

BEng Project: Objectives and Output

2012-
2013

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PROJECT OVERVIEW

MODERNIZATION OF BACHELOR PROGRAMS IN ENGINEERING IN ACCORDANCE WITH INTERNATIONAL STANDARDS OF ENGINEERING EDUCATION

The project is aimed at elaboration of *instructional guidelines* for development of *undergraduate curricula and learning outcomes* based on best practices and international standards of engineering education for Skolkovo priority areas defined by the Federal Law n.244-FL, September 28, 2011.

PROJECT OVERVIEW

PARTNERS



- Tomsk Polytechnic University (TPU)
- Higher School of Economics (HSE)
- National Research Nuclear University "MEPhI" (MEPhI)
- Samara State Aerospace University n.a. Korolyov (SSAU)
- National University of Science and Technology "MISIS" (MISIS)
- St.Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO)



All the partners are granted the status "National Research University".

PROJECT OVERVIEW

Customer	Skolkovo Foundation
Contractor	TPU
Duration	2012 - 2013
Budget	~\$750 000

PROJECT OBJECTIVES

1. Research and analysis of requirements of international standards of engineering education to competences of bachelor graduates (*IEA Graduate Attributes and Professional Competences, CDIO Syllabus, EUR-ACE Framework Standards - First Cycle, etc.*) and professional engineers (*EMF PE, FEANI Register, etc.*).

2. Analysis and international review of requirements Russian professional standards, Russian Federal Educational Standards and national employers to bachelor programs in engineering (in designated priority areas).

PROJECT OBJECTIVES

3. Elaboration and international review of integral list of bachelor competences those are adequate for complex engineering activity in modern professional environment.
4. Modernization of methodology for curriculum design of undergraduate programs in engineering in accordance with international standards of professional accreditation.
5. Recommendations on realization of engineering curricula taking into account world best practices of implementation of effective educational technologies (*Learning VS Teaching, Student - Centered Education, Problem and project based learning, case-study, etc.*).

TO BE STUDIED

International standards

- *IEA Graduate Attributes and Professional Competences*
- *EMF/APEC/FEANI Engineer Register*
- *CDIO Syllabus*

Accreditation Criteria

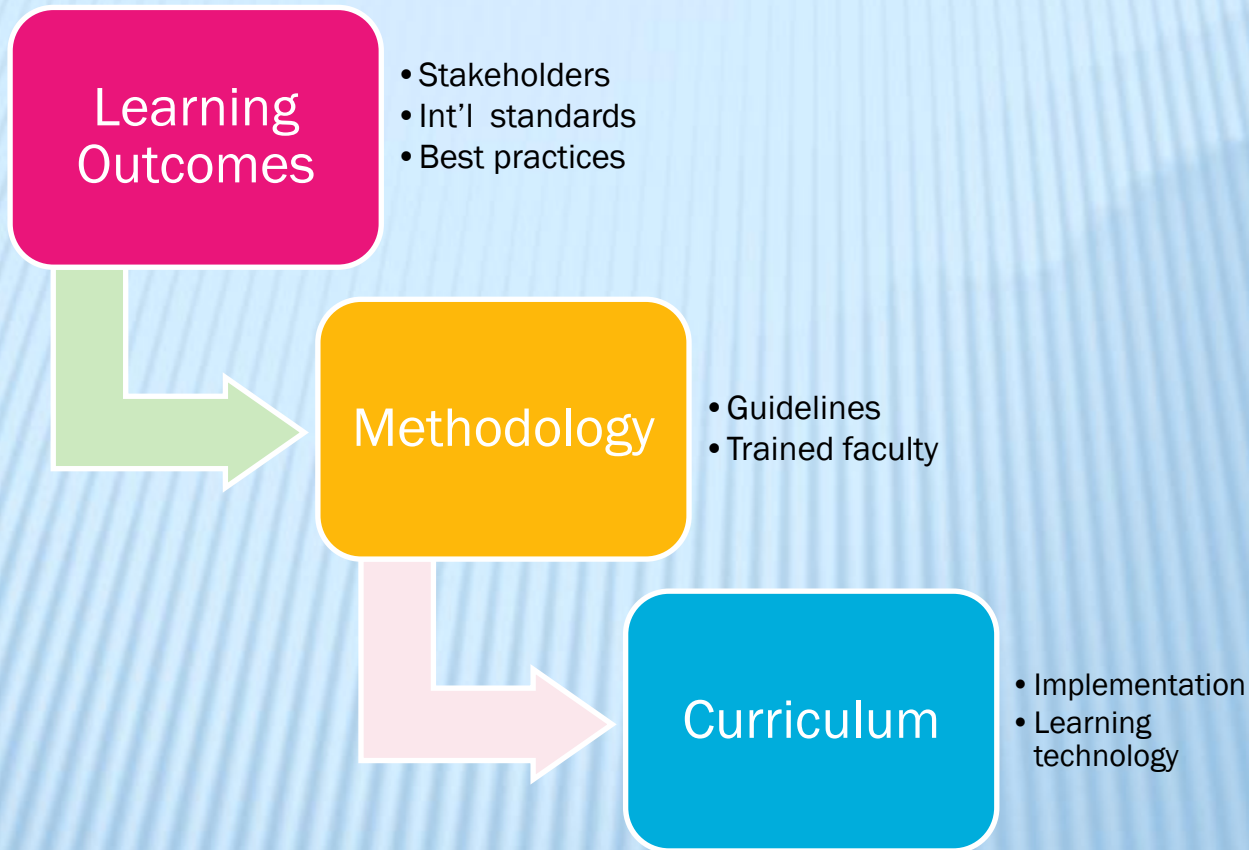
- *Washington Accord/ABET*
- *EUR-ACE/ENAAE*

Stakeholders

Best Practices

- *IFEES/SEFI/CESAER/CLUSTER*
- *Leading engineering schools (MIT, KTH)*

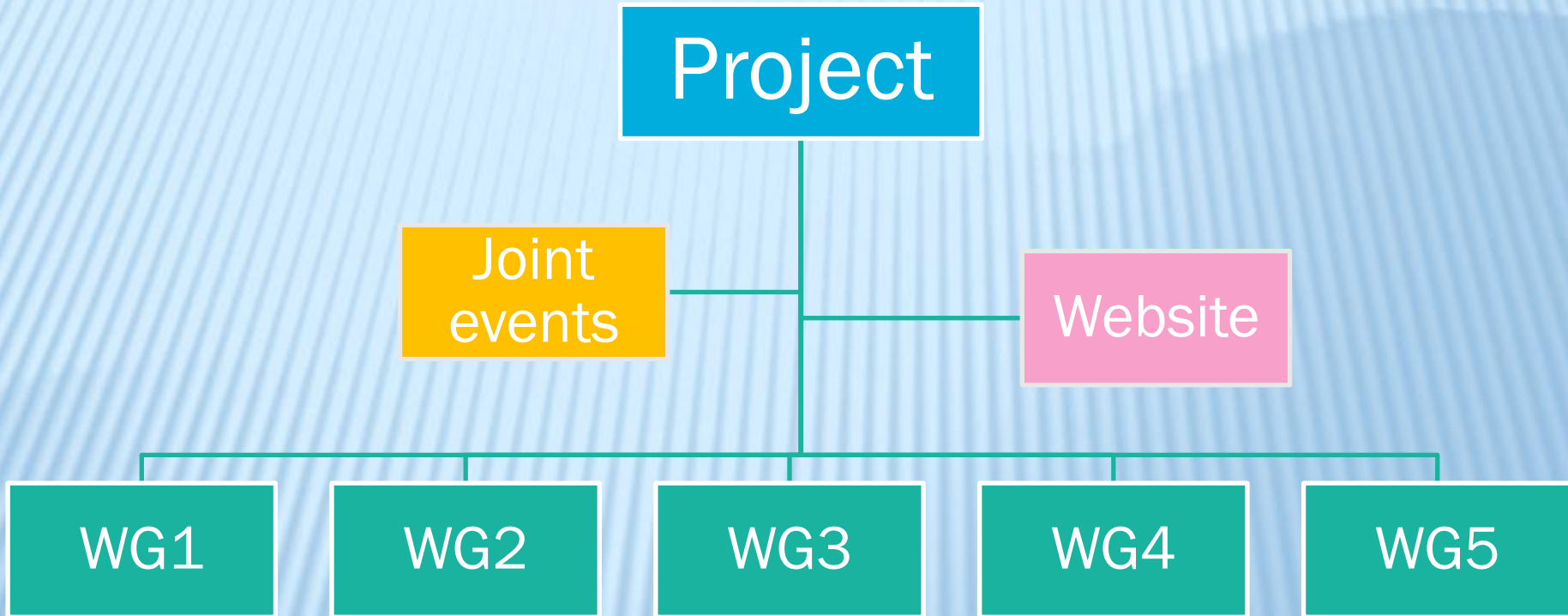
PPOJECT PHASES



TO BE DONE

- Elaboration of the integral **list of competences** of bachelor in engineering
- **Methodology for curriculum design** in engineering
- Recommendations on **delivering** of engineering curriculum in modern **learning environment**
- **Faculty training** in curriculum design and learning technologies
- **Piloting of the methodology** for curriculum design and its implementation at Russian partner-universities
- Recommendations on nomenclature of **disciplines** in engineering

PROJECT STRUCTURE



PPOJECT EVENTS

A large, light pink arrow pointing from the bottom-left towards the top-right, representing a timeline of project events. The arrow is set against a background of light blue diagonal lines.

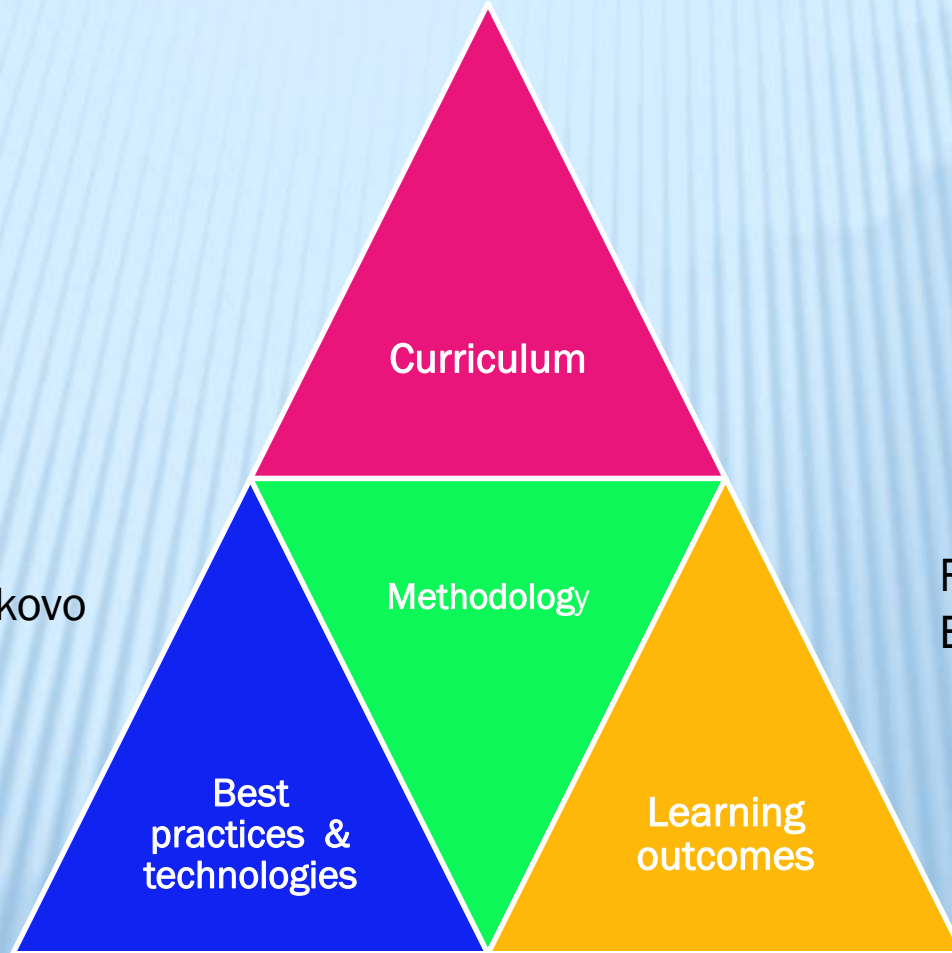
Workshop
(Boston, April
2012)

Faculty
training
(Moscow,
October, 2012)

Workshop
(Stockholm,
April 2013)

Conference
(Moscow,
October 2013)

PROJECT OUTPUTS



Final Report to Skolkovo

Report to Ministry of
Education and Science

Thank you for you attention

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BEng Project

<http://beng-sk.tpu.ru>