

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

Assignment ID: PATI134211

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST
CONVEYING PARTY DATA	
Name	Execution Date
COLUMBUS BUYER LLC	03/29/2024
RAYTHEON BLACKBIRD TECHNOLOGIES, INC.	03/29/2024
RAYTHEON FOREGROUND SECURITY, INC.	03/29/2024
RECEIVING PARTY DATA	
Company Name:	WELLS FARGO BANK, N.A., as Collateral Agent
Street Address:	1525 West WT Harris Blvd.
Internal Address:	1B1. MAC D110-019
City:	CHARLOTTE
State/Country:	NORTH CAROLINA
Postal Code:	28262
PROPERTY NUMBERS Total: 71	
Property Type	Number
Patent Number:	7162715
Patent Number:	7843335
Patent Number:	7924153
Patent Number:	8144008
Patent Number:	8680988
Patent Number:	8538373
Patent Number:	7970534
Patent Number:	8099235
Patent Number:	8700313
Patent Number:	9258321
Patent Number:	9392003
Patent Number:	7814822
Patent Number:	8342069
Patent Number:	8253576
Patent Number:	8636448
Patent Number:	7584808
Patent Number:	7870912

Property Type	Number
Patent Number:	9311248
Patent Number:	9292417
Patent Number:	9146767
Patent Number:	9208307
Patent Number:	9734325
Patent Number:	9696940
Patent Number:	9785492
Patent Number:	10264028
Patent Number:	10904279
Patent Number:	10901094
Patent Number:	11201884
Patent Number:	10891382
Patent Number:	11567845
Patent Number:	11347861
Patent Number:	11178159
Patent Number:	10908935
Patent Number:	11463407
Patent Number:	10891216
Patent Number:	11423150
Patent Number:	11620119
Patent Number:	11526358
Patent Number:	11544092
Patent Number:	11409635
Patent Number:	11513698
Patent Number:	11595411
Patent Number:	11630784
Patent Number:	11886350
Patent Number:	11757858
Patent Number:	10983804
Patent Number:	11379588
Patent Number:	11200147
Patent Number:	11386219
Patent Number:	11574252
Patent Number:	11599480
Patent Number:	11734161
Patent Number:	11423153
Patent Number:	11294783
Patent Number:	11677582

Property Type	Number
Patent Number:	11580006
Application Number:	16007734
Application Number:	16893904
Application Number:	17361741
Application Number:	17516101
Application Number:	17474527
Application Number:	17499161
Application Number:	17521724
Application Number:	17660180
Application Number:	18102912
Application Number:	18059095
Application Number:	18110537
Application Number:	63404783
Application Number:	63598371
PCT Number:	US2162353
PCT Number:	US2248455

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 8004945225

Email: ipteam@cogencyglobal.com

Correspondent Name: Jay daSilva

Address Line 1: 1025 Connecticut Avenue NW

Address Line 2: Suite 712

Address Line 4: Washington, DISTRICT OF COLUMBIA 20036

ATTORNEY DOCKET NUMBER:	2310424 PAT
NAME OF SUBMITTER:	Andrew Hackett
SIGNATURE:	Andrew Hackett
DATE SIGNED:	04/01/2024

Total Attachments: 12

source=1. Columbus - Patent Security Agreement (Execution Version)#page1.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page2.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page3.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page4.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page5.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page6.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page7.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page8.tif
source=1. Columbus - Patent Security Agreement (Execution Version)#page9.tif

source=1. Columbus - Patent Security Agreement (Execution Version)#page10.tif

source=1. Columbus - Patent Security Agreement (Execution Version)#page11.tif

source=1. Columbus - Patent Security Agreement (Execution Version)#page12.tif

PATENT

REEL: 066960 FRAME: 0414

PATENT SECURITY AGREEMENT

Patent Security Agreement, dated as of March 29, 2024, by Columbus Buyer LLC, a Delaware limited liability company, Raytheon Blackbird Technologies, Inc., a Virginia corporation, and Raytheon Foreground Security, Inc., a Florida corporation (individually, a “Grantor” and, collectively, the “Grantors”), in favor of WELLS FARGO BANK, N.A., in its capacity as Collateral Agent for the Secured Parties pursuant to the Credit Agreement (in such capacity, the “Collateral Agent”).

WITNESSETH:

WHEREAS, the Grantors are party to a Security Agreement dated as of March 29, 2024 (as amended, restated, amended and restated, supplemented or otherwise modified from time to time, the “Security Agreement”) in favor of the Collateral Agent pursuant to which the Grantors are required to execute and deliver this Patent Security Agreement.

NOW, THEREFORE, in consideration of the premises and to induce the Collateral Agent, for the benefit of the Secured Parties, to enter into the Credit Agreement, each Grantor hereby agrees with the Collateral Agent as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Security Agreement and used herein have the meaning given to them in the Security Agreement.

SECTION 2. Grant of Security Interest in Patent Collateral. As security for the payment or performance, as the case may be, in full of the Secured Obligations, including the Guaranty (as defined in the Credit Agreement), each Grantor hereby assigns and pledges to the Collateral Agent, for the benefit of the Secured Parties, and hereby grants to the Collateral Agent for the benefit of the Secured Parties, a security interest in, all right, title or interest in or to any and all of the following Article 9 Collateral (excluding any Excluded Assets) of such Grantor:

(a) All issued and applied for Patents of such Grantor, including those United States issued and applied for Patents listed on Schedule I attached hereto.

SECTION 3. The Security Agreement. The security interest granted pursuant to this Patent Security Agreement is granted in conjunction with the security interest granted to the Collateral Agent pursuant to the Security Agreement and the Grantors and the Collateral Agent hereby acknowledge and affirm that the rights and remedies of the Collateral Agent with respect to the security interest in the Patents made and granted hereby are more fully set forth in the Security Agreement. In the event that any provision of this Patent Security Agreement is deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall control.

SECTION 4. Termination. Upon the termination of the Security Agreement in accordance with Section 6.11 thereof, the Collateral Agent shall execute and deliver to any Grantor, at such Grantor’s expense, all documents that such Grantor shall reasonably request to evidence the termination or release of the lien on and security interest in the Patents under this Patent Security Agreement and shall perform such other actions reasonably requested by such Grantor to effect such release.

SECTION 5. Counterparts. This Patent Security Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which, taken together, shall constitute one and the same instrument. Delivery by facsimile or other electronic communication of an executed counterpart of a signature page to this Patent Security Agreement shall be effective as delivery of an original executed counterpart of this Patent Security Agreement.

SECTION 6. Governing Law. THIS PATENT SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

[Signature pages follow.]

COLUMBUS BUYER LLC, as Grantor

By: Bradford P. Meacham
Name: Bradford P. Meacham
Title: Vice President, General Counsel and
Secretary

**RAYTHEON BLACKBIRD TECHNOLOGIES,
INC., as Grantor**

By: Bradford P. Meacham
Name: Bradford P. Meacham
Title: Vice President, General Counsel and
Secretary

**RAYTHEON FOREGROUND SECURITY, INC., as
Grantor**

By: Bradford P. Meacham
Name: Bradford P. Meacham
Title: Vice President, General Counsel and
Secretary

WELLS FARGO BANK, N.A., as Collateral Agent

By: 
Name: Jordan Harris
Title: Managing Director

Schedule I
to
PATENT SECURITY AGREEMENT

UNITED STATES PATENTS AND PATENT APPLICATIONS

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
Method and Apparatus for Preemptive Monitoring of Software Binaries by Instruction Interception and Dynamic Recompilation	Columbus Buyer LLC	2003-03-17	10/390,397	7,162,715
MOBILE ASSET TRACKING UNIT, SYSTEM AND METHOD	Raytheon Blackbird Technologies, Inc.	2007-03-13	11/717,575	7,843,335
MOBILE ASSET TRACKING UNIT, SYSTEM AND METHOD	Raytheon Blackbird Technologies, Inc.	2010-11-24	12/953,502	7,924,153
MOBILE ASSET TRACKING UNIT, SYSTEM AND METHOD	Raytheon Blackbird Technologies, Inc.	2011-04-08	13/082,988	8,144,008
MOBILE ASSET TRACKING UNIT, SYSTEM AND METHOD	Raytheon Blackbird Technologies, Inc.	2012-03-26	13/430,120	8,680,988
METHODS AND APPARATUS FOR EMERGENCY TRACKING ¹	Raytheon Blackbird Technologies, Inc.	2011-05-25	13/115,680	8,538,373
MOBILE UNIT AND SYSTEM HAVING INTEGRATED MAPPING, COMMUNICATIONS AND TRACKING	Raytheon Blackbird Technologies, Inc.	2007-08-21	11/894,835	7,970,534
MOBILE UNIT AND SYSTEM HAVING INTEGRATED MAPPING, COMMUNICATIONS AND TRACKING	Raytheon Blackbird Technologies, Inc.	2011-06-27	13/169,569	8,099,235

¹ This patent is a Subject Invention.

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
MOBILE UNIT AND SYSTEM HAVING INTEGRATED MAPPING, COMMUNICATIONS AND TRACKING	Raytheon Blackbird Technologies, Inc.	2012-01-13	13/350,330	8,700,313
AUTOMATED INTERNET THREAT DETECTION AND MITIGATION SYSTEM AND ASSOCIATED METHODS	Raytheon Foreground Security, Inc.	2013-08-22	13/973,027	9,258,321
INTERNET SECURITY CYBER THREAT REPORTING SYSTEM AND METHOD	Raytheon Foreground Security, Inc.	2014-03-05	14/198,148	9,392,003
DEVICE AND METHOD FOR CONTROLLED BREACHING OF REINFORCED CONCRETE ²	Columbus Buyer LLC	2007-12-18	12/000,879	7,814,822
DEVICE AND METHOD FOR CONTROLLED BREACHING OF REINFORCED CONCRETE ³	Columbus Buyer LLC	2010-10-18	12/906,443	8,342,069
SEARCH AND RESCUE USING ULTRAVIOLET RADIATION	Columbus Buyer LLC	2009-09-04	12/554,527	8,253,576
DRILLING APPARATUS, METHOD, AND SYSTEM (DRILLING APPARATUS, METHOD AND SYSTEM, HILL)	Columbus Buyer LLC	2006-08-10	11/501,826	8,636,448
CENTRALIZER-BASED SURVEY AND NAVIGATION	Columbus Buyer LLC	2005-12-14	11/302,384	7,584,808

² This patent is a Subject Invention.

³ This patent is a Subject Invention.

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
DEVICE AND METHOD				
CENTRALIZER-BASED SURVEY AND NAVIGATION DEVICE AND METHOD	Columbus Buyer LLC	2009-08-17	12/542,529	7,870,912
Methods and Apparatuses for Monitoring Activities of Virtual Machines	Columbus Buyer LLC	2013-05-07	13/888,849	9,311,248
SYSTEM AND METHOD FOR HYPERVISOR BREAKPOINTS	Columbus Buyer LLC	2013-08-07	13/961,190	9,292,417
SECURE CLOUD HYPERVISOR MONITOR	Columbus Buyer LLC	2013-02-19	13/770,664	9,146,767
AUTOMATIC ALGORITHM DISCOVERY USING REVERSE DATAFLOW ANALYSIS	Columbus Buyer LLC	2013-08-08	13/962,829	9,208,307
HYPERVISOR-BASED BINDING OF DATA TO CLOUD ENVIRONMENT FOR IMPROVED SECURITY	Columbus Buyer LLC	2013-12-09	14/101,166	9,734,325
TECHNIQUE FOR VERIFYING VIRTUAL MACHINE INTEGRITY USING HYPERVISOR-BASED MEMORY SNAPSHOTS	Columbus Buyer LLC	2013-12-09	14/101,257	9,696,940
TECHNIQUE FOR HYPERVISOR-BASED FIRMWARE ACQUISITION AND ANALYSIS	Columbus Buyer LLC	2013-12-09	14/101,130	9,785,492
CENTRAL EMULATOR DEVICE AND METHOD FOR DISTRIBUTED EMULATION	Columbus Buyer LLC	2016-10-26	15/334,670	10,264,028
MALICIOUS CODE DETECTION	Columbus Buyer LLC	2018-06-13	16/007,734	Application under secrecy order

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
POLICY GENERATION IN AIRBORNE SYSTEMS	Columbus Buyer LLC	2018-06-14	16/008,625	10,904,279
MULTI-MODE TRACKING DEVICE ⁴	Raytheon Blackbird Technologies, Inc.	2018-08-01	16/052,501	10,901,094
BUS MONITORING SYSTEM FOR DETECTING ANOMALIES INDICATIVE OF MALFUNCTIONS OR CYBER-ATTACKS	Columbus Buyer LLC	2019-11-25	16/694,778	11,201,884
CYBERSECURITY BY I/O INFERRED FROM EXECUTION TRACES	Columbus Buyer LLC	2018-05-04	15/971,637	10,891,382
SERIAL DATA BUS NODE IDENTIFICATION SYSTEM	Columbus Buyer LLC	2019-09-18	16/574,241	11,567,845
CONTROLLING SECURITY STATE OF COMMERCIAL OFF THE SHELF (COTS) SYSTEM	Columbus Buyer LLC	2019-01-24	16/255,917	11,347,861
CROSS-DOMAIN SOLUTION USING NETWORK-CONNECTED HARDWARE ROOT-OF-TRUST DEVICE	Columbus Buyer LLC	2019-04-30	16/398,641	11,178,159
Deterministic Replay Clock	Columbus Buyer LLC	2018-08-02	16/053,468	10,908,935
POLICY ENGINE FOR CYBER ANOMALY DETECTION	Columbus Buyer LLC	2019-07-12	16/510,293	11,463,407
PARALLEL DATA FLOW ANALYSIS PROCESSING TO STAGE AUTOMATED VULNERABILITY RESEARCH	Columbus Buyer LLC	2018-12-21	16/228,963	10,891,216
SYSTEM AND METHOD FOR BOOTING	Columbus Buyer LLC	2019-04-01	16/371,191	11,423,150

⁴ This patent is a Subject Invention.

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
PROCESSORS WITH ENCRYPTED BOOT IMAGE				
Function Summarization Via Type Inference	Columbus Buyer LLC	2020-03-12	16/817,550	11,620,119
DETERMINISTIC EXECUTION REPLAY FOR MULTICORE SYSTEMS	Columbus Buyer LLC	2020-09-15	17/021,206	11,526,358
MODEL SPECIFIC REGISTER (MSR) INSTRUMENTATION	Columbus Buyer LLC	2019-08-15	16/541,623	11,544,092
ANTI-DEBUG SYSTEM	Columbus Buyer LLC	2019-08-23	16/550,056	11409635
ROOT OF TRUST ASSISTED ACCESS CONTROL OF SECURE ENCRYPTED DRIVES	Columbus Buyer LLC	2020-03-27	16/832,216	11,513,698
Adaptive, Multi-Layer Enterprise Data Protection & Resiliency Platform	Columbus Buyer LLC	2020-03-27	16/832,192	11,595,411
Low-cost Physical Tamper Detection and Response for Cryptographically Secure Sanitization	Columbus Buyer LLC	2019-11-20	16/689,362	11,630,784
SYSTEM MEMORY CONTEXT DETERMINATION FOR INTEGRITY MONITORING AND RELATED TECHNIQUES	Columbus Buyer LLC	2020-09-28	17/034,035	11,886,350
ANALOG WAVEFORM MONITORING FOR REAL-TIME DEVICE AUTHENTICATION	Columbus Buyer LLC	2020-04-21	16/854,621	11757858
PATCHING A BINARY FILE	Columbus Buyer LLC	2019-12-13	16/714,472	10,983,804
System Validation by Hardware Root of Trust (HROT) Device and System Management Mode (SMM)	Columbus Buyer LLC	2019-12-20	16/722,142	11,379,588
Architecture Agnostic Replay Verification	Columbus Buyer LLC	2019-12-19	16/720,554	11,200,147

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
DETECTION OF AN UNAUTHORIZED MODIFICATION TO STORAGE AND RESTORATION OF THE STORAGE	Columbus Buyer LLC	2020-08-24	17/000,474	11,386,219
SYSTEM AND METHOD FOR PRIORITIZING AND RANKING STATIC ANALYSIS RESULTS USING MACHINE LEARNING	Columbus Buyer LLC	2020-02-19	16/795,439	11,574,252
HARDWARE-ASSISTED IN-MEMORY HEALING	Columbus Buyer LLC	2021-03-11	17/198538	11,599,480
SYSTEM AND METHOD FOR FUZZING TEST ORCHESTRATION USING REINFORCEMENT LEARNING	Columbus Buyer LLC	2020-01-31	16/779365	11,734,161
BI-DIRECTIONAL INTERPOSITIONING OF VIRTUAL HARDWARE	Columbus Buyer LLC	2020-06-05	16/893904	
SYMBOL MAPPING FOR CONCURRENT KERNEL AND USER SPACE DEBUGGING OF A VIRTUAL MACHINE	Columbus Buyer LLC	2021-06-29	17/361741	
DETECTION OF MALICIOUS OPERATING SYSTEM BOOTING AND OPERATING SYSTEM LOADING	Columbus Buyer LLC	2020-08-18	16/996529	11,423,153
In-Vehicle Network Intrusion Detection Using Unsupervised Learning ⁵	Columbus Buyer LLC	2021-11-01	17/516,101	

⁵ This patent is a Subject Invention.

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
CONCURRENT KERNEL AND USER SPACE DEBUGGING OF GUEST SOFTWARE ON A VIRTUAL MACHINE IN THE PRESENCE OF PAGE TABLE ISOLATION	Columbus Buyer LLC	2021-09-14	17/474527	
Non-Invasive Program Execution Protection	Columbus Buyer LLC	2020-09-24	17/031240	11,294,783
DETECTING ANOMALIES ON A CONTROLLER AREA NETWORK BUS	Columbus Buyer LLC	2020-12-09	17/116370	11,677,582
DETECTING ANOMALIES ON A CONTROLLER AREA NETWORK BUS	Columbus Buyer LLC	2021-12-08	PCT/US21/062 353	
Annotated Deterministic Trace Abstraction for Advanced Dynamic Program Analysis	Columbus Buyer LLC	2021-02-01	17/164554	115,80,006
SYSTEMS AND METHODS FOR EVASIVE RESILIENCY COUNTERMEASURES	Columbus Buyer LLC	2021-10-12	17/499161	
Context-Aware, Intelligent Beaconing	Columbus Buyer LLC	2021-11-08	17/521724	
Context-Aware, Intelligent Beaconing	Columbus Buyer LLC	2022-10-31	PCT/US2022/0 48455	
Magnetic Device Emplacement Tool	Columbus Buyer LLC	2022-04-21	17/660,180	
Systems and Methods for Automated Neutralization of IDS Detected Malware Threats	Columbus Buyer LLC	2023-01-30	18/102,912	
ADAPTIVE DATA SELECTION AND REPORTING	Columbus Buyer LLC	2022-11-28	18/059,095	
Systems and Methods for Automated Generation of Playbooks	Columbus Buyer LLC	2023-02-16	18/110,537	

Patent Application Title	Owner	Filed Date	Application Number	Patent Number
for Responding to Cyberattacks				
System For Aggregating Program Analysis Tools	Columbus Buyer LLC	2022-09-08	63/404,783	
Automated Generation of Cyber Attack Models from Monitored Systems	Columbus Buyer LLC		63/598,371	