Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense											DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*					R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*							
COST ($ in Millions)	**All Prior Years**	**FY 2012**	**FY 2013#**	**FY 2014 Base**	**FY 2014 OCO ##**	**FY 2014 Total**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**Cost To Complete**	**Total Cost**
Total Program Element	-	34.444	36.826	46.875	-	46.875	51.452	54.453	57.828	58.716	Continuing	Continuing
P534: *Lincoln Laboratory*	-	27.877	32.775	37.870	-	37.870	41.846	44.707	46.003	46.797	Continuing	Continuing
P535: *Technical Intelligence*	-	3.687	3.683	8.640	-	8.640	9.606	9.746	11.825	11.919	Continuing	Continuing
P536: *Testbed for Comparative Analysis*	-	2.880	0.368	0.365	-	0.365	0.000	0.000	0.000	0.000	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Lincoln Laboratory (LL) research line program is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, technologies, components and materials in support of Lincoln Laboratory's missions in Advanced Electronics Technology, Communications Systems, Intelligence, Surveillance and Reconnaissance Systems and Technology, Tactical Systems, Space Control, and Air and Missile Defense. For FY 2013 the LL Program will support these missions by conducting research and development in five core science and engineering disciplines and four technical initiatives:

- Advanced Devices, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors.
- Optical Systems and Technologies, including the development of focal planes, integrated imagers, imaging and spectroscopic detection systems.
- RF Systems and Technologies, including the development of novel active and passive Radio Frequency (RF) sensors and development of electronic protection and electronics attack technologies and system concepts.
- Information, Computation, and Exploitation, which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.
- Cyber Security, includes developing technologies and new techniques for the protection of systems against cyber attack and exploitation.
- Technical Initiatives, include biological sciences to aid the warfighter and develop tools for biological research; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information; and novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature.

Supporting these and other priority technology and capability areas are work efforts entitled Technical Intelligence and Testbed for Comparative Analysis:

- Technical Intelligence is working to develop a comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy, and propulsion. Some details are classified, but one focus area is working to establish a broad horizon scanning and technology forecasting capability through a collaborative effort by the Department of Defense (DoD) and the Intelligence Community. This effort will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Office of Secretary Of Defense	DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*

- The Testbed for Comparative Analysis will enable the evaluation of quantitative, horizon scanning and technology forecasting techniques for discovering disruptive technologies that may impact the DoD. This effort will provide the DoD with objective ways to evaluate the accuracy of existing and future horizon scanning and technology forecasting efforts.

B. Program Change Summary ($ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	36.608	36.826	37.014	-	37.014
Current President's Budget	34.444	36.826	46.875	-	46.875
Total Adjustments	-2.164	0.000	9.861	-	9.861
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.153	-			
• SBIR/STTR Transfer	-	-			
• Baseline Adjustments	-	-	9.861	-	9.861
• Other Adjustments	-0.011	-	-	-	-

Change Summary Explanation

FY 2014 baseline adjustments are reflective of DoD S&T priorities and requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P534: *Lincoln Laboratory*	-	27.877	32.775	37.870	-	37.870	41.846	44.707	46.003	46.797	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Lincoln Laboratory (LL) research line program is an advanced technology research and development effort conducted through a cost reimbursable contract with the Massachusetts Institute of Technology (MIT). The LL Program funds innovations that directly lead to the development of new system concepts, technologies, components and materials in support of Lincoln Laboratory's missions in Advanced Electronics Technology, Communications Systems, Intelligence, Surveillance and Reconnaissance Systems and Technology, Tactical Systems, Space Control, and Air and Missile Defense. For FY 2013 the LL Program will support these missions by conducting research and development in five core science and engineering disciplines and four technical initiatives:

- Advanced Devices, with emphasis on development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors.
- Optical Systems and Technologies, including the development of focal planes, integrated imagers, imaging and spectroscopic detection systems.
- RF Systems and Technologies, including the development of novel active and passive Radio Frequency (RF) sensors and development of electronic protection and electronics attack technologies and system concepts.
- Information, Computation, and Exploitation, which seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data.
- Cyber Security, includes developing technologies and new techniques for the protection of systems against cyber attack and exploitation.
- Technical Initiatives, include biological sciences to aid the warfighter and develop tools for biological research; autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications; quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information; and novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature.

Supporting these and other priority technology and capability areas is a work effort titled Technical Intelligence. Technical Intelligence supports comprehensive understanding of technology emergence and advancement in a range of relevant scientific areas such as nanotechnology, directed energy, and propulsion. Some details are classified, but one collaborative effort by DoD and the Intelligence community is focused on establishing a broad horizon scanning and technology forecasting capability. This effort will develop insight over time into our relative position in science and technology around the world and potential impacts on capability development and future threat environments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: Advanced Electronics Technology	4.956	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Description: Development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors. ***FY 2012 Accomplishments:*** Developed new imager and electronics devices for visible and extended wavelength imaging. Continued development of photonics integrated-circuit-based coherent optical systems. Investigated novel semiconductor optical waveguide laser and amplifier designs architected for beam-combined sensing and directed energy applications.			
Title: Communications ***Description:*** Development of high-efficiency, free-space optical communications links as well as development and applications of meta materials. ***FY 2012 Accomplishments:*** Developed concepts for novel materials with improved spectral and spatial filtering for daytime optical communications. Developed high efficiency arrays of photon counting receivers for free-space coupling. Investigated distributed algorithms for dynamic networks.	2.062	0.000	0.000
Title: Intelligence, Surveillance, and Reconnaissance (ISR) ***Description:*** Development of novel active and passive Radio Frequency (RF) and electro-optic sensors useful for intelligence, surveillance, and reconnaissance applications. ***FY 2012 Accomplishments:*** Continued development of small, unmanned aerial system (UAS)-based distributed ISR architecture with multi-intelligence (multi-INT) sensor payloads. Continued development of low Size, Weight and Power (SWaP) reconfigurable RF System on Chip (SoC). Developed compact, low-power, multi-modal active imaging systems. Investigated high-resolution imaging capability using a synthetic aperture ladar. Built and demonstrated a long-endurance solar-powered UAS with high-bandwidth optical downlink technology for relaying real-time high-definition video.	5.236	0.000	0.000
Title: Net-centric Operations (NCO) ***Description:*** Developing and demonstrating the key technologies that will enable composable and dynamic multi-mission net-centric operations on the Global Information Grid. ***FY 2012 Accomplishments:*** Continued development of Knowledge Creation Services, to include improved access to massive heterogeneous data sources, resource allocation algorithms, and metadata extraction and linking algorithms. Continued development of algorithms and	1.053	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
techniques to implement trusted security of information in net-centric systems. Explored novel techniques to enable operator queries to dynamically modify algorithms.			
Title: Air and Missile Defense ***Description:*** Development of novel discrimination schemes and electronic warfare applications. ***FY 2012 Accomplishments:*** Investigated advanced concepts for the electronic protection (EP) of radars from jammers using advanced waveform and adaptive signal processing approaches. Explored concepts for a multi-beamforming antenna and receive architecture to provide extremely high sensitivity for electronic support (ES) functions. Investigated the use of laser radar in support of target characterization and identification.	1.570	0.000	0.000
Title: Space Control ***Description:*** Development of advanced remote-sensing architectures and small satellite applications. ***FY 2012 Accomplishments:*** Developed architectures and sensing technologies for satellite-based remote sensing applications. Began development of micro-satellite payload components and deployment schemes.	1.000	0.000	0.000
Title: Information, Computation, and Exploitation Sciences ***Description:*** Seeks to develop novel architectures, tools, and techniques for the processing, fusion, interpretation, computation, and exploitation of multi-sensor, multi-intelligence data. ***FY 2012 Accomplishments:*** Investigated full-motion video analytics, graph analytics, and multi-sensor fusion techniques. Developed video analysis tools on wide-area video sensor data from outdoor environments. Prototyped novel semantic analytics tailored to internet data sources. Demonstrated automatic three-dimensional construction and exploitation of a multi-intelligence world model. ***FY 2013 Plans:*** Extend video analytics work to enable end user customization and composability of video analytics engine. Develop theoretical framework for threat detection in networks and graphs. Develop a data-intensive cloud analytics infrastructure to enable collection, fusion, and exploitation of structured and unstructured datasets. ***FY 2014 Plans:*** Begin demonstration of large-scale multi-intelligence data fusion, exploitation, and visualization for specific application domains.	1.000	3.926	4.117
Title: Cyber Security	3.000	3.595	3.770

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Description: Developing technologies and new techniques for the protection of systems against cyber attack and exploitation. ***FY 2012 Accomplishments:*** Developed automated mission-relevant cyber risk assessment tools, novel hardware sensors for low-level low-artifact cyber data collection, and reference implementations for cyber testing standards. Continued work on flexible anti-tamper architecture and physically unclonable functions. Developed system for assessing Cyber situational awareness, using Lincoln Laboratory network operations. ***FY 2013 Plans:*** Develop tools to improve cyber situation awareness and simulation environments to model the impact of cyber attacks on mission effectiveness. Develop automated methods to reverse engineer malicious computer codes. ***FY 2014 Plans:*** Evaluate cyber situational awareness tools on operational networks. Evaluate the impact of cyber attacks on simulated networks and develop strategies to maximize mission effectiveness.			
Title: Advanced Devices ***Description:*** Development of materials, devices, and subsystems utilizing microelectronic, photonic, biological, and chemical technologies to enable new system approaches to Department of Defense (DoD) sensors. ***FY 2013 Plans:*** Evaluate new materials for short-wavelength infrared (SWIR) imagers. Develop proof-of-concept, ultra-low power electronics for processors. Fabricate silicon photonic devices for heterogeneous integration into coherent analog systems. Demonstrate arrays of high-power, semiconductor lasers optimized for incorporation into directed energy systems. ***FY 2014 Plans:*** Fabricate and test new SWIR imagers. Develop design and processes for full-scale, ultra-low power processors. Extend heterogeneous photonic component performance from the radio frequency (RF) to the microwave regime. Increase power scaling of directed energy laser components.	0.000	5.750	6.029
Title: Optical Systems ***Description:*** Development of focal planes, integrated imagers, imaging and spectroscopic detection systems. ***FY 2013 Plans:***	0.000	4.816	5.051

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Develop optical systems and components for space surveillance. Develop components and techniques for high-power, high-efficiency mid-wavelength infrared (MWIR) and long-wavelength infrared (LWIR) transmitters. Evaluate the performance of new concepts for extending the range of coherent laser radars. ***FY 2014 Plans:*** Continue technology development and evaluate performance of new optical space surveillance systems. Demonstrate high-efficiency MWIR/LWIR transmitters. Develop components for coherent laser radar imaging.			
Title: Radio Frequency (RF) Systems ***Description:*** Development of novel active and passive RF sensors and development of electronic protection and electronics attack technologies and system concepts. ***FY 2013 Plans:*** Complete fabrication and testing of a high-performance, low-power tunable receiver on a chip. Develop and evaluate concepts to extend the linearity of RF analog devices. Design and fabricate photonic components needed for massively channelized RF receivers. Develop RF techniques for electronic protection and attack. ***FY 2014 Plans:*** Design next generation RF receiver chips with enhanced linearity. Test components for massively channelized photonic RF receiver. Design and fabricate new RF components.	0.000	4.895	5.134
Title: Technical Initiatives ***Description:*** Technical Initiatives includes: Biological sciences to aid the warfighter and develop tools for biological research. Autonomous systems technologies with the objective of developing mobile, autonomous, robotic platforms that demonstrate key capabilities needed for a wide range of defense applications. Quantum information sciences to develop basic technologies that support the storage, transport, and computation of quantum information. Novel and engineered materials that utilize nano-manufacturing techniques to create meta or other materials with unique physical and optical properties not readily found in nature. ***FY 2012 Accomplishments:*** Biosciences: Continued development of novel tools for depression assessment using physiological biomarkers. Developed evaluation tools for rapid and accurate diagnosis of traumatic brain injury. Developed platform for gene synthesis under new Synthetic Biology initiative. Autonomous systems: Demonstrated optimized algorithms for distributed robotics networks and model-based autonomy algorithms for higher-level autonomy, and developed the technology underpinnings of a cognitive robotics architecture featuring biomimetic algorithms for true robot autonomy. Quantum Information Sciences: Continued to work on	8.000	9.793	10.269

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
optimization of qubits. Developed sources and detectors nearly capable of supporting the development of a verifiable random number generator. ***FY 2013 Plans:*** Biosciences: Grow techniques and platforms for synthetic biology research, focusing on digital-based gene synthesis. Develop tools and methods for rapid assessment of traumatic brain injury. Develop low Size, Weight and Power (SWaP) tools for physiological load monitoring. Autonomous systems: Focus on growth of shared-perception for autonomous systems, cognitive robotics (including demonstration) and multi-unmanned aerial vehicle/unmanned ground vehicle (UAV/UGV) cooperative mission operations. Quantum Information Sciences: Focus on demonstration of multi-qubit computation and development of quantum protected communications. Novel and Engineered Materials: Develop meta material designs and test material properties in support of the development of high-frequency, tunable mirrors in the mid to long-wave infrared. Develop designs and test miniature broad-band antennas utilizing negative index of refraction materials. ***FY 2014 Plans:*** Biosciences: Conduct synthetic biology research, focusing on digital-based gene synthesis. Evaluate methods for rapid assessment of traumatic brain injury. Evaluate low Size, Weight and Power (SWaP) tools for physiological load monitoring. Autonomous systems: Develop hardware optimized for autonomous control and planning. Quantum Information Sciences: Narrow focus of qubit research to one or more competing schemes. Focus on demonstration of multi-qubit computation. Demonstrate quantum protected communications. Novel and Engineered Materials: Develop high-frequency, tunable mirrors in the mid to long-wave infrared. Test miniature broad-band antennas.			
Title: Applied Research Analyses for Advancing S&T Priorities ***Description:*** In FY 2014 the Lincoln Laboratory (LL) program will include an additional project area to support studies, analyses and experiments across a wide range of complex systems problems that face the DoD. Emerging conflicts, shifting global priorities, natural disasters, and dwindling federal resources, to name a few, are all factors that will tax our ability to provide a timely and cost-effective military defense of the nation. LL will develop an agile analytical and experimental methodology for addressing the impact of proposed solutions on complex-systems-engineering challenges and will reduce this method to practice on specific problems selected by the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)). ***FY 2014 Plans:*** Assess one or more specific time-critical problems of interest to the DoD with the goal of providing a clear understanding of the source of the problem, proposed solution space, cost, and resources required to validate the proposed solutions, and conduct experimentation and analyses to support specific courses of action. The objective of these studies are to provide quick and	0.000	0.000	3.500

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P534: *Lincoln Laboratory*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
thorough reactive or proactive analyses that will aid in the DoD specific short term conflict resolution and long term strategic decision making.			
Accomplishments/Planned Programs Subtotals	27.877	32.775	37.870

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P535: *Technical Intelligence*	-	3.687	3.683	8.640	-	8.640	9.606	9.746	11.825	11.919	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Technical Intelligence supports the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) priorities through two primary mechanisms: 1) leveraging the university community through the JASONs; and 2) accessing information on the emergence, maturation, and development of technology globally.

JASONs is a group of approximately 65 appropriately cleared experts who provide detailed independent technical assessments of challenging technological problems. JASON members are primarily fully tenured professors in physics, mathematics, biosciences, and engineering disciplines who hold active Sensitive Compartmented Information-level clearances. The annual outputs of the JASONs are studies provided across the leadership and program manager levels which inform and often shape programmatic and technical decisions involving millions of dollars. JASONs were previously funded through university research programs, but their level of technical expertise in systems and development is appropriate for incorporation into Applied Research.

The technical intelligence program is working to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing, directed energy and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the Department of Defense (DoD) and the Intelligence Community (IC) to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: Technical Intelligence	3.687	3.683	8.640
Description: The mission of the Office of Technical Intelligence (OTI) is to support the ASD(R&E) imperative to prepare for an uncertain future. OTI identifies and assesses potential opportunities and threats, including novel issues as well as persistent problems or trends, to improve strategic direction and strengthen the research and engineering (R&E) portfolio. OTI maintains a robust collaboration across ASD(R&E), the Services, and the Intelligence Community (IC) to provide acquisition decision-makers a relevant awareness of emerging global Science and Technology (S&T) concepts, technologies, and capabilities.			
FY 2012 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Continued to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies focused on the areas most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program developed frameworks for S&T baseline assessments for the S&T Intelligence priorities and full technical net assessments on global technology advancement. This program continued 'five eyes' collaboration with the United Kingdom, Australia, Canada, and New Zealand to continue assessments on emerging and disruptive technologies and will leverage the best collection of methodologies for scanning/discovery, prioritization, and assessment of the military relevance for those emerging technologies. The program continued the effort of the National Academy of Sciences (under the National Research Council) through the Board of Global Science and Technology to engage globally on targeted areas of science and technology to understand global shifts and their relevance to national security. The Board sponsored several conferences in countries in reference to technologies of interest, with the initial focus on the large data challenge. In coordination with the National Intelligence Committee and the Defense Intelligence Community effort to Strengthen Science and Technology Analysis, this program continued a strong partnership with the intelligence community to provide clear feedback on products, improve articulation of S&T requirements, and define higher impact products for future development. Technical Intelligence continued to update and refine the S&T Intelligence priorities and mechanisms for increasing information flow from the intelligence community.			
FY 2013 Plans: Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will work to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing, directed energy and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the Department of Defense (DoD) and the Intelligence Community (IC) to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.			
FY 2014 Plans: Continue to focus the JASON studies and Technical Intelligence in areas critical to national security. JASON studies will be focused on the area most important in the security environment at the time. For the Technical Intelligence portion some details are classified. The program will work to develop a detailed understanding of both the opportunity and threat aspects from military-relevant technology emergence and advancement across a range of scientific, technology and capability areas. These areas include but are not limited to quantum information sciences, data analytics and data-intensive systems, novel manufacturing,			

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P535: *Technical Intelligence*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
directed energy, and other emerging technologies to fight and win in denied and contested environments. Some details are classified, but the focus is to work collaboratively across the DoD and the IC to establish a broad horizon scanning and technology forecasting capability. This capability is coupled with implementation of technical net assessments and other approaches to develop detailed analyses of the opportunities and threats posed by the technology and relevant counter-capabilities where impact appears most significant. These efforts will develop insight into our relative position in science and technology around the world over time, as well as determine potential impacts on DoD capability development and future threat environments.			
Accomplishments/Planned Programs Subtotals	3.687	3.683	8.640

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P536: *Testbed for Comparative Analysis*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
P536: *Testbed for Comparative Analysis*	-	2.880	0.368	0.365	-	0.365	0.000	0.000	0.000	0.000	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Testbed for Comparative Analysis will include a data, test and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
Title: Testbed for Comparative Analysis	2.880	0.368	0.365
Description: The Testbed for Comparative Analysis will enable the evaluation of quantitative horizon scanning and technology forecasting techniques for discovering disruptive technologies that may impact the DoD. This effort will provide the DoD with objective ways to evaluate the accuracy of existing and future horizon scanning and technology forecasting efforts.			
FY 2012 Accomplishments: Designed an initial data, test and evaluation environment to enable analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals.			
FY 2013 Plans: Implement and test the data, test and evaluation environment, and demonstrate analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy, relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals. The testbed will be developed in collaboration with other interested government agencies with modularity and expansion capabilities in mind.			
FY 2014 Plans: Implement and test the data, test and evaluation environment, and demonstrate analysis of both quantitative and qualitative techniques for technology forecasting and horizon scanning. This includes the ability to derive an understanding of accuracy,			

Exhibit R-2A, RDT&E Project Justification: PB 2014 Office of Secretary Of Defense		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602234D8Z: *Lincoln Laboratory*	PROJECT P536: *Testbed for Comparative Analysis*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2012	FY 2013	FY 2014
relevance, and robustness of analysis techniques and algorithms (for example, cluster analysis) to identify emerging technology trends and potentially disruptive weak signals.			
Accomplishments/Planned Programs Subtotals	2.880	0.368	0.365

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A