

# Boris Stilman

## RESUME

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## RESEARCH SUMMARY

In 1972-1988, in Moscow, USSR, after graduation in Mathematics from Lomonosov Moscow State University (1972), I was involved in the advanced research project PIONEER led by a former World Chess Champion Professor Mikhail Botvinnik. The goal of the project was to discover and formalize an approach utilized by the most advanced chess experts in solving chess problems almost without search. While program PIONEER has never played complete chess games, it solved a number of complex end-games and positions from the games of World Chess Champions. This project was never finished, however, based on these experiences over a number of years, in Moscow, I developed experimental and mathematical foundations of the new approach to search problems in Artificial Intelligence.

In 1990-91, while at McGill University, Montreal, Canada, based on this approach, I originated Linguistic Geometry (LG), a new theory for solving abstract board games (ABG). LG represents ABG as a hierarchy of formal languages (with controlled semantics) that change when the game moves from one state to the next. LG allows us to avoid combinatorial explosion by changing the paradigm from search to construction (from analysis to synthesis). It is scalable to solving complex real world problems that are considered intractable by conventional approaches.

Since 1991, I was developing the theory and applications of LG at the University of Colorado Denver (UC Denver). A leap in the development LG was made in 1999, when I (with a group of scientists and engineers) founded STILMAN Advanced Strategies, LLC (STILMAN). Since then, I combine my professorship at UC Denver with my leadership role of Chairman & CEO at STILMAN. A growing number of applications of LG developed at STILMAN have passed comprehensive testing and are currently transitioning to the real world command and control systems in the USA. The LG software is currently considered vital for the national defense in the USA and UK.

Out of more than thirty LG-based projects that STILMAN completed, three projects with DARPA are in a class of its own. They are Joint Force Air Component Commander (JFACC, 1999-2001), Force Multipliers (2005-06), and Real Time Adversarial Intelligence and Decision Making (RAID, 2004-08). Out of these three, RAID was especially successful. STILMAN developed the LG-RAID software generating in real time 4-hour predictive courses of action for the urban combat (in Baghdad). The efficacy and sophistication of these courses of action exceeded consistently those developed by the staff members. In a sense, LG-RAID passed an informal Turing Test.

Based on the results of the RAID project and a number of simulation and live exercises, the US Army and DARPA granted a series of awards for transition of LG-RAID to the US Army. Currently, a growing number of the US Army acquisition programs deploy this technology. Other branches of the U.S. Armed Forces such as Navy and Missile Defense follow suit.

Almost two decades of successful development of the real-world applications of LG led us to believe that LG is a lot more fundamental than simply yet another mathematical theory of efficient war-gaming. Every LG application generated new ideas that experts evaluated as brilliant. We believe that we discovered a mathematical model of human thinking about armed conflict, a mental reality that existed for thousands of years. The game of chess was invented 1.5-2 thousand years ago as a formal gaming model of ancient wars. In our case, chess served as a means for discovering human methodology of efficient warfare. In several papers we demonstrated power of LG on wars happened at times when the game of chess had yet to be invented, specifically, the battles of Alexander the Great and Hannibal. Soon, the LG-based software will demonstrate what-if analysis of those battles. Moreover, we suggested that proto-LG played the key role in the evolution of human intelligence and could be the major algorithm powered directly by the Primary Language of the human brain (as suggested by J. von

Neumann in 1957).

Our hypothesis is that the Primary Language is the Language of Visual streams, i.e., it is based on mental dynamic images (movies), visual streams, so that those streams drive reasoning, reading and writing, translation and should serve as a different form, the foundation, for all the sciences. (Note that, according to this hypothesis, the Primary Language is not a language in mathematical sense.) We are interested in revealing the detailed nature of the Primary Language by investigating ancient algorithms, including LG, crucial for development of humanity. It is likely that such ancient algorithms should be powered by the Primary Language directly and, thus, should utilize symbolic reasoning as auxiliary because it is located in the neocortex, a component of the human brain that had yet to be developed at that time. Our contention is that the hypothetical Algorithm of Discovery (AD) must be one of such algorithms.

For several years we have been developing a hypothesis that there is a universal AD driving all the innovations and, certainly, the advances in all sciences. By tracing and replaying discoveries in actual development of the theory of LG, we revealed the dynamics of visual streams, especially, the means for focusing streams in desired direction. The following research led us to replaying different, non-LG discoveries, specifically, we used the AD to replay the discovery of the structure of DNA, Genetic code, Protein synthesis, and, most recently, the discovery of the Theory of Special Relativity. The ultimate goal of this research is to automate discoveries which will lead to the self-learning and self-improving systems with deep understanding of their performance.

I published several books, including "Linguistic Geometry: From Search to Construction" by Kluwer (now Springer) in 2000, and contributions to books, and over 200 research papers. I am a recipient of numerous R&D awards, including the top research awards at UC Denver, grants from the former USSR Academy of Sciences, substantial grants from the US government agencies such as major multiple awards from US Dept. of Energy, DARPA, US Army, US Air Force, US Navy, US MDA, US JFCOM, etc.; Dstl/Ministry of Defence of UK; from the world leading contractors such as Boeing (many projects, USA), Rockwell (USA), BAE Systems (UK), SELEX Galileo/Finmeccanica (Italy-UK), and Fujitsu (Japan).

More details can be found in the brochure "Linguistic Geometry Tools: LG-PACKAGE" and in the 8 movies (recorded software demos) downloadable from the STILMAN's web site: [www.stilman-strategies.com](http://www.stilman-strategies.com), **go to "Demos"**. Unfortunately, these demos are out of date while the new demos could not be posted on the web due to security constraints.

**CURRENT POSITIONS***Chairman & CEO*STILMAN Advanced Strategies (STILMAN), LLC, Denver, CO, **USA** (for more details see p. 8)*Professor Emeritus of Computer Science*Dept. of Comp. Science & Eng., University of Colorado Denver (UC Denver), Denver, CO, **USA**.**RESEARCH INTERESTS***Artificial Intelligence (AI):*

Specific: The Primary Language, the Algorithm of Discovery (AD), Linguistic Geometry (LG), Applications of LG to Defense Systems, Role of LG in Human Intelligence.

General: Search, Knowledge Representation, Reasoning, Games, Strategies, Concurrent Systems, Multi-agent Systems, Accuracy and Complexity of AI Algorithms, Planning, Robotics, Network Security.

*Formal Languages and Compilers:*

Attribute Languages and Grammars, Controlled Grammars with applications to LG, Grammars' Accuracy and Efficiency, Integrated Language and CASE Environments.

**EDUCATION****1984**Ph. D. in *Computer Science* from National Research Inst. for Electrical Engineering, Moscow, **USSR**.Ph. D. in *Electrical Engineering* from National Research Inst. for Electrical Engineering, Moscow, **USSR**.**1972**M. S. in *Mathematics* from Moscow State University (Diploma with Honors), Moscow, **USSR**.**PROFESSIONAL EXPERIENCE****2018 – to date***Professor Emeritus of Computer Science*Department of Computer Science & Engineering, UC Denver, Denver, CO, **USA**.**1999 - to date***Chairman & CEO*STILMAN Advanced Strategies (STILMAN), LLC, Denver, CO, **USA**.**1994 - 2018***Professor of Computer Science (tenured)*Department of Computer Science & Engineering, UC Denver, Denver, CO, **USA**.**1991 - 1994***Associate Professor of Computer Science*Department of Computer Science & Engineering, UC Denver, Denver, CO, **USA**.**1990 - 1991***Visiting Professor*School of Computer Science, McGill University, Montreal, **Canada**.**1988 - 1990***Chief of Department for Software Design**Principal Software Designer/Leading Scientist*Computer Tech. Division, National Research Geological Inst. for Oil Development, Moscow, **USSR**.**1972 - 1988***Senior Scientist (Group Leader),* (1985–1988)*Senior Scientist,* (1975–1985)*Senior Engineer-Mathematician,* (1972–1975)*Lecturer in Computer Science*Dept. for Complex Search Problems, National Research Inst. for Electrical Engineering, Moscow, **USSR**.

**ADDITIONAL PROFESSIONAL EXPERIENCE****2017 (Fall)***Visiting Professor*Short Course "From Primary to Conventional Science", Far East Federal University, Vladivostok, **Russia**.**1996 (Summer)***Visiting Professor*Summer School on Linguistic Geometry, St. Petersburg University, St. Petersburg, **Russia**.**1995 (Summer)***Visiting Professor*Satellite Control and Simulation Division, U.S. Air Force Phillips Laboratory, Kirtland Air Force Base, Albuquerque, NM, **USA**.**1985 - 1989***Local Division Chief, Professor of Computer Science*The USSR Academy of Sciences Temporary Research Group SCHOOL-1, Moscow, **USSR**.**1981 - 1985***Professor of Computer Science*The USSR Academy of Sciences Scientific Council on Complex Problem *Cybernetics*, Moscow, **USSR**.**PROJECTS LED****2010 - to date****THE PRIMARY LANGUAGE OF THE HUMAN BRAIN:**

- *PRIMARY AND CONVENTIONAL SCIENCE* 2016 –
- *STRUCTURE OF THE PRIMARY LANGUAGE* 2015 –
- *THE ALGORITHM OF DISCOVERY* 2012 –
- *RE-DISCOVERING THE DISCOVERIES IN LG, MOL. BIOLOGY, MATH., PHYSICS, ETC.* 2010 –

**1990 - to date****LINGUISTIC GEOMETRY (LG):**

- *THEORY* 1990 –
- *APPLICATIONS TO DEFENSE* 1999 –
- *ROLE OF LG IN HUMAN CULTURE* 2010 –

**1988 - 1990****EXPERT SYSTEM FOR OIL DEVELOPMENT AND EXPLORATION****1985 - 1989****FORESTALL EDUCATION PROJECT: TRAINING METHODS AND AI SOFTWARE DESIGN****1972 - 1990****THE PIONEER PROJECT:**

- *"PIONEER" AI SYSTEMS FOR CONTROL, PLANNING, PLAYING CHESS* (experimental base of the future LG; under Prof. M. Botvinnik, a former World Chess Champion) 1972 –1988
- *HIERARCHY OF FORMAL GRAMMARS FOR SOLVING SEARCH PROBLEMS* (theoretical predecessor of LG) 1979 –1988
- *"PROGRAMMER'S WORKBENCH"* (computer-aided software engineering [CASE] system; originally developed to support other components of the PIONEER PROJECT, publications continued until 1996). 1981 –1990

**MOST IMPORTANT PUBLICATIONS**

(for a complete list of publications see p.18)

Stilman, B., From Primary to Conventional Science, V. Sgurev, et al. (Eds.), in *Learning Systems: From Theory to Practice, Studies in Computational Intelligence 756*, pp. 73-116, DOI 10.1007/978-3-319-75181-8, Springer Int., 2018.

Stilman, B., Discoveries on Demand, *Int. J. of Design & Nature and Ecodynamics*, Vol.11, No.4, pp. 495-507, 2016.

Stilman, B., Mosaic Reasoning for Discoveries, *J. of Artificial Intelligence and Soft Computing Research*, Vol. 3,

- No. 3, pp. 147-173., 2013 (published in 2014).
- Stilman, B., Proximity Reasoning for Discoveries, *Int. J. of Machine Learning and Cybernetics*, Springer, (DOI): 10.1007/s13042-014-0249-x, 31 p., 2014.
- Stilman, B., Visual Reasoning for Discoveries, *Int. J. of Machine Learning and Cybernetics*, Springer, (DOI): 10.1007/s13042-013-0189-x, 23 p., 2013.
- Stilman, B., Discovering the Discovery of the Hierarchy of Formal Languages, *Int. J. of Machine Learning and Cybernetics*, Springer, (DOI) 10.1007/s13042-012-0146-0, 25 p., 2012.
- Stilman, B., Discovering the Discovery of the No-Search Approach, *Int. J. of Machine Learning and Cybernetics*, Springer, (DOI) 10.1007/s13042-012-0127-3, 27 p., 2012. Printed in 2014, Vol. 5, No. 2, pp. 165-191.
- Stilman, B., Discovering the Discovery of Linguistic Geometry, *Int. J. of Machine Learning and Cybernetics*, Springer, (DOI) 10.1007/s13042-012-0114-8, 20 p., 2012. Printed in 2013, Vol. 4, No. 6, pp. 575-594.
- Stilman, B., Linguistic Geometry and Evolution of Intelligence, *ISAST Trans. on Computers and Intelligent Systems*, Vol. 3, No. 2, pp. 23-37, 2011.
- Stilman, B., Yakhnis, V., Umanskiy, O., The Primary Language of Ancient Battles, *Int. J. of Machine Learning and Cybernetics*, Springer, Vol. 2, No. 3, pp. 157-176, 2011.
- Stilman, B., Yakhnis, V., Umanskiy, O., Revisiting History with Linguistic Geometry, *ISAST Trans. on Computers and Intelligent Systems*, Vol. 2, No. 2, pp. 22-38, Oct. 2010.
- Stilman, B., Yakhnis, V., Umanskiy, O., Boyd, R., Pugachev, V., Hagen, L., LG-PACKAGE: New Frontier, *POLIBITS*, pp. 5-12, No. 42, 2010.
- Stilman, B., Yakhnis, V., Umanskiy, O., Linguistic Geometry: The Age of Maturity, *J. of Advanced Comp. Intelligence and Intelligent Informatics*, Vol. 14, No. 6, pp. 684-699, Sep. 2010.
- Stilman, B., Yakhnis, V., Umanskiy, O., Chapter 3.3. Strategies in Large Scale Problems, in the book: *Adversarial Reasoning: Computational Approaches to Reading the Opponent's Mind*, Ed. by A. Kott (DARPA) and W. McEneaney (UC-San Diego), Chapman & Hall/CRC, pp. 251-285, 2007.
- Stilman, B., Yakhnis, V., Umanskiy, O., Knowledge Acquisition and Strategy Generation with LG Wargaming Tools, *Int. J. of Comp. Intelligence and App-s*, pp. 385-410, Vol. 2, No. 4, 2002.
- Stilman, B., Yakhnis, V., Umansky, O., Winning Strategies for Robotic Wars: Defense Applications of Linguistic Geometry, *Artificial Life and Robotics*, (invited paper), pp. 148-155, Vol. 4, No. 3, 2000.
- Stilman, B., *Linguistic Geometry: From Search to Construction*, Kluwer (now Springer), 416 pp., 2000.
- Stilman, B., Fletcher, C., Systems Modeling in Linguistic Geometry: Natural and Artificial Conflicts, *Int. J.: Systems Analysis, Modeling, Simulation*, pp. 57-97, Vol. 33, 1998.
- Stilman, B., Managing Search Complexity in Linguistic Geometry, *IEEE Trans. on Systems, Man, and Cybernetics*, Vol. 27, No. 6, pp. 978-998, Dec. 1997.
- Stilman, B., Network Languages for Concurrent Multi-agent Systems, *An Int. J.: Computers & Mathematics with Applications*. Vol. 34, No. 1, pp. 103-136, 1997.
- Stilman, B., Network Languages for Intelligent Control, *An Int. J.: Computers & Mathematics with Applications*, Vol. 31, No. 3, pp. 91-118, 1996.
- Stilman, B., A Linguistic Geometry: Methodology and Techniques, *Cybernetics and Systems – An Int. J.*, Vol. 26, No. 5, pp. 343-405, Sept. 1995.
- Stilman, B., Heuristic Networks for Space Exploration, *Telematics and Informatics, An Int. J. on Telecommunications & Information Technology*, Vol. 11, No. 4, pp. 403-428, 1994.
- Stilman, B., Software Development Environment for Concurrent Design and Maintenance of Complex Research Projects, *Proc. of the Int. Symp. on Applied Corporate Computing - ISACC94*, pp. 147-156, Monterrey, Mexico, Oct. 1994.
- Stilman, B., A Formal Language for Hierarchical Systems Control, *Languages of Design*, Vol. 1, No. 4, pp. 333-356, 1993.
- Stilman, B., A Syntactic Hierarchy for Robotic Systems, *Integrated Computer-Aided Engineering*, Vol. 1, No. 1, pp. 57-82, 1993.
- Stilman, B., Network Languages for Complex Systems, *An Int. J.: Computers & Mathematics with Applications*, Vol. 26, No. 8, pp. 51-80, 1993.
- Stilman, B., A Linguistic Approach to Geometric Reasoning, *An Int. J.: Computers & Mathematics with*

- Applications*, Vol. 26, No. 7, pp. 29-58, 1993.
- Stilman, B., Stilman, Z., A Method of Programming on Algorithmic Language Using BASIC and FOCAL, *Microprocessor Devices and Systems*, Moscow, No. 3, pp. 34–37, 1986 (in Russian).
- Mirniy, V.R., Roizner, A.G., Chudakov, M.V., Stilman, B., CASE System for Development and Debugging of Large FORTRAN Programs, *Programming*, The USSR Acad. of Sci., Moscow, No. 5, pp. 27–38, 1986 (in Russian).
- Stilman, B., A Formal Linguistic Model for Solving Discrete Optimization Problems. I. *Bulletin of the USSR Academy of Sciences: Engineering Cybernetics*, Moscow, No. 3, pp. 110–122, 1985.
- Stilman, B., A Formal Linguistic Model for Solving Discrete Optimization Problems. II. *Bulletin of the USSR Academy of Sciences: Engineering Cybernetics*, Moscow, No. 4, pp. 10–21, 1985.
- Stilman, B., Fields of Play, Appendix 1 of the book: *Computers in Chess: Solving Inexact Search Problems*, by Botvinnik, M.M., Springer-Verlag, New York, NY, pp. 68–104, 1984.
- Botvinnik, M. M., Stilman, B., Yudin, A. D., An Artificial Chess Master, *The USSR Academy of Sciences Presidium Reports*, Moscow, No. 4., pp. 92–101, 1978 (in Russian).

## COURSES TAUGHT

### SEMESTER-LONG COURSES

University of Colorado Denver, Denver, CO, **USA**.

*Complex Intelligent Systems (grad.)*,

*Knowledge Representation for Intelligent Systems (grad.)*

*Linguistic Geometry (grad./undergr./Ph.D.)*,

*Artificial Intelligence (grad./Ph.D.)*

*Introduction to Artificial Intelligence (undergr.)*,

*Compiler Design (undergrad.)*

*Universal Compiler: Theory & Construction (grad./undergr.)*

### SHORT POST-GRAD. COURSES

2017 *From Primary to Conventional Science*

*The 2nd Russian-Pacific Conf. on Computer Technology and Applications (RPC 2017)*, Far East Federal University, Vladivostok, **Russia**.

2013 *Linguistic Geometry: Constructing Strategies Step by Step*

The 7th Moscow Int. Conf. on Operations Research - ORM'2013, Moscow, **Russia**.

2012 *The Essence of Linguistic Geometry: Constructing Strategies without Search*

The 12th Int. Conf. on Intelligent Systems Design and Applications – ISDA'2012, Cochin, **India**

2011 *Linguistic Geometry Tools: Solving Intractable Search Problems without Search*

3d Int. Conf. on Adv. Cognitive Technologies and Appl. – COGNITIVE'2011, Rome, **Italy**

2010 *Linguistic Geometry Paradigm*, 9th Mexican Int. Conf. on AI - MICAI'10, Pachuca, **Mexico**

2005 *Linguistic Geometry: From Search to Construction*, 14th Int. Congr. on Computing - CIC'05, Mexico City, **Mexico**

2001 *Advanced Strategies for Abstract Board Games: Foundations of Linguistic Geometry*

14th Australian Joint Conf. on Artificial Intelligence - AI'01, Adelaide, **Australia**

2000 *Winning War Games: Efficient Control with Linguistic Geometry*

ICSC Symposium on Engineering of Intelligent Systems – EIS'2000, Paisley, Scotland, **UK**

1998 *Linguistic Geometry for Computationally Challenging Problems*

IEEE Int. Conference on Systems, Man, and Cybernetics — SMC'98, San Diego, CA, **USA**

1997 *Linguistic Geometry for Modeling and Simulation*,

15th IMACS World Congress, Berlin-Brandenburg Acad. of Sci., Berlin, **Germany**

*Problem Solving with Linguistic Geometry*,

Rockwell Int. Corp., Rockwell Sci. Center, Thousand Oaks, CA, **USA**

1996 *Linguistic Geometry: Theory and Applications (SUMMER SCHOOL)*

Dept. of Applied Mathematics, St. Petersburg University, St. Petersburg, **Russia**

1995 *Foundations of Linguistic Geometry and Applications to Robotics*

Automation and Robotics Center of the University of Wales, Cardiff, **UK**

*Introduction to Linguistic Geometry*

Satellite Control and Simulation Division, Phillips Lab, Kirtland AFB, Albuquerque, NM, **USA**

## MORE DETAILS

**MAJOR PROFESSIONAL ACHIEVEMENTS, HONORS & AWARDS****1990 - 2018**

- **TALKS** NUMEROUS INVITED PRESENTATIONS in 28 COUNTRIES (for more details see p. 32)

**2018**

- **US Navy SBIR Phase II** \$1M for 1 year; NAVSEA compressed funding of years 2-3 of the SBIR Phase II project awarded in 2017 into the One-Year Award to STILMAN, *LG-RAID Technology Research, Predictive and Causal Modeling for NAVSEA*. Expedited development of the LG-based analysis and planning capabilities for the Navy assets, Aug 15, 2018, **USA**.
- **US Army SBIR Phase III** \$1.3M for 1 year; US Army awarded the 2<sup>nd</sup> year funding of the \$4.3M SBIR Phase III project (see 2017 awards). *Enhancement and integration of LG-RAID with ETSS* to create tactical courses of action (COAs) for leader support and on-board mission planning, with simultaneous expedited deployment with US Army, Aug 15, 2018, **USA**.
- **US Navy SBIR Phase I** \$125K (+100K option) for 0.5 year. US Navy (NAVAIR) awarded STILMAN SBIR Phase I contract for the LG-based development of Interactive Tool for Joint Mission Planning System. Due to the synergy with the current STILMAN's SBIR Phase II project with NAVSEA there is a chance of expansion into SBIR Phase II, June 1, 2018, **USA**.
- **US Army & GDLS** **LG-RAID Deployment**. US Army & General Dynamics Land Systems (GDLS) awarded STILMAN the first deployment of LG-RAID for the Stryker Family of Vehicles, May 20, 2018, **USA**.
- **US Army SBIR Phase III** \$250K for 3 months. **US Army** FoV ETSS program awarded an addition to the 1st year funding of the \$4.3M SBIR Phase III project (see 2017), *Enhancement and integration of LG-RAID with ETSS* to create tactical courses of action (COAs), Feb 15, 2018, **USA**.

**2017**

- **US SOCOM Deployment** \$80K, Special Operations Command (SOCOM). As a subcontractor to Orbis Technologies STILMAN supported deployment of LG-RAID with SOCOM, **USA**.
- **US Navy SBIR Phase II** \$1.5M for 3 years, NAVSEA awarded SBIR Phase II project to STILMAN, *RAID Technology Research, Predictive and Causal Modeling for NAVSEA*. Development of the LG-based analysis capabilities for the Carrier Strike Group (CSG), Ballistic Missile Defense (BMD), Surface Action Group (SAG), and the Expeditionary Strike Group (ESG)/Amphibious Readiness Group mission profiles, Aug 21, **USA**.
- **US Army SBIR Phase III** \$4.3M for 3 years (\$860K avail. for Year 1). The FoV ETSS (Stryker Family of Vehicles Embedded Training Simulation Software) program awarded SBIR Phase III project to STILMAN to enhance and integrate LG-RAID with ETSS to create tactical courses of action (COAs) for leader support and mission planning, with simultaneous expedited deployment with US Army, **USA**.
- **US Army & GDLS** \$176K, US Army & General Dynamics Land Systems (GDLS) awarded STILMAN a 5-month project for demonstrating initial integration of LG-RAID with ETSS, **USA**.
- **US MDA SBIR Phase II** \$1M for 2 years. Missile Defense Agency (MDA) awarded STILMAN SBIR Phase II contract for the LG-based streamlining scenario generation for the ground test for the Ballistic Missile Defense (BMD). Due to the STILMAN's experience in applying LG to the BMD simulation in the past there is a chance of expansion into SBIR Phase III, **USA**.

**2016**

- **US Army CP&I** Contract with US Army Command, Power and Integration Directorate (CP&I) was the main source of STILMAN's funding in 2016. Within this contract, STILMAN participated successfully in two demonstration events at Ft. Leavenworth, KS for the Automated Planning Framework (APF) Program (May and August). Several versions of LG-RAID received accolades from the growing number of the US Army programs that requested immediate deployment, **USA**.



- **US SOCOM Deployment** From Dec 23, 2016 LG-RAID has been deployed with All-Source Analytical Environment (ASAE) program of the U.S. Special Operations Command (SOCOM). As a subcontractor to Orbis Technologies STILMAN is expected to participate in support program with SOCOM, **USA**.
- **US MDA SBIR Phase I** **100K** for 0.5 year. Missile Defense Agency (MDA) awarded STILMAN SBIR Phase I contract for simulation of the ground test for the Ballistic Missile Defense (BMD). STILMAN has a high probability to move to SBIR Phase II (\$1M) because of the MDA's pressing need to achieve simulation of this test ASAP and due to the STILMAN's experience in applying LG to the BMD simulation in the past and synergy with an expected new Navy project (see below) which has a significant BMD component, **USA**.
- **US Navy SBIR Phase II** NAVSEA PEO IWS 1.0 ("Aegis") is about to award sole-source Phase II project to STILMAN. There is a chance of infusion of the Phase III funding. The purpose of the project is to develop multi-threat courses of action (COA) analysis capabilities for the various Naval assets, **USA**.
- **US Army Stryker FoV** The Stryker Family of Vehicles (FoV) Embedded Training (ET) program revived its requirement for utilizing LG on all the Stryker vehicles for embedded training. J. Mosley, Chief Engineer for Stryker FoV, requested completion of the first stage of integration with Stryker ET by July 2017. The first funding came in Dec. via General Dynamics Land Systems (GDLS), a prime for the Stryker program. The main funding is expected to come through in 2017, **USA**.

## 2015

- **US Army CP&I** **\$5.1M** for 3 years (closed in Feb 2017 after spending **\$600K**), PD/PI, «*LG Technology for Decision Enhancing Capabilities*». Further advancement of LG technology
  - to all levels of mission command systems, from Company to Brigade;
  - to control unmanned vehicles in collaboration with the manned systems;
  - to increase fidelity of LG decisions based on high level information fusion and deception;
 with CP&I (Command, Power, and Integration Directorate) and STILMAN, Aberdeen Proving Ground, MD, Dec 2015, **USA**.
- **US Army SBIR Phase III** **\$392K**, for 1.5 year, PD/PI, addition to SBIR Phase III Award.
  - Multiresolution modeling across command hierarchy with LG-RAID;
 with STILMAN, and US Army Simulation & Training Technology Center (STTC), May 2015, **USA**.
- **US Army SBIR Phase III** **\$173K** for 1 year, PD/PI, addition to SBIR Phase III Award.
  - Mission Command interoperability with LG-RAID installed on Nett Warrior;
 with STILMAN, RDECOM CP&I, US Army Simulation & Training Technology Center (STTC), March 2015, **USA**.
- **Marine Corps SBIR Phase III** **\$722K + \$123K**, for 1 year, PD/PI, addition to SBIR Phase III Award.
  - Predictive Threat Modeling for Marine Corps capabilities,
 with the US Marine Corps, US Army Simulation & Training Technology Center (STTC), STILMAN and ADAPX (subcontract), Orlando, FL, Feb 2015, **USA**.
- **US Army TECD 7c** LG-RAID participated successfully in the number of demonstrations around the country including those at TCM Gaming (Ft. Leavenworth, KS), Captain's Career Course (CCC) and Cavalry Leader Course (CLC) at Maneuver Center of Excellence (MCoE, Fort Benning, GA) with the U.S. Army Simulation & Training Technology Center (STTC) and STILMAN, a **year-long event**, 2015, **USA**.
- **US Army C4ISR NM E15** LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NetMod E15 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Mission Command - Technology Enabled Capability Demonstration (MC TECD), Simulation & Training Technology Center (STTC) and STILMAN, **3-week event**, Ft. Dix, NJ, July-Aug 2015, **USA**.

## 2014

- **US Army MC TECD AI TECD** **\$1.7M** for 2 years, PD/PI, SBIR Phase III Award (continuation). Further development of LG-RAID:
  - MicroCloud architecture,
  - Mission planning and training for Joint Ops;

**Marine Corps** - Predictive Threat Modeling for MC capabilities, with US Army Mission Command Technology Enabled Capability Demonstration (MC TECD), US Army Actionable Intelligence - Technology Enabled Capability Demonstration (AI TECD), and US Marine Corps, with STILMAN and ADAPX (subcontract), Orlando, FL, 2014, **USA**.

- **US Army TECD 7c** **\$432K** for 2 years, PD/PI, US Army RIF (Rapid Innovation Fund) Award "*Human-Collective Training for Tactical Operations*" for developing LG-RAID gaming software for
  - multiple user collaborative team training,
  - taking into account relevant social, cultural and sustainment effects.
 with STILMAN, Army RIF, RDECOM, Aberdeen Proving Ground, MD, Sep 2014, **USA**.
- **US Army TECD 7c** LG-RAID participated successfully in the number of demonstrations around the country including those at TCM Gaming (Ft. Leavenworth, KS), Captain's Career Course (CCC) and Cavalry Leader Course (CLC) at Maneuver Center of Excellence (MCoE, Fort Benning, GA) with the U.S. Army Simulation & Training Technology Center (STTC) and STILMAN, a **year-long event**, 2014, **USA**.
- **US Army C4ISR NM E14** LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NetMod E14 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Mission Command - Technology Enabled Capability Demonstration (MC TECD), Simulation & Training Technology Center (STTC) and STILMAN, **3-week event**, Ft. Dix, NJ, July-Aug 2014, **USA**.
- **US Army** « ... *LG-RAID is the most effective wargaming tool I have seen to date*», TECD Post-mission Soldier Survey at the NetMod E14 Army Exercise, Ft. Dix, NJ, Aug 2014, **USA**.

## 2013

- **US Army MC TECD AI TECD Marine Corps** **\$1.35M** for 1 year, PD/PI, SBIR Phase III Award. Further integration of LG-RAID with Nett Warrior handheld, DCGS-A, develop LG-RAID's information fusion capability for MicroCloud, mission planning and training for Joint Ops; with contributions from US Army MC TECD, US Army AI TECD (Actionable Intelligence - Technology Enabled Capability Demonstration), and US Marine Corps, with STILMAN and ADAPX (subcontract), Orlando, FL, Dec 2013, **USA**.
- **US Army TECD 7c** **\$2.2M** (with 432K option) for 2 years, PD/PI, US Army RIF (Rapid Innovation Fund) Award "*Human - Collective Training for Tactical Operations*" for developing LG-RAID ubiquitous gaming software to be deployed with several US Army Programs of Record, with STILMAN, Army RIF, RDECOM, Aberdeen Proving Ground, MD, Sep 2013, **USA**.
- **US Army AEWE** LG-RAID competitively selected and participated successfully in the national US Army Exercise AEWE (Army Expeditionary Warrior Experiment), Spiral I, with Simulation & Training Technology Center (STTC) and STILMAN, **year-long event**, Ft. Benning, GA, 2013, **USA**.
- **US Army STTC and MC TECD** **\$143K** for 2 months, PD/PI; further integration of LG-RAID with NettWarrior handheld and FBCB2 and participation in the Army exercise NetMod E13, with contributions from US Army MC TECD (Mission Command - Technology Enabled Capability Demonstration) and STTC (Science & Technology Training Center); with STILMAN, Ft Dix, NJ, July 2013, **USA**.
- **US Army C4ISR NM E13** LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NM E13 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Simulation & Training Technology Center (STTC) and STILMAN, **3-week event**, Ft. Dix, NJ, July-Aug 2013, **USA**.
- **US Army TNT** LG-RAID competitively selected and participated successfully in the national US Special Forces (SOCOM) Exercise Tactical Network Testbed (TNT) 13-2, with Simulation & Training Technology Center (STTC) and STILMAN, **week-long event**, Avon Park, FL, Feb-Mar 2013, **USA**.

## 2012

- **US Army Programs** **Future of the LG-RAID technology**, SBIR Phase II Enhancement and Phase III Kick-off Meeting, with DCGS-A Tactical Cloud Integration Lab (TCIL), TECD Mission Command Lab, RDECOM Simulation & Training Technology Center (STTC) and STILMAN, 1-day event, Aberdeen Proving Ground, MD, Aug. 24, 2012, **USA**.

- **US Army STTC** \$1.5M for 1.5 year, PD/PI, SBIR Phase III Award. Further integration of LG-RAID with DCGS-A, expansion of parallel computing with LG-RAID and the LG Hypergame approach, US Army STTC (Science & Technology Training Center), with STILMAN, Orlando, FL, Aug 2012, **USA**.
- **US Army SBIR** \$0.8M for 1 year, PD/PI, SBIR Phase II Enhancement Award. Further development and eventual deployment of LG-RAID for Stryker, FBCB2, OneSAF and Android devices, with STILMAN, Army SBIR Program Management Office, RDECOM, Aberdeen Proving Ground, MD, July 2012, **USA**.
- **SELEX GALILEO** \$147K, PD/PI, 1-Year Maintenance for LG-PACKAGE 3.15.1, with STILMAN, SELEX C2C (Concept to Capability Center), April 2012, Luton, **UK**.
- **Association of US Army** Demo of the LG-RAID technology at the Association of the US Army's Institute of Land Warfare WINTER SYMPOSIUM AND EXPO – AUSA; with US Army Simulation & Training Technology Center (STTC) and STILMAN, 3-day event, Ft. Lauderdale, FL, Feb. 22 - 24, 2012, **USA**.
- **US Army DCGS-A** \$300K for 1 year, \$500K in-kind contribution, PD/PI, US Army DCGS-A Program of record endorsed additional R&D for integration of LG-RAID with DCGS-A Cloud Architecture and further deployment to all 43 US Army Brigade Combat Teams all over the world. DCGS-A Program of Record, with STILMAN, Aberdeen Proving Ground, MD, Feb 2012, **USA**.
- **US Army DARPA / STTC** \$225K for 1 year, PD/PI, Further integration of LG-RAID with Army OneSAF (One Semi-Automated Forces) Simulation System, DARPA and US Army STTC (Science & Technology Training Center); with STILMAN, Orlando, FL, Jan 2012, **USA**.

## 2011

- **I/ITSEC** Invited Exhibit I of the LG-RAID technology at the Interservice/Industry Training, Simulation and Education Conference – I/ITSEC, with US Army RDECOM Simulation & Training Technology Center (STTC) and STILMAN, 4-day event, Orlando, FL, Nov. 27 - Dec 1, 2011, **USA**.
- **I/ITSEC** Invited Exhibit II of the LG-PACKAGE technology at the Interservice/Industry Training, Simulation and Education Conference – I/ITSEC, with Alion Science & Technology and STILMAN, 4-day event, Orlando, FL, Nov. 27 - Dec 1, 2011, **USA**.
- **US Army RDECOM** “LG-RAID technology is “fantastic”; US Army needs immediate deployment of LG-RAID with mission command systems to participate in current Army operations ...” - Nickolas Justice, MG, Commanding General, RDECOM, at the I/ITSEC Exhibit with US Army RDECOM Simulation & Training Technology Center (STTC), Orlando, FL, Nov. 30, 2011.
- **US Army STTC** \$382K for 1 year, PD/PI, Further development of LG-RAID technology for initial integration with OneSAF (One Semi-Automated Forces) Simulation System and other software tools, US Army STTC (Science & Technology Training Center), with STILMAN, Orlando, FL, Nov 2011, **USA**.
- **US Army Stryker Team** “This system is exponentially better than anything we could even dream about. It is light years ahead of our expectations.” Lt. Col. Perry Caskey, at the Meeting of the US Army Training and Doctrine Command: Capabilities Manager Stryker Brigade Combat Team (TRADOC-TCM SBCT), US Army Maneuver Center of Excellence, with STILMAN, Ft. Benning, GA, June 2, 2011, **USA**.
- **Alion S&T** Alion S&T estimated conservatively potential annual US Army savings from integration of LG-RAID with OneSAF as \$14M a year. It will provide automated simulation setup and intelligent control of the simulated entities (vehicles, soldiers) without human operators; will serve as a bridge between OneSAF and battle command systems (CPOF, FBCB2, DCGS-A); with STILMAN, Aug 2011, **USA**.
- **SELEX GALILEO** \$136K, PD/PI, 1-Year Maintenance for LG-PACKAGE 3.7.0, with STILMAN, SELEX C2C (Concept to Capability Center), April 2011, Luton, **UK**.

## 2010

- **US Army Battle Lab** «... favorably impressed. RAID gives a quick analysis of the enemy situation. You can look at the display and see potential enemy actions that you might not have thought about» Assessment by Mission Command Battle Lab, Capabilities Development Integration Directorate (CDID), Army Battle Command Battle Lab (BCBL), Ft. Leavenworth, KS, Dec 7, 2010, **USA**.
- **SELEX GALILEO** \$90K, PD/PI, Two licenses for LG-PACKAGE 3.7.0 (GST), with STILMAN, SELEX C2C (Concept to Capability Center), Sept 2010, Luton, **UK**.

- **US Army SBIR CPP** \$575K for 1 year, PD/PI, SBIR Commercialization Pilot Program (CPP). Awarded by Panel of Directors of Army Program Executive Offices. Further development and eventual deployment of LG-RAID for Stryker, FBCB2, CPOF and DCGS-A Programs of Record, with STILMAN, Program Management Office, Army SBIR, RD&E Command, Ft Belvoir, VA, July 2010, **USA**.
- **US Army RDECOM** \$240K for 1 year, PD/PI, Further development of LG-RAID technology for integration within CPOF (Command Post of the Future) Battlefield Command System, RDECOM (Research, Development and Engineering Command), Ft Monmouth, NJ, July 2010, **USA**.
- **SELEX GALILEO** \$125K, PD/PI, 1-Year Maintenance for *LG-PACKAGE 3.7.0*, with STILMAN, SELEX C2C (Concept to Capability Center), April 2010, Luton, **UK**.
- **Stryker FoV** Dr. Jeffrey Mosley, Technical Lead for Embedded Training, Stryker FoV Program, endorses further development and integration of LG-RAID with Stryker FoV Training System. Meeting of TRADOC, Stryker FoV and FBCB2 Programs, and RAID Personnel, STTC, Orlando, FL, Feb 2010, **USA**.
- **TRADOC** Col Dwayne Carman, TCM (TRADOC Capability Manager), endorses integration of LG RAID with CPOF (Command Post of the Future) Battlefield Command and Control System. Meeting of TCM for Platform Battle Command and Combat Identification, TRADOC (US Army Training and Doctrine Command), FBCB2 Program and RAID Personnel, with STILMAN, Orlando, FL, Feb 2010, **USA**.
- **US Army RDECOM** Maj. Gen. Nickolas Justice, RDECOM Commander, endorses further development of LG-RAID technology for expedited integration within various US Army systems, Program Management Review, with STILMAN, STTC (Simulation and Training Tech. Center), Orlando, FL, Jan 2010, **USA**.

## 2009

- **US Army SBIR** SBIR Commercialization Pilot Program (CPP). Selected among 25 (out of 500) SBIR Phase II Army projects using the criteria of program success and US Army needs. Further development and deployment of LG-RAID for FBCB2 and DCGS-A Army programs, with STILMAN, Program Management Office, Army SBIR, RD&E Command, Ft Belvoir, VA, Dec 2009, **USA**.
- **US Army FBCB2** *PM FBCB2 (Force XXI Battle Command, Brigade and Below) endorses further development of LG-RAID technology for potential integration within FBCB2 Battlefield Command and Control System to all the currently deployed 70 thousand FBCB2 stations*, with STILMAN, PEO Command, Control, and Communications Tactical, Ft Monmouth, NJ, Nov 2009, **USA**
- **US Army DCGS-A** *PM DCGS-A (Digital Common Ground System - Army) endorses further development of LG-RAID technology for potential integration within DCGS-A Battlefield Intelligence System to all 43 existing brigade command posts by FY12*, with STILMAN, RDECOM CERDEC, Intelligence and Information Warfare Directorate, Ft Monmouth, NJ, Oct 2009, **USA**.
- **DARPA & ARL** One-year extension (redirecting \$500K), PD/PI, *LG-RAID Installation and Evaluation as Experimental Testbed on SIPRNET at ARL (for World Wide Access for US Armed Forces)*, Modification to STILMAN's SBIR Phase II project, Aug 2009, ARL (Army Research Lab), Aberdeen Proving Ground, MD, **USA**.
- **US Army DCGS-A** \$300K for 0.5 year, PD/PI, *Integration of LG-RAID with DCGS-A*, with STILMAN, Primary DCGS-A Integrated Lab via CSP Technologies, June 2009, Ft Monmouth, NJ, **USA**.
- **SELEX GALILEO** \$72K, PD/PI, Targeted Upgrades for *LG-PACKAGE 3.0.0 – 3.3.0*, with STILMAN, SELEX C2C (Concept to Capability Center), June 2009, Luton, **UK**.
- **Boeing** \$15K, PD/PI, B1 Attack Planner Demo, with Applied Systems Intelligence and STILMAN, The Boeing Co., April 2009, Los Angeles, **USA**.
- **SELEX GALILEO** \$125K, PD/PI, 1-Year Maintenance for *LG-PACKAGE 3.0.0*, with STILMAN, SELEX C2C (Concept to Capability Center), Jan 2009, Luton, **UK**.

## 2008

- **US Army SBIR Phase II** \$250K for 2 years, PD/PI, *RAID Experimentation in Marines Environment*, Matching Funds in support of the DARPA/Marine Corps Supplement to STILMAN's SBIR Phase II project, CERDEC RDECOM, Ft Monmouth, NJ, Oct 2008, **USA**.

- US Army SBIR Phase II *Experimentation with SHADOW System; Testing LG-RAID predictions for actual US Army operations in Iraq, with STILMAN, Ft. Monmouth, NJ – US Army in Iraq, Aug 2008, USA.*
  - DARPA, US Army SBIR Phase II *\$250K for 2 years, PD/PI, LG-RAID Experimentation in Marines Environment, Supplement to STILMAN's SBIR Phase II project, DARPA/Marine Corps, July 2008, USA.*
  - US Army DCGS-A *\$300K for 0.5 year, PD/PI, LG-RAID Integration into DCGS-A Prediction Tab, with STILMAN, Primary DCGS-A Integrated Laboratory via CSP Technologies, Apr 2008, Ft Monmouth, NJ, USA.*
  - US Army SBIR Phase II *Ongoing Experimentation with EMI, a customized Game Mobile Interface (GMI); Provides access to LG-RAID via Internet Browser for US military experts located around the world, with STILMAN, March 2008 – to date, USA.*
  - TRADOC & DARPA *RAID system was recommended for transition to the Army Battle Command Domain at the Meeting between COL Mosher, TCM (TRADOC Capability Manager) for Platform Battle Com-d and Combat Identification, and DARPA RAID Personnel, with STILMAN, Ft Huachuca, AZ, Jan 2008.*
  - SELEX GALILEO *\$625K, PD/PI, Unlimited Term Experim. & Demo License & 1-Year Maintenance for LG-PACKAGE 3.0.0, from STILMAN to SELEX C2C (Concept to Capability Center), Jan 2008, Luton, UK.*
- 2007
- SELEX GALILEO *«Realistic Experiments Modeling Conceptual British Future Rapid Effects System (FRES)», Assessment of FRES employing LG-PACKAGE 2.0.0 for SELEX, Ltd., at STILMAN Offices, Denver, Nov.–Dec. 2007, USA.*
  - US Army NEBC *«Integration of RAID with BCPL-L was impressive and the results are amazing», Assessment of Integrated System RAID/BCPL-L during Air Assault Expeditionary Force (AAEF) Spiral D Experiment, 1-week event, US Army, with STILMAN, Nov 2007, Ft Benning, GA, USA.*
  - SELEX (USA) *\$26K, PD/PI, FRES Vignettes Work-Package based on LG-PACKAGE 2.0.0, SELEX, Inc., with STILMAN, Oct. 2007, Arlington, VA, USA.*
  - US Army SBIR Phase II *“RAID/FBCB2 will improve US Army Battle Command Systems”, Assessment of Integrated System RAID/FBCB2 during Air Assault Expeditionary Force (AAEF) Spiral D Experiment, 2-month event, US Army, with STILMAN, Oct-Nov 2007, Ft Benning, GA, USA.*
  - US Army SBIR Phase II *\$996K for 2 years, PD/PI, LG Based Predictive Technology for Battle Command Simulation & Training, CERDEC RDECOM with Fast Track sponsored by DARPA, with STILMAN, June 2007, USA.*
  - DARPA *“RAID/DCGS-A will improve US Army Intelligence, Surveillance & Reconnaissance (ISR) plans”, Assessment of RAID/DCGS-A during DARPA/Army Wargaming Experiment 5 (review panel of human experts), 3-week event, with STILMAN, Primary DCGS-A Integrated Laboratory, Feb 2007, Ft Monmouth – Ft Dix, NJ, USA.*
  - US Army NEBC *\$200K, PD/PI, 1-year Experimentation & Demonstration License for a subset of LG-PACKAGE 2.0.0 – 2 copies of GST, with STILMAN, CERDEC NEBC, Feb. 2007, Ft. Monmouth, UK.*
  - DARPA *\$195K for 2 years, PD/PI, LG Based Predictive Technology, Matching Funds in support of STILMAN's application for SBIR Phase II, January 2007, USA.*
- 2006
- Boeing *\$69K for 0.5 year, PD/PI, The first in a series of upgrades to the License - LG-PACKAGE (LG-BNC 1.2) for Boeing NETWORK COMMANDER, with STILMAN, Dec. 2006, USA.*
  - NSWC CRADA (COOPERATIVE R&D AGREEMENT), PD/PI, *LG for Homeland and Force Protection, Naval Surface Warfare Center (NSWC) and STILMAN, for 3 years, Dec. 2006, USA.*
  - Dstl *“Exceeding Level of All Available Tools”, Successful Experiments with Advanced LG-Based Simulated Sensors, Communications & Command Hierarchy, LG-PACKAGE 2.0.0, Nov-Dec 2006, with STILMAN, Defence Science and Technology Lab (Dstl), Farnborough, UK.*
  - US Army SBIR Phase I *\$70K for 0.5 year, PD/PI, LG Based Predictive Technology for Simulation & Training, CERDEC RDECOM, with STILMAN, Sep 2006, USA.*

- NSWC \$30K, PD/PI, *Run Time License for LG-RAIDER (Problem-oriented LG-PACKAGE for Littoral Ops)*, from STILMAN to Naval Surface Warfare Center (NSWC), Sep. 2006, **USA**.
- DARPA \$1.9M, PD/PI, *Real-time Adversarial Intelligence & Decision-making - RAID*, Based on the results of Experiment 4 (see below), DARPA awarded Phase III Funding of \$1.5M (plus additional \$400K) to STILMAN. To accelerate transition, DARPA converted RAID Phase III into Transition to the US Army DCGS-A Program of Record; Sept. 2006, **USA**.
- DARPA **"By Far Exceeding Level of Advanced Experts"**, *Recommended for Transition to US Army*, Validation of LG during DARPA RAID Wargaming Experiment 4 (against team of human experts), 3-week event, with STILMAN, Battle Command Training Center, July 2006, Ft Leavenworth, KS, **USA**.
- US Air Force SBIR Phase I \$100K for 0.5 year, PD/PI, *LG Techniques to Support Mission Awareness: LG-ORACLE*, AFRL, Wright Patterson AFB, with STILMAN and SAIC, April 2006, **USA**.
- DARPA **"Exceeding Level of Advanced Experts"**, *Validation of LG during DARPA RAID Wargaming Experiment 3 (against team of human experts)*, 3-week event, with STILMAN, Intelligence Systems Integration Lab, Feb 2006, Ft Huachuca, NM, **USA**.

## 2005

- Boeing \$25K, PD, LG-PROTECTOR 1.6, Five STILMAN Demonstration Licenses of LG-PROTECTOR 1.6 for the Boeing Integration Centers, with STILMAN, BICs East & West, Boeing, Nov. 2005, **USA**.
- BAE SYSTEMS \$17K, PD, Workshop in Denver – R&D with *LG-PACKAGE/BAE*, BAE SYSTEMS(UK) & STILMAN, July 2005, **UK & USA**.
- DARPA RAID \$1.5M (out of \$4.5M), PD/PI, *Real-time Adversarial Intelligence & Decision-making - RAID*, DARPA awarded Phase II Funding to STILMAN; Sept. 2005, **USA**.
- DARPA RAID **"At the Level of Advanced Experts"**, *Validation of LG during DARPA RAID Wargaming Experiment 2 (against team of human experts)*, 3-week event, with STILMAN, Offices of SAIC, July-Aug 2005, Orlando, FL, **USA**.
- US Army STTR Phase I \$100K for 0.5 year, PD/PI, *LG Techniques for Distributed Interactive Training: LG-EXPERT*, from Army Research Institute (ARI), with STILMAN and U. of West Florida (UC Denver declined participation), July 2005, **USA**.
- US Air Force SBIR Phase I \$100K for 9 months, PD/PI, *LG for Integrated Adversarial Courses of Action Generation: LG-ADVERSARY*, from Air Force Research Lab (AFRL) and Space Missile Center (SMC), with STILMAN, March 2005, **USA**.
- US JFCOM \$350K for 4 months PD/PI, *Identification of technological and functional enhancements to current capabilities used in JWFC's operational training of Joint Forces: LG-TRAINER*, with The Analysis Group (TAG), STILMAN & Overwatch Systems, March 2005, **USA**.
- DARPA \$400K for 6 months, PD/PI, R&D CONTRACT, *Automated Decision Support for Urban Area Operations*, DARPA Project *Force Multipliers for Urban Area Operations: LG-COMMANDER*, with The Analysis Group (TAG), STILMAN & Overwatch Systems, March 2005, **USA**.
- DARPA **"Approaching the Level of Advanced Experts"**, *First Experimental Validation of LG during DARPA RAID Wargaming Experiment 1 (against team of human experts)*, 2-week event, Offices of SAIC, Feb 2005, Orlando, FL, **USA**.
- Boeing Permanent Experimentation and Demonstration Base for LG Applications at Boeing Integration Center (BIC West); employing various LG-PACKAGEs, Anaheim, CA, Jan. 2005-, **USA**.

## 2004

- Boeing \$325K, PD/PI, One-Year Experimentation & Demonstration License - *LG-PACKAGE/Boeing for Evaluation of Applications of LG to Network Centric Op-s*, from STILMAN, Nov. 2004, **USA**.
- DARPA \$1.45M (out of \$4.5M), PD/PI, *Linguistic Geometry Techniques for Adversarial and Deception Reasoning*, for *Real-time Adversarial Intelligence & Decision-making – RAID*; DARPA awarded Phase I funding to STILMAN, Prime Contractor for ARM-S (Adversarial Reasoning Module); other Primes: SAIC, Alion, Altarum, and Lockheed Martin; Sept. 2004, **USA**.

- **BAE SYSTEMS** \$270K, PD/PI, R&D CONTRACT, One-Year Experimentation & Demonstration License - *LG-PACKAGE/BAE for Evaluation of Appl-s of LG to BAE Projects*, from STILMAN, Sept. 2004, **UK**.
- **Boeing** \$120K, PD/PI, *Optimized LG-PROTECTOR 1.6 linked to Total Domain 2.1, New Generation of Boeing Blackboard Environment*, 4 Demo Licenses, from STILMAN, June 2004, **USA**.
- **Dstl** \$120K, PD/PI, One-Year Experimentation and Demonstration License - *LG-PACKAGE/Dstl for "Scenario Preparation for Synthetic Environments" and "Control of Computer Generated Forces in Synthetic Environments"*, for Defence Science & Technology Lab (Dstl) of Ministry of Defence (MoD UK) from STILMAN, May 2004, **UK**.

## 2003

- **Boeing** \$23K, PD, 1.5-Year Demo License, LG-PROTECTOR 1.5, from STILMAN, Dec. 2003, **USA**.
- **Boeing** \$72K for 1 month, PD/PI, *LG Based Simulation Based Acquisition: Global Strike with CAV (Common Aerial Vehicle)*, from Boeing, with STILMAN, Nov. 2003, **USA**.
- **Boeing/DARPA** \$67K for 20 days, PD/PI, *LG Based Simulation Based Acquisition of Repositionable Satellites: ORBITAL EXPRESS*, with STILMAN, Nov. 2003, **USA**.
- **US Army SBIR Phase I** \$70K for 0.5 year, PD/PI, *Linguistic Geometry Intelligent Nodes for COA Generation and Analysis*, with STILMAN (UC Denver declined participation), Nov. 2003, **USA**
- **US Navy SBIR Phase I** \$70K for 0.5 year, PD/PI, *LG for Combat System Automation Management*, from the Naval Surface Warfare Center (NSWC), with STILMAN, Nov. 2003, **USA**.
- **US MDA SBIR Phase I** \$70K for 0.5 year, PD/PI, *Linguistic Geometry Techniques for Advanced Engagement Planning*, Missile Defense Agency (MDA), with STILMAN, July 2003, **USA**.
- **Boeing** *STILMAN (with \$3M share) is included on the Boeing-led team of the top national defense contractors for a \$150M unsolicited proposal to the US Air Force (not awarded)*, with STILMAN, July 2003, **USA**.
- **Boeing** \$27K for 1 month, PD/PI, *Optimized LG-PROTECTOR 1.5 linked to New Generation of Boeing Software Environments*, with STILMAN, April 2003, **USA**.
- **AFRL WP AFB** \$720K for 1 year, PD/PI, *Linguistic Geometry Techniques for Enhancing Human Performance in Synthetic Battlespace*, with STILMAN, (awarded with zero funding), April 2003, **USA**.

## 2002

- **US MDA SBIR Phase I** \$70K for 0.5 year, PD/PI, *Linguistic Geometry Techniques for Missile Defense*, Missile Defense Agency (MDA), with STILMAN, Dec. 2002, **USA**.
- **Boeing** \$12K for 1 month, PD/PI, *Advanced Interface for LG-PROTECTOR 1.5 with Boeing Software Environment*, with STILMAN, Nov. 2002, **USA**.
- **Boeing** \$2K, PD/PI, *Demonstration License and CD for installing LG-PROTECTOR 1.4 at the Boeing Integration Center (BIC), Anaheim, CA*, with STILMAN, Oct. 2002, **USA**.
- **Boeing** \$78K for 2 months, PD/PI, *LG-PROTECTOR 1.5 for Planning and MC2A Control for Integrated Defense Against Cruise Missile Attack including Sea-based Targets*, Oct. 2002, **USA**.
- **Fujitsu** \$15K for 5 months, PD/PI, *Applications of LG to Military Command and Control*, from Fujitsu Defense Systems, with STILMAN, Aug. 2002, **Japan**.
- **Boeing** \$80K for 1 month, PD/PI, *LG-PROTECTOR 1.4 for Advanced Planning and MC2A Control for Integrated Defense Against Cruise Missile/Bomber Attack*, with STILMAN, June 2002, **USA**.
- **Boeing** \$200K for 2 months, PD/PI, *LG-PROTECTOR 1.3 for Advanced Planning and Fire Control for Integrated Defense Against Cruise Missile Attack*, with STILMAN, Feb. 2002, **USA**.

## 2001

- **Boeing** \$232K for 4 months, PD/PI, *LG-PROTECTOR 1.0 for Integrated Defense Against Cruise Missile Attack*, with STILMAN & Rockwell Science Center, Aug. 2001, **USA**.
- **UCD** \$4K, PI, THE 2001 UCD FACULTY RESEARCH AWARD, May 2001.
- **Boeing** \$170K for 6 months, PD/PI, *Strategy and Search Algorithms: Stilman's Linguistic Geometry Algorithms for Effect Based Operations*, with STILMAN & Rockwell, Jan. 2001, **USA**.

## 2000

- Boeing \$10K, for 4 months, PI, *Application of LG to Air Traffic Management*, Sept. 2000, USA.
- Boeing \$20K, for 4 months, PI, *Application of LG for Mid-Air Collision Avoidance Automation*, with STILMAN, Sept. 2000, USA.
- DARPA \$160K for 1 year, PI, *JFACC Experiment Commander (Experiment Enabled LG Software Prototype)* with STILMAN, from Rockwell Science Center/DARPA, DARPA JFACC Project, Feb. 2000, USA.

## 1999

- STILMAN CO-FOUNDER, STILMAN Advanced Strategies, LLC, Denver, CO, Sept 1999, USA.
- DARPA \$1.6M for 1.5 years, PI, *Agile Symbolic Mission Control and Hostile Counteraction Strategies*, DARPA JFACC Project, with Rockwell Sci. Center (prime), UCD, Wayne State University, and STILMAN; UC Denver share is \$159K, STILMAN share is \$160K, Sept. 1999, USA.
- UCD \$4K, PI, THE 1999 UC Denver FACULTY RESEARCH AWARD, May 1999.
- DARPA PI, *Mission-Based Control of Coordinated Systems* to DARPA, \$2.3M for 3 years, with Rockwell Science Center (prime), Wayne State University, and St. Claude University, — found to be **selectable** without actual funding, April 1999, USA.

## 1998

- UCD THE 1998 UC Denver RESEARCHER OF THE YEAR (the top research award).
- UCD THE 1998 UC Denver COLLEGE OF ENGINEERING RESEARCHER OF THE YEAR.

## 1997

- UCD THE 1997 UC Denver CHANCELLOR'S LECTURESHIP AWARD (the top UCD research award).
- UCD \$5K, PI, THE 1997 UC Denver FACULTY RESEARCH AWARD, May 1997.
- WHO'S WHO AMONG AMERICAN TEACHERS, *The Best Teachers in America Selected by the Best Students*, March 1997, USA.

## 1996

- UCD PI, THE 1997-98 UC Denver FACULTY RESEARCH FELLOWSHIP AWARD (top research award, 1-year release from teaching), USA.
- US DOE Sandia \$217K for 3 years, PI/PD, *Linguistic Geometry: Theory and Applications*, from DOE (US Dept. of Energy) thru Sandia National Labs, supplemented with \$36K from UC Denver, (utilized only \$72K; terminated in Dec 1996 due to the budget cut at DOE), Albuquerque, NM, USA.

## 1995

- US AFOSR \$14K for 12 weeks, PI, FACULTY RESEARCH ASSOCIATESHIP AWARD, Air Force Office of Scientific Research (AFOSR), 1995 *Summer Faculty Research Program* at the US Air Force Phillips Laboratory, Kirtland AFB, Albuquerque, NM, May-August 1995, USA.
- UCD \$4K, PI, THE 1995 UC Denver FACULTY RESEARCH AWARD, May 1995, USA.
- UCD THE 1995 UC Denver COLLEGE OF ENGINEERING RESEARCHER OF THE YEAR, USA.
- UCD THE 1995 UC Denver COLLEGE OF ENGINEERING OUTSTANDING FACULTY (teaching award, voted by students), USA.

## 1994

- UCD EARLY TENURE AWARD AND EARLY PROMOTION TO FULL PROFESSOR, July 1994, USA.

## 1993

- UCD \$5K, PI, THE 1993 UC Denver FACULTY RESEARCH AWARD, May 1993, USA.

## 1991

- UCD \$3K, PI, THE 1991 UC Denver JUNIOR FACULTY RESEARCH AWARD, 1991, USA.

## 1990

- NSERC & McGill U. \$10K for 1 year, Co-PI, *Research in Search Problems in AI*, NSERC of Canada and McGill University, July 1990, Montreal, Canada.

## 1988



- USSR Acad. of Sciences      **100K rub.** for 3 years, PI/PPD, *Intelligent Teaching System*, Forestall Education Project, USSR Academy of Sciences, **USSR**.
  - USSR Acad. of Sciences      **1.2M rub.** for 3 years, PI/PPD, *National Distributed AI-based System for Geological Information Processing*, USSR Academy of Sciences and Department of Geology, **USSR**.
- 1985**
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225. Stilman, B., *Formalization of PIONEER Method Employing Theory of Formal Grammars*, Nat'l Research Inst. for Electrical Engineering, Moscow, **Russia**, 105 pp., 1981.
226. Stilman, B., Reznitskiy, A.I., *Design of New Method for Solving Complex Search Problems and its Application to Power Control*, Rep. to the Young Investigators Contest, Moscow, **Russia**, 30 pp., 1981.
227. Botvinnik, M.M., Stilman, B., Yudin, A.D., *Improvement of Algorithm and Design of PIONEER Program for Solving Economic Problems*, Report No. 23-0200/76, National Research Inst. for Electrical Engineering, Moscow, **Russia**, 60 pp., 1978.
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## REVIEWS AND ARTICLES ABOUT MY RESEARCH

### — from open publications, Internet and limited distribution sources

230. "Lessons Learned in Creating an Autonomous Driver for OneSAF", by J. Stevens, L. Eifert, D. Reed, E. Diaz, O. Umanskiy, *Proc. of Interservice/Industry Training, Simulation, and Education Conf. – IITSEC 2014*, 12 p., Orlando, FL., **USA**.
231. *Feature Story: "Linguistic Geometry: From Fighting Wars to Computing Them"*, *IMPACT – Shaping Future Through Creative Problem Solving*, Annual magazine of the College of Engineering & Applied Science, pp. 12-14, published in Nov. 2014, Denver, CO, **USA**.
232. "Boris Stilman: From chess to war games", *TIMES OF INDIA* and online at mobiletoi.timesofindia.com by Sudha Nambudiri, Dec 4, 2012, **India**.
233. "Artificial Intelligence to make future wars scarier", *DECCAN CHRONICLE* and online at deccanchronicle.com/channels/sci-tech/future/ by Manoj Mathew, Nov. 28, 2012, Cochi, **India**.
234. "STILMAN Advanced Strategies - to support the US Army", *US Army MATERIAL COMMAND, Annual Issue (160 pp.)*, p. 88, Dec. 2009, **USA**.
235. *Interview with Dr. Alexander Kott, RAID Program Manager, DARPA*, *Jane's International Defense Review*, idr.janes.com, March 2008.
236. "Raiding the Enemy's Mind", by Dr. Alex Kott, *MILITARY INFORMATION TECHNOLOGY, Online Edition*, V. 11, Issue 11, www.military-information-technology.com, Dec 29, 2007, **USA**.
237. "STILMAN to apply DARPA RAID Technology to Army FBCB2 battle-management program", *MILITARY & AEROSPACE ELECTRONICS ONLINE*, mae.pennnet.com, Nov. 21, 2007, **USA**.
238. Kott, A., "A RAID into the Mind of the Enemy", Press Release, 4 p., *DARPA*, 11/2007, **USA**.
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  241. *DARPA RAID Experiment 4, Invitation from DARPA/STILMAN* – International Distribution, July 2006, **USA**.
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  244. "Advanced Technology Concepts for Command and Control", 457 pp., Xlibris, 2004, Edited by Dr. A. Kott, DARPA Program Manager, Contributions to the DARPA JFACC Project. Chapter 2, Section, *Board Games as Paradigm*, pp. 87-88, Chapter 14, *Battle as a Board Game*, pp. 361-380. Review of the Rockwell Team contribution to the DARPA JFACC project. The Team includes Rockwell Science Center, STILMAN Advanced Strategies, U. of Colorado at Denver, and Wayne State University, **USA**.
  245. *LINGUISTIC GEOMETRY WORKSHOP, with STILMAN Comments, REPORT*, 17 pp., Dstl (Defence Science and Technology Lab), MoD UK, Review of LG technology at the 2-day Workshop with scientists and representatives from military branches of British Government, NATO, and major international companies (28 participants), Farnborough, April 28, 2003, **UK**.
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  247. "CU-Denver Professor a PIONEER: Linguistic geometry mimics human decision-making" (AI at UCD for DOD) by Karin Kowalski, *UCD ADVOCATE - News*, p. 2-3, September 18, 2002, **USA**.
  248. "25 Ways to Fight Terrorism: PLAYING WAR GAMES", by Warren Cohen, pp. 25-31, *ASEE PRISM*, Feb. 2002, Washington, DC. Research on LG Wargaming at UCD is listed as one of the 25 most important projects directed against terrorism developed in the US engineering schools across the country. This is the *only project* on the list developed in Colorado, **USA**.
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  253. Review of LG in *ASYMMETRIC WARGAMING: TOWARD A GAME THEORETIC PERSPECTIVE*, Report by G. M. Whittaker, The MITRE Corp., 2000, **USA**.
  254. "Our People in Action: Boris Stilman", *INTERCHANGE*, U. of Colorado at Denver, p. 4, July 2, 1998, **USA**.
  255. "CU Denver Faculty receive awards at annual forum. 1998 UCD Researcher of the Year: Boris Stilman", *SILVER & GOLD RECORD*, p. 4, U. of Colorado, Denver, June 11, 1998, **USA**.
  256. "Computer Science and Engineering: Dr. Boris Stilman Wins University Researcher of the Year Award", *CU IN ENGINEERING*, p. 6, Summer, 1998, **USA**.
  257. "Professor Develops Linguistic Geometry Theory for Computers", by A. Oderberg, *CU-DENVER ADVOCATE*, p. 5, July 30, 1997, **USA**.
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  259. "Ostanovki ne bude!" (No Stopping), by U. Stolov, *MOSKOVSKIY KOMSOMOLETS*, p. 2, Dec. 23, 1981, Moscow, **USSR** (in Russian).
  260. "Robot nachinaet i ..." (Robot begins and ...), Interview with Dr. M. Botvinnik, by I. Romanov, *KOMSOMOLSKAYA PRAVDA*, p. 4, April 24, 1980, Moscow, **USSR** (in Russian).
  261. *On Botvinnik's Program*, *PERSONAL COMPUTING*, pp. 51-54, May 1979, **USA**.
  262. *A Russian Algorithm for Chess*, by H. Shershow & M. Miller, *PERSONAL COMPUTING*, pp. 77-79, June 1979, **USA**.

263. *A Russian View of Chess Computers*, *PERSONAL COMPUTING*, pp. 64-65, Sep. 1979, **USA**.
  264. *Botvinnik on "Man and the Computer"*, *PERSONAL COMPUTING*, pp. 38-40, Jan. 1979, **USA**.
  265. *"Pioner gotovitsia k chempionatu"* (PIONEER is getting ready for the Championship: Why a computer should play chess), by M. Botvinnik, *PRAVDA*, p. 6, Nov. 24, 1977, Moscow, **USSR** (in Russian).
  266. *"An Algorithm for Chess"*, by V. Khenkin, *SOVIET UNION*, p. No. 6, 1977, **USSR**.
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## PROFESSIONAL CONTRIBUTIONS (from 1995)

## 2018

- INVITED KEYNOTE SPEAKER; 6th Global Summit on Artificial Intelligence and Neural Networks, 1-hour Keynote Talk, Introduction to the Primary Language: Discovering the Algorithm of Discovery, October 15-16, 2018, Helsinki, Finland.*
- INVITED TUTORIAL PRESENTER; 6th Global Summit on Artificial Intelligence and Neural Networks, 2-hour Tutorial/Special Session, Introduction to the Primary Language: Discovering Mysteries of Opposing Games, October 15-16, 2018, Helsinki, Finland.*
- INVITED PRESENTER; 6th Global Summit on Artificial Intelligence and Neural Networks, 2.5-hour Tutorial/Q&A Session, Introduction to the Primary Language: Visual Themes of Discoveries, October 15-16, 2018, Helsinki, Finland.*
- ORGANIZER, PANELIST; Meeting with US Navy (NAVSEA) within the scope of the SBIR Phase II project for the LG-based Surface Navy Mission Planning with STILMAN (USA), Talks, Demos, & Discussions (1 day), Predictive and Causal Modeling for NAVSEA, July 25, 2018, Washington DC, USA.*
- ORGANIZER, SPEAKER, PANELIST; Meeting with STILMAN and US Army Program Management, Stryker Family of Vehicles (FoV) Embedded Training (ET) program, Talks, Demos, & Discussions (1 day), The latest results of development of LG-RAID for Embedded Training for Stryker, April 11, 2018, Denver, CO, USA.*
- ORGANIZER, SPEAKER, PANELIST; Kick-off Meeting with US Navy (NAVAIR) within the scope of the SBIR Phase I project with STILMAN (USA), Talks & Discussions (1.5 hour), LG Technology for the Joint Mission Planning System, June 27, 2018, Patuxent River, MD, USA.*
- ORGANIZER, SPEAKER, PANELIST; Kick-off Meeting with Missile Defense Agency (MDA) within the scope of the SBIR Phase II project for the LG-based simulation of the ground test for the Ballistic Missile Defense (BMD) with STILMAN (USA), Talks & Discussions (1 day), LG Technology for Streamlining Scenario Generation, May 16, 2018, Colorado Springs, CO, USA.*
- ORGANIZER, SPEAKER, PANELIST; Meeting with STILMAN and US Army Program Management, Stryker Family of Vehicles (FoV) Embedded Training (ET) program, Talks, Demos, & Discussions (2 days), Validation & Verification of Development of LG-RAID for Embedded Training for Stryker, May 14-15, 2018, Denver, CO, USA.*
- ORGANIZER, SPEAKER, PANELIST; Meeting with STILMAN and Unmanned Aerial Systems (UAS), University of Hawaii, Talks, Demos, & Discussions (1 day), Applications of Linguistic Geometry to Defense Systems, April 30, 2018, Denver, CO, USA.*
- ORGANIZER, SPEAKER, PANELIST; Meeting with STILMAN and US Army Program Management, Stryker Family of Vehicles (FoV) Embedded Training (ET) program, Talks, Demos, & Discussions (1 day), The latest results of development of LG-RAID for Embedded Training for Stryker, April 11, 2018, Denver, CO, USA.*

## 2017

- INVITED SPEAKER, PANELIST; The 23rd Int. Conf. on Information and Software Technologies (ICIST 2017), Oct 12-14, 1.5-hour Talk/Q&A Session, Turning university research into the real world systems, with discussion, Oct 14, Druskininkai, Lithuania.*
- INVITED TUTORIAL PRESENTER, PANELIST; The 23rd Int. Conf. on Information and Software Technologies (ICIST 2017), Oct 12-14, 2-hour Tutorial, From Primary to Conventional Science, with discussion, Oct 13, Druskininkai, Lithuania.*
- INVITED KEYNOTE SPEAKER, PANELIST; The 23rd Int. Conf. on Information and Software Technologies (ICIST 2017), Oct 12-14, 1-hour Keynote Talk, Intelligent Strategies for Defense Systems, with discussion, Oct 12, Druskininkai, Lithuania.*
- INVITED SPEAKER; Seminar on Intelligent Systems at the Warsaw University of Technology, 1-hour Talk, Linguistic Geometry for Intelligent Warfighting, with discussion, Oct 10, Warsaw, Poland.*
- INVITED SPEAKER; Presentation at the System Research Institute of Polish Academy of Sciences, 2-hour Tutorial, Investigating the Primary Language: A Path to Discoveries, with discussion, Oct 9, Warsaw, Poland.*
- INVITED PROFESSOR, PANELIST; 2nd Russian-Pacific Conference on Computer Technology and Applications*



(RPC 2017) & Summer School, Sept 24-29, **5-hour Short Course, From Primary to Conventional Science:**

1. "The Primary Language I: From Primary to Conventional Science", 1 hour, Sept 25;
2. "The Primary Language II: Discovering Structure of DNA and Differentiation", 1 hour, Sept 25;
3. "The Primary Language III: Discovering No-Search Approach to Opposing Games", 2 hours, Sept 27;
4. "University Spin-off in the USA: How We Turned Idea into Reality", 1 hour, Sept 25.

Far-Eastern Federal University, Vladivostok, Russky Island, **Russia**.

**INVITED KEYNOTE SPEAKER;** 2nd Russian-Pacific Conference on Computer Technology and Applications (RPC 2017) & Summer School, Sept 24-29, **1-hour Keynote Talk, Prepare, Aim, and ... Checkmate the Enemy**, with discussion, Sept 25, Far-Eastern Federal University, Vladivostok, Russky Island, **Russia**.

**INVITED KEYNOTE SPEAKER;** The 8th International Multi-Conference "Complexity, Informatics and Cybernetics" (IMCIC 2017), March 21-24, **1-hour Keynote Talk, Intelligent Warfighting: Protecting Peace with Ultimate Defense**, March 24, Orlando, FL, **USA**.

**INVITED SPEAKER;** The 8th International Multi-Conference "Complexity, Informatics and Cybernetics" (IMCIC 2017), March 21-24, **1-hour Talk, From Primary to Conventional Science: Introduction**, March 23, Orlando, FL, **USA**.

**INVITED KEYNOTE SPEAKER;** The 8th International Multi-Conference "Complexity, Informatics and Cybernetics" (IMCIC 2017), March 21-24, **1-hour Keynote Talk, Turning Idea into Real World Systems: Personal Experience**, with discussion, March 22, Orlando, FL, **USA**.

**INVITED TUTORIAL PRESENTER;** The 8th International Multi-Conference "Complexity, Informatics and Cybernetics" (IMCIC 2017), March 21 - 24, **2-hour Tutorial, Discovering Mysteries of Opposing Games**, March 21, Orlando, FL, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR;** Multiple meetings for developing license for transition of LG-RAID to the US Army Command, Power and Integration Directorate (CP&I), and STILMAN, Jan-Feb, 2017, **USA**.

**ORGANIZER, SPEAKER, PANELIST;** Teleconferences with Missile Defense Agency (MDA) within the scope of the SBIR Phase I project for the LG-based simulation of the ground test for the Ballistic Missile Defense (BMD) with STILMAN (USA), **Talks & Discussions (1-2 hours each)**, *Recent Advances in Applying LG to BMD tests*, Jan-June, 2017, **USA**.

**ORGANIZER, SPEAKER, PANELIST;** Multiple teleconferences with STILMAN, Stryker Family of Vehicles (FoV) Embedded Training (ET) program, **Talks, Demos, & Discussions (1-2 hours each)**, *The latest results of development of LG-RAID for Embedded Training for Stryker*, a year-long event, **USA**.

## 2016

**ORGANIZER, SCIENTIFIC ADVISOR;** Multiple meetings for developing license for transition of LG-RAID to TCM Gaming, with Simulation & Training Technology Center (STTC), and STILMAN, a year-long event, **USA**.

**INVITED SPEAKER, PANELIST;** Seminar at the Dept. of Computer Science, **1-hour Talk, The Primary Language of the Human Brain**, University of Macau, Dec. 19, 2016, **Macau, China**.

**INVITED KEYNOTE SPEAKER, PANELIST;** The Int. Conf. on Behavior Engineering (ICBE 2016), Dec 19-22, **1-hour Keynote Talk, Engineering Intelligent Enemies for Defense Systems**, with discussion, Dec 20, **Macau, China**.

**INVITED TUTORIAL PRESENTER, PANELIST;** The Int. Conf. on Behavior Engineering (ICBE 2016), Dec 19-22, **2-hour Tutorial, Constructing Strategies for Adversarial Games**, with discussion, Dec 19, **Macau, China**.

**INVITED SPEAKER;** The 8th IEEE Int. Conf. on Intelligent Systems IS'16 & Summer School, Sept 3-7, 2016, **2-hour Lecture, Linguistic Geometry: Constructing Strategies for Adversarial Games**, with discussion, Sept 7, Sofia, **Bulgaria**.

**INVITED TUTORIAL PRESENTER, PANELIST;** The 8th IEEE Int. Conf. on Intelligent Systems IS'16 & Summer School, Sept 3-7, **2-hour Tutorial, Linguistic Geometry: A Strategic Guide to Battles, From Ancient to Modern Ones**, Sept 7, Sofia, **Bulgaria**.

**INVITED TUTORIAL PRESENTER, PANELIST;** The New Forest Int. Conf. on Complex Systems, June, 1-3, **2-hour Tutorial, The Essence of Linguistic Geometry: From Search to Construction**, with discussion, June 3, New Forest, **UK**.

**INVITED KEYNOTE SPEAKER;** The New Forest Int. Conf. on Complex Systems, June, 1-3, **1-hour Keynote Talk, Linguistic Geometry: Resolving Complexities of Defense Systems**, with discussion, June 1, New Forest, **UK**.

*INVITED TUTORIAL PRESENTER; The 26th Int. Conf. on Electronics, Communications and Computers (CONIELECOMP), Feb 24-26, 2-hour Tutorial, Linguistic Geometry: A New Paradigm for Strategic Games, with software demos and discussion, Feb 25, Puebla, Mexico.*

*INVITED KEYNOTE SPEAKER; The 26th Int. Conf. on Electronics, Communications and Computers (CONIELECOMP), Feb 24-26, 1-hour Keynote Talk, Linguistic Geometry: From Ancient Warfare to Intelligent Adversarial Reasoning, with software demos and discussion, Feb 25, Puebla, Mexico.*

*ORGANIZER, SPEAKER, PANELIST; Teleconference with STILMAN (USA), MOD/Dstl (UK), Nov 4, Talk & Discussion (2 hours), Recent Advances in Applying LG to Various Defense Systems in the USA, Denver (USA)/London (UK).*

*ORGANIZER, SPEAKER, PANELIST; Multiple Meetings: Telecon. with STILMAN, US Army Communications, Power & Information Directorate (CP&I), Talks, Demos, & Discussions (2 hours each), The latest results of development of LG-RAID for Command & Control of Defense Systems, Denver, CO; Aberdeen Proving Ground (APG), MD, USA.*

## 2015

*ORGANIZER, SCIENTIFIC ADVISOR; Multiple meetings and training sessions for transition of LG-RAID to TCM Gaming, Captain's Career Course (CCC), and Cavalry Leader Course (CLC) at Maneuver Center of Excellence (MCoE), with Simulation & Training Technology Center (STTC) and STILMAN, year-long event, Fort Benning, GA, USA.*

*SPEAKER, PANELIST; LG Days at UC Denver, Department of Computer Science & Eng., 4-hour Talks and Demos, The Primary Language, The Algorithm of Discovery – Making Discoveries on Demand; LG: A Historical Prospective, Jan 28 and Sept. 9, University of Colorado Denver, Denver, USA.*

*INVITED KEYNOTE SPEAKER, PANELIST; The 3rd International Conference on Advances in Intelligent Systems and Cybernetics 2015 (IntelliSys 2015), Dec 19-20, 2015, 1-hour Keynote Talk, Structure of The Primary Language of the Human Brain, with discussion, Dec 19, Bali, Indonesia.*

*INVITED TUTORIAL PRESENTER, PANELIST; The 3rd International Conference on Advances in Intelligent Systems and Cybernetics 2015 (IntelliSys 2015), Dec 19-20, 2015, 2-hour Tutorial, Linguistic Geometry: New Paradigm for Strategic Games, with discussion, Dec 19, Bali, Indonesia.*

*INVITED SPEAKER, PANELIST; The First Int. Science and Practice Forum «Science and Business», June 29 – July 3, 2015, 1-hour Talk, Turn Idea into Ubiquitous Systems: University Spin-off Business in the USA (Personal Experience), with discussion, July 3, Chernivtsi, Ukraine.*

*INVITED SPEAKER, PANELIST; The First Int. Science and Practice Forum «Science and Business», June 29 – July 3, 2015, 1-hour Talk, The Algorithm of Discovery: Making Discoveries on Demand, with discussion, July 2, Chernivtsi, Ukraine.*

*INVITED KEYNOTE SPEAKER, PANELIST; The First Int. Science and Practice Forum «Science and Business», June 29–July 3, 2015, 1-hour Keynote Talk, Linguistic Geometry: Protecting Peace with Ultimate Defense, with discussion, June 29, Dnipropetrovsk, Ukraine.*

*INVITED TUTORIAL PRESENTER, PANELIST; The First Int. Science and Practice Forum «Science and Business», June 29 – July 3, 2015, 2-hour Tutorial, Linguistic Geometry: What is under the Hood?, with discussion, June 30, Dnepropetrovsk, Ukraine.*

*INVITED KEYNOTE SPEAKER; The First Asian Conf. on Defence Technology (ACDT 2015), April 23-25, 1-hour Keynote Talk, Linguistic Geometry: From Ancient Warfare to Intelligent Adversarial Reasoning, with discussion, April 23, Hua Hin, Thailand.*

*INVITED TUTORIAL PRESENTER; The First Asian Conf. on Defence Technology (ACDT 2015), April 23-25, 2-hour Tutorial, The Essence of Discoveries: Rediscovering the No-Search Approach in Linguistic Geometry, with software demos and discussion, April 23, Hua Hin, Thailand.*

*ORGANIZER, SPEAKER, PANELIST; Teleconference with STILMAN (USA), Australian Navy, Dec 10, Talk, Demo, & Discussion (2 hours), Applicability of LG-RAID to Australian Defense Systems, Denver (USA)/London (UK)/Canberra (Australia).*

*ORGANIZER, SPEAKER, PANELIST; Teleconference with STILMAN (USA), ULTRA (UK), April 7, Talk & Discussion (2 hours), Recent Advances in Applying LG to Various Defense Systems in the USA, Denver (USA)/London (UK).*

*ORGANIZER, SCIENTIFIC ADVISOR*; LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NM E15 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Simulation & Training Technology Center (STTC) and STILMAN, **3-week event, Ft. Dix, NJ, July-Aug, USA.**

## 2014

*ORGANIZER, SCIENTIFIC ADVISOR*; Multiple meetings and training sessions for transition of LG-RAID to TCM Gaming, Captain's Career Course (CCC), and Cavalry Leader Course (CLC) at Maneuver Center of Excellence (MCoE), with Simulation & Training Technology Center (STTC) and STILMAN, **year-long event, Fort Benning, GA, USA.**

*SPEAKER, PANELIST*; *LG Day at UC Denver, Department of Computer Science & Eng., 4-hour Talks and Demos, LG & the Algorithm of Discovery as Components of the Primary Language; LG: A Historical Prospective, Sept. 3, University of Colorado Denver, Denver, USA.*

*INVITED KEYNOTE SPEAKER, PANELIST*; *The 4th Int. Conf. on Applied Math and Fundamental Informatics, April 22-26, 1-hour Keynote Talk, The Primary Language of Battles and Discoveries, with discussion, April 22, Omsk, Russia (via Skype).*

*INVITED KEYNOTE SPEAKER, PANELIST*; *The 13th Int. Conf. on Artificial Intelligence and Soft Computing – CAISC'2014, June 1-5, 1-hour Keynote Talk, Discovering Components of the Primary Language, with discussion, June 2, Zakopane, Poland.*

*INVITED KEYNOTE SPEAKER, PANELIST*; *The 9th Int. Conf. on Knowledge, Information and Creativity Support Systems – KICSS'2014, Nov 6-8, 1-hour Keynote Talk, From Fighting Creative Wars ... to Making Ordinary Discoveries, with discussion, Nov 6, Limassol, Cyprus.*

*INVITED TUTORIAL PRESENTER, PANELIST*; *The 9th Int. Conf. on Knowledge, Information and Creativity Support Systems – KICSS'2014, Nov 6-8, 3-hour Tutorial, Discovering the Discovery of the No-Search Approach, with software demos and discussion, Nov 6, Limassol, Cyprus.*

*INVITED TUTORIAL PRESENTER, PANELIST*; *The 13th Int. Conf. on Artificial Intelligence and Soft Computing – CAISC'2014, June 1-5, 3-hour Tutorial, No-Search Approach in Linguistic Geometry: Uncovering Mysteries of the State Space, with software demos and discussion, June 5, Zakopane, Poland.*

*INVITED SPEAKER, PANELIST*; *Joint Seminar at Cornell University "Combinatorics & Logic", Dept. of Mathematics and Dept. of Computer Science, 2-hour Talk, No-Search Approach: Discovering Mysteries of the State Space in Opposing Games, with discussion, Sept. 26, Ithaca, USA.*

*ORGANIZER, SPEAKER, PANELIST*; Conference on Applicability of LG-RAID to Various Defense Systems with ARL/STTC, Marine Corp Lab, Sept. 9-11, **Opening Talk, The Essence of LG-RAID, Sept. 9, STILMAN's Office, Denver, USA.**

*ORGANIZER, SPEAKER, PANELIST*; Teleconference on Applicability of LG-RAID, SELEX Galileo/ Finmeccanica (UK), March 27, **Talk & Discussion (2 hours), Recent Advances on Applying LG to Defense Systems in the USA, Denver (USA)/London (UK).**

*ORGANIZER, SCIENTIFIC ADVISOR*; LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NM E14 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Simulation & Training Technology Center (STTC) and STILMAN, **3-week event, Ft. Dix, NJ, July-Aug 2014, USA.**

## 2013

*ORGANIZER, SCIENTIFIC ADVISOR*; LG-RAID competitively selected and participated successfully in the national US Army Exercise AEWE (Army Expeditionary Warrior Experiment), Spiral I, with Simulation & Training Technology Center (STTC) and STILMAN, **year-long event, Fort Benning, GA, 2013, USA.**

*SPEAKER, PANELIST*; *Seminar at the Department of Computer Science & Eng., 2-hour Talk, The Primary Language: LG & the Algorithm of Discovery, with Program Manager of Intelligent Systems (AFOSR), Nov. 21, University of Colorado Denver, Denver, USA.*

*INVITED KEYNOTE SPEAKER, PANELIST*; *The 7th Moscow Int. Conf. on Operations Research (ORM'2013), Oct. 15-19, 1-hour Keynote Talk, Development of Linguistic Geometry: From Fighting Wars ... To Computing Them, with discussion, October 15, Moscow, Russia.*

*INVITED TUTORIAL PRESENTER, PANELIST*; *The 7th Moscow Int. Conf. on Operations Research*

(ORM'2013), Oct. 15-19, **3-hour Tutorial**, *Constructing Strategies Step by Step*, with software demos and discussion, October 16, Moscow, **Russia**.

**INVITED SPEAKER, PANELIST**; Seminar at Moscow State University, Dept. of Intelligent Systems, **2-hour Talk**, *Linguistic Geometry: Theory and Applications*, with discussion, October 17, Moscow, **Russia**.

**SPEAKER, PANELIST**; Faculty Seminar at the College of Engineering and Applied Science, **1-hour Talk**, *Discovering Components of the Primary Language*, Sept. 17, University of Colorado Denver, Denver, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR**; LG-RAID competitively selected and participated successfully in the national US Special Forces (SOCOM) Exercise Tactical Network Testbed (TNT) 13-2, with Simulation & Training Technology Center (STTC) and STILMAN, **week-long event**, Avon Park, FL, Feb-Mar 2013, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR**; LG-RAID competitively selected and participated successfully in the national US Army Exercise C4ISR NM E13 (Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance Network Modernization Exercise), with Simulation & Training Technology Center (STTC) and STILMAN, **3-week event**, Ft. Dix, NJ, July-Aug 2013, **USA**.

## 2012

**ORGANIZER, SCIENTIFIC ADVISOR**; LG-RAID for Marine Corp, with discussion and demonstration, Workshop on applications of LG technology, with Marine Corp, Simulation & Training Technology Center (STTC), and STILMAN, together with L. Eifert (COR, STTC), **2-hour event**, Dec. 4, 2012, **USA**.

**INVITED KEYNOTE SPEAKER, PANELIST**; The 12th Int. Conf. on Intelligent Systems Design and Applications – ISDA'2012, **1-hour Keynote Talk**, *Linguistic Geometry: From Ancient Warfare to Modern Adversarial Reasoning*, with discussion, Nov. 29, 2012, Cochin, **India**.

**INVITED TUTORIAL PRESENTER, PANELIST**; The 12th Int. Conf. on Intelligent Systems Design and Applications – ISDA'2012, **3-hour Tutorial**, *The Essence of Linguistic Geometry: Constructing Strategies without Search*, with software demos and discussion, Nov. 27, 2012, Cochin, **India**.

**SPEAKER, PANELIST**; The 12th Int. Conf. on Intelligent Systems Design and Applications – ISDA'2012, **Two Contributed Talks**,

*Discovering Components of the Primary Language*, Nov. 28;

*Industrial Applications of Linguistic Geometry*, Nov. 29,

with discussions, 2012, Cochin, **India**.

**ORGANIZER, SCIENTIFIC ADVISOR, SPEAKER**; LG-RAID for Joint Operations, with discussion and demonstration, Telecon with Internet Demo, with Joint Forces Command, Simulation & Training Technology Center (STTC), and STILMAN, **2-hour event**, Nov. 1, 2012, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR**; *Integration of LG-RAID with DCGS-A Cloud Environment*, with discussions and demonstrations, Meetings and workshops with DCGS-A Tactical Cloud Integration Lab (TCIL) and STILMAN, Aberdeen Proving Ground, MD, Sep-Nov, 2012, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR, PANELIST**; *Future of the LG-RAID technology*, with discussion and demonstrations, SBIR Phase II Enhancement & Phase III Kick-off Meeting, with DCGS-A Tactical Cloud Integration Lab (TCIL), TECD Mission Command Lab, Simulation & Training Technology Center (STTC) and STILMAN, **1-day event**, Aberdeen Proving Ground, MD, Aug. 24, 2012, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR**; LG-RAID for US Army, with discussion and demonstrations, Workshop with US Army RDECOM Simulation & Training Technology Center (STTC) and STILMAN, **1-day event**, Orlando, FL, July 26, 2012, **USA**.

**ORGANIZER, SCIENTIFIC ADVISOR**; DEMO: *Applications of the LG-RAID technology*, with discussion, Association of the United States Army's Institute of Land Warfare WINTER SYMPOSIUM AND EXPOSITION – AUSA, with US Army RDECOM Simulation & Training Technology Center (STTC) and STILMAN, **3-day event**, Ft. Lauderdale, FL, Feb. 22 - 24, 2012, **USA**.

## 2011

**INVITED EXHIBITOR, SPEAKER**; LG-RAID Exhibit at the Interservice/Industry Training, Simulation and Education Conference – IIITSEC, multiple discussions and demos, Exhibit with US Army RDECOM Simulation & Training Technology Center (STTC) and STILMAN, **4-day event**, Orlando, FL, Nov. 27 - Dec 1, 2011, **USA**.

**INVITED EXHIBITOR, SPEAKER**; LG-PACKAGE Exhibit at the Interservice/Industry Training, Simulation and

- Education Conference – IITSEC, multiple discussions and demos, Exhibit with Alion Science & Technology (Alion) and STILMAN, 4-day event, Orlando, FL, Nov. 27 - Dec 1, 2011, USA.*
- ORGANIZER, SPEAKER; LG-RAID for the US Army, Special Meeting with Gen Nick Justice: Presentation, Demonstration and Discussion, Commanding General, RDECOM (U.S. Army Research, Development and Engineering Command), at the IITSEC STILMAN's Exhibit at US Army RDECOM Simulation & Training Technology Center (STTC), 2-hour event, Orlando, FL, Nov. 30, 2011, USA.*
- INVITED SPEAKER; The Essence of Linguistic Geometry; LG-RAID for Army Battle Command, with discussion and demonstrations, Workshop with Alion Science & Technology (Alion) and STILMAN, 1-day event, Alion Office, Norfolk, VA, Nov. 3, 2011, USA.*
- ORGANIZER, SCIENTIFIC ADVISOR; LG-RAID for Training US Army Officers, with discussion, training and demonstrations, Workshop with US Army Maneuver Center of Excellence (MCoE) and STILMAN, 2-day event, Ft. Benning, GA, Oct 25-26, 2011, USA.*
- ORGANIZER, SCIENTIFIC ADVISOR, SPEAKER; Predictive Capabilities of LG-RAID at The Army Brigade Level; Presentations, Discussions and Demos, Workshop with the DCGS-A Organization and STILMAN, 1-day event, Aberdeen Proving Ground, VA, Oct 19, 2011, USA.*
- INVITED KEYNOTE SPEAKER, PANELIST; The 3d Int. Conf. on Advanced Cognitive Technologies and Applications – COGNITIVE'2011, 1-hour Keynote Talk, Linguistic Geometry: Adversarial Reasoning for Real Life Problems, with discussion, Sept. 27, 2011, Rome, Italy.*
- INVITED TUTORIAL PRESENTER, PANELIST; The 3d Int. Conf. on Advanced Cognitive Technologies and Applications – COGNITIVE'2011, 3-hour Tutorial, Linguistic Geometry Tools: Solving Intractable Search Problems without Search, with software demos and discussion, Sep 25, 2011, Rome, Italy.*
- ORGANIZER, SPEAKER, PANELIST; LG-PACKAGE and LG-RAID to provide Enhanced Simulation Control and Interoperability for Battle Command Systems, with discussion and demonstration, Workshop with SIMCI – (Simulation to Command, Control, Communications, Computers and Information (C4I) Interoperability), 2-hour Telecon., July 20, 2011, USA.*
- ORGANIZER, SPEAKER, PANELIST; LG Based Predictive Technology for LG-PACKAGE and LG-RAID, with extensive discussions and demonstrations, Meeting with SELEX GALILEO (UK) and STILMAN, 3-day event, STILMAN Quarters, Denver, CO, June 14-16, 2011, USA.*
- ORGANIZER, SCIENTIFIC ADVISOR; LG-RAID Capabilities for Embedded Training on STRYKER, Workshop with US Army TRADOC Stryker, and STILMAN, Presentation, demonstration and discussion, 0.5-day event, Ft. Benning, GA, June 2, 2011, USA.*
- ORGANIZER, PANELIST; LG-Based Predictive Technology for Battle Command, Simulation, and Training, with discussion and demonstration; Workshop with TCM Battle Command, TCM STRYKER, STILMAN, ADAPX; together with Dr. Yakhnis, O. Umanskiy, L. Eifert (STTC), Col Zanol, J. Burzak, and officers and experts from TCM Battle Command, Simulation & Training Technology Center (STTC), 1-day event., Orlando, April 27, 2011, USA.*

## 2010

- ORGANIZER, SCIENTIFIC ADVISOR; LG-RAID for Army Training: Constructive Simulation Driver, with extensive discussion and demonstrations, Workshop with Army Training Support Center (ATSC) and STILMAN, together with officers and experts from ATSC; Col J. Moore, Dr. V. Yakhnis, O. Umanskiy, V. Pugachev, 1-day event, Ft. Eustis, VA, Dec 8, 2010, USA.*
- ORGANIZER, SCIENTIFIC ADVISOR; LG-RAID for Army Battle Command, with discussion and demonstrations, Workshop with Army Battle Command Battle Lab (BCBL), Capabilities Development Integration Directorate (CDID) and STILMAN, together with Col Johnson (Deputy Director-BCBL), John Ralietz (Program Manager-BC), MAJ Cain, other officers and experts from Army Battle Lab; Col J. Moore, O. Umanskiy, V. Pugachev, 1-day event, Ft. Leavenworth, KS, Dec 7, 2010, USA.*
- INVITED KEYNOTE SPEAKER, PANELIST; 9<sup>th</sup> Mexican Int. Conf. on Artificial Intelligence – MICAI'2010, with discussion, Discovering Role of Linguistic Geometry, 1-hour Keynote Talk, Nov 10, 2010, Pachuca, Mexico.*
- INVITED TUTORIAL PRESENTER, PANELIST; 9<sup>th</sup> Mexican Int. Conf. on Artificial Intelligence – MICAI'2010, with software demonstrations and discussion, Linguistic Geometry Paradigm: From Search to*

- Construction, 4-hour Tutorial*, Nov 8, 2010, Pachuca, **Mexico**.
- ORGANIZER, SCIENTIFIC ADVISOR**; Mission Command TCM Synchronization Conference and S&T Operational and Working Group; Presentations, Discussions and Demonstrations of LG-RAID, **2-day event** (by invitation only); Multiple meetings with several US Army TRADOC Capability Managers, Col D. Carman, Col J. Gubler, L. Eifert (COR for STILMAN, STTC), Col J. Moore, O. Umanskiy, V. Yakhnis, and defense leaders, engineers and scientists from Battle Command Battle Lab (BCBL) and CPOF Program; Holiday Inn Expo Center, Kansas City, MO, Sep 28-29, 2010, **USA**.
- ORGANIZER, SPEAKER, PANELIST**; *LG Based Predictive Technology for Battle Command, Simulation, and Training*, with discussion and demonstration, CPP Kick-off Meeting with Stryker PoV and STILMAN, together with Dr. J. Mosley, (V.P. for Ground Vehicle Technology), Dr. Yakhnis, O. Umanskiy, V. Pugachev, and several experts from Stryker Program (online and over the phone), **1-day event**, STILMAN Quarters, Denver, CO, June 2, 2010, **USA**.
- ORGANIZER, SCIENTIFIC ADVISOR**; *LG-RAID for Army Operations*, with discussion, training and demonstrations, Workshop with Army Battle Lab and STILMAN, together with Col J. Moore, V. Pugachev, officers and experts from Army Battle Lab, **2-day event**, Ft. Leavenworth, KS, May 4-5, 2010, **USA**.
- ORGANIZER, SPEAKER, PANELIST**; LG-PACKAGE and LG-RAID applications for UK Forces: Present and Future Plans, with discussion and demonstration, Workshop with SELEX, together with M. Breach (SELEX), Sir Sandy Wilson, Dr. Yakhnis, O. Umanskiy – (all STILMAN), and officers and experts from SELEX (Luton, UK), **2-hour Telecon.**, April 29, 2010, **USA-UK**.
- ORGANIZER, SCIENTIFIC ADVISOR**; Workshop, Demonstration of LG-RAID and Training, *LG: Foundations and Defense Applications*, Multiple presentations at the **2-day event** with, M. Mittrick (ARL), L. Eifert (COR for STILMAN, STTC), Col J. Moore, O. Umanskiy, V. Pugachev, and engineers and scientists from Army Research Lab (ARL), Aberdeen Proving Ground, MD, April 13-14, 2010, **USA**.
- ORGANIZER, PANELIST**; *LG-Based Predictive Technology for Battle Command, Simulation, and Training*, with discussion and demonstration, Workshop with TCM Battle Command, together with Dr. Yakhnis, O. Umanskiy, L. Eifert (COR for STILMAN, STTC), and officers and experts from TCM Battle Command (Ft. Leavenworth, KS), **2-hour Telecon.**, March 23, 2010, **USA**.
- INVITED SPEAKER, PANELIST**; US Army CPP Review Board for 2010 with discussion; Review of the 25 Commercialization Pilot Program Awards (including STILMAN's award "*LG Based Predictive Technology for Battle Command, Simulation, and Training*") with MILCOM Venture Partners, Navigant Consulting, SBIR Office and STILMAN, Panel of 18 Directors of all the Army Program Executive Offices, invited for our topic review Dr. Stilman, Dr. Yakhnis, O. Umanskiy, **3-day event** (STILMAN involved for 1 hour over the phone), March 17, 2010, **USA**.
- ORGANIZER; SCIENTIFIC ADVISOR**; Workshop: Presentation and Demonstration of LG-RAID integrated with FBCB2 system to TCM Battle Command, Multiple discussions at the **1-day event** with Col D. Carman (TCM Battle Command), Col Gubler, L. Eifert (COR for STILMAN, STTC), Col J. Moore, O. Umanskiy, V. Pugachev, engineers and scientists from TCM Battle Command and FBCB2 program, The Ft Hood Battle Command Training Center, Ft. Hood, TX, Feb 24, 2010, **USA**.
- ORGANIZER; SCIENTIFIC ADVISOR**; Workshop: Presentation and Demonstration of LG-RAID integrated with FBCB2 system, *LG: Foundations and Defense Applications*, Multiple discussions at the **1-day event** with Col D. Carman (TCM Battle Command), Dr. J. Mosley (V.P. for Ground Vehicle Technology), P. Lucyk, L. Eifert (COR for STILMAN, STTC), Col J. Moore, O. Umanskiy, V. Pugachev, engineers and scientists from Simulation and Training Technology Center (STTC), PEO STRI, TCM Battle Command and FBCB2 program, US Army Program Executive Office of Simulation, Training and Instrumentation (PEO STRI), Orlando, FL, Feb 10, 2010, **USA**.
- ORGANIZER; SCIENTIFIC ADVISOR**; STTC Program Management Review (PMR): Presentation and Demonstration of LG-RAID integrated with FBCB2 system on Applique V4 Computer, *LG: Foundations and Defense Applications*, Multiple presentations and discussions at the **2-day event** with MG Justice (Commander of RDECOM), P. Lucyk, R. Alexander (Chief Engineer of FBCB2), Col J. Moore, O. Umanskiy, V. Pugachev, engineers and scientists from STTC and FBCB2 program, US Army SFC

Paul Ray Smith Simulation and Training Technology Center - STTC, Orlando, FL, Jan 21, 2010, **USA.**

**2009**

*SCIENTIFIC ADVISOR, REVIEWER*; Completion of integration of LG-PACKAGE with VR-Forces simulation software (Phase I), Dec 29, 2009, Anticyc (UK) - SELEX Galileo (UK), Denver, CO, **USA.**

*INVITED KEYNOTE SPEAKER, PANELIST*; The 3d Int. on Workshop on Artificial Intelligence in Science and Technology – AISAT'2009, with software demonstrations and discussion, *Linguistic Geometry: Theory and Experiments*, **1-hour Talk**, Nov 24, 2009, Hobart, Tasmania, **Australia.**

*INVITED SPEAKER, PANELIST*; The 3d Int. on Workshop on Artificial Intelligence in Science and Technology – AISAT'2009, with software demonstrations and discussion, *Linguistic Geometry for Defense Systems*, **2-hour Talk**, Nov 24, 2009, Hobart, Tasmania, **Australia.**

*ORGANIZER; SCIENTIFIC ADVISOR*; Workshop and Demonstration of LG-RAID integrated with FBCB2 system on Applique V4 Computer, with software demonstrations and discussions, *LG: Foundations and Defense Applications*, Multiple presentations at the **1-day event** with P. Lucyk, R. Alexander (Chief Engineer of FBCB2), L. Eifert (COR for STILMAN, STTC), Dr. A. Kott (ARL), Col J. Moore O. Umanskiy, V. Pugachev, and engineers and scientists from FBCB2 program, Sep 30, 2009, FBCB2 (Force XXI Battle Command Brigade and Below) Offices, Ft. Monmouth, NJ, **USA.**

*INVITED SPEAKER, PANELIST*; 2009 SBIR Beyond Phase II Conference & Technology Showcase (sponsored by the US Department of Defense, by invitation only - for companies successfully completing SBIR Phase II projects), with software demonstrations and discussions, *LG: Foundations and Defense Applications*, Multiple presentations at the **4-day event** together with Dr. Yakhnis, O. Umanskiy, Sep 21-24, 2009, Orlando World Center Marriott, Orlando, FL, **USA.**

*INVITED SPEAKER, PANELIST*; LG Based Predictive Technology for Battle Command, Simulation, and Training, with discussion and demonstration, Workshop with MILCOM Venture Partners and STILMAN, together with Dr. Yakhnis, O. Umanskiy, J. Buffa, and 4 experts from MILCOM Partners, **2-hour event**, Sep 22, 2009, Orlando World Center Marriott, Orlando, FL, **USA.**

*SCIENTIFIC ADVISOR, REVIEWER*; Completion of installation and testing of LG GMI (Game Mobile Interface) on the FBCB2 (JCR BCPL SDK) computer Applique EV4, Aug 31, 2009, STILMAN Quarters, Denver, CO, **USA.**

*SPEAKER, PANELIST*; Installation of LG-RAID on SIPRNET within the scope of the "LG Based Predictive Technology for Battle Command, Simulation, and Training" project, with discussion and demonstration, Kick-off Meeting with ARL and STILMAN, Dr. A. Kott, Dr. B. Broome, M. Thomas (scribe), M. Mittrick (all – ARL), Dr. M. Bauer (STTC), O. Umanskiy, Dr. V. Yakhnis (STILMAN), **2-hour Teleconf.**, Aug 27, 2009, ARL (Army Research Lab)-STTC (Simulation & Training Technology Center)-STILMAN, Aberdeen Proving Ground – Orlando – Denver, **USA.**

*INVITED SPEAKER*, Mind and the Natural World, *Linguistic Geometry and Human Consciousness*, **2-hour Talk**, May 29, 2009, Dept. of Psychology, University of Colorado at Denver, Denver, **USA.**

*ORGANIZER, SPEAKER*, Workshop on Directions for the LG Applications Development, with Dr. V. Yakhnis, Dr. T. Altman, Sir Sandy Wilson, Dr. E. Novotny; **1-day event**, March 18, 2009, STILMAN Headquarters, Denver, CO, **USA.**

*ORGANIZER, SPEAKER*, LG Day at UCD: Demonstrations of Advanced Defense Applications of Linguistic Geometry by Chief Software Architect O. Umanskiy, **3-hour event**, March 16, 2009, UCD and STILMAN, Denver, CO, **USA.**

*INVITED SPEAKER, PANELIST*; LG Based Predictive Technology for various Army Projects, with discussion and demonstration, Teleconference with Simulation Training and Technology Center (STTC) and STILMAN, with Dr. M. Bauer (SBIR Phase II Program Manager), Dr. A. Kott, Dr. Yakhnis, O. Umanskiy, **2-hour event**, Feb 26, 2009, Orlando-Denver, **USA.**

*ORGANIZER, SCIENTIFIC ADVISOR*, Workshop with TRADOC Capability Manager, Platform Battle Command and Combat Identification TCM PBC CID, *RAID-LG Technology for US Army*, with TCM Col Carman, Dr. A. Kott, J. Speer, P. Lucyk, Col J Moore, O. Umanskiy, V. Pugachev, **4-hour event**, Feb 12, 2009, Simulation Training and Technology Center (STTC), Orlando, FL, **USA.**

**2007**

*MAJOR SCIENTIFIC ADVISOR, REVIEWER, Air Assault Expeditionary Force (AAEF) Spiral D Experiment – TRANSITION OF RAID to US Armed Forces (Integration of DARPA RAID with FBCB2 System), US Army Test & Evaluation Command, major 2-month event, Oct – Nov, 2007, Soldier Battle Lab, US Army Infantry Center, Fort Benning, GA, USA.*

*ORGANIZER, SPEAKER, PANELIST*

**BRITISH SEMINAR SERIES IX**

Oct 5, 2007 - *LG-PACKAGE: Current Capabilities, Future Enhancements; COA Generation for MOUT; 0.5-day Workshop*, with T. Arnold, D. O’Byrne, M. Breach, SELEX S&AS, Capability Green, Luton, **UK**.

Oct 4, 2007 - *LG strategies for US & British Defense Systems, 6-hour Workshop* with Sir “Sandy” Wilson, D. Hemsley, 12 scientists & managers, Systems Consultants Services Ltd, Henley, **UK**.

*ORGANIZER, SCIENTIFIC ADVISOR; Workshop with US Intelligence Officers, RAID-LG Technology for Defense Systems, with TCM Col Mosher, Col J Moore, V. Pugachev, Sep 11, 2007, Ft Huachuca, AZ, USA.*

*INVITED SPEAKER, PANELIST; VIII Argentine Symposium on Computing Technology, with software demonstrations and discussion, Linguistic Geometry Tools: Discovering Past, Controlling Present and Shaping Future, 1-hour Talk, 36 JAIIO (36<sup>th</sup> Int. Conference on Computer Science), Aug 30, 2007, Mar del Plata, Argentina.*

*INVITED SPEAKER, PANELIST; IX Argentine Symposium on Artificial Intelligence (ASAI), with software demonstrations and discussion, Linguistic Geometry Paradigm: From Fighting Wars ... to Computing Them, 2-hour Talk, 36 JAIIO (36<sup>th</sup> Int Conference on Informatics), Aug 28, 2007, Mar del Plata, Argentina.*

*SPEAKER, PANELIST; Workshop with DARPA RAID Program Manager Dr. A. Kott, with software demonstrations and discussion, Transition of LG Applications to US Armed Forces, 0.5-day event together with Dr. T. Altman, O. Umanskiy, June 27, 2007, STILMAN Offices, Denver, CO, USA.*

*ORGANIZER, SPEAKER, PANELIST*

**BRITISH SEMINAR SERIES VIII**

June 15, 2007 - *LG-based Defense Systems, 3-hour Workshop* with, D. Hemsley, 4 scientists & managers, Systems Consultants Services Ltd, Henley, **UK**.

June 14, 2007 - *Advantages of the LG-based Technology, 1-day Workshop* (with software demonstrations and discussion), with Sir “Sandy” Wilson, Dr. V. Yakhnis, R. Boyd, and 45 scientists and engineers from MBDA - Missile Ballistic Defence Agency, MBDA, Stevenage, **UK**.

June 13, 2007 - *LG: Foundations and Applications; 0.5-day Workshop*, with ACM Sir Brian Burridge, ACM Sir “Sandy” Wilson, T. Arnold, D. O’Byrne, Dr. V. Yakhnis, R. Boyd, SELEX, London, **UK**.

June 12, 2007 - *LG-PACKAGE 2.0: Evaluation of Enhancements; Survey of Applications of LG to MOUT; 1-day Workshop*, with Sir “Sandy” Wilson, B. Patel, S. Gale, Dr. D. Tilley, B. Wardman, and other scientists and engineers from MoD UK, Dstl, MoD, Farnborough, **UK**.

June 11, 2007 - *Capabilities of LG for the SELEX Concept to Capability Center (C2C); 1-day Workshop*, with Sir “Sandy” Wilson, Dr. V. Yakhnis, T. Arnold, D. O’Byrne, M. Breach, SELEX S&AS, Capability Green, Luton, **UK**.

*SPEAKER, PANELIST; LG: From Theory to Advanced Software Products, with software demonstrations and discussion, DARPA Service Chiefs’ Program, 3-hour event together with Dr. T. Altman, O. Umanskiy, C. Earl (Special Assistant to DARPA Director), 8 DARPA Interns, May 15, 2007, STILMAN Headquarters, Denver, CO, USA.*

*INVITED SPEAKER, PANELIST; Mathematical Foundations of Linguistic Geometry, with discussion, Workshop at DARPA IPTO, 2-hour Workshop together with Dr. V. Yakhnis, Lt Col Dr. B. Surdu, K. Kittka, and Dr. Morfeld (Director of IPTO), DARPA IPTO (Information Processing Technology Office), May 3, 2007, Arlington, VA, USA.*



- INVITED SPEAKER, PANELIST*; with software demonstrations and extensive discussion, *Applications of LG to Naval Systems*, **0.5-day Workshop** within the Scope of NSWC/STILMAN CRADA, with Dr. V. Yakhnis, M. Kuchinski (NSWC), C. Blakelock (NSWC), and other managers, scientists and engineers, May 4, 2007, Naval Surface Warfare Center (NSWC), Dahlgren, VA, **USA**.
- INVITED SPEAKER, PANELIST*, Foundations and Applications of LG (to Defense Systems), **3-hour Workshop**, with Dr. V. Yakhnis, top managers of SELEX, Inc., May 3, 2007, Offices of SELEX, Inc, Arlington, VA, **USA**.
- MAJOR SCIENTIFIC ADVISOR, REVIEWER, DARPA RAID Experiment 5*, Integrated RAID/ARM-S system with DCGS-A (The 1<sup>st</sup> step in Transition), **major 3-week event**, April 24 – May 10, 2007, US Army DCGS-A Lab (Digital Common Ground System – Army), Ft. Monmouth, NJ, **USA**.
- INVITED SPEAKER, PANELIST*; Linguistic Geometry: Foundations & Applications, with discussion, *Workshop at DARPA IPTO*, **2-hour Workshop** together with Dr. V. Yakhnis, Lt Col Dr. B. Surdu, K. Kittka, DARPA IPTO, April 13, 2007, Arlington, VA, **USA**.
- INVITED SPEAKER, PANELIST*, Applications of LG to Various Defense Systems, **3-hour Workshop**, with Sir “Sandy” Wilson, Dr. V. Yakhnis, top managers of SELEX, Inc. & SELEX Ltd., April 12, 2007, Offices of Finmeccanica, Washington, DC, **USA**.
- MAJOR SCIENTIFIC ADVISOR, REVIEWER, TRIAL RUN: DARPA RAID Experiment 5*, SAIC Offices, March 5-9, 2007, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER, PANELIST*, Assessment of LG Capabilities Employing 2 Scenarios (from SELEX), **2-day Workshop** with O. Umanskiy, M. Breach (SELEX, UK), T. Barnes (SELEX, UK), Feb 9-10, 2007, Offices of STILMAN, Denver, CO, **USA**.
- INVITED SPEAKER, PANELIST*, LG Based Predictive Technology for Battle Command, Simulation and Training, **1-day SBIR Phase I Project Kick-off Meeting**, Jan. 18, 2007, SAIC Offices, Orlando, FL, **USA**.

**2006**

- ORGANIZER, SPEAKER*; Technical Exchange, Software/Hardware Exhibition at the Interservice/Industry Training, Simulation & Education Conference – IITSEC; Brief Meetings with US Marine Corps, US JFCOM, Canadian Forces, General Dynamics, Raytheon, Northrop Grumman, Boeing, Lockheed Martin, SAAB (Sweden), Thales (UK-France), Dec. 6, 2006, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER*; Workshop with British Officers (UK), *LG Technology for Defense Systems*, together with Brig A. Macklin, J. Brennan, J. Searle, Maj G. Osmond, Maj T. Mouat, Lt C. Armstrong, Wg Com J. Broadbent, IITSEC, Dec 5, 2006, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER*; Workshop with Dstl, MoD, QuinetiQ (UK), *LG, Theory and Technology; LG-PACKAGE 2.0.0*, together with B. Patel (Dstl), S. Armstrong (QuinetiQ), R. McNee (MoD), Maj C. Morgan (MoD), IITSEC, Dec 5, 2006, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER*; Workshop with Dstl (UK), *Experiments with LG-PACKAGE 2.0.0: Evaluation and Advanced Training*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, O. Umanskiy, B. Wardman, Nov. 2-3, 2006, Denver, CO, **USA**.
- ORGANIZER, SPEAKER*; Workshop with SELEX (UK), *LG: Applications to Defense Systems*, **1-day event**, with Dr. T. Altman, Dr. V. Yakhnis, O. Umanskiy, P. Collins (SELEX), T. Brignall (SELEX), Oct 24, 2006, Denver, CO, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Army RES/NEBC2, Viecore, CACI, C2WD, with software demonstrations and discussion, *LG-Based COA for Running Estimate Service*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, R. Szymanski (RES/NEBC2), and other scientists and engineers (22 participants), RDECOM CERDEC C2D, Oct 20, 2006, Ft Monmouth, NJ, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Army C2ORE, with software demonstrations and discussion, *LG-Based Control of Robotic Entities*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, S. Koo (C2ORE), R. Mendelsohn (SAIC), and other scientists and engineers (10 participants), C2ORE, RDECOM CERDEC C2D, Oct 20, 2006, Ft Monmouth, NJ, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Army DCGS-A, with software demonstrations and discussion, *LG Services for DCGS-A, including Advanced Sensor Fusion*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, A. Hansen, and other scientists and engineers (12 participants),

- C2D/CERDEC, Oct 19, 2006, Ft Monmouth, NJ, **USA**.
- INVITED SPEAKER, PANELIST*, with Dr. V. Yakhnis, “Red and Blue COA Generation and the Battlespace Visualization”, *Oral Presentation of Proposal*, Sept. 13, 2006, ONR Panel of Reviewers “Sea Strike Science and Technology (S&T) Transparent Urban Structures”, MITRE, Woodbridge, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with AFRL, SAIC, with software demonstrations and extensive discussion, *LG-Based Red Driver for Combat Simulation Systems*, **1-day event** together with Dr. V. Yakhnis, O. Umanskiy, W. McQuay (AFRL), L. Straube (SAIC), T. Broadstock (SAIC), and other managers, scientists and engineers, AFRL, Aug 25, 2006, Wright Patterson AFB, OH, **USA**.
- SPEAKER, PANELIST*, with Dr. V. Yakhnis, O. Umanskiy, “RAID Experiment 4: Lessons Learned; Phase III (Integration with DCGS-A) Requirements”, **1-day event**, *DARPA RAID PI Tech. Meeting*, August 3-4, 2006, Battle Command Training Center, 35<sup>th</sup> Infantry Division, Ft. Leavenworth, KS, **USA**.
- ORGANIZER, SPEAKER, PANELIST*, with Dr. V. Yakhnis, “LG Technology in the DARPA RAID Project; LG outside RAID”, Multiple Meetings, Presentations and Demonstrations to various VIP visitors (50 people) during *DARPA RAID Experiment 4*, with Dr. Yakhnis, **2-week event**, July 23 – Aug. 4, 2006, Battle Command Training Center, 35<sup>th</sup> Infantry Division, Ft. Leavenworth, KS, **USA**.
- MAJOR SCIENTIFIC ADVISOR, REVIEWER, DARPA RAID Experiment 4*, US Army Intelligence Systems Integration Laboratory, **major 3-week event**, July 12 – Aug. 4, 2006, Battle Command Training Center, 35<sup>th</sup> Infantry Division, Ft. Leavenworth, KS, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Northrop Grumman, with software demonstrations and extensive discussion, *LG Technology for Commanders*, **0.5-day event** together with Dr. A. Murdoch, K. Goetz, N. Love, and other scientists and engineers (25 people), Northrop Grumman Electronic Systems, Northrop Grumman, May 31, 2006, Baltimore, MD, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussion, *LG Technology for Boeing Network Commander*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, D. Manser, L. Gustafson, and other managers and engineers, Boeing AMS, Boeing Integration Center (BIC West), May 16, 2006, Anaheim, CA, **USA**.
- INVITED SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussion, *LG Technology for Effect Based Operations*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, R. Hurrenburg, J. Malone, J. Willis, M. Less, M. Lucian, K. Carlsen, L. Gustafson, J. Morrow, S. Schwartz, and other managers, scientists and engineers, Boeing Phantom Works and Integrated Defense Systems, May 15, 2006, Huntington Beach, CA, **USA**.
- ORGANIZER, SPEAKER*; Asymmetric Warfare and LG Decision Aids, Talk at M&D C2 with Demonstrations, with O. Umanskiy, M. Molz, R. Rasch; May 11, 2006, US Army M&D C2 Lab, Orlando, FL, **USA**.
- MAJOR SCIENTIFIC ADVISOR, REVIEWER, TRIAL RUN: DARPA RAID Experiment 4*, SAIC Offices, May 8-11, 2006, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER, PANELIST*
- BRITISH SEMINAR SERIES VII**
- April 21, 2006 - *LG strategies for Defense Systems*, **3-hour Workshop** with Sir “Sandy” Wilson, M. White, I. Milne, top managers, Northrop Grumman, London, **UK**.  
 - *LG Foundations*, **3-hour Workshop** (with software demonstrations and discussion), with Sir Andrew Wilson, M. St. John-Green, other scientists (7 participants), Government Communications HQ, Cheltenham, **UK**.
- April 20, 2006 - *LG-PACKAGE: Future Enhancements, COA Generation for MOUT*; **0.5-day Workshop**, with Sir Andrew Wilson, S. Gale, Dr. D. Tilley, B. Wardman, and other scientists and engineers, Dstl, MoD, Farnborough, **UK**.  
 - *Report: Experiments with LG-PACKAGE; Future Plans*, **3-hour Workshop**, (6 participants) with Sir Andrew Wilson, P. Collins, A. Daw, and other scientists and engineers, BAE SYSTEMS, Farnborough, **UK**.
- April 19, 2006 - *LG: Foundations and Applications; Training and Mission Rehearsal*, **0.5-day Workshop**, with Sir Andrew Wilson, Lt Col G Deakin, Wg Cdr P. Wilkins, Lt Col N.

Chapman, Maj M. Winston-Davis, AVM Maddox, Joint Services Staff College (Defence Academy), Shrivenham, **UK**.

April 18, 2006 - *Integration of LG and Flames*, **3-hour Workshop**, with Sir Andrew Wilson, F. Pew, J. Robertson, Flames Offices, St Albans, **UK**.

- *Advantages of the LG-based technology*, **0.5 day Workshop** (with software demonstrations and discussion), with Sir Andrew Wilson, A. Gabby, P. Armstrong, P. Norriss, VEGA, London, **UK**.

**ORGANIZER, SPEAKER**; *LG Systems for Advanced Training*, Tech. Meeting for the STTR Army LG-EXPERT Project with Demonstrations, with Dr. V. Yakhnis, O. Umanskiy, S. Shadrik, March 17, 2006, US Army Research Institute, Ft Knox, KY, **USA**.

**SPEAKER, PANELIST**, with Dr. V. Yakhnis, O. Umanskiy, “RAID Experiment 3: Lessons Learned”, *DARPA RAID PI Tech. Meeting*, March 14-16, 2006, Kansas City, MI, **USA**.

**INVITED SPEAKER, PANELIST**; Joint Technological Opportunities in Applying LG to the National Defense Projects, *Meetings with SPARTA*, with Dr. V. Yakhnis, O. Umanskiy, J. Walsh, C. Whitlock, other scientists and engineers, March 8-9, 2006, SPARTA, Huntsville, AL, **USA**.

**SPEAKER, PANELIST**, with Dr. V. Yakhnis, Presentations and Discussion on Results of the *DARPA RAID Experiment 3*, US Army Intelligence Sys-s Integration Lab, March 1-3, 2006, Ft Huachuca, NM, **USA**.

**MAJOR SCIENTIFIC ADVISOR, REVIEWER, DARPA RAID Experiment 3**, US Army Intelligence Systems Integration Lab, **major 3-week event**, Feb 10 - March 3, 2006, Ft Huachuca, NM, **USA**.

## 2005

**ORGANIZER, SPEAKER**; Final Review, DARPA Tech. Meeting, LG-COMMANDER Demonstration: *Force Multipliers for Urban Operations*, with TAG, Overwatch Systems, and STILMAN, with Dr. V. Yakhnis, O. Umanskiy, J. Ramming, Col Gulotta, Dec. 22, 2005, ITspatial Offices, McLean, VA, **USA**.

**ORGANIZER, SPEAKER**; Technical Exchange, Software/Hardware Exhibition at the Interservice/Industry Training, Simulation & Education Conference – I/ITSEC, with D. Halloran, Sir Sandy Wilson, Nov. 29, 2005, Orlando, FL, **USA**.

**ORGANIZER, SPEAKER**; Tech. Meeting with Dstl (UK), *Experiments with LG-PACKAGE: Required Enhancements*, with S. Gale, Sir Sandy Wilson, Nov. 29, 2005, Orlando, FL, **USA**.

**ORGANIZER, SPEAKER**; Tech. Meeting for the JFCOM Project with TAG, ITspatial (now Overwatch) & STILMAN, *Final Demonstration of LG-TRAINER*, **3-hour event**, with Dr. V. Yakhnis, O. Umanskiy, JFCOM-J7, Oct. 7, 2005, Suffolk, VA, **USA**.

**ORGANIZER, SPEAKER**; Tech. Meeting for the Boeing NETWORK COMMANDER Project, *Required Enhancements to LG-PACKAGE*, **4-hour event**, with Dr. V. Yakhnis, L. Gustafson, other scientists and engineers, Sept. 30, 2005, Boeing Integrated Defense Systems, Huntington Beach, CA, **USA**.

**ORGANIZER, SPEAKER**; Tech. Meeting for the SBIR Air Force Project (with AFRL, Wright Patterson AFB and SMC, Los Angeles AFB), *LG-ADVERSARY for Generating Strategies for SEAS*, **4-hour event**, with Dr. V. Yakhnis, O. Umanskiy, R. Weber, other scientists and engineers, Sept. 29, 2005, Space Missile Center, Los Angeles, CA, **USA**.

**ORGANIZER, SPEAKER**; DARPA IPR Tech. Meeting, LG-COMMANDER Demonstration: *Force Multipliers for Urban Operations*, with TAG, ITspatial (now Overwatch), and STILMAN, with Dr. V. Yakhnis, O. Umanskiy, J. Ramming, Col J. Moore, Col Gulotta, Sept. 15-16, 2005, ITspatial Offices, Falls Church, VA, **USA**.

**INVITED KEYNOTE SPEAKER, TUTORIAL INSTRUCTOR**,

Keynote Talk, *Advanced Applications of Linguistic Geometry*,

Tutorial, *Linguistic Geometry: From Search to Construction*;

14th International Congress on Computing - CIC'05, Sept. 5-9, 2005, Mexico City, **Mexico**.

**ORGANIZER, SPEAKER**; Tech. Meeting for the JFCOM Project with TAG, ITspatial (now Overwatch) & STILMAN, *Demonstration of LG-TRAINER*, **2-day event**, with Dr. V. Yakhnis, O. Umanskiy, ITspatial - JFCOM-J7, Aug. 25-26, 2005, McLean-Suffolk, VA, **USA**.

**INVITED PANELIST**, COLORADO Homeland Security Research Focus Group (organized by the CU-Boulder Leeds School of Business), Aug. 23, 2005, Denver, CO, **USA**.

- ORGANIZER, SPEAKER*; Kick-off Tech. Meeting for the STTR Army LG-EXPERT Project (with Army Research Inst. – Ft. Knox, KY), *LG Systems for Advanced Training*, **2-day event**, with Dr. V. Yakhnis, O. Umanskiy, S. Shadrik, Dr. Loussier, Aug. 16-17, 2005, Denver, CO, **USA**.
- SPEAKER, PANELIST*, with Dr. V. Yakhnis, O. Umanskiy, “RAID Experiment 2: Lessons Learned; Phase II Requirements”, *DARPA RAID PI Tech. Meeting*, July 28-29, 2005, Orlando, FL, **USA**.
- ORGANIZER, SPEAKER, PANELIST*, with Dr. V. Yakhnis, “ Role of LG Technology in the DARPA RAID Project”, Multiple Meetings, Presentations and Demonstrations to various VIP visitors (50 people) during *DARPA RAID Experiment 2*, Offices of the RAID Systems Integrator – SAIC, July 20-29, 2005, Orlando, FL, **USA**.
- SCIENTIFIC ADVISOR, REVIEWER, DARPA RAID Experiment 2*, Offices of SAIC, **major 3-week event**, July-Aug, 2005, Orlando, FL, **USA**.
- INVITED SPEAKER*; Invited Talk (with Dr. V. Yakhnis), *Linguistic Geometry for Modeling & Simulation of Defense Systems*, with Gen Hall, Dr. Ozolek, US JFCOM-J9 (Modeling & Simulation, Joint Forces Command), July 18, 2005, Suffolk, VA, **USA**.
- ORGANIZER, SPEAKER*; Workshop with BAE SYSTEMS (UK), *Experiments with LG-PACKAGE: Evaluation and Advanced Training*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, O. Umanskiy, J. Senior, June 27-28, 2005, Denver, CO, **USA**.
- ORGANIZER, SPEAKER*; with Dr. V. Yakhnis, P. Curry, K. Wilshire, *LG Strategies for Joint Operations*, US JFCOM-J7 (Training Division, Joint Forces Command), June 9, 2005, Suffolk, VA, **USA**.
- INVITED SPEAKER*; Invited Talk (with Dr. V. Yakhnis, Gen Freeman), *Linguistic Geometry for US Joint Forces*, US JFCOM-J9 (Modeling & Simulation, Joint Forces Command), June 8, 2005, Suffolk, VA, **USA**.
- ORGANIZER, SPEAKER*; (with Dr. V. Yakhnis), Presentation to Gen Freeman, *LG Systems: New Opportunities*, May 5, 2005, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER*; (with Dr. V. Yakhnis), DARPA Kick-off Tech. Meeting, *Force Multipliers for Urban Operations*, with TAG, ITspatial (now Overwatch), and STILMAN, J. Ramming, Col J. Moore, DARPA, May 6, 2005, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER*; Workshop with Dstl (UK), with software demonstrations, *Experiments with LG-PACKAGE: Required Enhancements*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, Dr. P. Young, Dr. D. Tilley, B. Wardman, April 28-29, 2005, Denver, CO, **USA**.
- ORGANIZER, SPEAKER*; Workshop with BAE SYSTEMS (UK), with software demonstrations, *Experiments with LG-PACKAGE: Lessons Learned and Future Plans*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, O. Umanskiy, Dr. P. Grossmann, A. Daw, April 21-22, 2005, Denver, CO, **USA**.
- SPEAKER, PANELIST*; (with Dr. V. Yakhnis, O. Umanskiy), “DARPA RAID Experiment I: Lessons Learned”, *DARPA RAID PI Technical Meeting*, April 14, 2005, Orlando, FL, **USA**.
- SCIENTIFIC ADVISOR, REVIEWER, DARPA RAID Experiment 1*, Offices of SAIC, **major 3-week event**, March-April, 2005, Orlando, FL, **USA**.
- INVITED SPEAKER*; Invited Talk (with Dr. V. Yakhnis, Sir Sandy Wilson), *Linguistic Geometry for US Army Projects*, US Army Science Board, *Potential Applications to Future Combat Systems (FCS)*, MITRE, April 13, 2005, McLean, VA, **USA**.
- ORGANIZER, PANELIST*; Research Meeting; TAG, ITspatial (now Overwatch), and STILMAN, Discussion of the DARPA projects on Urban Operations, **4-hour event**, with Dr. V. Yakhnis, O. Umanskiy, P. Curry, scientists and engineers, April 12, 2005, The Analysis Group, Falls Church, VA, **USA**.
- ORGANIZER, SPEAKER*; Two Invited Sessions on *Linguistic Geometry*, **0.5-day event** at the 2005 SPIE DEFENSE & SECURITY, Symposium "Enabling Technologies for Simulation Science IX", Orlando, FL, March 29-30, 2005, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with RAID SME, with software demonstrations and extensive discussions, *Linguistic Geometry Strategies for Urban Operations*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, Col Moore, Feb. 23-24, 2005, Denver, CO, **USA**.
- ORGANIZER, SPEAKER*; **3-hour Workshop** at Lockheed Martin, “Capabilities of LG Tools”, with Dr. V. Yakhnis and 7 scientists, Center for Innovation, Lockheed Martin, Feb. 18, 2005, Suffolk, VA, **USA**.

- ORGANIZER, SPEAKER*; (with Dr. V. Yakhnis), Presentation at DARPA, “LG Systems for Integrated Battle Command”, with Dr. J. Allen, Program Manager, DARPA, Feb. 17, 2005, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER*; Presentation at BAE SYSTEMS/N. America, “LG Tools: New Advancements”, with Dr. V. Yakhnis, Sir Sandy Wilson, Dr. R. Lawrence, BAE SYSTEMS Headquarters, Feb. 17, 2005, Rockville, MD, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop at Northrop Grumman, with software demonstrations and extensive discussions, *LG Technology for Modeling and Simulation*, **0.5-day event**, with Dr. V. Yakhnis, Sir Sandy Wilson, Dr. V. Roske, M. Tulkoff, and 10 managers, scientists and engineers, Modeling, Simulation & Analysis Center, Northrop Grumman, Feb. 16, 2005, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER*; (with Dr. V. Yakhnis), Presentation at ONR, “LG Tools to Autonomous Operations, Future Naval Capability”, with Marc Steinberg, Deputy Program Manager, STTR topic N05-T017, Office of Naval Research, Feb. 15, 2005, Arlington, VA, **USA**.
- ORGANIZER, PANELIST*; Research Meeting:, TAG, ITspatial (now Overwatch), and STILMAN, Discussion of the Joint DARPA Project “Force Multipliers”, **3-hour event**, with Dr. V. Yakhnis, O. Umanskiy, other scientists and engineers, Feb. 15, 2005, The Analysis Group, Falls Church, VA, **USA**.
- INVITED SPEAKER, PANELIST*; Invited Talk (with Dr. V. Yakhnis), LG Tools for Modeling Command Organization Structure, DARPA RFI SN05-09 Workshop, *Tools to Identify an Enemy's Command Organization and Manage its Disruption*, Jan. 25-27, 2005, Orlando, FL, **USA**.

**2004***INVITED KEYNOTE SPEAKER*,

Keynote Talk I, *LG-PACKAGE, The Ultimate Wargaming Environment*,

Keynote Talk II, *LG Wargaming for Simulation Based Acquisition*,

International Conference on Artificial Intelligence in Science and Technology – AISAT’2004, Nov. 21-24, 2004, U. of Tasmania, Hobart, **Australia**.

*ORGANIZER, SPEAKER, PANELIST***BRITISH SEMINAR SERIES VI**

- Oct. 18, 2004: - *LG for Defense: A Strategic View*, **3-hour Workshop** (with software demonstrations and discussion), with O. Umanskiy, Sir Wilson, Air Vice-Marshal G. Williams, top managers and scientists (7 participants), Lockheed Martin, London, **UK**.
- Oct. 19, 2004: - *LG strategies for Naval Operations*, **3-hour Workshop** (with software demonstrations and discussion), with O. Umanskiy, Sir Wilson, N. Moss, managers and scientists (5 participants), Thales, London, **UK**.  
 - *Advantages of the LG based technology*, **1-hour Workshop** (with software demonstrations and discussion), with O. Umanskiy, Sir A. Wilson, UK CAS ACM Sir J. Stirrup, B. Patel, Dr. P. Young, top managers and scientists (12 participants), Ministry of Defence, London, **UK**.  
 - *LG strategies for Naval Operations*, **3-hour Workshop** (with software demonstrations and discussion), with O. Umanskiy, Sir Wilson, Sir J. Blackham, J. Telford, VP, top managers (7 participants), EADS, London, **UK**.
- Oct. 20, 2004, - *Mathematical Foundations of LG: Why does LG work?*, **0.5-day Workshop**, (15 participants) with O. Umanskiy, Dr. P. Grossmann, and other scientists, SEIC (Systems Engineering Innovation Center), BAE SYSTEMS, Bristol, **UK**.  
 - *LG strategies for Defense Systems*, **3-hour Workshop** (with software demonstrations and discussion), with O. Umanskiy, Dr. J. Stark, RADM, K. Marshall, top managers (6 participants), Northrop Grumman, London, **UK**.
- Oct. 21, 2004, - *Experiments with LG-PACKAGE; Future Enhancements*, **1-day Workshop**, (10 participants) with O. Umanskiy, Dr. P. Young, Dr. T. Gardener, B. Wardman, and other scientists and engineers, Dstl, Farnborough, **UK**.
- Oct. 22, 2004, - *Experiments with LG systems; Lessons Learned*, **0.5-day Workshop**, (10 participants) with O. Umanskiy, Dr. P. Young, Dr. T. Gardener, Sir “Sandy” Wilson, B. Patel,, and other scientists, Dstl, Farnborough, **UK**.  
 - *Experiments with LG-PACKAGE*, **3-hour Workshop**, (6 participants) with O. Umanskiy, Sir S. Wilson, P. Collins, A. Daw, Dr. P. Grossmann, and other scientists

- and engineers, BAE SYSTEMS, Farnborough, **UK**.
- SPEAKER, PANELIST*; (with Yakhnis, V.), “Linguistic Geometry Strategies for Adversarial Reasoning”, *DARPA RAID Kick-off Technical Meeting*, Oct. 12-15, 2004, Offices of SAIC, Orlando, FL, **USA**.
- INVITED SPEAKER*, Talk *LG for Command & Control and Effects-Based Operations*, to the Panel of Reviewers “*Force Multipliers for Urban Area Operations*”, DARPA, Arlington, VA, Sept. 13, 2004, **USA**.
- ORGANIZER*; Modeling and What-If Experiments with LG-PACKAGE: Optimizing Configuration of Aircraft Carrier to Withstand Cruise Missile Attacks, **1-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, A. Daw (BAE), Dr. P. Grossmann (BAE SYS-S, UK), Sept 9, 2004, Denver, CO, **USA**.
- ORGANIZER, INSTRUCTOR*; Workshop with BAE SYSTEMS (UK), with software demonstrations, “*Know How*” for *LG-PACKAGE*, **3-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, Dr. P. Grossmann (BAE SYSTEMS, UK), Sept 6-8, 2004, Denver, CO, **USA**.
- INVITED SPEAKER*, Presentation *LG for Predictive Situational Awareness and Threat Assessment*, to the Panel of Reviewers “*Command and Control and Combat Systems Discovery*”, Office of Naval Research, Arlington, VA, Aug. 5, 2004, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with CECOM RDEC, with software demonstrations and extensive discussions, *LG Technology for US Army*, **1-day event**, with Dr. V. Yakhnis, O. Umanskiy, E. Dawidowitz (CECOM RDEC), and 12 managers, scientists and engineers, US Army CECOM RDEC, May 17, 2004, Ft. Monmouth, NJ, **USA**.
- ORGANIZER, SPEAKER*; Workshop with BAE SYSTEMS (UK), with software demonstrations and extensive discussions, *Exploration of Capabilities of LG at BAE SYSTEMS*, **1-day event**, with Dr. V. Yakhnis, P. Collins (Manager, BAE SYSTEMS, UK), May 9, 2004, Denver, CO, **USA**.
- ORGANIZER, SPEAKER, INSTRUCTOR*; Workshop with Dstl (UK), with software demonstrations and extensive discussions, “*Know How*” for *LG-PACKAGE*, **3-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, Dr. P. Young (Dstl – Defence Science and Technology Lab, UK), B. Wardman (Dstl), C. Johnson (Dstl), May 2-4, 2004, Denver, CO, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with NSWC and UWF, with software demonstrations and extensive discussions, *Linguistic Geometry for Simulation Based Acquisition*, **1-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, V. Pugachev, Dr. J. Canning (NSWC – Naval Surface Warfare Center), R. Dibble (NSWC), April 22, 2004, Denver, CO, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with NSWC and General Dynamics, with software demonstrations and extensive discussions, *Foundations of the LG Theory; LG Technology for Littoral Operations*, **1-day event**, with Dr. V. Yakhnis, O. Umanskiy, Dr. S. Kass (UWF, telecommute), J. Kimball, C. Blakelock, B. Copeland, B. Dibble, J. Canning, and 20 managers, scientists and engineers, Naval Surface Warfare Center, March 18, 2004, Dahlgren, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with XPXC, *LG for Air Force Operations*, with software demonstrations and extensive discussions, **0.5-day event**, with Dr. V. Yakhnis, O. Umanskiy, Dr. H. Meyer, Scientific Advisor (HQ USAF/XPXC), and 15 officers, HQ USAF/XPXC (The Pentagon), March 17, 2004, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with DTRA, with software demonstrations and extensive discussions, *LG Technology for Missile Defense*, **3-hour event**, with Dr. V. Yakhnis, O. Umanskiy, and 8 managers, scientists and engineers, DTRA - Defense Threat Reduction Agency, March 16, 2004, Ft. Belvoir, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with BAH, with software demonstrations and extensive discussions, *LG Technology: Foundations and Applications*, **3-hour event**, with Dr. V. Yakhnis, O. Umanskiy, Dr. F. Frostic (BAH), and 7 scientists and engineers, BAH – Booze, Allen, Hamilton, March 15, 2004, Tyson’s Corner, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with MDA and SPARTA, with software demonstrations and extensive discussions, *LG Technology for Missile Defense*, **3-hour event**, with Dr. V. Yakhnis, O. Umanskiy, C. Paldino (SPARTA), J. Stoehr (MDA), and 5 scientists and engineers, SPARTA, Feb. 25, 2004, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with NSWC and General Dynamics, with software

demonstrations and extensive discussions, *LG Technology for Tactical and Strategic Operations*, **1-day event**, with Dr. V. Yakhnis, O. Umanskiy, J. Kimball (SBIR Program Manager, NSWC), and 11 managers, scientists and engineers, Naval Surface Warfare Center, Feb. 26, 2004, Dahlgren, VA, **USA**. *ORGANIZER, SPEAKER, PANELIST*; Workshop with NSWC and UWF, with software demonstrations and extensive discussions, *LG: New Opportunities for US Navy*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, R. Boyd, O. Umanskiy, J. Kimball (SBIR Program Manager, Naval Surface Warfare Center), Dr. S. Kass (Univ. of West Florida), Jan. 8-9, 2004, Denver, CO, **USA**.

**2003**

- ORGANIZER, SPEAKER*; Workshop "LG for Aerospace Defense Systems", Organized **0.5-day event** at the Defence Science and Technology Organization – DSTO, Melbourne, Dec. 12, 2003, **Australia**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Raytheon, with software demonstrations and extensive discussions, *LG: New Opportunities for Defense Systems*, **1-day event**, with Dr. T. Altman, R. Boyd, Dr. D. Nguen, K. Casey, P. Brenner, D. Ruehre, S. Hansen, E. Hansen, L. Schwartz, and other managers, scientists and engineers, Raytheon Office, Nov. 14, 2003, Aurora, CO, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussions, *LG Technology for Defense Systems*, **2-day event** together with Dr. V. Yakhnis, O. Umanskiy, T. Rolston, C. McCiver, Heinz, VP, Dr. M. McCoy, G. Johanningmeier, R. Bertin, Ass. Tech Fellow, R. Jones, G. Engel, Dr. M. L. Lucian, and other managers, scientists and engineers, Boeing Phantom Works and Integrated Defense Systems, Nov. 6-7, 2003, St. Louis, MO, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Space Missile Center and Boeing, with software demonstrations and extensive discussions, *LG Theory for Solving Higher-Dimensional Game, Applications to Defense*, **1-day event** together with Dr. V. Yakhnis, O. Umanskiy, T. Rolston, R. Weber, and other managers, scientists and engineers (SMC and Aerospace Corp.), SMC, Los Angeles AFB, Sept. 19, 2003, Los Angeles, CA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussions, *LG Technology for Defense Systems*, **1-day event** together with Dr. V. Yakhnis, O. Umanskiy, T. Rolston, Director, C. McCiver, Manager, and other managers, scientists and engineers, Boeing Integrated Defense Systems, Sept. 18, 2003, Huntington Beach, CA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussions, *LG Technology for Space Defense Systems*, **2-day event** together with Dr. V. Yakhnis, O. Umanskiy, K. Neifert, T. Rolston, G. Smith, and other managers, scientists and engineers, Boeing Integrated Defense Systems, Aug. 14-15, 2003, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop: Air Force Future Concepts and Transformation with USAF/XPXC and Boeing, with software demonstrations and extensive discussions, *LG for Air Force Future Systems*, Organized **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, T. Rolston (Boeing), Dr. Howard Meyer, HQ USAF/XPXC at The Pentagon, Aug. 15, 2003, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Lecture-Seminar: MDA, Boeing, XPXC, with extensive discussions, *How LG Works for Ballistic Missile Defense*, **0.5-day event**, with Dr. V. Yakhnis, O. Umanskiy, C. Paldino (SPARTA), J. Stoehr (MDA), T. Rolston (Boeing), Dr. H. Meyer (USAF/XPXC) and other scientists and engineers, Missile Defense Agency, Aug. 14, 2003, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with MDA and SPARTA, with software demonstrations and extensive discussions, *LG: Theory and Applications to Ballistic Missile Defense*, **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, C. Paldino (SPARTA), J. Stoehr, Dr. L. Altgilbers and other managers, scientists and engineers (all – MDA), Missile Defense Agency, July 1, 2003, Arlington, VA, **USA**.
- ORGANIZER, SPEAKER, PANELIST*; Workshop with Boeing, with software demonstrations and extensive discussions, *LG Technology for Space Systems*, Organized **1-day event** together with Dr. V. Yakhnis, O. Umanskiy, T. Rolston, J. Carlile, J. Shelnutt, J. Winzell, and other managers, scientists and engineers, Boeing Phantom Works and Integrated Defense Systems, June 6, 2003, Seal Beach & Huntington Beach, CA, **USA**.

*ORGANIZER, SPEAKER*; Invited session *Linguistic Geometry*, **0.5-day event** at the 2003 Symposium "Enabling Technologies for Simulation Science VII", Orlando, FL, April 25, 2003, **USA**.

*ORGANIZER, SPEAKER, PANELIST*, Workshop with Lockheed Martin (LM), with software demonstrations and extensive discussions, *LG: New Opportunities for Defense Systems*, a **0.5-day event** together with Dr. V. Yakhnis, O. Umanskiy, Dr. S. Smith, Dir. (LM), S. Reineke, Dir. (LM), D. Barton, VP (LM), J. Murray (LM), T. Barnard (LM) and other managers, scientists and engineers, Lockheed Martin Headquarters, March 26, 2003, Bethesda, MD, **USA**.

*ORGANIZER, SPEAKER, PANELIST*

**BRITISH SEMINAR SERIES V**

Feb. 28, 2003: - *LG for Defense: A Strategic View*, **4-hour Workshop** (with software demonstrations and discussion), with Dr. V. Yakhnis, O. Umanskiy, Sir Wilson, top managers and scientists (12 participants), Alenia Marconi, Kimberley, **UK**.

Feb.25-26, 2003, - **Joint British/American Workshop** at Dstl (MoD UK), UCD (USA), STILMAN (USA) with representatives from military branches of British Government, NATO, and major international companies (28 invited participants): presentations, live software demonstrations, and extensive discussions, *LG: New Opportunities for Defense Industry*, **2-day event**, with Dr. V. Yakhnis, O. Umanskiy, Sir "Sandy" Wilson, and B. Patel, Dr. P. Young, Dr. T. Gardener, Dstl, Farnborough, **UK**.

Feb. 24, 2003: - *The Power of LG-based Defense Systems*, **3-hour Presentation** (with software demonstrations and discussion), with Dr. V. Yakhnis, O. Umanskiy, Sir Wilson, top managers and scientists of the Dept. of Strategy, BAE Systems, London, **UK**.

*ORGANIZER, SPEAKER, PANELIST*, *Presentation with software demonstrations and extensive discussions*, *LG: New Technology for Strategic Wargaming*, **3-hour workshop** together with Dr. V. Yakhnis, J. Kreighbaum, Lt Col, N. Beard, J. Noss, P. Wathen, Lt Col, R. Fabian, *Wargaming and Simulation, Headquarters USAF, Jan. 30, 2003, Arlington, VA, USA*.

*ORGANIZER, SPEAKER, PANELIST*, *Presentation with software demonstrations and extensive discussions*, *LG: Predicting and Neutralizing Enemy Sensors*, **4-hour workshop** together with Dr. V. Yakhnis, M. Gray, J. Scott, T. Drzewiecki, J. Rossi, Alion Science and Technology, Jan. 28, 2003, Alexandria, VA, **USA**.

*SPEAKER, PANELIST*, *Presentation*, *LG: New Technology for Focusing Search and Analysis of Advanced Information Extraction*, **3-hour workshop** together with Dr. V. Yakhnis, S. Kimmel, B. Tagliaferri, M. Benezra, D. McAuliffe and 20 team members of the large-scale proposal to AFRL, Alion Science and Technology, Jan. 28, 2003, Washington, DC, **USA**.

**2002**

*ORGANIZER, SPEAKER, PANELIST*, *Joint American/British Workshop* with presentations, software demonstrations and extensive discussions, *Advanced Applications to Defense Systems and Foundations of Linguistic Geometry*, **2-day event**, with Dr. T. Altman, Dr. V. Yakhnis, O. Umanskiy, R. Boyd, Dr. P. Young, Dr. T. Gardener, Dec. 16-17, 2002, Denver, CO, **USA**.

*SPEAKER*, *Presentation with software demonstration and discussion*, *Linguistic Geometry: New Technology for Defense Systems*, **0.5-hour talk** at the Joint Meeting of the Industrial & Student Advisory Boards, Dept. of Computer Science and Eng., UCD, Nov.22, 2002, Denver, CO, **USA**.

*INVITED SPEAKER, PANELIST*, *Presentation with software demonstrations and extensive discussions*, *LG: Mathematical Foundations and Computational Complexity*, **4-hour workshop** together with Dr. V. Yakhnis, B. Tagliaferri, Dan McAuliffe, Alex Sisti, Dr. Tim Busch, and John McNamara, Information Directorate, Air Force Research Lab, Nov. 12, 2002, Rome, NY, **USA**.

*ORGANIZER, SPEAKER, PANELIST*, *Presentation with software demonstrations and extensive discussions*, *LG: Predictive Capability; Application to Information Extraction*, **2-hour workshop** together with Dr. V. Yakhnis, B. Tagliaferri, Dan McAuliffe, Alion Science and Technology (former IITRI), Nov.12, 2002, Rome, NY, **USA**.

*ORGANIZER, SPEAKER, PANELIST*, *Presentation with software demonstrations and extensive discussions*, *LG: New Horizons for Modeling and Simulation*, **2-hour workshop**, with J. "Snake" Clark, Lt Col K. Johns, Maj. P. Hastert (Eagle Team Solutions), Directorate of Quick Reaction Combat



- Support, Air Force, The Pentagon, Sept. 26, 2002, Washington, DC, **USA**.  
**ORGANIZER, SPEAKER, PANELIST**  
**BRITISH SEMINAR SERIES IV**  
 Sept. 3, 2002: - *LG: Wide Range of Defense Applications*, 3-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis, Dr. P. Martin, LOGICA, Cobham, Surrey, **UK**.  
 Sept. 2, 2002: - *LG for Maritime Operations and Other Applications*, 3-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, Sir Wilson, Dr. A. Low (Tech. Director), N. Moss (Dep. Director), Thales, London, **UK**.  
**ORGANIZER, SPEAKER, PANELIST**, Presentation with software demonstrations and extensive discussions, *LG: New Conceptual Model for Defense Systems*, **3-hour workshop** together with C. Warner (Euromarkt), M. Gray, J. Scott, IITRI (now Alion), Aug. 30, 2002, Alexandria, VA, **USA**.  
**ORGANIZER, SPEAKER, PANELIST**, Presentation with software demonstrations and extensive discussions, *LG: New Technology for Strategy Generation*, **3-hour workshop** together with Col Dr. B. McCrabb (DMM Ventures), C. Warner (Euromarkt), M. Upson (Executive Associate, CACI), J. A. Schandua (Senior Simulation Engineer, CACI), CACI, Aug. 30, 2002, Arlington, VA, **USA**.  
**ORGANIZER, SPEAKER, PANELIST**, Presentation with software demonstrations and extensive discussions, *LG for Effects Based Planning and Wargaming*, **3-hour workshop** together with Col Dr. B. McCrabb (DMM Ventures), C. Warner (Euromarkt), E. Geier (Director, Program Development for Army, Air Force and DARPA, ORINCON), R. Pudwill (Chief Scientist, ORINCON), ORINCON Corp., Aug. 29, 2002, Arlington, VA, **USA**.  
**ORGANIZER, SPEAKER, PANELIST**, Presentation with software demonstrations and extensive discussions, *LG: Results and Opportunities for Defense Systems*, **One-day workshop** together with Lt Gen T. Case (Former Deputy Commander in Chief and Chief of Staff, U.S. Pacific Command, Interim Dean), College of Business and Public Policy, University of Alaska at Anchorage, Aug. 15, 2002, Anchorage, Alaska, **USA**.  
**ORGANIZER, SPEAKER, PANELIST**,  
**BRITISH/EUROPIAN SEMINAR SERIES III**  
 Aug. 2, 2002: - *LG: New Technology for Operations Planning*, One-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis, Sir Wilson, Dr. J. Daily and 12 scientists (NATO C3 Agency), The Hague, **The Netherlands**.  
 Aug. 1, 2002: - *LG for Short and Long Range Planning and Resource Allocation*, Two-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis and Sir Wilson, Participants: 20 officers, NATO-SHAPE, Brussels, **Belgium**.  
 July 31, 2002: - *LG Defense Systems: Practical Approach*, Five-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, A Thompson and 5 scientists, EDS Defence Ltd., Hook, Hampshire, **UK**.  
 July 30, 2002: - *LG for Maritime Operations Planning and Execution*, Three-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, N. Moss (Dep. Director, Thales Naval), London, **UK**.  
 July 29, 2002: - *LG Technology for Aircraft Carrier Configuration Analysis and Operations*, Four-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis and Sir Wilson (all - STILMAN), J. Bray, A. Daw, C. Tovee, I. Stage (all - Alenia Marconi Ltd.), Farnborough, **UK**.  
 - *LG Technology for Defense Systems*, Three-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis, Advantage Tech. Consulting, Farnborough, **UK**.  
 July 26, 2002: - *LG for Maritime Operations*, Three-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, Dr. A. Low (Technical Director, Thales), Thales, London, **UK**.  
**ORGANIZER, SPEAKER, INSTRUCTOR**, Extended Presentations and Demonstrations of LG Applications at the **4-day long** exhibit *LG: New Technology for Defense Systems* at JAWS S3 2002 (Joint Advanced Weapons Systems, Sensors, Simulations and Support Symposium), US Air Force Academy, July 22-

- 25, 2021, Colorado Springs, CO, USA.
- INVITED SPEAKER, Linguistic Geometry: New Technology for Defense Systems, 1-hour Invited Talk, The 2002 International Symposium on Information Systems and Engineering (ISE'2002), July 17, 2002, San Diego, CA, USA.*
- ORGANIZER, SPEAKER, PANELIST;*
- BRITISH SEMINAR SERIES II**
- June 21, 2002: - *LG: New Technology for Military Operations Rehearsal*, Three-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis, Sir Wilson, Air Vice-Marshal Robinson and his staff (Permanent Joint Headquarters - PJHQ), Northwood, **UK**.
- June 20, 2002: - *Defense Applications of LG: Inside-Out*, Four-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, and Sir Wilson, Participants: 18 scientists from BAe Systems, Bristol, **UK**.
- June 19, 2002: - *LG Defense Systems: Practical Approach*, Five-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, Wing Com. T. Stephens and his staff, Dr. R. Willer (Dstl), RAF Cranwell College, Air Warfare Centre, Cranwell, **UK**.
- June 18, 2002: - *LG Technology for Modeling and Simulation*, Three-hour Presentation (with software demonstrations and discussion), with Dr. V. Yakhnis, J. Bray, J. Rutherford, Dr. D. Scott, L. Watton, Alenia Marconi Ltd., Farnborough, Hampshire, **UK**.
- June 17, 2002: - *LG: Theoretical Foundations and Advanced Applications*, Five-hour Workshop (with software demonstrations and discussion), with Dr. V. Yakhnis, Sir Wilson, B. Patel, Dr. P. Young, Dr. I. Greig, R. Frampton, Dstl, Ministry of Defence UK, Farnborough, Hampshire, **UK**.
- ORGANIZER, SPEAKER, Demonstration of LG-PROTECTOR 1.3 to the top Boeing management including J. Albaugh (Boeing Space and Communications, Director) and G. Muellner (Boeing Phantom Works, Director); Briefings at Boeing Integration Center, 2-day event together with Dr. V. Yakhnis, O. Umanskiy, and J. Hearing, P. Bloch, The Boeing Company, June 2-3, 2002, Los Angeles, CA, USA.*
- ORGANIZER, SPEAKER, PANELIST, Presentation to the Joint Synthetic Battlespace Group with software demos and extensive discussions, LG: New Opportunities for Synthetic Battlespace, 1-day event, with Dr. V. Yakhnis, Dr. S. D. Kwak, Col E. Andrew, Hanscom AFB, May 28, 2002, Boston, MA, USA.*
- ORGANIZER, SPEAKER, PANELIST, Presentation to the Collaborative Simulation Technology Branch with software demonstrations and extensive discussions, LG: Results and Opportunities for Defense Systems, 1-day event together with Dr. V. Yakhnis, B. McQuay, Dr. K. Weigand, Wright-Patterson AFB, May 23, 2002, Dayton, OH, USA.*
- ORGANIZER, INSTRUCTOR, Extended Presentation to the US Air Force Scientific Advisory Board with demonstration of PROTECTOR 1.3 and extensive discussions, Optimal Resource Allocation for the Defense against Cruise Missile Attack, Participants: Boeing Phantom Works, Rockwell Science Center, UCD, STILMAN Advanced Strategies, 2-day event together with J. Hearing, P. Bloch (all - Boeing), The Boeing Company, May 14-15, 2002, Mesa, AZ, USA.*
- SPEAKER, PANELIST, Briefing, Defense Capabilities of Linguistic Geometry, 1-hour event, together with Dr. V. Yakhnis, Charles Warner (Euromark), DARPA Program Managers from IXO (Information Exploitation) and ATO (Advanced Technologies) departments (17 attendees), May 6, 2002, DARPA, Arlington, VA, USA.*
- ORGANIZER, SPEAKER, PANELIST, Joint Seminar of Boeing Phantom Works/Rockwell Science Center/STILMAN/UCD with software demonstrations and extensive discussions, Advanced Applications and Mathematical Foundations of Linguistic Geometry, 2-day event together with Dr. J. Albert, P. Bloch, J. Hearing (all - Boeing Phantom Works), The Boeing Company, April 25-26, 2002, Seattle, WA, USA.*
- ORGANIZER, SESSION CHAIR, SPEAKER, Linguistic Geometry for Wargaming and COA Analysis (0.5-day event) at the 2002 Symposium "Enabling Technologies for Simulation Science VI", Orlando, FL,*

April 2-5, 2002, **USA**.

**ORGANIZER, SPEAKER**, Joint Seminar of STILMAN/UCD/Fujitsu Defense Systems (**Japan**) with software demonstrations, *Modeling and Simulation with Linguistic Geometry*, **1-day event**, March 21, 2002, Denver, CO, **USA**.

**INVITED SPEAKER, PANELIST**, *Defense and Commercial Applications of Linguistic Geometry*, **3-hour** Presentation (with software demonstration and discussion), with C. Wilcox, Euromarkt, Ltd, Feb. 28, 2002, Washington, DC, **USA**.

**INVITED SPEAKER, PANELIST**, *LG Based Technology for Air Force, Army, and Navy*, **3-hour** Presentation (with software demonstration and discussion), with C. Wilcox, British Embassy, Feb. 28, 2002, Washington, DC, **USA**.

**INVITED SPEAKER, PANELIST**, *Defense Capabilities of Linguistic Geometry Tools*, **3-hour** Presentation (with software demonstration and discussion), with Dr. V. Yakhnis, O. Umanskiy, RAF Air Commodore S. Peach and UK Representatives at the U.S. Central Command - CENTCOM, Jan. 31, 2002, Tampa, FL, **USA**.

**INVITED SPEAKER, PANELIST**, *LG Tools for Planning & Control of Defense Systems*, **2-hour Presentation** (with software demonstration and discussion), with V. Yakhnis, O. Umanskiy, Col. McCrabb, The US Air Force Command And Control BattleLab, Jan. 30, 2002, Hurlburt Field, FL, **USA**.

**ORGANIZER, SPEAKER, PANELIST**;

**BRITISH SEMINAR SERIES I**

Jan. 17, 2002: - *LG Technology for Air Traffic Management*, Two-hour Presentation (with software demonstration and discussion), with C. Wilcox, ACM Sir Wilson, Alenia Marconi Ltd., Farnborough, Hampshire, **UK**.

- *LG: Revolutionary Technology for Defense Systems*, Three-hour Presentation (with software demonstration and discussion), with ACM Sir Wilson, B. Patel (Dstl/MoD), UK Ministry of Defence, Farnborough, Hampshire, **UK**.

- *LG: New Wargaming Technology*, Four-hour Presentation (with software demonstration and discussion), with C. Wilcox, ACM Sir Wilson, Newman & Spurr Consultancy Ltd., Surrey, **UK**.

Jan. 16, 2002: - *Linguistic Geometry Tools for Defense Systems*, Four-hour Presentation (with software demonstration and discussion), with C. Wilcox, Royal Air Force Cranwell, Air Warfare Centre, London, **UK**.

Jan. 15, 2002: - *Various Applications of LG to Defense Systems*, Four-hour Presentation (with software demonstration and discussion), with C. Wilcox, BAe Systems, Bristol, **UK**.

Jan. 14, 2002: - *Linguistic Geometry for Command and Control*, Three-hour Presentation (with software demonstration and discussion), with C. Wilcox, UK Ministry of Defence, Synthetic Environments Coordination Office, London, **UK**.

## 2001

**INVITED SPEAKER, PANELIST**, *Linguistic Geometry: Theory and Applications*, Four-hour Presentation (with software demonstration and discussion), Defense Science and Technology Organization - DSTO, Dec. 11, 2001, Adelaide, **Australia**.

**INVITED TUTORIAL INSTRUCTOR**, Six-hour Tutorial, *Advanced Strategies for Abstract Board Games: Foundations of Linguistic Geometry*, *14th Australian Joint Conference on Artificial Intelligence - AI'01*, Dec. 10, 2001, Adelaide, **Australia**.

**ORGANIZER, SPEAKER, TUTORIAL INSTRUCTOR, PANELIST**, Workshop *LG-PROTECTOR for Integrated Defense Against Cruise Missile Attack; Future Plans*, **Two-day event** with Boeing Phantom Works (with software demonstrations and extensive discussion), The Boeing Company, November 29-30, 2001, Seattle, WA, **USA**.

**INVITED PLENARY SPEAKER, TUTORIAL INSTRUCTOR**, *Intelligent Virtual Worlds Empowered by LG Engine*, *International Conference on Computational Intelligence and Multimedia - ICCIMA-2000*, Shonan International Village, Oct. 30, 2000, Yokosuka City, **Japan**.

**INVITED SPEAKER, PANELIST**, *Linguistic Geometry: New Technology for Advanced C<sup>2</sup>, Modeling, and*

*Simulation*, Two-hour Presentation (with software demonstration and discussion), Defense Systems Group, Fujitsu, Oct. 29, 2001, Tokyo, **Japan**.

*INVITED SPEAKER*, *Linguistic Geometry: New Technology for Defense Systems*, Two-hour Presentation (with software demonstration and discussion) with O. Umanskiy, T. Altman, C. Wilcox, TRW Data Technologies Division, Oct. 2, 2001, Denver, CO, **USA**.

*INVITED SPEAKER, PANELIST*, *Linguistic Geometry Wargaming for Effects Based Operations*, One-hour Presentation (with software demo and extensive discussion) with V. Yakhnis, Workshop on Effects Based Wargaming, Air Force Research Laboratory (AFRL), July 10, 2001, Rome, NY, **USA**.

*INVITED SPEAKER*, *Linguistic Geometry: A New Type of Game Theory*, One-hour Talk (with software demonstration), Pre-Collegiate “Engineering Topics”, UCD, June 29, 2001, Denver, CO, **USA**.

*ORGANIZER, SPEAKER, TUTORIAL INSTRUCTOR, PANELIST*, *Foundations and Defense Applications of Linguistic Geometry*, Two-day Workshop of STILMAN Advanced Strategies, Boeing Phantom Works, and Rockwell Science Center (with software demonstrations and extensive discussion), The Boeing Company, June 14-15, 2001, Seattle, WA, **USA**.

*INVITED SPEAKER, PANELIST*, *Linguistic Geometry for Air Force Problem Solving*, Three-hour Presentation (with software demonstration and extensive discussion) with V. Yakhnis and O. Umanskiy, The U.S. Air Force Research Laboratory (AFRL), June 12, 2001, Rome, NY, **USA**.

*INVITED TUTORIAL INSTRUCTOR*, “Human and Robotic Wars: The Winning Strategies”, *IEEE International Conference on Robotics and Automation - ICRA-2001*, May 21-25, 2001, Seoul, **Korea**.

*ORGANIZER, SPEAKER, PANELIST*, *Linguistic Geometry: Foundations and Applications*, Joint Seminar of STILMAN Advanced Strategies, UCD, and representatives of various industries (with software demonstrations), March 23, 2001, Denver, CO, **USA**.

*SPEAKER, PANELIST*, — Talks, Software Demonstrations, Panel Discussions (with Lee, J., Feng Lin, Yakhnis, V., Umansky, O.), “LG History and Projects”, “JFACC Experiment Commander (JEC): Advanced SEAD Missions”, *Tech. Interchange Meeting with Science Fair*, DARPA JFACC Program, Feb. 5-8, 2001, San Diego, CA, **USA**.

## 2000

*INVITED PLENARY SPEAKER, TUTORIAL INSTRUCTOR*, *International Conference on Artificial Intelligence in Science and Technology - AISAT-2000*, The University of Tasmania, Dec. 16-20, 2000, Hobart, **Australia**.

*INVITED PLENARY SPEAKER, TUTORIAL INSTRUCTOR*, *The ICSC Int. Symposium on Intelligent Systems and Applications – ISA’2000*, Dec. 11-15, 2000, Wollongong, **Australia**.

*INVITED SPEAKER*,

*Artificial Intelligence: Personal Impressions;*

*From Turk to Linguistic Geometry,*

UCD REFIT Program at Chapparel, Dec. 7, 2000, Denver, CO, **USA**.

*ORGANIZER, SPEAKER, PANELIST*, *Defense and Civil Applications of Linguistic Geometry*, Joint Seminar of the Boeing Company, STILMAN Advanced Strategies, and UCD with software demonstration, Nov. 28, 2000, Denver, CO, **USA**.

*INVITED SPEAKER*, *Linguistic Geometry for Effects Based Operations*, The Boeing Company, Nov. 13, 2000, Washington, DC, **USA**.

*INVITED SPEAKER*, *Linguistic Geometry for Tactical Command and Control*, Raytheon, Nov. 8, 2000, Washington, DC, **USA**.

*INVITED SPEAKER*, *Linguistic Geometry: Winning Games, Advising Commanders, Routing Vehicles*, MITRE, Nov. 8, 2000, Washington, DC, **USA**.

*SPEAKER, PANELIST*, — Talk, Software Demonstration, Panel Discussion (with Lee, J., Feng Lin, Yakhnis, V., Umansky, O.), “JFACC Experiment Commander (JEC): New SEAD Experiments”, *Tech. Interchange Meeting with Air Operations Panel*, JFACC Program, DARPA, Oct. 31-Nov. 2, 2000, Pittsburgh, PA, **USA**.

*INVITED TUTORIAL INSTRUCTOR*, *The 2<sup>nd</sup> Int. Conference on Computers and Games – CG’2000*, October 26-28, 2000, Hamamatsu, **Japan**.

*INVITED SPEAKER, Internet Protection with LG, LATIS, Oct. 10, 2000, Boulder, CO, USA.*

*INVITED SPEAKER, Applications of LG to Various Problem Domains, Sandlot Capital, Sept. 20, 2000, Denver, CO, USA.*

*INVITED SPEAKER, LG: Background and Expectations, Softbank Venture Capital, Sept. 8, 2000, Louisville, CO, USA.*

*INSTRUCTOR, — Tutorials, Software Demonstrations (with Lee, J., Feng Lin, Yakhnis, V.), “JFACC Experiment Commander (JEC): Advanced SEAD Experiments”, Tech. Interchange Meeting with Science Fair, JFACC Program, DARPA, July 12-14, 2000, Minneapolis, MN, USA.*

*PROGRAM COMMITTEE MEMBER, SESSION CHAIR, SPEAKER (with Yakhnis, V.), The 2<sup>nd</sup> DARPA JFACC Symposium “Advances in Enterprise Control,” July 10-11, 2000, Minneapolis, MN, USA.*

*PROGRAM and STEERING COMMITTEES MEMBER, INVITED PLENARY SPEAKER, INSTRUCTOR, The 2<sup>nd</sup> Int. Symp. on Engineering of Intelligent Systems - EIS’2000, June 27-30, 2000, Paisley, UK.*

*SPEAKER (with Yakhnis, V.), JEC: First Analytical Experiments, DARPA Program Review – PMR, Multimedia long-distance conference, June 21, 2000, Denver - Thousand Oaks – Detroit – Washington - San Diego, USA.*

*SPEAKER, INSTRUCTOR, — Talk, Tutorials, Software Demonstrations (with Lee, J., Feng Lin, Chen, Y., Yakhnis, V., Umansky, O.), “JFACC Experiment Commander (JEC): First SEAD Experiments”, Tech. Interchange Meeting with Sci. Fair, JFACC Program, DARPA, May 2-4, 2000, Washington, DC, USA.*

*SPEAKER (with Yakhnis, V.), LG Prototype Development: A Roadmap, DARPA Program Review, Multimedia long-distance Conf., April 4, 2000, Denver - Thousand Oaks – Detroit – Washington - San Diego, USA.*

*ORGANIZER and CHAIR, Joint STILMAN/UCD Tech. Meeting on JFACC Project, March 24, 2000, Denver, CO, USA.*

*ORGANIZER and CHAIR, Joint STILMAN/UCD/Rockwell Tech. Meeting on JFACC Project, March 2-3, 2000, Denver, CO, USA.*

*ORGANIZER and CHAIR, Joint STILMAN/UCD/Rockwell Tech. Meeting on JFACC Project, Feb. 1, 2000, Denver, CO, USA.*

*SPEAKER, DARPA JFACC Technical Meeting for Rockwell Team, Jan. 9-12, 2000, Rockwell Science Center, Thousand Oaks, CA, USA.*

**1999**

*INVITED INSTRUCTOR, 2-hour Tutorial, LG: Winning Strategies for Multiagent Systems, The 1st Asia-Pacific Conf. on Intelligent Agent Technology – IAT’99, Dec. 14-17, 1999, Hong Kong, China.*

*PROGRAM COMMITTEE MEMBER, INVITED SPEAKER, International Workshop on Emergent Synthesis - IWES’99, December 6-7, 1999, Kobe, Japan.*

*ORGANIZER and CHAIR, STILMAN/UCD/Pioneer Technologies Tech. Meeting on JFACC Project, Nov., 1999, Denver, CO, USA.*

- KEYNOTE TALK, “Military Applications of Linguistic Geometry”;
- TALK with SOFTWARE DEMO (with Skhisov, E.), “2D Combat Simulator/ Controller;”
- TALK with SOFTWARE DEMO (with Umanskiy, O.), “Dynamic 3D User Interface for the JFACC Experiment Commander.”

*PROGRAM COMMITTEE MEMBER, SESSION CHAIR, SPEAKER (with Yakhnis, V.), 1<sup>st</sup> DARPA JFACC Symposium “Advances in Enterprise Control,” November 15-16, 1999, San Diego, CA, USA.*

*INVITED SPEAKER, Invited Lecture, “Linguistic Geometry: Strategies to Win”, The 1999 Int. Conference on Mechatronic Technology - ICMT’99, Oct. 21-23, 1999, Pusan, S. Korea.*

*SPEAKER, (with Lee, J., Chen, Y., Lin, F., Yakhnis, V.) “Agile Symbolic Mission Control and Hostile Counteraction Strategies,” DARPA JFACC Tech. Interchange Meeting, Sept. 21-23, 1999, Washington, DC, USA.*

*SPEAKER (with Yakhnis, V.), “LG Strategies for Agile Control”, DARPA JFACC Kick-off Tech. Meeting (teleconference), Sept. 1, 1999, Rockwell Sci. Center, Thousand Oaks, CA, USA.*

*CO-FOUNDER, (CHAIRMAN & CEO), STILMAN Advanced Strategies, a company to advance research*

and develop applications of Linguistic Geometry, Sept. 9 of 1999, Denver, CO, **USA**.

*INTERNATIONAL SCIENTIFIC COMMITTEE MEMBER*, The 3rd Int. Conf. on Systems, July 4-8, Athens, **Greece**.

*PROGRAM COMMITTEE MEMBER*, Int. Conf. "Problems of Control and Modeling in Complex Systems", June 14-18, 1999, Samara, **Russia**.

*INVITED SPEAKER*, Lecture, *From Games to Intelligent Systems*, Department of Electrical Eng. and Computer Science, Tulane University, March 18, 1999, New Orleans, LA, **USA**.

*INVITED SPEAKER*, Lecture, *Winning Strategies for Robot War Games*, 4th Int. Symp. *ARTIFICIAL LIFE AND ROBOTICS - AROB'99* "Challenge for Complexity", Jan.19-22, 1999, Oita, **Japan**.

## 1998

*INVITED SPEAKER*, Invited Lecture, *Solving Games by Construction of Strategies*, CTS Workshop on Combinatorics and Algorithms, Center for Theoretical Sciences (CTS), Institute of Information Science, Academia Sinica, December 21-23, 1998, Republic of China, **Taiwan**.

*PROGRAM COMMITTEE MEMBER*, The 3rd IEEE European Workshop on Computer-Intensive Methods in Control and Data Processing, "Can We Beat the Curse of Dimensionality?" Sept. 7-9, 1998, Prague, **Czech Republic**.

*ORGANIZER, INSTRUCTOR, SPEAKER, and PROGRAM COMMITTEE CHAIR*

**THIRD SYMPOSIUM on LINGUISTIC GEOMETRY:**

2 tutorial sessions: *Introduction to Linguistic Geometry: Tools and Experiments*  
*Optimal Strategies and Formal Grammars*

3 paper sessions: *Winning Strategies in Linguistic Geometry*  
*Linguistic Geometry Tools*  
*LG: Implementations*

at *IEEE Int. Conf. on Systems, Man, and Cybernetics — SMC'98*, San Diego, Oct. 11-14, 1998, **USA**.

*INVITED KEYNOTE SPEAKER*, Invited Keynote Talk, *6th Int. Workshop on Distributed Data Processing - DDP'98*, Academy of Sci., June 23-25, 1998, Akademgorodok, Novosibirsk, Siberia, **Russia**.

*INVITED SPEAKER*, Invited Lecture, Institute of Systems in Computer Science (Informatics), The Russian Academy of Science, Akademgorodok, Novosibirsk, Siberia, June 29, 1998, **Russia**.

*INVITED PANELIST*, *Ambiguity and Uncertainty in the 21st Century: Revolutions in Business, Science & Technology*, Chancellor's Scholars and Leaders Program, Panel Discussion, University of Colorado at Denver, Denver, CO, March 27, 1998, **USA**.

*INVITED INSTRUCTOR*, 4-hour Tutorial, *World Automation Congress*, May 1998, Anchorage, AK, **USA**.

*INVITED SPEAKER, INSTRUCTOR*, Invited Keynote Lecture and 4-hour Tutorial, International Symposium on Engineering of Intelligent Systems - EIS'98, Feb. 11-13, Tenerife, **Spain**.

*INVITED SPEAKER, INSTRUCTOR*, Invited Keynote Lecture and 4-hour Tutorial, *The Int. Conf. on Comp. Intelligence and Multimedia Applications*, Feb. 8-11, 1998, Monash University, Churchill, **Australia**.

*INVITED SPEAKER*, Florida State University Annual Colloquium Series in Computer Science for the Spring Semester, Jan. 22, 1998, Tallahassee, FL, **USA**.

## 1997

*INVITED SPEAKER, INSTRUCTOR*, Invited Lecture and 2.5-hour Tutorial, Asian Pacific Neural Network Assembly, ICONIP'97, jointly with the 5th Australian and New Zealand Int. Conf. on Intelligent Information Processing Systems (ANZIS'97) and the 3rd New Zealand Int. Conf. on Artificial Neural Networks and Expert Systems (ANNES'97), Nov. 24-28, 1997, Dunedin & Queenstown, **New Zealand**.

*INVITED INSTRUCTOR*, 4-hour Tutorial, ANNIE'97 - Artificial Neural Networks and other Emerging Technologies for Designing Smart Engineering Systems, Nov. 9-12, 1997, St. Louis, **USA**.

*INVITED KEYNOTE SPEAKER*, International Symposium on Intelligent Systems AMSE-ISIS'97, September 11-13, 1997, Reggio Calabria, **Italy**.

*ORGANIZER, INSTRUCTOR, SPEAKER, and PROGRAM COMMITTEE CHAIR*

**SECOND SYMPOSIUM on LINGUISTIC GEOMETRY (3-day event):**

2 tutorial sessions: *Linguistic Geometry for Modeling and Simulation; Informal Survey, Formal Issues*

2 invited paper sessions: *Linguistic Geometry for Multi-Agent Systems: Theory and Applications Construction and Verification of Strategies in LG and Other Games*  
at the 15th IMACS World Congress on Scientific Computation, Modeling and Applied Mathematics, August 24-29, 1997, Berlin, **Germany**.

*INVITED PLENARY SPEAKER, SESSION CHAIR*, World Multi-conference on SYSTEMICS, CYBERNETICS and INFORMATICS SCI '97/ISAS '97, July 7-11, 1997, Caracas, **Venezuela**.

*INVITED SPEAKER*

2 Invited Talks: *Linguistic Geometry for Planning and Control, Software Configuration Management with Programmer's Workbench,*  
4-hour Tutorial on Linguistic Geometry,  
Rockwell International Corp., Rockwell Science Center, Thousand Oaks, CA, May 8-9, 1997, **USA**.

*INVITED INSTRUCTOR*, 2-hour Tutorial *Linguistic Geometry: Problems and Solutions*, INFORMS - National Conf. on Operations Research and Management, San Diego, CA, May 4-7, 1997, **USA**.

*INVITED SPEAKER*, Seminar *Intro to Linguistic Geometry*, Tennessee Tech. University, April 28, 1997, **USA**.

*INVITED SPEAKER, CHANCELLOR'S LECTURE: Linguistic Geometry: First Contact*, University of Colorado at Denver, Denver, CO, April 2, 1997, **USA**.

*INVITED SPEAKER*, Invited Talk: *Linguistic Geometry for Intelligent Systems*, Department of Computer Science, Indiana University — Purdue University, April 11, 1997, **USA**.

*ORGANIZER, PLENARY SPEAKER, and CHAIR*  
FORUM on LINGUISTIC GEOMETRY (2-day event, 4 special sessions):  
*From Search to Analysis: Linguistic Geometry of Complex Systems*  
*Advances in Linguistic Geometry*  
*Construction of High Assurance Systems via Linguistic Geometry and Other Methods*  
*Linguistic Geometry: Foundations and Applications*  
at the 2nd Workshop of the INTERNATIONAL INSTITUTE FOR GENERAL SYSTEMS STUDIES, Jan. 1997, San Marcos, TX, **USA**.

*Marcus WHO'S WHO IN SCIENCE AND ENG., WHO'S WHO IN AMERICA, WHO'S WHO IN THE WORLD, USA.*

**1996**

*INVITED SPEAKER*, Talk "Complex Systems from the Linguistic Geometry Prospective", Proc. of the Int. Workshop *Control Mechanisms for Complex Systems: Issues of Measurement and Semiotic Analysis*, (sponsored by the US Army), Dec. 8-12, 1996, Las Cruces, **USA**.

*INVITED SPEAKER*, Talk "Introduction to Linguistic Geometry", AAAI FALL SYMPOSIUM "Learning Complex Behaviors in Adaptive Intelligent Systems, Nov. 9-11, MIT, Boston, **USA**.

*INVITED KEYNOTE SPEAKER*, 1.5-hour Keynote Talk at the V Congreso Iberoamericano de Inteligencia Artificial - the 5th Int. Congress on Artificial Intelligence of Ibero-American countries (mainly Latin America, Spain and Portugal) - IBERAMIA'96, Oct. 28 - Nov. 1, Cholula, **Mexico**.

*INVITED INSTRUCTOR, GUEST MEMBER OF THE PANEL*, One-day Tutorial "A Linguistic Geometry for Multiscale Intelligent Planning and Control: Optimal Strategies in War Scenarios, Manufacturing, Positional Games", Int. Conf. *INTELLIGENT SYSTEMS: A SEMIOTIC PERSPECTIVE*, Oct. 20-23, NIST, Gaithersburg, MD, **USA**.

*INVITED SPEAKER*, Invited Lecture, *Linguistic Geometry for Multi-agent Systems*, Research Colloquium, Department of Mathematics and Computer Science, University of Denver, Sept. 20, Denver, CO, **USA**.

*INVITED KEYNOTE SPEAKER, SESSION CHAIR, MEMBER OF THE PANEL*, Invited Lecture "Advances in Linguistic Geometry", Eleventh Int. Conference on the *Applications of Artificial Intelligence in Engineering*, Sept. 11-13, 1996, Clearwater, Florida, **USA**.

*INVITED KEYNOTE SPEAKER*, Invited Lecture (2 hours) "Fighting Dimensionality with Linguistic Geometry", IEEE Workshop on *Computer-Intensive Methods in Control and Signal Processing*,

August 28-30, 1996, Prague, **Czech Republic**.

*INVITED SPEAKER*, Talk “New Results in Linguistic Geometry”, Joint Seminar of the Departments of Computer Science and AI, University of New South Wales, Sydney, August 20, 1996, **Australia**.

*INVITED KEYNOTE SPEAKER*, Invited Lecture “Linguistic Geometry: A Hierarchy of Semantic Networks for Search Reduction”, *IV Int. Conf. on Conceptual Structures*, Sydney, August 19-22, 1996, **Australia**.

*ORGANIZER and INSTRUCTOR*,

**SUMMER SCHOOL ON LINGUISTIC GEOMETRY**, a **week-long event** at the Dept. of Applied Mathematics and Process Control, St. Petersburg University, St. Petersburg, July 1996, **Russia**.

*INVITED INSTRUCTOR*, Advanced Tutorial “Linguistic Geometry: A Formal Model of Human Reasoning for Solving Search Problems”, *Int. Conf. on Formal and Applied Practical Reasoning*, Gustav Stresemann Institut, Bonn, June 1996, **Germany**.

*INVITED SPEAKER*, Invited Talk “Advances in Linguistic Geometry: Heuristic Model Generates Optimal Solutions”, Research Seminar *Readings in Optimization*, Dept. of Mathematics, University of Colorado at Denver, April 4, 1996, Denver, **USA**.

*INVITED SPEAKER*, Invited Talk "Linguistic Geometry: Search and Knowledge Representation", Research Seminar, School of Business, CU-Boulder, March 14, 1996, Boulder, CO, **USA**.

*INVITED SPEAKER*, Invited Talk “LINGUISTIC GEOMETRY: A Cognitive Model for Autonomous Agents”, *Workshop on Biologically Inspired Autonomous Systems: Computation, Cognition and Action*, Durham, NC, March 4-6, 1996, **USA**.

*INVITED INSTRUCTOR*, Advanced Tutorial “A Linguistic Geometry for Modeling and Control”, 5th *INFORMS Conf. on Comp. Sci. and Op-s Research: Recent Advances in the Interface*, Dallas, TX, Jan. 8-10, 1996, **USA**.

## 1995

*INVITED SPEAKER*, *Local Heuristic Networks for Multi-agent Systems*, 1.5-hour Presentation at the VI *Conference of the Spanish Association for AI - CAEPIA'95*, Alicante, Nov. 1995, **Spain**.

*INVITED SPEAKER*, “Linguistic Geometry: Theory and Applications”, 2-hour Presentation at the 8th *National Conference on AI and Expert Systems*, Ciudad Guyana, October 1995, **Venezuela**.

*INVITED INSTRUCTOR*, “Heuristic Networks for Aerospace Systems Control”, Half-a-day Advanced Tutorial at the *5th Int. Conference on Human-Machine Interaction and Artificial Intelligence in Aerospace (HMI-AI-AS'95)*, Sept. 1995, Toulouse, **France**.

*SESSION CHAIR and SPEAKER*, “LG for Robotic Systems: From Partial to Total Concurrency”, *First ECPD Int. Conf. on Intelligent Automation and Advanced Robotics*, Athens, Sept. 1995, **Greece**.

*INVITED INSTRUCTOR*, Short Course “Applications of Linguistic Geometry to Robotics”, *Automation and Robotics Center* of the University of Wales, Cardiff, Sept. 1995, **United Kingdom**.

*INVITED INSTRUCTOR*, “Linguistic Geometry for Intelligent Control”, 0.5-day Tutorial on LG for Intel. Control at the *10th IEEE Int. Symp. on Intelligent Control*, Monterey, CA, August, 1995, **USA**.

*INVITED SPEAKER*, “Semiotic Structure of LG”, *IEEE/ISIC Workshop on Architectures for Semiotic Modeling and Situation Analysis in Large Complex Sys-s*, Monterey, CA, Aug. 1995, **USA**.

*INVITED INSTRUCTOR*, Half-a-day Advanced Tutorial “Heuristic Networks for Search Reduction”, *Int. Conf. on Recent Advances in Mechatronics*, Istanbul, **Turkey**, August 1995.

*INVITED SPEAKER*, One-Hour Talk “Linguistic Geometry for Software Agents,” *High Integrity Software Initiative – Research Meeting*, Sandia National Laboratories, Albuquerque, NM, **USA**, July 1995.

*INVITED INSTRUCTOR*, Half-a-day Tutorial "From Search to Analysis: Introduction to LG and Applications", *Sandia Nat'l Labs*, joint audience of researchers from Sandia, Phillips Lab, and U. of New Mexico, Albuquerque, NM, **USA**, July 1995.

*INVITED INSTRUCTOR*, Two-Day **SHORT COURSE**, “Linguistic Geometry for Autonomous Vehicles Control”, Satellite Control and Simulation Division, U.S. Air Force Phillips Laboratory, Kirtland Air Force Base, Albuquerque, NM, **USA**, June 1995.

*INVITED INSTRUCTOR*, half-a-day Tutorial “LG for Technology Transfer”, *8th Int. Conf. on Industrial & Eng. Applications of AI & Expert Systems - IEA/AIE*, Melbourne, June 1995, **Australia**.



- INVITED SPEAKER*, “Linguistic Geometry for Intelligent Control”, Joint Seminar of Departments of Computer Science and Artificial Intelligence, Univ. of New S. Wales, Sydney, June 1995, **Australia**.
- INVITED SPEAKER*, “Found-s of LG”, Dept. of Comp. Sci., U. of Sydney, Sydney, June 1995, **Australia**.
- INVITED SPEAKER*, Invited Talk, *Introduction to Linguistic Geometry: A Practical Approach*, Satellite Control and Simulation Division, U.S. Air Force Phillips Laboratory, Kirtland Air Force Base, Albuquerque, NM, **USA**, May 1995.
- INVITED INSTRUCTOR*, 3-Hour Advanced Tutorial “Space Applications of Linguistic Geometry”, 1995 *Goddard Conf. on Space Applications of AI and Emerging Information Technologies*, NASA Goddard Space Flight Center, Greenbelt, MD, May 1995, **USA**.
- PROGRAM COMMITTEE MEMBER* at the *Int. Conf. and Summer School on New Information Technologies*, Gurzuf, **Ukraine**, May 1995.
- ORGANIZER and CHAIR*, Panel Discussion *Eng. Education in USA and Eastern Europe*, Int. Conf. *Contemporary Russia: Myth and Reality*, Nat’l Endow-t for Humanities & UC Denver, **USA**, Apr. 1995.
- INVITED INSTRUCTOR*, Two-Hour Briefing “Linguistic Geometry for Aerospace Applications”, *American Institute for Aeronautics and Astronautics (AIAA) “Computing in Aerospace 10” Conference*, San Antonio, TX, **USA**, March 1995.
- SESSION CHAIR*, *American Institute for Aeronautics and Astronautics (AIAA) “Computing in Aerospace 10” Conference*, San Antonio, TX, **USA**, March 1995.
- ORGANIZER, PROGRAM COMMITTEE CHAIR, SPEAKER*, **FIRST SYMPOSIUM ON LINGUISTIC GEOMETRY AND SEMANTIC CONTROL** at the *First World Congress on Intelligent Manufacturing Processes & Systems*, **Puerto-Rico**, Feb. 1995.
- INVITED INSTRUCTOR*, Full-Day Advanced Tutorial “Applications of LG to Control and Manufacturing” at the *First World Congress on Intel. Manufacturing Processes & Systems*, **Puerto-Rico**, Feb. 1995.
- INVITED SPEAKER*, “From Search to Analysis: Linguistic Geometry Applications”, Seminar *Theoretical Issues of CAD Development*, Auto-trol Technology, Denver, CO, **USA**, Jan. 1995.