WARSAW ELHEP Group for

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1. Motivation and plan for ELHEP involvement in TESLA

This document is a kind of a White Book about planned ELHEP Group involvement in TESLA. It is a record of opening status, as seen and agreed by the ELHEP Group members. Not all of the views expressed here and forwarded proposals have yet been consulted with DESY and TESLA authorities. In this respect, the document is only a suggestion to be debated with relevant experts in DESY.

The simple and strong motivation of ELHEP Group is to participate in the development of TESLA. The Group intends to form a permanent, resident in DESY, team associated with TESLA.

The participation bases formally on the agreement, between Warsaw University of Technology and DESY, concerning TESLA. The initiator of this agreement, from the WUT side, was ELHEP Group.

Te first visit of ELHEP Group for TESLA was in July, and the second in September 2002.

2. ELHEP Group portrait – Who we are?

ELHEP stands for Electronics for High Energy Physics Experiments. The interdisciplinary, inter-university Group was formed several years ago to address the needs to design and construct complex photonics and electronics systems for HEP. The mother institution is Institute of Electronics Systems (IES) of Warsaw University of Technology (WUT). The core for ELHEP at IES is PERG Laboratory. PERG stands for Photonics and Web Engineering Research Group. The ELHEP members, apart form the IES.WUT, are also from: other institutes and faculties of WUT (Institute of Radioelectronics, Faculty of Physics, Faculty of Environmental Engineering, Faculty of Chemistry), Institute of Experimental Physics of Warsaw University, A.Sołtan Institute of Nuclear Problems and a few private spin-off firms active in advanced electronic systems and web engineering.

The Group is characterized in the best way through her activities. Relevant, sample, chosen materials are included. The Group worked and is working for ZEUS and CMS experiments. Participated in several European Programs within the FP5. Is organizing an annual Symposium in WILGA on advanced photonics and electronics systems, in cooperation with international engineering professional associations like IEEE-The Institute of Electrical and Electronics Engineers (www.ieee.org) and SPIE – The International Society for Optical Engineering (www.spie.org). The Symposium turned recently to international. The Group publishes annually a few tens of scientific papers in relevant journals and at conferences. The Group cooperates internationally with DESY, CERN, Helsinki Institute of Physics and Bari Institute of Physics.

The ELHEP Group consists now of 30+ members. The names of relevant persons are mentioned in appendices. A dozen of these persons are experienced senior researchers. The rest are Ph.D. and M.Sc. students.

3. Definition of ELHEP tasks for TESLA

There are two layers of tasks: general and particular. According to the DESY-WUT agreement the following general fields for ELHEP were defined initially, for TESLA: 1) Control System; 2) Radio Frequency System; 3) Beam Diagnostics and Instrumentation. In particular, the Group concentrates now o the LLRF control. In this respect, ELHEP cooperates closely with LLRFC coordinator dr Stephan Simrock. The Group receives now a lot of professional help from dr Simrock.

4. How to realize the assigned tasks for TESLA?

A) BASIC MEANS

4.1. ORGANIZATION

The suggestion, concerning the work organization from ELHEP side is as follows. ELHEP is going, with consent of DESY and TESLA management to start to build a team of young researchers residing, if possible, permanently in DESY. This team will be supervised, advised, supported and frequently visited by senior members from Warsaw ELHEP. Some of the young researchers have to be prepared for the work in DESY in ELHEP Laboratory at IES.WUT. Some of the work has also to be done in Warsaw, to improve the efficiency of the whole system. That is why ELHEP suggests building a strong sister laboratory in Warsaw. This laboratory should mirror some of the work done in DESY. Some of the hardware and software should be prepared in Warsaw for implementations and tests in DESY.

4.2. RESOURCES

4.2.1. At DESY

There was initial information that DESY is going to build special facility for a team involved in TESLA Project, which may embrace such tasks like these mentioned for ELHEP. Now ELHEP is located at TESLA temporarily in a barrack adjacent to the TESLA Control Room. This laboratory space is now satisfactory but will not be satisfactory in the future. ELHEP will soon need access, in a more permanent way, to typical laboratory equipment like electronic parts, test PCBs, measurement equipment, PCs, office equipment, etc.

4.2.2. At IES.WUT

The mother institute IES is not able to provide ELHEP with modern laboratory equipment for TESLA. IES in cooperation with the Faculty of Electronics and Information Technologies of WUT is now preparing a new redecorated laboratory space for ELHEP. The space is large enough to accommodate up to 20 persons with PCs and electronics assembling and testing laboratory. ELHEP is counting on DESY for support with building proper technological abilities to build sister laboratory supporting from Warsaw the DESY resident team.

B) AUXILIARY MEANS

The basic course of work of ELHEP for TESLA should be supplemented by some auxiliary means. This is associated with academic character of ELHEP. ELHEP is organizing an annual international Symposium. The main subject of this symposium is Photonics and Electronics for HEP Experiments and also Web Engineering. ELHEP very much would like to bring this event to the attention of DESY/TESLA.

ELHEP is editing from time to time a special issue of one of domestic scientific journals. ELHEP wants, with support from DESY, to prepare a special issue of ELEKTRONIKA Monthly Journal. This Journal is owned by the Association of Polish Electrical Engineers – which is equivalent organization to VDE. The journal is also supported by the Committee of Electronics and Telecommunications of Polish Academy of Sciences.

ELHEP considers making properly understood publicity and lobbying on behalf of TESLA in Poland as an essential part of its involvement policy.

ELHEP considers opening an advanced lecture concerning TESLA and Electronics for HEP experiments at the Faculty of E and IT of WUT.

5. Appendices

- I. DESY WUT Agreement on TESLA
- II. Minutes of ELHEP visits to TESLA
- III. ELHEP presentations in DESY during LLRFC and TP meetings
- IV. PERG/ELHEP WILGA Symposia on Photonics/Electronics for HEP Experiments and Web Engineering
- V. Program of special issue of Electronics and Telecom. Quarterly on Electronics for HEP Experiments co-edited by ELHEP
- VI. Paper drafts just under preparation by ELHEP on LLRC control for TESLA (in cooperation with dr S.Simrock)