

## Short Term Scientific Mission Report

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The mission included the number of meetings with academics and industry representatives and a seminar dedicated to problems solved in the past ESGI and our approach to its organisation and running. The mission went according to the work plan as detailed below:

*a) To pitch the ESGI to Israeli companies*

At the beginning of my trip I met with Ms Elena Donets, the CEO of the StarTAU – the largest and most active entrepreneurship centre in Israel (<http://en.startau.co.il/>). Our discussed cantered around the number of issues:

- *Interest of the start-up companies in collaboration with mathematicians*  
Israeli start-up companies are actively hiring and searching for applied mathematicians and experts in data analytics with a main goal to use their algorithm development skills for success of the business. The companies are also interested in hiring academics as consultants for various projects.
- *Barriers in collaboration between academia and industry*  
The companies often get frustrated as they don't get any positive response from academics and find it very hard (almost impossible) to make mathematicians interested in the problems faced by industry. On the other hand, the situation is very different with Computer Science, where researchers are much more open for academia-industry collaboration. Israeli universities have still very outdated IP share and protection policy, which also makes the collaboration between industry and academia difficult.
- *Organisation of the ESGI and similar events in Israel*  
The StarTAU centre would be very happy to help to organise ESGI in Israel. It has a long and successful experience in organisation of Hackatlons – similar type of events involving computer scientists and programmers from industry and academia. The Hackatlons have different format: large number of participants (usually few hundreds), significant number of problems and a sort of competition, when more than one group can be working on one problem. The Hackatlons are usually shorter than ESGI and spread over 2-3 days. In the recent years, the concept of Hackatlons, initially developed for Cybersecurity experts, has been also adopted by Social Sciences and Finance and Business communities among others. So it would be worth at least to try organise such event for mathematicians as well.
- *Participation of Israeli companies in ESGI outside Israel*  
Israeli companies are still unfamiliar with the ESGI concept and they are very careful with their IP. However, many multinational companies that regularly take part in ESGI have their R&D centres in Israel, so they might bring the problem of interest to ESGI through their local representatives. An example is Analog Devices, which has R&D centres in both Israel and Ireland and it regularly submits problems to Irish ESGI. Open access (no IP protection) policy of ESGI can be one of the major barriers in participation of Israeli companies in ESGI outside Israel.

During my visit I met with researchers working in two companies: Nova Measuring Instruments (Israeli company traded on NASDAQ) and St Jude Medical (a global medical device company that maintains one of its largest R&D centre in Israel). Both companies have prob-

lems that would fit very well with the interests and the expertise of ESGI participants. My contact in Nova agreed to bring the idea of participation in ESGI in Dublin to the management committee, however, there are better chances that they would present this problem to ESGI in Israel, where they can be more involved in the solution process. On the other hand, St. Jude would have a serious problem with IP protection and until this issue is resolved, their participation in ESGI seems to be impossible.

*b) To advertise ESGI to potential Israeli participants*

I had series of meetings with Israeli scientists to facilitate the participation of Israeli mathematicians in ESGI. On these stage two Israeli mathematicians have already registered as participants in the ESGI-118 in Dublin and we expect more participants to register as soon as the workshop problems will be announced in late April. The main problem for Israeli participants in ESGI is funding: most scientists need to get permission from the university to use their conference allowance. However, workshops, where they aren't giving a talk/presenting a poster (like ESGI) aren't recognised as such. The flight tickets from Israel to most European destinations are relatively expensive as well.

The workshop fliers were distributed in Tel Aviv University, Technion and Ort Braude College. In Tel Aviv University, I met with Prof Eli Turkel (who was my host), the Head of School of Mathematical Sciences Prof. Nir Sochen, Head of the Systems Engineering Department Prof. Michael Margaliot among others. In Technion, I met Prof. Jacob Rubinstein – internationally renown expert in theory and applications of Partial Differential Equations and one of the few Israeli mathematicians who has very strong connections with industry (in 2003, Prof Rubinstein has co-founded a start-up company that specialises in industrial optics and it still exists today). Prof. Rubinstein will be a keynote speaker in the ESGI-118 and he will lead one of the groups.

In Ort Braude College, I met the faculty members and gave a seminar dedicated to ESGI with special emphasis on types of the problems we have approached in the past and the organisational issues related to this event. The presentation is attached to my report.

*c) Plan ESGI in Israel in the near future*

Among the goals of my visit was to help to plan ESGI in Israel in the near future. During my trip I have connected between the entrepreneurship centre StarTAU and my colleagues from Ort Braude College, Tel Aviv University and Technion to form a critical mass of companies and mathematicians that will make such event possible. StartTAU will help with bringing on board the companies, which would be interested to take part in such a workshop. One of the important things is that the workshop should be open to all mathematicians, statisticians and computational scientists and advertised in Computer Science Departments and Engineering Schools as well: many of these units are employing applied mathematicians, while Mathematics Departments are mostly staffed with pure mathematicians. We agreed that my colleagues in Ireland and I will help to organise the Student Mathematical Modelling Workshop in conjunction with a major international conference on Theory and Applications of Differential Equations planned in Israel in May 2017. This workshop will be followed by the bid for ESGI.