Surfaces and Applications

In this chapter, we will first introduce the fundamentals of subdivision surfaces, and then focus on two more advanced issues, namely the way subdivision surfaces support the representation of shapes with special features, and structured shape models. As far as the first issue is concerned, shape interrogation issues for the special case of subdivision surfaces will be discussed; in particular, artifacts which are typical in this geometric representation. As far as structuring of geometric information is concerned, multi-resolution subdivision surfaces can be seen as a natural choice for a multi-resolution approach to geometry representation, and as a possible way to structure geometry. Moreover, a first "semantic" structure can be given by a set of special geometric constraints the shape has to preserve. How subdivision surfaces can cope with constraint-based modeling will also be a section of the chapter. Finally, we will discuss how subdivision surfaces can support some structured representations, e.g. feature-based models and skeletal structures.

- **Authors**: *Chiara Eva Catalano (IMATI), Ioannis Ivrissimtzis (MPII), Ahmad Nasri (American University of Beirut)*

Chapter 5: Level-Of-Detail (LOD) Surface and Volume Modeling

Due to the rapidly increasing complexity of data sets which describe shapes such as free-form surfaces, terrains or volumetric scalar fields, the investigation of Level-Of-Detail (LOD) representations has been an active research area in the last few years. An LOD model is a compact description of several representations of a shape from which shape descriptions at different levels of detail can be extracted efficiently. The LOD can be variable in different parts of the representation, and it can be changed on a virtually continuous scale. In this chapter, we review first mesh-based LOD representations for free-form surfaces and terrains as well as mesh simplification algorithms for generating them. We will then consider volumetric LOD representations for implicit surfaces and 3D scalar fields based on hierarchical hexahedral or tetrahedral decompositions. Finally, we will investigate LOD representations based on structural information focusing on models for implicit surfaces generated by skeletons.

- **Authors:** *Leila De Floriani, Enrico Puppo (DISI), Marie-Paule Cani (INPG), Paolo Cignoni (Istituto di Scienze e Tecnologie dell'Informazione, CNR)*

Chapter 6: Skeletal Structures

Existing techniques can represent the geometry of a shape with high detail, typically through a dense mesh of simple basic elements such as triangles, tetrahedra, and cuboids. Such meshes can approximate the geometry of a shape arbitrarily well, but they fail in describing the morphological structure of the shape, which has a fundamental importance for shape classification and understanding and in data mining over the web. On the contrary, iconic models, intended as concise, part-based representations of a shape, provide more structured descriptions, even if sometimes less accurate. This

chapter covers a variety of methods for describing digital shapes through skeletal structures. The chapter will start with the definition of the existing skeletal representations: in particular, the notions of medial axis, skeleton, shock graph, Reeb graph, and their approximations in the discrete context will be addressed. Then we will cover the algorithmic aspects related to the surveyed methods providing comparative remarks and examples on applications. In the final section of the chapter we will point out future developments or existing challenges.

- **Authors:** *Silvia Biasotti, Michela Mortara, Michela Spagnuolo (IMATI), Dominique Attali (INPG), Gershon Elber (Technion), Jean-Daniel Boissonnat (INRIA), Gabriella Sanniti di Baja (Istituto di Cibernetica, CNR), Herbert Edelsbrunner (Duke University, USA), Mirela Tanase (UU)*

Chapter 7: Morphological Representations of Scalar Fields

In this chapter, we consider the problem of extracting and representing morphological information from scalar fields. This is a relevant issue for developing automatic tools for specifying, detecting and extracting knowledge from scientific data sets, such as terrain data, or volume data sets. There has been a considerable amount of research in the literature on extracting critical features from grey-level images and terrain models, and a quite limited amount of work in the case of 3D scalar fields. Here, we concentrate on a survey, analysis and comparison of techniques for morphological representations for 2D scalar fields. We will review methods which compute a decomposition of the domain of the field into a so-called Morse-Smale complex, both those based on a watershed approach and on computing the boundary of the regions of the complex. We will then review methods which compute a topological representation of the level set of a 2D field, called a contour tree. Extensions to the case of 3D scalar fields will be briefly discussed at the end.

- **Authors**: *Silvia Biasotti (IMATI), Leila De Floriani (DISI), Bianca Falcidieno (IMATI), Laura Papaleo (DISI)*

Chapter 8: Morphological Representations of Vector Fields

Vector fields are a very important and well-researched data class because they describe – among others – the flow of fluids and gases. In the last decade, a number of approaches to analyze and visualize them have been developed. Among them, feature based approaches play an important role because they offer to describe even complex flow behaviors by only a limited number of graphical primitives. Some of the most popular representatives of feature based methods are topological methods. The main idea of them is to segment the flow into areas of different flow behavior. To do so, critical points and separatrices of the flow are extracted. In this chapter we introduce topological features of 2D and 3D vector fields and discuss approaches to extract and visualize them. Special attention is paid to the representation of the temporal behavior of the features in time-dependent vector fields. Finally, we demonstrate applications of topological methods to compress, compare, simplify, and construct vector fields.

- **Authors:** *Holger Theisel (MPII) and Christian Roessl (MPII)*

Chapter 9: Control Structure and Multi-Resolution Techniques for Virtual Human Representation

A virtual human represents a typical instance of an articulated physical object: it does not have only one shape but many, corresponding to all the possible postures that the underlying articulated skeleton can reach. It is a subset of a larger family that can be defined as “articulated deformable characters”. To mimic the flexible and dynamic behavior of the human body shape, the traditional approach uses skeleton-driven

deformations: a classical method for the basic skin deformation that is the most widely used technique in 3D character animation. It binds a 3D shape representing the body shape to an articulated control skeleton. Binding information is then used to deform the body shape according to the skeleton motion. The control skeleton is the main structuring information for articulated deformable characters. Constructing such a character requires assembling a static 3D shape with a control skeleton so that skeleton-driven deformations accurately reproduce the body shape in any possible skeleton posture. For realistic rendering results, a high-quality texture is usually associated to the shape and skeleton structure. Basically, controlling and animating a virtual human model requires simultaneously many graphics and computation resources. Textured virtual humans are used in a wide range of applications (from movie films to 3D games) and platforms (from high-end graphics workstations to PDAs). Adapting a virtual human model to the application and platform context therefore requires defining levels of detail without penalizing the degrees of freedom and visual results. To that end, the production of LoDs must consider the virtual human as a whole, including the 3D body shape, the articulated skeleton and if necessary the texture, which implies to consider at the same time geometric and animation LoDs. Moreover, geometry simplification must not alter the degrees of freedom of the underlying skeleton and the visual quality of the associated texture. The first part of this chapter surveys the notions associated to the articulated control skeleton structure and reviews different existing approaches to build an articulated control skeleton and bind it to the skeleton. The second part addresses the methods related to the production of Levels of Detail (LoDs) for virtual humans. To achieve this objective, the global structure “shape + skeleton” is taken into consideration to simultaneously control the levels of detail of the 3D shape (geometry) and the articulated skeleton (motion and animation).

- **Authors:** *Thomas Di Giacomo, HyungSeok Kim, Laurent Moccozet, Nadia Magnenat-Thalmann (MIRAlab, University of Geneva)*

2.2 Effective Computational Geometry for Curves and Surfaces

The book on “Effective Computational Geometry for Curves and Surfaces” is a collection of contributions by leading experts in the field edited by Jean-Daniel Boissonnat (INRIA) and Monique Teillaud (INRIA). It will be published by Springer Verlag in its series on *Mathematics and Visualization.* The publication date is September 2006. The content of the book concerns topics within Work Packages 5 and 6.

The intent of this book is to settle the foundations of non-linear computational geometry. It covers combinatorial data structures and algorithms, algebraic issues in geometric computing, approximation of curves and surfaces, and computational topology. Each chapter provides a state of the art, as well as a tutorial introduction to important concepts and results. The focus is on methods which are both well founded mathematically and efficient in practice. References to open source software and discussions of potential applications of the presented techniques are also included. We list below the table of content of the book, for completeness.

Table of content

1 Introduction

2 Arrangements – *Authors: Efi Fogel, Dan Halperin, Lutz Kettner, Monique Teillaud, Ron Wein, Nicola Wolpert*

3 Curved Voronoi Diagrams - *Authors: Jean-Daniel Boissonnat, Camille Wormser, Mariette Yvinec*

4 Algebraic Issues in Computational Geometry - *Authors: Bernard Mourrain, Sylvain Pion, Susanne Schmitt, Jean-Pierre Técourt, Elias Tsigaridas, Nicola Wolpert*

5 Differential Geometry on Discrete Surface - *Authors: David Cohen-Steiner, Jean-Marie Morvan*

6 Meshing of Surfaces - *Authors: Jean-Daniel Boissonnat, David Cohen-Steiner, Bernard Mourrain, Günter Rote, Gert Vegter*

7 Delaunay Triangulation Based Surface Reconstruction - *Authors: Frédéric Cazals, Joachim Giesen*

8 Computational Topology: An Introduction - *Authors: Günter Rote, Gert Vegter*

9 Appendix -Generic Programming and The Cgal Library - *Authors: Efi Fogel, Monique Teillaud*

3 SPECIAL ISSUES OF SCIENTIFIC JOURNALS

In this section we present special issues of leading scientific journals in the field which have been published during the period January 2005 - June 2006, or are under development. All special issues concern topics within the three research work packages of the Network. The organization of a special issue is typically done by a researcher of one consortium partner together with a researcher outside the Network, thus contributing to opening toward collaborations with other communities. For each special issue, we report below the name of the journal, the editors (we have highlighted the editors from AIM@SHAPE), the topic, and the status of the issue.

Title: Shape Reasoning and Understanding.

- **Journal:** Computers and Graphics
- **Guest Editors:** Bianca Falcidieno (IMATI) and Remco Veltkamp (University of Utrecht):
- **Status:** call for paper issued in 2005 and handling of the review process before December 2005
- **Publication:** Computers & Graphics, volume 30, number 2, April 2006.

Content:

- Reverse engineering of architectural buildings based on a hybrid modeling approach - *Authors: Livio De Luca, Philippe Veron and Michel Florenzano*
- Shape reasoning on mis-segmented and mis-labeled objects using approximated Fisher criterion - *Authors: Hervé Glotin, Sabrina Tollari and Pascale Giraudet*
- From geometric to semantic human body models - *Authors: M. Mortara, G. Patané and M. Spagnuolo*
- Second order 3D shape features: An exhaustive study - *Authors: Marco Reisert and Hans Burkhardt*

Title: Shape Similarity Detection and Search for CAD / CAE Applications

- **Journal:** Computer Aided Design

- **Guest Editors:** William C. Regli (Drexel University, USA) and Michela Spagnuolo (IMATI)
- **Status:** Call for papers and first stage of the review process for two special issues by the end of 2005
- **Expected publication:** October 2006

Title: Mesh Analysis

- **Journal:** Computers and Graphics
- **Guest Editors:** Ayellet Tal (Technion), Thomas A. Funkhouser (Princeton University, USA), Ariel Shamir (The Interdisciplinary Center, Israel)
- **Submission Deadline**: November 5, 2005
- **Completion of Minor Revision Reviews:** February 5, 2006
- **Publication Materials Due**: May 5, 2006
- **Expected Publication:** vol. 30, no. 6, December 2006

Title: CGAL - the Computational Geometry Algorithms Library

- **Journal:** Computational Geometry: Theory and Applications
- **Guest Editors:** Bernd Gärtner (ETH, Zürich, Switzerland), Remco Veltkamp (University of Utrecht)
- **Submission Deadline:** March 1, 2006
- **Acceptance Decision**: July 1, 2006
- **Final version due:** November 1, 2006

4 SURVEY PAPERS

In this section, we list the survey papers published or submitted by the partners. Please note that we do not list the survey papers which are the chapters of the two books on which we reported in Section 2.

The following survey papers have been published within the topics of Work Package 5. They are based on the state-of-the-art report of Work Package 5 (Deliverable 5.1):

- Remco C. Veltkamp, Johan W.H. Tangelder. *Content Based 3D Shape Retrieval,* In: Encyclopedia of Multimedia, Borko Furht (Ed.), ISBN: 0-387-24395-X, Springer 2006.
- F.B. ter Haar, P. Cignoni, P. Min, R.C. Veltkamp, *A Comparison of Systems and Tools for 3D Scanning*. In: Proc. 3D Digital Imaging and Modeling: Applications of Heritage, Industry, Medicine and Land. 2005.
- Arnout Ruifrok, Alize Scheenstra, Remco C. Veltkamp., *A Survey of 3D Face Recognition Methods*. Audio- and Video-based Biometric Person Authentication (AVBPA 2005), LNCS 3546, p. 891-899.

The following survey papers have been published or submitted on topics of Work Packages 6 and 7:

- Leila De Floriani, Annie Hui, *Data Structures for simplicial complexes: an analysis and a comparison*, Symposium on Geometry Processing (SGP 2005), Vienna, July 4-6, 2005 [Workpackage 7]
- Johan W. H. Tangelder, Remco C. Veltkamp. *A Survey of Content Based 3D Shape Retrieval Methods*. Multimedia Tools and Applications (under review) [Workpackage 6].
- Emanuele Danovaro, Leila De Floriani, Enrico Puppo, Hanan Samet, *Out-of-Core Multi-resolution Modeling,* Modelling and Management of Geographical Data over Distributed Architectures, Springer Verlag, Lecture Notes on Computer Science (accepted for publication) [Workpackage 6].

5 TUTORIALS AND STATE OF THE ART REPORTS

In this section we report on tutorials and state-of-the-art reports presented by the partners at leading conferences in the field. The tutorial notes and the reports have been published in the proceedings, and co-authored by researchers in the Network and leading researchers in the field. We list here tutorials and STARs presented at SIGGRAPH in the United States and at Eurographics in Europe. These are the two major conferences in the field of Computer Graphics, and they have a very large attendance. We highlighted in the list the researchers from the Network.

Tutorials at SIGGRAPH 2005:

- Marc Alexa (TUD), Haixia Du (NIH), John C. Hart (University of Illinois), *Modern Techniques for Implicit Modeling*.
- Daniel Thalman (EPFL), Laurent Kermel, (PDI/DreamWorks) William Opdyke (PDI/DreamWorks), Stephen Regelous (Massive Software), *Crowd and Group Animation*.

Tutorials and STARs at Eurographics 2005:

- Nadia Magnenat-Thalmann (University of Geneva), Pascal Fua, Frederic Vexo (EPFL), Daniel Thalmann (EPFL), H. Kim, *Mixed realities in inhabited worlds* (Tutorial).
- Nadia Magnenat-Thalmann (University of Geneva), Pascal Volino (University of Geneva), Bernhard Thomaszewski (University of Tübingen), Markus Wacker (University of Tübingen), *Key techniques for interactive virtual garment simulation* (Tutorial).
- Marc Alexa (TUD), Alexis Angelidis (INPG), Marie-Paule Cani (INPG), Karan Singh University of Toronto), Denis Zorin (NYU), *Interactive Shape Modeling* (Tutorial).
- Andrew Nealen (TUD), Matthias Müller (NovodeX/AGEIA), Richard Keiser (ETH Zürich), Eddy Boxerman (University of British Columbia), Mark Carlson (DNA Productions Inc.), *Physically Based Deformable Models in Computer Graphics* (STAR).

Tutorials at SIGGRAPH 2006:

- Marc Alexa (Technische Universität Berlin), Marie-Paule Cani (INPG), Sarah Frisken (Tufts University), Steven Schkolne (California Institute of the Arts), Karan Singh (University of Toronto), Denis Zorin (New York University), *Interactive Shape Editing.*

- Mario Botsch, Mark Pauly (Eidgenössische Technische Hochschule Zürich), Stephan Bischoff, Leif Kobbelt (RWTH-Aachen), Christian Rössl (MPII), *Geometric Modeling Based on Triangle Meshes.*

Tutorials at Eurographics 2006:

- Wolfgang Strasser (University of Tübingen), Nadia Magnenat-Thalmann, (MIRALab, University of Geneva), Pascal Volino (University of Geneva), Bernhard Thomaszewski (University of Tübingen), *High Performance Virtual Garment Simulation*.
- Nadia Magnenat-Thalmann (University of Geneva), George Papagiannakis (University of Geneva), Antonio Frisoli (Percro), Massimo Bergamasco (Percro), *Real-time Inhabited Virtual Worlds and Interaction*.
- Daniel Thalmann (EPFL), Carol O'Sullivan (Trinity College, Dublin), Pablo de Heras Ciechomski (EPFL), Simon Dobbyn (Trinity College, Dublin), *Populating Virtual Environments with Crowds*.
- Matthias Teschner (Freiburg University), Marie-Paule Cani (INPG), Ron Fedkiw (Stanford University, USA), Stephane Redon (INRIA Rhone-Alpes, France), Pascal Volino (University of Geneva), Gabriel Zachmann (Clausthal University, Germany), Robert Bridson (University of British Columbia), *Collision Handling and its Applications*.

6 CONCLUSIONS

This deliverable shows the relevant editorial dissemination activity carried on by all the partners in AIM@SHAPE in terms of openness toward the international scientific community. Several scientists outside the Network, and often in the US community, have been involved in some activities, in the organization of special issues of journals and of tutorials, or as co-authors of survey papers and contributed book chapters. Also, the editorial activities have been an important opportunity for integration among the partners, who have collaborated tightly especially for the book on "*Shape Analysis and Structuring*" and on numerous survey papers. The publication venues of the various contributions (books, special issues, tutorials, survey papers) shows also the high quality of the research performed in the Network and the international recognition of AIM@SHAPE in the scientific community.