It has been 2 full and exciting years since Lars Beex and I arrived at the University of Luxembourg. Jack Hale joined us from the start from Imperial College and we had no time to get bored since our arrival (see list of publications in annex)!

Early 2016, the Legato-Lux-team, created this year will be made up of approximately 10-15 researchers, mainly post-doctoral fellows, and three PhD students.

An exciting piece of news is that Luxembourg is moving into the Computational Modelling direction, with the creation of an interdisciplinary research centre high on the agenda. Through collaborations with Mathematics, Physics and Life Sciences, this promises to lead to productive years and exciting multi-disciplinary research.

Pierre Kerfriden has been leading the Cardiff computational mechanics group since Stéphane left in 2013 with great success. 2016 will be a year where we will intensify exchanges between Cardiff and Luxembourg.

The core of this year’s research was within the ERC Starting Grant RealTcut, and Stéphane’s University of Strasbourg Institute for Advanced Studies Fellowship. Our collaboration with INRIA, both with Stéphane Cotin and Christian Duriez has strengthened. For example, we have developed a real-time error estimation and mesh adaptation technique for soft tissue simulations (Phuoc Huu Bui).

Jack Hale, now permanent researcher at Legato has developed strong relationships with ICES Texas (Tan Bui-Thanh), Oxford Mathematics Department (Farrell) and the FEniCS project. He is working on the release of a FEniCS Shell project (Maurini).
Lars Beex has continued working on the quasi-continuum method, making significant improvement to the projection and interpolation methods, devising a new integration technique for reduced order models, and, with our student Hussein Rappel and Jack, a new Bayesian inversion approach for elasto-plasticity. He has also developed a comprehensive crystal-plasticity coding environment in Matlab®.

Lars is also responsible for a number of projects, in particular in collaboration with e-Xstream, in particular for the M-ERANET funded project STOMMMAC. Lars has been very actively pursuing our collaboration with Prague, in particular with Jan Zeman. He has also started a collaboration with Saarbrücken (S. Diebels' group, in particular A. Jung).

lars.beex@uni.lu

Stéphane continued to work with Andrés and the CENAERO team on 3D adaptive methods for fracture using the extended finite element method. This work is done in collaboration with Yuan Jin, Olivier Pierard and Eric Wyart at CENAERO and Andrés Gonzalez Estrada, now an academic at Universidad Industrial de Santander in his native Colombia.

Stéphane, Jack and Satyendra have started a fruitful collaboration with Mathematicians in Besançon: Franz Chouly, Alexei Lozinski on goal-oriented error estimation for large deformation problems. This project is in collaboration with Yohan Payan, Marek Bucki (Texisense) and Pierre-Yves Rohan.

Happy 2016! Let us aim for 2016 to be a year full of tolerance and understanding. Let us do good around us in the hope that it propagates further on with its own momentum.

Stéphane P.A. Bordas
and the team

(viel) Spaß

2 http://legato-team.eu

2016 highlights

- Jan: Visits of Elena Atroshchenko and Julien Réthoré
- Feb: Luxembourg workshop in medical simulation
- May: GIAN Course at IIT Madras (with Sundararajan Natarajan)
- ECCM Crete: large presence of Legato planned
- Lars to present in St-Petersburg for a Plenary lecture at Advanced Problems in Mechanics
- Luxembourg to join ECCOMAS with the creation of the Luxembourg Association for Computational Mechanics
- Faculty position open in computational mechanics
- Volume 49 of Advances in Applied Mechanics
- New collaboration with Roman Nowak (Finland) to start
- New collaboration with Elias Aifantis, Pierre Kerfriden and Elena Atroschchenko
We are still very fortunate to have Winthrop Professor Karol Miller from University of Western Australia (Distinguished Honorary Professor at Cardiff University) under the INTERMOBILITY Scheme from the Luxembourgish National Research Fund (FNR) for his sabbatical visit. Our joint work has been most productive in terms of joint publications, in particular in collaboration with George Bourantas (submitted and in preparation). In 2015, Karol became associate editor of the Journal Annals of Biomedical Engineering. With Elena Atroshchenko work on Cosserat, IGABEM continued and was very productive and fun. We all look forward to 2016! Stéphane is now an adjunct professor at the University of Western Australia, Department of Mechanical and Chemical Engineering, Intelligent Systems for Medicine Laboratory.
Elisa is leaving and now seeking a faculty position. We are very grateful to have worked together with you and wish you well for your career, which promises to be most

Alex will fly to warmer horizons in Nice to model breasts… We will be staying in touch to complete a few (!) papers and hope to collaborate through H2020 proposals…

Thank you for being our webmaster this year! You will be hard to “replace…”

As part of ERC RealITCut, Vahid will work on massively parallel phase field models of fracture in large deformations, Davide on model order reduction for patient specific models, Kostas will continue his excellent work on well-conditioned XFEM for fracture and Paul Hauseux will focus on uncertainty quantification for biomechanics problems.

We will have the chance to receive a number of Chinese-Scholarship-Council—funded PhD students from China in Cardiff (and Luxembourg) in 2016. Welcome to Jason Deng this year!
A) 2015 Publications with peer review process


