SIFEM project
FP7-ICT-2011-9-600933

FP7 Contract: 600933

Semantic Infostructure interlinking an open source Finite Element tool and libraries with a model repository for the multi-scale Modelling and 3d visualization of the inner-ear

Presentation
by

Milos Kojic
Senior Member, Houston Methodist Research Institute
External Expert from USA

PARTICIPANTS IN THE PROJECT

No	Name	Short name	Country	Project entry month[10]	Project exit month
1	NATIONAL UNIVERSITY OF IRELAND, GALWAY	NUIG	Ireland	1	36
2	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	ICCS	Greece	1	36
3	UNIVERSITY OF SOUTHAMPTON	ISVR	United Kingdom	1	36
4	LINKOPINGS UNIVERSITET	LiU	Sweden	1	36
5	BioIRC d.o.o. Kragujevac	BioIRC	Serbia	1	36
6	INTRASOFT INTERNATIONAL SA	INTRASOFT	Luxembourg	1	36
7	UNIVERSITY COLLEGE LONDON	UCL-EI	United Kingdom	1	36
8	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS	UoA	Greece	1	36
9	THE METHODIST HOSPITAL RESEARCH INSTITUTE	TMHRI	United States	1	36
10	THE RESEARCH TRUST OF VICTORIA UNIVERSITY OF WELLINGTON	RTV	New Zealand	1	36

WORK PACKAGES

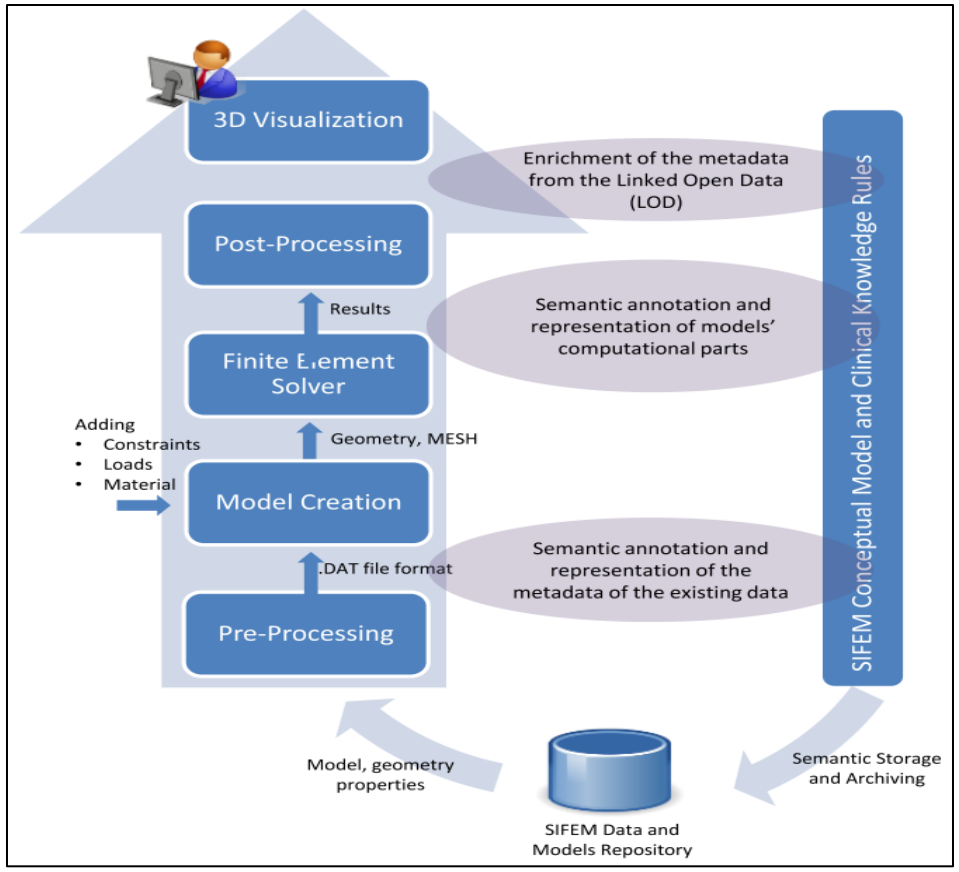
WP Number [63]	WP Title	Type of activity [64]	Lead beneficiary number [65]	Person-months [66]	Start month [67]	End month [68]
WP 1	Project Management, Dissemination and Exploitation	MGT	1	50.20	1	36
WP 2	Design of the SIFEM system	RTD	2	34.00	1	9
WP 3	Open Source Finite Element Modelling Tool and 3D Visualization	RTD	5	103.00	4	27
WP 4	Multi-Scale Modelling of the Inner-Ear	RTD	3	75.50	4	27
WP 5	SIFEM Rich Semantic Infostructure	RTD	1	40.00	10	27
WP 6	SIFEM Infrastructure Integration	RTD	6	77.00	13	36
WP 7	Validation, Models Verification and SIFEM Infostructure Evaluation	RTD	2	46.50	16	30
			Total	426.20		

PROJECT GOALS

- Development of an infrastructure to interlink various computational tools and libraries with the clinical knowledge
- Delivery of a robust multi-scale model of the inner-ear
- Expose models and other linked data in standard, published formats
- Contribute to the knowledge related to diverse cochlear disorders in order to achieve personalized healthcare

FINAL OUTCOME

Functional 3D multi-scale and validated inner-ear model



Bioengineering Research and Development Center
Prvoslava Stojanovica 6, 34000 Kragujevac
Serbia
www.bioirc.ac.rs bioirc@kg.ac.rs

ADMINISTRATIVE DETAILS

- Information about the EU program obtained through web page of CORDIS site and via scientific conferences
- Project partners established through previous collaboration and web pages
- Application prepared together with collaborator from Greece and other institutions in Serbia
- Work on application required about 2 months of intensive effort
- Work with US researchers is exceptionally successful
- Plenary meetings are scheduled every 3 months
- Review meetings are scheduled annually
- Good progress has been achieved within the first 4 months

ADMINISTRATIVE DETAILS

UNSUCCESSFUL ENGAGEMENT OF AMERICAN INSTITUTION

- Initially proposed Houston Methodist Research Institute to be a partner in the Project

- Consortium Agreement could not be signed due to disagreements about which laws and jurisdiction are applicable

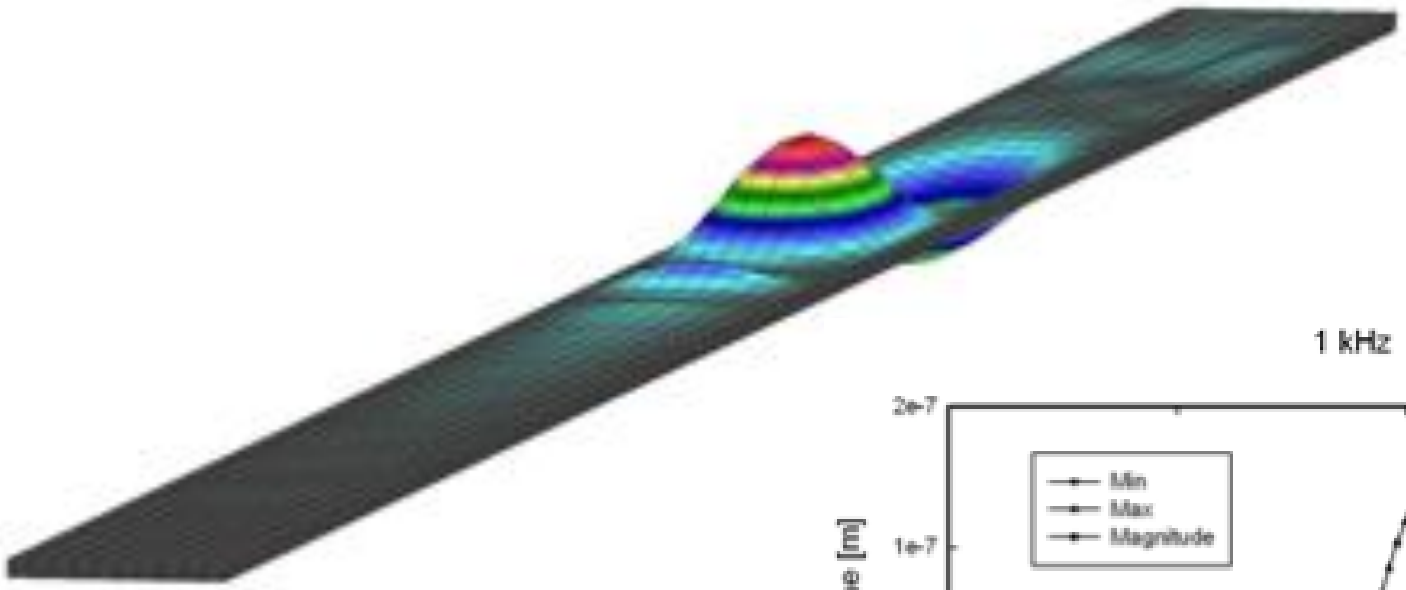
- Then, University of Houston was proposed and again the CA could not be signed due to the same reasons

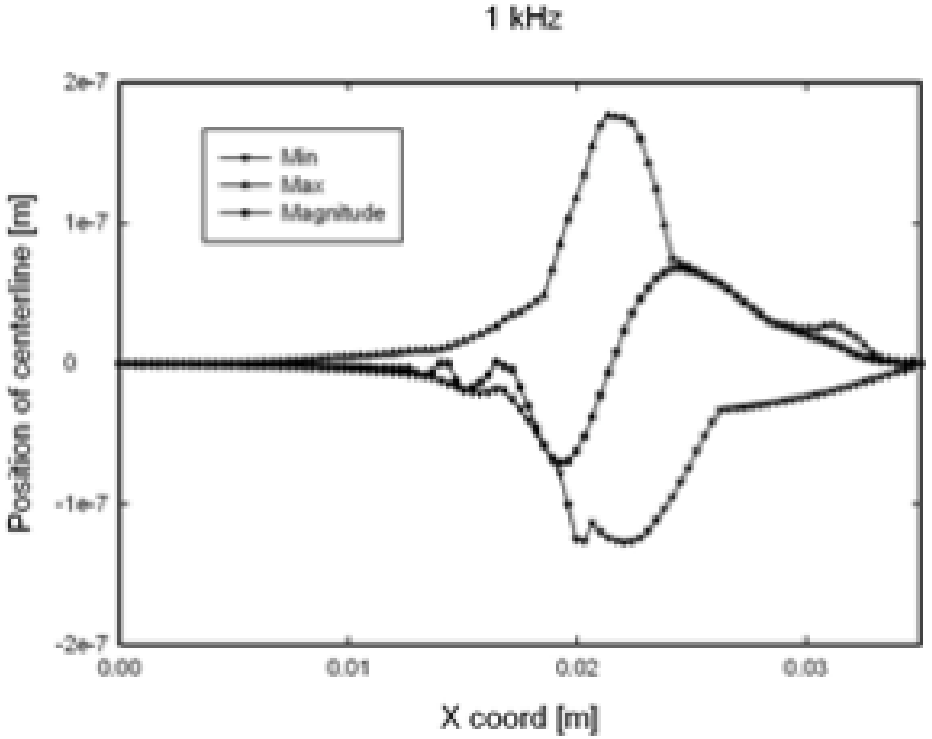
Article 11.7 **Applicable law**

This Consortium Agreement shell be constructed in accordance with and governed by the laws of Belgium

11.8 **Settlement of disputes**

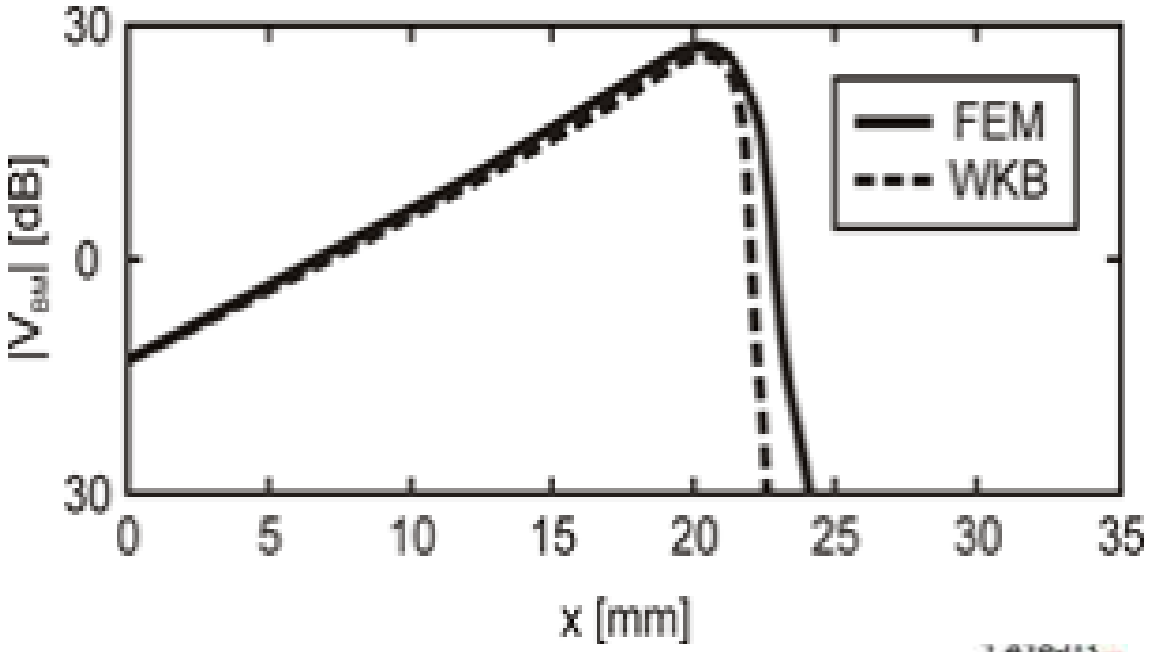
.. the Dispute shell be finally settled under the Rules of Arbitration of the International Chamber of Commerce...



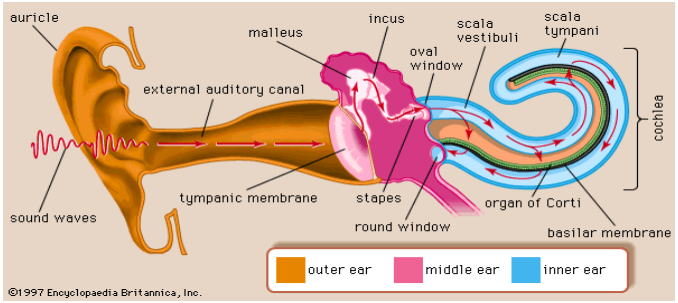


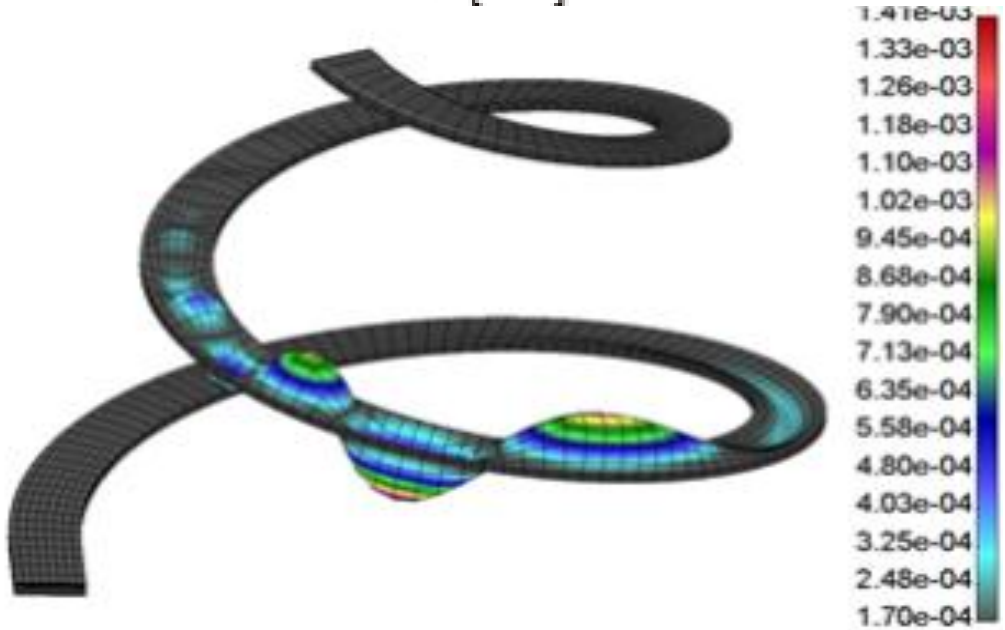
Basilar membrane displacements distribution (top) and centerline position along distance from base (bottom) with frequency of 1000 Hz

RESULTS



Distribution of the amplitude of modal velocity along basilar membrane for frequency of 1000 Hz





Response of coiled spiral basilar membrane for excitation frequency of 1000 Hz

CONCLUDING REMARKS

It is expected that this Project will:

- **Provide new fundamental knowledge related to diverse cochlear disorders**
- **Offer a robust multi-scale computational model of the inner-ear**
- **Help in achieving personalized healthcare**

Acknowledgments

Professor Nenad Filipovic

BioIRC

Bioengineering Research and Development Center

Prvoslava Stojanovica 6,
34000 Kragujevac
Serbia
www.bioirc.ac.rs
bioirc@kg.ac.rs