

Project: FOTONIKA-LV

Unlocking and Boosting Research Potential for Photonics in Latvia – Towards Effective Integration in the European Research Area

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Report on Participation in high level international conferences

**WP4. Knowledge Transfer and Training: Organisation of Workshops,
Conferences and Research Courses**

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1. Introduction

Participation to the international conferences / workshops / etc. is a part of the project FOTONIKA-LV Work Package 4 “Knowledge Transfer and Training: Organisation of Workshops, Conferences and Research Courses”; in particular, the Task 4.1 foresees “Presentation and testing the FOTONIKA-LV researches community scientific results at high level international conferences”.

The main objectives of this Task are, to:

- present at least 24 reports on the results of basic and applied research carried out in photonics domain in Riga (both by Association FOTONIKA-LV member Institutes as well as by recruited scientists) by participating at international conferences in the photonics sector,
- establish contacts with world class scientists for further collaboration in the field,
- raise publicity and visibility of FOTONIKA-LV researchers’ community and promote *Rīgas Fotonikas Centrs* in general,
- become a recognised partner in the European Research Area (ERA) in this field.

Task 4.1 runs throughout the whole project duration. The activities performed during the 1st reporting period from 1 February 2012 to 31 July 2013 are discussed in the Deliverable D4.9: 17 researchers were supported in attending of 15 international events with 18 different reports; more than 20 contacts with world class scientists were established for further collaboration in the field.

This report covers mobility activities from 1 August 2014 to 31 January 2015.

2. Background information

Researchers from the Association FOTONIKA-LV formed by-bottom up initiative of three well recognised institutes at the University of Latvia - Institute of Atomic Physics and Spectroscopy, Institute of Astronomy, Institute of Geodesy and Geoinformatics are active in presentation and testing research results at conferences on topics dealing with fundamental and applied photonics, quantum sciences and space sciences and related technologies. Although each of the three institutes legally is separate entity, the research activities are joined in order to benefit from synergy.

The leading scientists Professor Janis Spigulis, Dr. Janis Alnis (repatriate, Germany), Dr. Arnolds Ubelis have contributed in establishing contacts with world class scientists for further collaboration in the field and raising the publicity and visibility of FOTONIKA-LV researchers' community. Also, repatriated and recruited researchers Vidvuds Beldavs (USA), Amara Graps (USA), Teodora Kirova (Bulgaria), Jorge del Pino (Cuba), Miķelis Svilans (Canada) have promoted *Rīgas Fotonikas Centrs* in general.

Our Young researchers at international conferences are presenting mainly a poster report; however, Kalvis Salmiņš took the advantage of oral reports for presenting current findings in laser ranging at the University of Latvia on conferences beyond EU – Japan and USA.

The Task 4.1 is carried out in synergy with Task 4.3 “Organisation of the 1st International Conference and Training course “Biophotonics - Riga 2012”” and Task 4.4 “Organisation of the 1st International Conference and Training course “Nocturnal - Riga 2014”” by training young researchers for presentations at International conferences. Among the ones attracting interest of established foreign researchers can be mentioned:

- **S.Fomins, et al.** Modelling the Appearance of Chromatic Environment Using Hyperspectral Imaging: presentation at “BIOPHOTONICS – Riga 2014” Conference;
- **D.Jakovels, et al.** Application of Principal Component Analysis to Multispectral Imaging Data for Evaluation of Pigmented Skin Lesions: presentation at “BIOPHOTONICS – Riga 2014” Conference;
- **K.Kanders, et.al.** Assessment of Conduit Artery Vasomotion Using Photoplethysmography: presentation at “BIOPHOTONICS – Riga 2014” Conference;
- **U.Rubins, et al.** Application of Colour Magnification Technique for Revealing Skin Microcirculation Changes under Regional Anaesthetic Input: presentation at “BIOPHOTONICS – Riga 2014” Conference;
- **A.Apsītis, et.al.** Optimisation of continuous wave excitation for ROFLEX-type iodine EDSLs sources: poster at “NOCTURNAL – Riga 2014” Conference;
- **L.Asare.** Signal Analysis of Multi-spectral Photoplethysmograph Biosensor: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **A.Bekina, et al.** Multimodal Device for Assessment of Skin Malformations: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **J.Blahins, et al.** A Concept of High-Accuracy DIY 3D Plasmotron Printer for Medical Applications: poster at “NOCTURNAL – Riga 2014” Conference;
- **I.Brice, et al.** Towards Skin Fluorescence Diagnostics Using Femtosecond Frequency Comb Laser: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **I.Brice, et al.** GNSS More Than a Tool for Navigation: poster at “NOCTURNAL – Riga 2014” Conference;

- **A.Bzhishkyan, et al.** Low-budget solutions in computerisation and exploitation of precious experimental equipment: poster at “NOCTURNAL – Riga 2014” Conference;
- **K.Chabs, et al.** Use of fuzzy logic for vegetation mapping in landsat-8 satellite image: poster at “NOCTURNAL – Riga 2014” Conference;
- **I.Ferulova, et al.** Fluorescence Lifetime Spectroscopy: Potential for In-vivo Estimation of Skin Fluorophores Changes after Low Power Laser Treatment: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **S.Fomins, et al.** Identification of Deposits on Contactlens Surface: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **D.Haritonova, et al.** Project of multi-purpose optical tracking system: design and deformations of optical system’s transmitting path: poster at “NOCTURNAL – Riga 2014” Conference;
- **D.Jakovels, et al.** Assessment of Efficiencies of Electroporation and Sonoporation Methods by Fluorescence RGB Imaging Method: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **I.Janpaule, et al.** High Accuracy Latvian Geoid Model for GNSS Measurements: poster at “NOCTURNAL – Riga 2014” Conference;
- **A.Lihachev, et al.** Fluorescence Spectroscopy for Estimation of Anticancer Drug Sonodestruction in Cell Culture: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **I.Lihacova, et al.** Development of Multispectral Imaging Method for Skin Pathology Diagnostics: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **K.Miculis.** Overview of advances in research in photochemistry of nocturnal atmosphere: poster at “NOCTURNAL – Riga 2014” Conference;
- **J.Rutkis, et al.** Dust particle counting in ambient laboratory air: poster at “NOCTURNAL – Riga 2014” Conference;
- **I.Saknite, et al.** Water Detection In Skin By Dual-Band Photodiodes: poster at “BIOPHOTONICS – Riga 2014” Conference;
- **J.Zaharans, E.Zaharans, et al.** A Development of Multispectral Approach to Evaluate the Cardiometabolic Risk Related to Alterations in Body Composition: poster at “BIOPHOTONICS – Riga 2014” Conference.

3. Promotion of basic and applied research results in photonics domain obtained in Riga

The objective of the task is to facilitate transfer of knowledge in photonics at national and international level and raise publicity and visibility of FOTONIKA-LV researchers' community in the European Research Area by participation for at least 24 conferences in the photonics fields.

During the second reporting period in total 30 participations of 17 researchers were supported in attending 18 diverse high-level international events: 2 general assemblies, 2 symposiums, 7 conferences and 7 workshops where 12 oral presentations and 7 poster reports of FOTONIKA-LV participants research results were presented; also, 7 research promotion visits and 4 Horizon 2020 proposal preparation meetings took place (Annex 1).

3.1. Overview of events

The results were presented at photonics related conferences and other events throughout Europe including several travels outside EU: USA, Japan, Taiwan and Russia. The conference themes covered photonics technologies, biophotonics, quantum sciences, atomic and molecular physics as well as geosciences, stellar systems and satellite laser ranging (Table 1).

Table 1. List of attended conferences

	Conference	www	Place	Dates
1.	International Association of Geodesy, Scientific Assembly 2013	www.iag2013.org	Potsdam, Germany	1-6 September, 2013
2.	ESA Living Planet Symposium	www.livingplanet2013.org	Edinburgh, UK	9-13 September, 2013
3.	18 th International Conference on Innovation "Baltic Dynamics 2013"	www.balticdynamics.com	Riga, Latvia	11-13 September, 2013
4.	The Progress in Photonics	www.oulu.fi/eeng/oemlab	Oulu, Finland	30 September, 2013
5.	The Next Giant Leap: Leveraging Lunar Assets for Sustainable Pathways to Space	http://2014giantleap.aerospacehawaii.info/	South Kohala, Island of Hawai'i; USA	09-13 November 2014
6.	18 th International Workshop on Laser Ranging - Pursuing Ultimate Accuracy & Creating New Synergies	http://geo.science.hit-u.ac.jp/lw18	Fujiyoshida, Japan	11-15 November, 2013
7.	18 th Meeting of the International Optoelectronics Association (IOA); EPIC 10 th Anniversary	www.epic-assoc.com/events/?at=30	Brussels, Belgium	12-13 December, 2013
8.	SPIE Photonics West / BiOS	http://spie.org/x105834.xml	San Francisco, USA	1-6 February, 2014

	Conference	www	Place	Dates
9.	International workshop on scientific use, digitization and preserving astronomical photographic records	www.astroplate.cz/	Prague, Czech Republic	15-23 March, 2014
10.	Industrial Technology Conference	www.industrialtechnologies2014.eu/	Athens, Greece	9-11 April, 2014
11.	SPIE Photonics Europe 2014	http://spie.org/x107471.xml	Brussels, Belgium	14-17 April 2014
12.	ESA Workshop: Industry Space Days - B2B	www.industryspacedays.com/en/	Nordwijk, the Netherlands	3-4 June, 2014
13.	Asteroids, Comets and Meteors 2014 Conference	www.helsinki.fi/acm2014	Helsinki, Finland	29 June - 4 July, 2014
14.	6 th International Symposium on Non-equilibrium Processes, Plasma, Combustion and Atmospheric Phenomena - NEPCAP 2014	www.icp.ac.ru/v-mire-nauki/konferencii/russia/2716-6th-international-symposium-on-non-equilibrium-processes-plasma-combustion-and-atmospheric-phenomena-nepcap-2014-6-10-oktyabrya-2014g-g-sochi.html	Sochi, Russia	6-11 October, 2014
15.	Workshop on Coherent Manipulation between Light and Matter and the Third TLL/COLIMA Meeting	http://phys.cts.nthu.edu.tw/actnews	Hsinchu, Taiwan	16-28 October 2014
16.	19 th International Workshop on Laser Ranging, Celebrating 50 Years of SLR: Remembering the Past and Planning for the Future	http://cddis.gsfc.nasa.gov/lw19/	Annapolis, MD; USA	27-31 October, 2014
17.	5 th International GOCE User Workshop	http://goce2014.org	Paris, France	25-28 November, 2014
18.	BILAT 2.0 EU-U.S Innovation Conference “How to integrate the innovation dimension in the EU-U.S. S&T Agreement?”	www.euussciencetechnology.eu/sites/default/files/EU_US_InnovationConference_agenda_final_12JAN15_FINAL.pdf	Brussels, Belgium	14-15 January, 2015

During the first half of the project FOTONIKA-LV researchers were actively promoting the project results (18 reports at 15 conferences) and the overall task target (24 reports) seemed to be achievable. Since there were budget savings in Tasks 4.2-4.5 (organising the conferences) the Project board decided to shift saved resources to Task 4.4. This allowed supporting travels for securing also the sustainability of the project: promoting the activities performed in Riga, establishing of new research contacts in the fields of defined smart technologies (Photonics, Quantum Sciences and Space Sciences and Related Technologies) as well as for participation at the consortium meetings elaborating new project proposals under the Horizon 2020 programme (Table 2).

Table 2. List of attended events: Promotion of the project; Set-up of new research collaboration;
Designing a new Horizon 2020 project

	Organisation	Place	Dates	Purpose	www
1.	National Tsing Hua University, Department of Physics - Ultra-Low Temperature Laboratory	Hsinchu, Taiwan	04-28 October, 2013	Research collaboration – joint paper submitted to Journal of the Optical Society of America, B	www.nthu.edu.tw/english/ ; www.phys.nthu.edu.tw/en/research.htm
2.	Laser Research Center, Vilnius University - VU LRC	Vilnius, Lithuania	26-27 October, 2013	Brainstorming workshop on photonics sector in Baltics – survey of industry and academia capacities	www.lasercenter.vu.lt
3.	Institute of Physical Chemistry "Rocasolano" - CSIC	Madrid, Spain	27-28 November, 2013	Research collaboration – planning joint upgrade of instrumentation	www.iqfr.csic.es/index.php?lang=en
4.	Central Institute of Aviation Motors	Moscow, Russia	17-19 April, 2014	Brainstorming workshop – analysis of future joint projects	www.ciam.ru
5.	Interuniversity Microelectronics Centre - IMEC	Leuven, Belgium	30 April – 2 May, 2014	Research collaboration – analysis of future joint projects	http://wn.com/imec_interuniversity_microelectronics_center_leuven_belgium
6.	Tomsk Polytechnic University; Kirensky Institute of Physics, Krasnoyarsk; Novosibirsk Research Institute of Traumatology and Orthopaedics; Central Institute of Aviation Motors	Tomsk- Novosibirsk- Krasnoyarsk- Moscow, Russia	14 August – 3 September, 2014	Research collaboration – analysis of future joint projects	http://tpu.ru/en/ ; http://kirensky.ru/en ; www.niito.ru ; www.CIAM.ru
7.	Space Research Centre, Polish Academy of Sciences	Warsaw, Poland	6-8 November, 2014	Brainstorming workshop – analysis of future joint projects	www.cbk.waw.pl/en
8.	<i>Industrial Leadership - Space</i>	Brussels, Belgium	27-28 November, 2013	Horizon 2020 project proposal elaboration	<i>results in Spring 2015</i>

	Organisation	Place	Dates	Purpose	www
9.	<i>Excellent Science - Research infrastructures</i>	London, Great Britain	14-15 February 2014 & 22-24 April 2014	Horizon 2020 project proposal elaboration	<i>results in Spring 2015</i>
10.	<i>Excellent Science - Future and Emerging Technologies</i>	Lund, Sweden	18-19 September 2014	Horizon 2020 project proposal elaboration	<i>results in Spring 2015</i>

3.2. Participants

The project supported employees from all the three Association FOTONIKA-LV institutes, as well as ‘repatriates’ and ‘recruits’ from other countries, associated with the project - scientists earlier performing research in Bulgaria, Canada, Cuba, Germany, USA and now transferring their knowledge to FOTONIKA-LV (Table 3). Among 18 supported conference attendees 5 are young researchers / PhD students who have contributed in total with 8 reports: 3 oral presentation and 5 posters.

Table 3. List of supported participants (Reports, Posters, Project proposal, Project promotion)

	Participant	Affiliation; Status	Participation; Presentation
1.	Ūbelis Arnolds	Institute of Atomic physics and Spectroscopy; <i>Lead researcher</i>	8 participations= 2 Reports + 8 Promotions of FOTONIKA-LV
2.	Grapa Amara	Recruit (USA) to the Institute of Astronomy; <i>Researcher</i>	4 participations= 1 Poster + 3 Project proposals
3.	Salmiņš Kalvis	Institute of Astronomy; <i>Researcher</i>	2 participations= 2 Reports + 2 Posters
4.	Spīgulis Jānis	Institute of Atomic physics and Spectroscopy; <i>Professor</i>	2 participations= 2 Reports
5.	Beldavs Vidvuds	Repatriate (USA) to the Institute of Atomic physics and Spectroscopy; <i>Researcher</i>	2 participations= 1 Report + 1 Promotion of FOTONIKA-LV
6.	Kirova Teodora	Recruit from Bulgaria; <i>Researcher</i>	1 participation= 2 Reports
7.	Atvars Aigars	Institute of Atomic physics and Spectroscopy; <i>Researcher</i>	1 participation= 1 Report
8.	Del Pino Jorge	Recruit (Cuba) to the Institute of Astronomy; <i>Researcher</i>	1 participation= 1 Report
9.	Kaminskis Jānis	Institute of Geodesy and Geoinformatics; <i>Researcher</i>	1 participation= 1 Report

	Participant	Affiliation; Status	Participation; Presentation
10.	Asare Lāsmā	Institute of Atomic physics and Spectroscopy; <i>Young researcher</i>	1 participation= 1 Poster
11.	Eglītis Ilgmārs	Institute of Astronomy; <i>Researcher</i>	1 participation= 1 Poster
12.	Haritonova Diāna	Institute of Geodesy and Geoinformatics; <i>Young researcher</i>	1 participation= 1 Poster
13.	Janpaule Inese	Institute of Geodesy and Geoinformatics; <i>Young researcher</i>	1 participation= 1 Poster
14.	Brūveris Mārtiņš	Laser Centre; <i>Young researcher</i>	1 participation= 1 joint research paper
15.	Jānis Alnis	<i>Repatriate</i> (Germany) to the Institute of Atomic physics and Spectroscopy; Senior Researcher	1 participation= 1 Project proposal
16.	Svilans Miķelis	<i>Repatriate</i> (Canada) to the Institute of Atomic physics and Spectroscopy; <i>Researcher</i>	1 participation= 1 new research collaboration
17.	Balodis Jānis	Institute of Geodesy and Geoinformatics; <i>Lead researcher</i>	1 participation= 1 Promotion of FOTONIKA-LV

3.3. Reported themes

On contrary to the first part of the project when the majority of presentations were poster type (11 posters and 7 oral reports), during the second half the researchers have preferred oral reports – 12 presentations in front of audience and only 7 posters (Table 4). This has secured broader visibility of the Association FOTONIKA-LV research results.

Table 4. List of presented themes

	Heading	Type of report
1.	Absolute gravity measurements in the Fennoscandian postglacial rebound area: history, network, results	oral report
2.	Applications of iodine and bromine atomic resonance spectra sources for atmosphere research	oral report
3.	Commercialisation of Photonic Technologies in Latvia	oral report
4.	Distant optical sensing of blood pulsations for cardiology and anaesthesiology	oral report
5.	Hazards and Risk @ SLR Network, Updates and New Challenges	oral report
6.	International Lunar Decade and the Declaration for an International Lunar Decade	oral report
7.	Laser Manipulation of Electromagnetically Induced Transparency in Rydberg Atoms in the Dipole Blockade/Antiblockade Regimes	oral report
8.	Modernization and Characterization of the Riga SLR Timing System	oral report

	Heading	Type of report
9.	Peculiarities of Bright and Dark States Formation in Three-level Ladders of NaHyperfine Levels	oral report
10.	Preserving history and technical "know-how" - experience at SLR station Riga	oral report
11.	Secondary photochemical reactions and technologies for active remote sensing of nocturnal atmosphere - international consortium project "NOCTURNAL ATMOSPHERE" (2013-2017)	oral report
12.	Single snapshot RGB multispectral imaging at fixed wavelengths: proof of concept	oral report
13.	Asteroid regoliths: The development of a database	poster
14.	Baldone Schmidt telescope astronomical photos archive	poster
15.	Clinical measurements analysis of multi-spectral photoplethysmograph biosensors	poster
16.	Improvement of Latvian geoid model using GNSS/levelling, GOCE data and vertical deflection measurements	poster
17.	On the Geodynamics in Latvia	poster
18.	Riga SLR station upgrade and status report	poster
19.	Satellite laser ranging in the University of Latvia since 1975	poster

Summary for majority of presentations is published in abstract books of the respective conferences; some of the presentations resulted in submitted papers which will be published and available for broader research community. For example: "Electrooptic coefficient measurements by Mach Zehnder interferometric method: Application of Abelès matrix formalism for thin film polymeric sample description" has been published in Optics Communications (2013); "Investigation of in-vivo skin autofluorescence lifetimes under long-term cw optical excitation" - Quantum Electronics (2014); "Application of room temperature photoluminescence from ZnO nanorods for salmonella detection" - IEEE Sensors Journal (2014); "Storage time of cold Rb atoms in an optical dipole trap formed by a multimode fiber laser" has been submitted to the Journal of the Optical Society of America B on 5 January 2015.

3.4. Outcomes

The main outcome of the Task 4.1 is dissemination of the achieved results, discussion of future collaboration and promotion of the association FOTONIKA-LV in general. However, participants have taken the advantage of meeting foreign colleagues to talk over the possibilities of joint proposing to Horizon 2020.

Our scientists have long-lasting tradition of coming together during University of Latvia annual scientific conference in January-February to inform colleagues about research results presented at international conferences during the previous academic year. Since 2013 the Association FOTONIKA-LV organises a separate section on Photonics. They were held on 1 February 2013 (http://dspace.lu.lv/dspace/bitstream/handle/7/1379/LU-71_konf-programma_2013.pdf;jsessionid=51898A72C553268F8C417544AA9B1BFC?sequence=1, pages 94-100); 7 February 2014 (<http://ej.uz/fotonika2014> or <https://fotonikalv.wordpress.com/conferences/university-of-latvia-72nd-annual-conference-photonics-and-quantum-science-section>) and will take place on 6 February 2015 (https://fotonikalv.files.wordpress.com/2014/12/programm_06-02-2015b.pdf). Books of Abstracts (Annex 2) consolidates the scientific outcomes of the FOTONIKA-LV project in the years of 2013 and 2014 including some abstracts of the conference participation financially supported under project Task 4.1. These booklets are widely disseminated at all international events as well as in Latvia organised activities with international participation.

The 17 participants supported for attending international events (conferences, workshops, proposal design meetings) report also on new contacts established not only in Europe but also beyond: Australia, India, Japan, Russia, Saudi Arabia, South Korea, Taiwan, USA (Table 5):

Table 5. Established contacts

	Institution	Collaboration contact
1.	24IP Law Group; Germany	Robert Harrison
2.	Astro Space Center of Lebedev Physical Institute; Russia	Kirill Sokolovsky
3.	Austrian research promotion Agency (FFG); Austria	Ralf König
4.	Bundesamt für Kartographie und Geodäsie (BKG); Germany	Stefan Riepl
5.	Central Bureau International Laser Ranging Service Harvard-Smithsonian Center for Astrophysics Cambridge, MA; USA	Michael Pearlman
6.	Central Institute of Aviation Motors; Russia	Alexander M.Starik, Alexander S.Sharipov
7.	Czech Technical University in Prague; Check Republic	Ivan Prochazka, Stanislav Vitek
8.	Deep Space Industries, Silicon Valley; USA	Sebastian Ernest
9.	Deutsches Geodätisches Forschungsinstitut; Germany	Christian Schwatke
10.	ECSITE network; UK	Anita Rachael Heward
11.	EOS Space Systems; Australia	Chris Moore
12.	ESPACE network, Delft University of Technology; the Netherlands	Bert Vermeersen
13.	Estonian Land Board; Estonia	Anti Gruno, Ants Vain
14.	ExelisInc; USA	Shawn Butani

	Institution	Collaboration contact
15.	Finnish Geodetic Institute; Finland	Arttu Raja-Halli, Jyri Näränen
16.	Finnish Meteorological Institute; Finland	Walter Schmidt
17.	Hitotsubashi University; Japan	Toshimichi Otsubo
18.	Honeywell Technology Solutions Incorporated, Columbia, MD; USA	E.Hoffman
19.	Indian Space Research Organisation (ISRO); India	Elango Kattimuthu
20.	Institute of Physical Chemistry "Rocasolano" (IQFR); Spain	Alfonso Saiz-Lopez
21.	Instituto de Astrofisica de Andalucia (CSIC); Spain	Rene Duffard
22.	Interdisciplinary Aerodynamics Group (IAG, EPFL); Switzerland	Pénélope Leyland
23.	International Laser Ranging Service, NASA; USA	David McCormick
24.	John Hopkins University; USA	Dean Hines, Andy Cheng
25.	Joint Institute of VLBI in Europe (JIVE); the Netherlands	Leonid Gurvits
26.	Korea Astronomy and Space Science Institute; South Korea	Daniel Kucharski
27.	L.V.Kirensky Institute of Physics; Russia	Sergey G.Ovchinnikov
28.	Leiden University; the Netherlands	George Miley,Pedro Russo
29.	Main Astronomical Observatory; Ukraine	Vitaliy M.Andruk, Valentina Golovnya
30.	Max-Planck-Institute of Solar System Science; Germany	Colin Snodgrass
31.	Mibatron SRL; Romania	ViorelPopescu
32.	Minor Planet Center, Cambridge, MA; USA	José Luis Galache
33.	National Center for Scientific Research Demokritos; Greece	Konstantinos P.Giannakopoulos
34.	National Tsing Hua University; Taiwan	Ite Yu, Shih-Chuan Gou
35.	NERC Space Geodesy Facility; UK	Graham Appleby
36.	Novosibirsk Research Institute of Traumatology and Orthopaedics; Russia	Irina A.Kirilova
37.	Oregon Health & Science University; USA	Steven L.Jacques
38.	P.N.Lebedev Physical Institute of RAS, Samara Branch; Russia	Paul A.Mikheyev
39.	Risø National Laboratory; Denmark	Peter Anderssen
40.	SABIC Corporate Research and Innovation Center at KAUST, Saudi Arabia	Ihab N.Odeh
41.	Saratov State University; Russia	Valery Tuchin
42.	Sherwin-Williams, Ohio; USA	Virginia Scarborough
43.	Skolkovo Institute of Science and Technology (Skoltech); Russia	Mats Nordlund

	Institution	Collaboration contact
44.	SLR station Graz; Austria	Georg Kirchner, Franz Koidl
45.	SLR Tracking Station (7824) at San Fernando; Spain	Jorge Gárate
46.	Space Research Center (SRC); Poland	Marek Banaszkiewicz, Mirosław Denis
47.	SpaceTech GmbH; Germany	Andre Kloth
48.	SPIE, Student Activities Coordinator; USA	Tasha Chicovsky
49.	Technische Universität München; Germany	Karl Ulrich Schreiber
50.	Thayer School of Engineering at Dartmouth; USA	Brian W.Pogue
51.	Tomsk Polytechnic University; Russia	Yuri Sharkeev, Peteris Kraujinsh
52.	UC Davis Comprehensive Cancer Center, CA; USA	Dennis L.Mathews
53.	University of Ghent; Belgium	Sanjeev Naithani
54.	University of Texas at Austin: USA	Randall L.Ricklefs
55.	University of Western Australia; Australia	David Sampson
56.	Uponor AB; Sweden	Suleyman Dag
57.	Vienna University of Technology; Austria	Manfred Horvat

4. Conclusions

Although some WPs of the project have been extended, the WP1 including Task 4.1 will end on 31 January 2015 as planned.

Although it was planned to support only 24 reports on international events, the Project Board decided to reallocate the saved resources for conference organisation in Riga (Task 4.2 “Photonics Technologies - Riga 2012”, Task 4.3 “Biophotonics - Riga 2013”, Task 4.4 “NOCTURNAL - Riga 2014”, and Task 4.5 “KNOWLEDGE”) in order to support more participations from Association FOTONIKA-LV to high level international events. Since the travels have become more distant (Japan, Taiwan, USA), the mean cost for one travel has risen in comparison to the 1st reporting period and has reached the planned 800 €.

Activities under the Task 4.1 have supported 47 travels of 23 researchers in attending 43 international events to present research results in photonics domain, promote Association FOTONIKA-LV (*Rīgas Fotonikas Centrs*), establish new contacts for further collaboration and ensure the sustainability of the FOTONIKA-LV project by elaborating new project proposals under Horizon 2020 several themes.

Annex 1: Extended list of Conference participants

	Name	Location	Dates	Conference / Institution	www	Presentation title
1.	Kaminskis Jānis	Potsdam, Germany	1-6 September, 2013	International Association of Geodesy, Scientific Assembly 2013	www.iag2013.org	Report: J.Mäkinen, A.Engfeldt, O.Gitlein, J.Kaminskis, F.Klopping, T.Oja, O.C.D.Omang, E.Paršeliunas, B.R.Pettersen, G.Strykowski, H.Wilmes "Absolute gravity measurements in the Fennoscandian postglacial rebound area: history, network, results"
2.	Haritonova Diāna	Edinburgh, UK	9-13 September, 2013	ESA Living Planet Symposium	www.livingplanet2013.org	Poster: Janis Balodis, Diana Haritonova, IneseJ anpaule, Madara Normand, Gunars Silabriedis, Ansis Zarinsh, Augusts Rubans, Maris Kalinka, Izolde Jumare, Ieva Lasmane "On the Geodynamics in Latvia"
3.	Beldavs Vidvuds	Riga, Latvia	11-13 September, 2013	18 th International Conference on Innovation "Baltic Dynamics 2013"	www.balticdynamics.com	Report: Vidvuds Beldavs, Arnolds Ubelis "Commercialisation of Photonic Technologies in Latvia"
4.	Spīgulis Jānis	Oulu, Finland	30 September, 2013	The Progress in Photonics	www.oulu.fi/eeng/oemlab	Report: Janis Spigulis "Distant optical sensing of blood pulsations for cardiology and anaesthesiology "
5.	Brūveris Mārtiņš	Hsinchu, Taiwan	04-28 October, 2013	National Tsing Hua University, Department of Physics - Ultra-Low Temperature Laboratory	www.nthu.edu.tw/english/ ; www.phys.nthu.edu.tw/en/research.htm ;	Joint research publication "Storage time of cold Rb atoms in an optical dipole trap formed by a multimode fiber laser"; submitted to the Journal of the Optical Society of America B on 05 Jan 2015. Authors: Ite Yu, Martins Bruvelis, Weilun Hung, Panpan Huang, Feng-Chuan Wu, Hau-Yi Xiao, Aigars Ekers

	Name	Location	Dates	Conference / Institution	www	Presentation title
6.	Ūbelis Arnolds	Vilnius, Lithuania	26-27 October, 2013	Laser Research Center, Vilnius University - VU LRC	www.lasercenter.vu.lt/	Survey of industry and academic research capacities in Baltics in the domain of Photonics and Quantum Sciences on brainstorming Workshop assessing the potential to announce Photonics as a pan-Baltic Regional smart specialisation
7.	Atvars Aigars	South Kohala, Island of Hawai'i; USA	09-13 November 2014	The Next Giant Leap: Leveraging Lunar Assets for Sustainable Pathways to Space	http://2014giantleap.aerospacelhawaii.info/	Report: V.Beldavs, A.Atvars "International Lunar Decade and the Declaration for an International Lunar Decade"
8.	Del Pino Jorge	Fujiyoshida, Japan	11-15 November, 2013	18 th International Workshop on Laser Ranging - Pursuing Ultimate Accuracy & Creating New Synergies	http://geo.science.hit-u.ac.jp/lw18	Report: Jorge R. del Pino, "Hazards and Risk @ SLR Network, Updates and New Challenges" (presentation 13-0309)
9.	Salmiņš Kalvis	Fujiyoshida, Japan	11-15 November, 2013	18 th International Workshop on Laser Ranging - Pursuing Ultimate Accuracy & Creating New Synergies	http://geo.science.hit-u.ac.jp/lw18	Report: Kalvis Salminsh, Jorge R. del Pino, "Preserving history and technical "know-how" - experience at SLR station Riga"; Poster: Kalvis Salminsh, Maris Abele, Jorge R. del Pino "Riga SLR station upgrade and status report"
10.	Ūbelis Arnolds	Madrid, Spain	27-28 November, 2013	Institute of Physical Chemistry "Rocasolano" - CSIC	www.iqfr.csic.es/index.php?lang=en	planning the upgrade of ROFLEX instrument for Br concentration measurements in marine atmosphere
11.	Graps Amara	Brussels, Belgium	27-28 November, 2013	Horizon 2020 Planning		H2020 project EUROPLANET development analysis

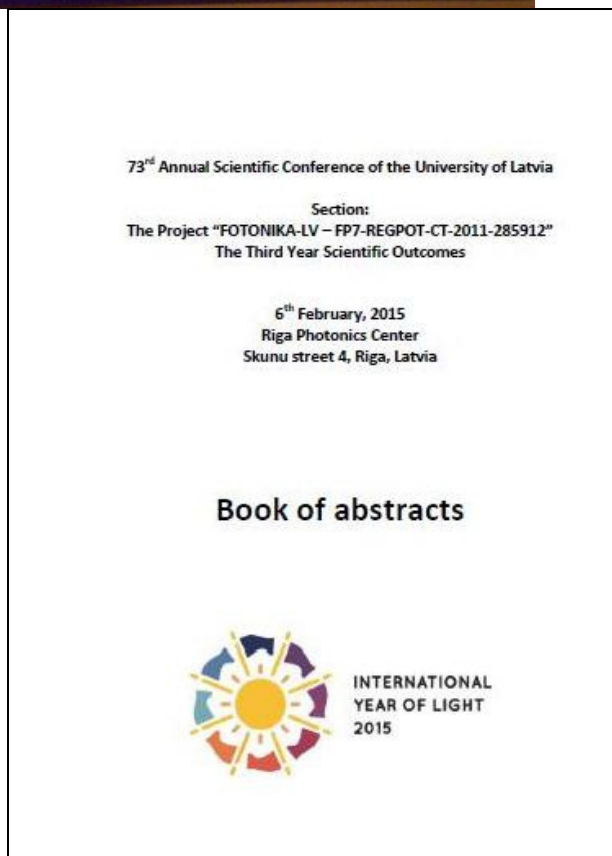
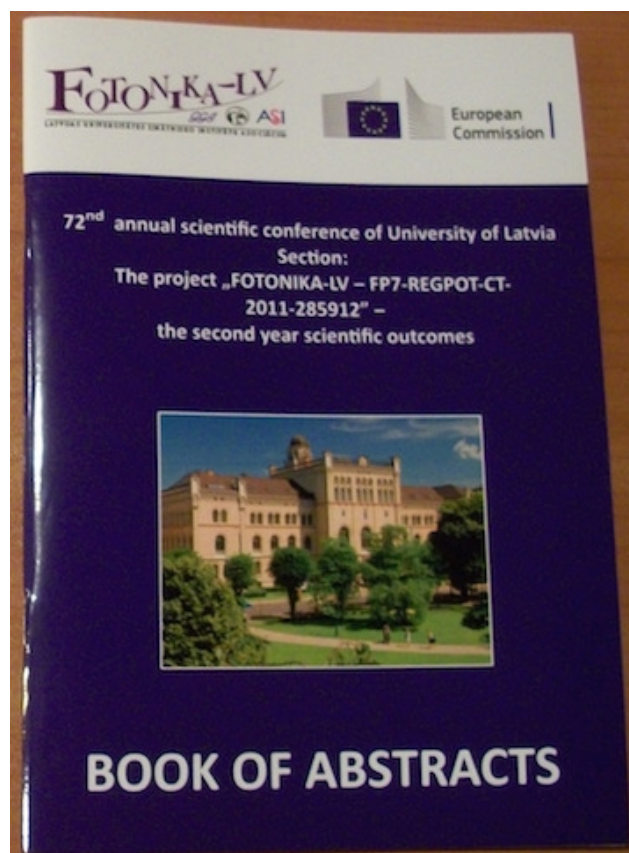
	Name	Location	Dates	Conference / Institution	www	Presentation title
12.	Ūbelis Arnolds	Brussels, Belgium	12-13 December, 2013	18 th Meeting of the International Optoelectronics Association – IOA EPIC 10 th Anniversary	www.epic- assoc.com/events/?at=3 0	promotion of the FOTONIKA-LV project
13.	Spīgulis Jānis	San Francisco, USA	1-6 February, 2014	SPIE Photonics West / BIOS	http://spie.org/x105834. xml	Report: Janis Spigulis, Liene Elste "Single snapshot RGB multispectral imaging at fixed wavelengths: proof of concept"
14.	Graps Amara	London, UK	14-15 February, 2014	Horizon 2020 Planning		H2020 project EUROPLANET-RI 2020 development
15.	Eglītis Ilgmārs	Prague, Czech Republic	15-23 March, 2014	International workshop on scientific use, digitization and preserving astronomical photographic records	www.astroplate.cz	Poster: "Baldone Schmidt telescope astronomical photos archive"
16.	Beldavs Vidvuds	Athens, Greece	9-11 April, 2014	Industrial Technology Conference	www.industrialtechnolo gies2014.eu/	promotion of the FOTONIKA-LV project
17.	Asare Lāsmā	Brussels, Belgium	14-17 April 2014	SPIE Photonics Europe 2014	http://spie.org/x107471. xml	Poster: Lasma Asare, Edgars Kviesis- Kipge, Janis Spigulis, "Clinical measurements analysis of multi-spectral photoplethysmograph biosensors"
18.	Ūbelis Arnolds	Moscow, Russia	17-19 April, 2014	Central Institute of Aviation Motors	www.ciam.ru	analysis of future cooperation and implementation of joint projects on brainstorming Workshop; promotion of the FOTONIKA-LV project

	Name	Location	Dates	Conference / Institution	www	Presentation title
19.	Graps Amara	London, UK	22-24 April, 2014	Horizon 2020 Planning		H2020 project development under activity COMPET-05-2015
20.	Svilans Miķelis	Leuven, Belgium	30 April - 2 May, 2014	Interuniversity Microelectronics Centre - IMEC	http://wn.com/imec_interuniversity_microelectronics_center_leuven_belgium	analysis of potential future cooperation in the domain of silicon photonics; promotion of the FOTONIKA-LV project
21.	Balodis Jānis	Nordwijk, the Netherlands	3-4 June, 2014	ESA Workshop: Industry Space Days - B2B	www.industryspacedays.com/en/	B2B discussions with 13 SME companies on potential cooperation issues; promotion of the FOTONIKA-LV project
22.	Graps Amara	Helsinki, Finland	30 June - 4 July, 2014	Asteroids, Comets and Meteors 2014 Conference	www.helsinki.fi/acm2014	Poster: Amara Graps "Asteroid regoliths: The development of a database"
23.	Ūbelis Arnolds	Tomsk-Novosibirsk-Krasnoyarsk-Moscow, Russia	14 August – 3 September, 2014	Tomsk Polytechnic University; Kirensky Institute of Physics, Krasnoyarsk; Novosibirsk Research Institute of Traumatology and Orthopaedics; Central Institute of Aviation Motors	http://tpu.ru/en ; http://kirensky.ru/en ; www.niito.ru ; www.CIAM.ru	analysis of future cooperation and implementation of joint projects on brainstorming Workshop; promotion of the FOTONIKA-LV project
24.	Alnis Jānis	Lund, Sweden	18-19 September, 2014	Horizon 2020 Planning		H2020 project development under activity FET-open

	Name	Location	Dates	Conference / Institution	www	Presentation title
25.	Ūbelis Arnolds	Sochi, Russia	6-11 October, 2014	6 th International Symposium on Non-equilibrium Processes, Plasma, Combustion and Atmospheric Phenomena - NEPCAP 2014	www.icp.ac.ru/v-mire-nauki/konferencii/russia/2716-6th-international-symposium-on-non-equilibrium-processes-plasma-combustion-and-atmospheric-phenomena-nepcap-2014-6-10-oktyabrya-2014g-g-sochi-.html	Report: Arnolds Ubelis, Alfonso Saiz-Lopez, Janis Blahins, Aigars Apsitis, Uldis Gross "Applications of iodine and bromine atomic resonance spectra sources for atmosphere research; Report: Arnolds Ubelis "Secondary photochemical reactions and technologies for active remote sensing of nocturnal atmosphere - international consortium project "NOCTURNAL ATMOSPHERE"(2013-2017)"
26.	Kirova Teodora	Hsinchu, Taiwan	16-28 October, 2014	Workshop on Coherent Manipulation between Light and Matter and the Third TLL/COLIMA Meeting	www.phys.cts.nthu.edu.tw/actnews/index.php?Sn=203	Invited Report: "Peculiarities of Bright and Dark States Formation in Three-level Ladders of Na Hyperfine Levels" Invited Report: "Laser Manipulation of Electromagnetically Induced Transparency in Rydberg Atoms in the Dipole Blockade/Antiblockade Regimes"
27.	Salmiņš Kalvis	Annapolis, MD; USA	27-31 October, 2014	19 th International Workshop on Laser Ranging, Celebrating 50 Years of SLR: Remembering the Past and Planning for the Future	http://cddis.gsfc.nasa.gov/lw19/	Report: Evan Hoffman, Kalvis Salmins, Jorge R. del Pino, Aivis Meijers "Modernization and Characterization of the Riga SLR Timing System" Poster: K.Lapuska, M.Abele, J.Balodis, A.Rubans, K.Salmins, A.Zarins, "Satellite laser ranging in the University of Latvia since 1975"
28.	Ūbelis Arnolds	Warsaw, Poland	6-8 November, 2014	Space Research Centre, Polish Academy of Sciences	www.cbk.waw.pl/en/	analysis of future cooperation and implementation of joint projects on brainstorming Workshop; promotion of the FOTONIKA-LV project

	Name	Location	Dates	Conference / Institution	www	Presentation title
29.	Janpaule Inese	Paris, France	25-28 November, 2014	5 th International GOCE User Workshop	http://goce2014.org	Poster: Inese Janpaule, Diana Haritonova, Ansis Zarins, Janis Balodis "Improvement of Latvian geoid model using GNSS/levelling, GOCE data and vertical deflection measurements"
30.	Ūbelis Arnolds	Brussels, Belgium	14-15 January, 2015	BILAT 2.0 EU-U.S Innovation Conference “How to integrate the innovation dimension in the EU-U.S. S&T Agreement?”	www.euussciencetechnology.eu/sites/default/files/EU_US_Innovation_Conference_agenda_final_12JAN15_FINAL.pdf	promotion of the FOTONIKA-LV project; planning of IPR workshops

Annex 2: Abstract Booklets: Photonics section at the University of Latvia Scientific Conferences No 72 (in 2014) and No 73 (in 2015)



Cover sheets, content has been submitted separately

Annex 3: Photos



Vidvuds Beldavs at 18th International Conference on Innovation "Baltic Dynamics 2013"



Aigars Atvars at the Next Giant Leap: Leveraging Lunar Assets for Sustainable Pathways to Space



Kalvis Salmiņš and Jorge del Pino at 18th International Workshop on Laser Ranging - Pursuing Ultimate Accuracy & Creating New Synergies



Ilgmārs Eglītis at International workshop on scientific use, digitisation and preserving astronomical photographic records

Annex 4: Abbreviations

Abbreviation	
Association FOTONIKA-LV	Association of three University of Latvia research institutes: Institute of Atomic Physics and Spectroscopy, Institute of Astronomy and Institute of Geodesy and Geoinformation
B2B	Brokerage event
BIOPHOTONICS – Riga 2013	International Conference “Biophotonics-Riga 2013”
BiOS	Biomedical Optics Conference, part of SPIE Photonics
COLIMA	
CSIC	Institute of Physical Chemistry; Madrid, Spain
D	Deliverable
ERA	European Research Area
ESA	European Space Agency
EU	European Union
GNSS	Global Navigation Satellite System
GOCE	Gravity Field and Steady-State Ocean Circulation Explorer
IMEC	Interuniversity Microelectronics Centre; Leuven, Belgium
IOA	International Society for Optics and Photonics
NEPCAP	Non-equilibrium Processes, Plasma, Combustion and Atmospheric Phenomena
NOCTURNAL – Riga 2014	International Conference “Nocturnal Atmosphere, Remote Sensing and Laser Ranging”
RGB	
<i>Rīgas Fotonikas Centrs</i>	Riga Photonics Centre (in Latvian)
SLR	Satellite Laser Ranging
SPIE	International Optoelectronics Association
TTL/COLIMA	Transistor–Transistor Logic / Coherent Manipulation between Light and Matter
USA (US)	United States of America
VU LRC	Laser Research Center, Vilnius University
WP	Work package