

Summary report on research accreditation

I. General information

Name of organization	Alecu Russo Balti State University
Organization type (<i>to underline</i>)	Research institute <u>Higher education institution</u> Ministerial research institute
Research mission of organization	Alecu Russo Balti State University is a national scientific center whose mission is to organize and carry fundamental and applicative research, to implement and disseminate research results, to train new generations of researchers in doctoral and postdoctoral programs, to offer technical, scientific and consultative services, etc. Research constitutes an integrant and indissoluble part of the University activity.
Strategic research direction (s)	Enhancement of human resources, natural and information resources for sustainable development; Nanotechnologies, industrial engineering, new products and materials
Evaluated period	2006 – 2010
Web of organization	www.usb.md ; http://v2.usb.md/

II. Research capacity (annual average for evaluated period)

Total number of employees	68,2					
Number of scientific researches	63,2					
Number of researchers who possess honorific titles, scientific degrees, scientific and scientific-didactical titles	ASM full members	ASM corresp. Members	Professor	Associated professor	Dr. hab.	Dr. (PhD)
	-	-	2,2	20,0	2,8	27,4
Number of researches involved in international projects	FP7	STCU	Bilateral	Others		
	-	-	-	-		
Number of young researchers (under 35 years old)	Dr. (PhD)	PhD students	Others			
	11	18	9,4			
Financial resources (thousand MDL)	Public budget	International projects/grants	Research contracts			
	1808,9	-	-			
Distribution of expenditures (thousand MDL)	Salary	Infrastructure development	Other			
	1220,6	318,6	269,7			
Expenditures for infrastructure development (thousand MDL)	Equipment	IT infrastructure	Endowment of experimental resorts			
	284,3	34,3	-			
List of 3 basic research methods, installations, technologies (per accredited field)	Research field <i>Physics and Technology of Material Environments</i>					
	<ol style="list-style-type: none"> 1. The method of synthesis and deposition in plasma. 2. HF sectioning method. 3. The radio-physical method of probing the ionosphere with frequency linear modelated signals. Experimental installations: VUP- 5.					
	Research field <i>Teleology of Educational Curriculum</i>					
	1. The method of pedagogical experiment.					

	<p>2. The method of statistical and mathematical processing of results. 3. Observation and questioning; pedagogic modelling.</p> <p style="text-align: center;">Research field <i>Sociojuridical Dimension of the Republic of Moldova European Integration</i></p> <p>1. Sociological and psychological methods and techniques (observation, document analysis, sociological survey by questionnaire, interview, content analysis). 2. Statistical methods (statistical grouping, statistical calculation and correlation of indicators)</p> <p style="text-align: center;">Research field <i>Modern Philology in the Context of Cross-cultural Dialogue;</i> Research field <i>Literary and Language Phenomena: Synchronic and Diachronic Perspectives</i></p> <p>1. Comparative – historical method. 2. Hermeneutic method. 3. Descriptive method.</p>
List of provided scientific services	-
List of editorial activities	<p>1. The Scientific Journal <i>Physics and Engineering: Processes, Models, Experiments</i> 2. <i>Arts and Artistic Education</i>, Journal of Culture, Science and Practical Education. 3. <i>New Philological Journal of Science, Culture and Civilization</i> 4. <i>Speech and Context</i>. Journal of Linguistics, Semiotics and Literary Science 5. <i>Glotodidactica</i>, Biannual Journal of Applied Linguistics</p>

III. Distribution of number of research projects and themes during evaluated period

Institutional projects	2006 11	2007 11	2008 11	2009 12	2010 12
Projects in the frame of State Programmes	2006 -	2007 1	2008 1	2009 1	2010 1
Technological transfer projects	2006 -	2007 -	2008 -	2009 -	2010 -
Projects for equipment procurement	2006 -	2007 -	2008 -	2009 -	2010 -
Projects for young researchers	2006 -	2007 1	2008 1	2009 -	2010 -
Projects in the frame of bilateral programmes	2006 -	2007 -	2008 -	2009 -	2010 -
International projects/grants	2006 -	2007 -	2008 -	2009 -	2010 -
List of 3 representative international projects/grants	-				
Research contracts	2006 -	2007 -	2008 -	2009 -	2010 -
List of 3 representative research contracts	-				

IV. Scientific publications

Total number of publications abroad	Books 7	Chapters in books -	Journal papers 228
Total number of publications in ISI journals and books	Books -	Chapters in books -	Journal papers 10
Total number of publications in the country	Books 91	Chapters in books 6	Journal papers 364
Total number of conference abstracts	International abroad 116	International in the country 88	National 145
List of 5 representative publications (per accredited field)	<p style="text-align: center;"><i>Research field Physics and Technology of Material Environments</i></p> <ol style="list-style-type: none"> 1. UREADOV V., IVANOV V., PLOHOTNIUC E., ERUHIMOV L., BLAUNSTEIN N., FILIP N. Dynamic Processes in the Ionosphere: Research Methods. -Iași, Tehnopress, 2006, 284 p. ISBN 973-702-310-2 (13,2) (in Romanian) 2. BLAUNSTEIN N., PLOHOTNIUC E. Ionosphere and Applied Aspects of Radio Communication and Radar. -New York, CRC Press, Taylor&Francis Group, 2008, 577 p. ISBN 978-1-4200-5514-6 (28,85) (in English) 3. TOPALA, P.; STOICEV, P. Conductive Material Processing Technologies with the Application of Pulsed Electrical Discharges. Chișinău, TEHNICA-INFO Press, 2008, 265 p. ISBN 978-9975-910-61-3 (13,25) (in Romanian) 4. SAFRONOV, I.I.; TOPALA, P.A.; GORBUNOV, A.S. EDM Processes at the Electrodes and the Microstructural Fzovy Composition of the Doped Layer. Chișinău, TEHNICA-INFO Press, 2009. 495 p. ISBN 9975-65-092-X (24,75) (in Russian) 5. SHARAGOV V., AZARENCO O., LYSENCO G., OLARU I. Section Etching of Flat Glass after Thermomagnetic Treatment. Proc. of the XXI International Congress on Glass. Strasbourg (France), 2007. A 39. P. 17-21 (in English) <p style="text-align: center;"><i>Research field Teleology of Educational Curriculum</i></p> <ol style="list-style-type: none"> 1. GAGIM, I. Dictionary of Music. Ch.: Î.E.P. Știința Press, 2008, 212 p. 8 coloured page plate. (in Romanian) 2. COJOCARU, V.; SOCOLIUC, N. Educational Management Rec. V. Pritcan, V. Botnari; Academy of Sciences of the Republic of Moldova; State University of Tiraspol; Alecu Russo State University of Bălți. Ch.: Cartea Moldovei Press, 2007. 264 p.: tab. ISBN 978-9975-60-061-3 (in Romanian) 3. BABII, V. Theory and Praxeology of Music and Artistic Education. Ch.: Elena V.I., 2010, 310 p. ISBN 978-9975-9649-0-6 (in Romanian) 4. GAGIM, I. Music and Philosophy. Chișinău, Știința Press, 2009, 160 p. (in Romanian) 5. SOCOLIUC, N.; COJOCARU, V. Educational Management. Ch.: Cartea Moldovei Press, 2007, 260 p. ISBN 978-9975-60-061-3 (in Romanian) 		

Research field *Literary and Language Phenomena: Synchronic and Diachronic Perspectives*

1. VRABIE D., Knowledge and Authenticity (the Drama of Knowledge and of Authenticity in Interwar Romanian Literature) Timișoara, Augusta Press and Artpress Press, 2008, 283 p., 17 c.a. ISBN: 978-973-108-144-1. (in Romanian)
2. POPA Gh., Fixed Word Combinations in the Romanian System of Nominative Units, Scientific editor, Acad. Silviu Berejan, Chișinău, Știința Press, 2007, 228 p., 15 c.a., ISBN: 978-9975-67-262-7. (in Romanian)
3. RĂCIULA L., Diaphasic Variability within Some Stylistic and Historical Series, Chișinău, Bons Offices Press, 2010, 190 p., 12 c.a., ISBN: 978-9975-80-322. (in Romanian)
4. ȘLEAHTIȚHI M., Open Circle. Romanian Literature from Bessarabia in the Post-Communism Era, Iași, Timpul Press, 2007, 218 p., 15 c.a. ISBN: 978-973-612-276-7. (in Romanian)
5. POPA Gh. (coautor), Dictionary of Pleonasm, Chișinău, Știința Press, 2010, 303 p., 18 c.a., ISBN: 978-9975-67-650. (in Romanian)

Research field *Sociojuridical Dimension of the Republic of Moldova European Integration*

1. PÎNZARI, V. Marriage in the Romanian and Moldovan Legislations. Cluj-Napoca, Sfera Juridică Press, 2006. 331p. 17,5 c.a. ISBN(10) 973-86766-9-X; (13) 978-973-86766-9-5 (in Romanian)
2. FAIGHER, A. Reasonable Risk. /Анатолие Файгер; Bălți, Bălți Ltd Press, 2009 – 232 c. 13,5 c.a. ISBN 978-9975-4038-2-5. (in Russian)
3. CAPCELEA, V. Social Norms. Scientific editor, Alexandru Roșca. Chișinău, ARC Press, 2007, 300 p. 17,2 c.a. ISBN 978-9975-61-185-5. (in Romanian)
4. RUSU, V., POP, O. Prosecution of Cases Involving Minors. Chișinău, PONTOS Press, 2008, 120 p., 7,5 c.a. ISBN 978-9975-72-072-4. (in Romanian)
5. RUSU, V., BALAN, O., NEAGU, Gh. Dictionary of International Humanitarian Law. Chișinău, PONTOS Press. 2007, 360 p. 18,1 c.a. ISBN 978-9975-72-005-2. (in Romanian)

Research field *Modern Philology in the Context of Cross-Cultural Dialogue*

1. COȘCIUG, A. Structural, Semantic and Pragmatic Peculiarities of Biblical Stories. Vol. I. "Structural Peculiarities of Biblical Stories". Bălți, Bal□i University Press, 2010, 180 p. (in French)
2. IGNATIUC, Iu.; MUNTEAN, A.; ALADIN, L.; PUIU, D.; FOCA, L. *Read and Learn*, Book for Reading, Chișinău, ARC Press, 2009, 82 p. ISBN 978-9975-61-545-7. (in English)
3. PROȚIUC, E; VARZARI, E.; CEH, O.; STANTIERU, O. *Perceiving British Culture through the Might of Words*. Bălți, Bălți Ltd Press, 2007, 108 p. ISBN978-9975-9510-7-4. (in English)
4. CEH, O.; PROȚIUC, E; VARZARI, E. *All Crime Stories*. Bălți, Bal□i University Press, 2006. 110 p. ISBN 9975-931-63-4. (in English)
5. SIROTA, E.; MIGHIRINA, H. Peculiarities of the Syntactical Representation of the Concept "Receptor" in the Light of Optimizing the

	Description of the Syntactical Units of the Language Layer. The Place of the Russian Language and Literature in the International Educational Space: State of the Art and Perspectives. II International Conf. Proc., Granada 2010: RUBIÑOS, S.A., Madrid, p. 264-268. (in Russian)
List of 5 citations	<p>1. Monograph, <i>Fixed Word Combinations in the Romanian System of the Nominative Units</i>, author Gheorghe Popa, cited by Vasile Bahnaru in <i>Romanian Language Journal</i>, No 5-6, Vol XVIII, 2008; http://limbaromana.md/index.php?go=articole&n=472.</p> <p>2. Volume on Literary criticism and history <i>Open Circle. The Romanian Literature from Bessarabia in the Post-Communism Era</i>, author Maria Şlehtiţchi, cited by Vitalie CIOBANU, in <i>New Romanian Literature from Bessarabia – Fertile Requirements</i> //Romanian Life, No. 6-7, 2009 ; http://www.viataromaneasca.eu/arhiva/60_viata-romaneasca-6-7-2009/10_cronica-literara/377_noua-literatura-din-basarabia-exigente-fertile.html.</p> <p>3. Monograph <i>Marriage in the Romanian and Moldovan Legislations</i>, author Veaceslav Pînzari, cited by Dr. Iulian Mihai L. Constantinescu in the article <i>Marriage Institution and its Canonical and Legal Implications in Today's Society</i>; http://www.crestinortodox.ro/drept-bisericesc/institutia-casatoriei-implicatiile-canonice-juridice-societatea-zilelor-noastre-69973.html.</p> <p>4. Monograph <i>Music and Philosophy</i>, author Ion Gagim, cited by Manuela Teodora Balasca-Mihoci in the article <i>A Philosophy of Music through the Artistic Education: Ion Gagim. Music and Philosophy</i>. In: AGATHOS. <i>An International Review of the Humanities and Social Sciences</i>. Volume I, Issus I, 2010, p. 181-185.</p> <p>5. <i>Dictionary of Music</i>, author Ion Gagim, cited by Tetelea Margareta in <i>The Arts Journal</i>. Audio-Vsual Arts Series), 2010, p.138-139.</p>

V. Innovation outputs

Total number of patents	Registered in the country 3	Registered abroad -	Implemented 3
Total number of new developed methods and technologies	Registered -	Non-registered 5	Implemented -
Total number of new scientific products	Registered -	Non-registered -	Implemented -
Total number of scientific outputs for central and local authorities (draft of law, strategies etc.)	3		
Total number of scientific outputs for educational institutions	Handbooks for high education 18	Handbooks for pre-university institutions 39	Delivered university courses 223
List of 5 representative innovation outputs (per accredited field)	<p>Research field <i>Physics and Technology of Material Environments</i></p> <ol style="list-style-type: none"> 1. Technological equipment used for synthesis of micro and nanostructures in plasma, obtained by means of impulse electric discharge 2. Equipment used to treat glass with magnetic fields (constant, variable 		

	<p>and impulse);</p> <ol style="list-style-type: none"> 3. Chemical and thermal treatment of industrial glassware by gaseous reagents; 4. Technology of graphite film formation with impulse electric discharge; 5. Method of improving the operating properties of annealed industrial glassware, made of various glass; 6. Optimal methods and regimes to treat glassware with gaseous reagents; 7. Complex method to investigate structural changes in model and multicomponent bottles, treated with electromagnetic fields (constant, alternating and impulse).
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VI Major scientific and innovation achievements

<p>Short description of main scientific results and its confirmation (by awards, citations, development of international projects etc.)</p>	<p style="text-align: center;">Research field <i>Physics and Technology of Material Environments</i></p> <p>A new physical model of electrolytic erosion has been developed, based on capillary waves that appear on the surface of liquid metal in electric fields, which lead to the extraction of concave menisci with an angle of 88 ... 92 °. Formation of menisci on the surface of cathodes increases their active area by about 8 times and the emission current by about 10 times under the same operating conditions.</p> <p>There has been developed a model of transfer of the electrode-tool, made of graphite, to the workpiece surface, which was subject to treatment with impulse electric discharge. The formation of carbon deposits on internal surfaces of pipes allowed omitting the paraffin stage, and when applied to the workpiece of glass molds it increases their durability by 3 times.</p> <p>Glassware of various natures have been treated with gaseous, liquid and solid reagents in working conditions at glass producing plants in Chisinau and Floresti. It was found that thermochemical treatment of bottles and jars with gaseous reagents increases their chemical stability by 10-20 times, the mechanical strength by 10-20%, microhardness and thermostability by 5-10%.</p> <p>Optimal regimens of thermomagnetic treatment of samples of model and industrial bottles with electromagnetic fields (constant, alternating and impulse) have been determined.</p> <p>In working conditions, under the influence of electromagnetic fields the mechanical strength of glassware increases by 20-40%, microhardness by 10-20%, thermal stability by 5-10%.</p> <p>The programs and algorithm that are necessary to determine the network of radio stations / telecommunications for maximum coverage of the territory of the Republic of Moldova have been developed.</p> <p style="text-align: center;">Research field <i>Teleology of Educational Curriculum</i></p> <p>The main Curriculum for children's musical-artistic education in the Republic of Moldova was modernized. The inovative document provides teachers of musical-artistic education for children (schools of music/arts) a unique and systemic vision on the educational process and aims to develop the students' skills necessary for the improvement of the individual potential and for effective integration into society.</p> <p>The Curriculum for the Musical Instrument (piano) and the Curriculum for</p>
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Music Literature for music schools have been developed. The concept of the management efficiency of students' extracurricular activities has been developed as well.

Investigations that have been carried out within the research groups from the Faculty of Pedagogy, Psychology and Social Assistance are relevant due to the obtained results, having a great impact on the improvement of the Department teaching staff and pre- university teachers, and particularly on the preparation of students for research and teaching activity.

Arguments:

About 133 scientific papers, 7 monographs, 80 scientific articles, and 43 educational-methodical works have been published and four international conferences have been organized.

Research field *Sociojuridical Dimension of the Republic of Moldova European Integration*

The concept of professional ethics of a judge has been developed which has an impact on the formation of mindsets among judges.

University curricula have been modernized for the specialties of the Law Faculty which positively influences the increase of Community Law subjects in the process of training lawyers.

The concept of juvenile prosecution has been developed which ensures the successful social reintegration of minors with deviant behavior without resorting to application of austere punishment.

Between 2006-2010 the scientific activity amounted to around 196 researches. Among them: 6 monographs, one of them being published abroad, 12 textbooks for University level, 14 scientific articles in international journals, 7 scientific articles published in international conference papers.

The obtained scientific results are implemented both in higher education practice as well as in jurisprudence. This fact ensures dynamism and coherence to higher education training.

Research field *Literary and Language Phenomena: Synchronic and Diachronic Perspectives*

Concepts of intercultural dialogue and intercultural education have been developed as well as a Curriculum for the discipline Intercultural Communication (University level), lecture notes in French and Romanian languages, a glossary of terms and a set of methodological guidance to the folkloric practice in multicultural environment. There have been developed the concept and main chapters of the Handbook of Spoken Languages in Balti; a survey about the relation between civic consciousness and ethnicity has been done as well as a case study in the multilingual area from Balti municipality.

The results of scientific research have been revealed within a number of national and international conferences and colloquiums, afterwards published in speciality journals and conference papers. Thus, about 217 works have been published, and namely 5 monographs, 12 textbooks, and 200 scientific papers, out of which 41 published abroad.

Research field *Modern Philology in the Context of Cross Cultural Dialogue*

Research results of the scientific staff within the accredited profile show

	in the 36 textbooks for university and pre-university institutions, 7 methodological guides, 9 curricula, 7 collections of tests, texts and exercises, 12 Internet publications etc.				
Number of organization' invited speakers at international conferences	2006 37	2007 12	2008 15	2009 31	2010 59
Short description of technological transfer and innovation results and its certification by implementation	<p>For the first time a procedure was developed to improve the operating properties of industrial products of various kinds of glass, annealed (ie after their shaping) and those already on the storage and use.</p> <p>Devices and facilities have been developed to create non-standard electromagnetic fields (constant, alternating and in pulsed state).</p> <p>Two automated systems of sounding on fixed frequencies and two automated systems of sounding with signals of linear modulated frequency have been developed, which can work under nonstop operating mode (24 hours per day) for accumulation of experimental data about the ionosphere condition in the frequency band 1 -30 MHz;</p> <p>Ionograms were obtained under direct oblique regime of ionospheric sounding on various tracks.</p> <p>An XeCl excimer laser was developed and made and laser generation was obtained ($\lambda= 308$ nm, $E_{imp} = 50$ mJ).</p> <p>Experimental facilities were designed and made for synthesis and deposition technologies of semiconductor structures with application of UV laser radiation and plasma obtained by electric discharge in pulsed state.</p> <p>Microstructures and nanostructures of $ZnAl_2S_4$ were obtained, thin films and ZnO microcrystals doped with Cu, Ta, Eu and W.</p> <p>About 144 scientific papers were published based on research results, including 4 monographs, 4 manuals, 112 scientific articles, of which 23 articles published abroad, 24 methodical works. There have also been organized two international conferences.</p> <p>2009</p> <p>Silver medal at the International Specialized Exhibition "INFO INVENT 2009", TOPALA PAVEL, Method of hardening of metal surfaces by electric discharge.</p> <p>Bronze medal at the International specialized exhibition INFO INVENT. 24 to 27 November 2009, Chisinau, Vasile Şaragov, Azarenco Olga, Botezatu Vitalie, Lîsenco Galina, Olaru Ion, The combined method to improve the physic-chemical properties of glass products.</p> <p>Diploma, 2nd degree, , authors Topala, P., A. Balanich, Pinzaru N., P. Stoicheff, Sletinyanu L., report "The process for increasing the resistance of the electrode-based tools used in the formation of surface layers by pulsed discharges", Donetsk, International Conference MACHINE-BUILDING AND TECHNOSPHERE OF THE XXI CENTURY, 2009.</p> <p>2010</p> <p>Gold Medal, Pavel Topala, Sergiu Mazuru, Vitalie Besliu, Cosovschi Pavel, Petru Stoicev, Ist SCIENTIFIC AWARD at the 14th International Conference ModTech 2010.</p>				
Number of defended dr. hab. and dr. theses per year	2006 3	2007 -	2008 9	2009 7	2010 3

VI. Present/further involvement in the Seventh Framework Programme (FP7): specific programmes (Cooperation, Ideas, People, Capacities) of interest and its sub-divisions.

Six persons from Alecu Russo Bălți State University participate in the Project *Enhancing the capacities of the ELIRI Research Institute in applied research to enable the integration of Moldova in the European Research Area on the basis of scientific excellence*, which started in 01.12.2011.

The objective of MOLD-NANONET is to assist the ELIRI Research Institute to develop and implement a research strategy that will expand its activities and increase its level of excellence in micro-nano-electronics related to the development of intelligent systems, so that it can compete and collaborate with leading research institutions in Europe. MOLD-NANONET will create a unified infrastructure in Moldova by integrating the R&D capabilities of the city of Balti with those of the capital city (Chisinau). Training activities will be opened up and integrate with activities in other relevant research institutions in Moldova and with the new Technological Park affiliated to ELIRI. MOLD-NANONET will stimulate the creation of a bridge between applied research and innovative business.

VII. Accredited research field and its evaluation by the National Council for Accreditation and Attestation of the Republic of Moldova (very good/good/ satisfactory)

Research field *Physics and Technology of Material Environments* – **good**;

Research field *Teleology of Educational Curriculum* – **satisfactory**;

Research field *The Socio-Legal Dimension of the European Integration of the Republic of Moldova* – **satisfactory**;

Research field *Modern Philology in the Context of Cross Cultural Dialogue* – **satisfactory**;

Research field *Literary and Language Phenomena: Synchronic and Diachronic Perspectives* – **good**.

VIII. Category (A/B/C) attributed by the National Council for Accreditation and Attestation of the Republic of Moldova to the organization

The **Category B** was attributed by the National Council for Accreditation and Attestation of the Republic of Moldova to Alecu Russo Balti State University.

IX. Institutional development actions planned for the next 5 years (maximum ½ page).

1. Teachers and researcher will compete for doctoral (15) and post-doctoral (2) state budget scholarships.
2. There will be prepared and submitted to decision-making bodies entitlement papers for scientific advising in doctoral programs: 10.02.04 *Slavic Languages (Russian)* and 13.00.02 *Theory and methodology of training (Russian)*.
3. The University will participate in the ASM contest to organize two incubators of innovation

- and technological transfer within the universities of the Republic of Moldova.
4. The University will provide the necessary information to register at the European Committee for research in view of accession to international research programs (FC7 etc.).
 5. There will be submitted two applications to obtain international funding: CEEPUS, FC7 (for the profile *Physical properties of substances in different states*).
 6. There will be made the necessary steps to:
 - a) obtain the reaccreditation of the scientific journal *Arts and Artistic Education. The Journal of Culture, Science and Educational Practice*;
 - b) obtain the accreditation of the scientific journals *Physics and Engineering. Processes, Models, Experiments; Speech and Context*.
 7. There will be created three joint research centers at Balti State University and the Academy of Science of Moldova in view of collaborating, coordinating and improving the quality of research activities.
 8. Scientific research within accredited profiles will be assessed monthly.
 9. The quality of training doctoral students will be monitored.
 10. There will be organized three scientific events with the participation of licenta students, master's degree students and doctoral degree students, and university faculty. The research materials presented at these events will be published.
 11. PhD students who will defend their theses within the scheduled terms as well as their scientific advisors (University employees) will get a financial bonus of 1000 lei.
 12. Young researchers will get encouragement and support to participate in international mobility projects (the concept is reflected in the Regulations for granting salary supplements).
 13. The University webpage will be conceptually reorganized.
 14. There will be systematically reflected:
 - a) research activities;
 - b) doctoral program training;
 - c) notices about other types of research activities.
 15. The position of Head of the University patenting of scientific inventions will be established.
 16. Annually, two patent applications for inventions will be submitted.