

**BIRD**

Israel-U.S.

Binational Industrial Research  
and Development Foundation



# ANNUAL REPORT 2022



**BIRD FOUNDATION**

Accelerating Growth Through Strategic Partnerships

# BIRD'S

## MISSION STATEMENT

To stimulate, promote and support  
industrial R&D of mutual benefit  
to Israel and the U.S.

# EXECUTIVE DIRECTOR'S MESSAGE - FAREWELL



The year 2022 ended with concerns over global inflation and reduced growth that resulted from Russia's invasion of Ukraine and the impact of the COVID-19 pandemic. Fears of an economic recession reversed the almost euphoric mood which followed record fundraising in 2021 by Israeli companies. The result is a significant slowdown in the flow of investment, and the workforce reductions and downsizing that come with it.

Private investment in innovation tends to be "pro-cyclical," i.e., they increase during good times and often decrease when there are signs of trouble.

The sudden and rapid changes in 2022 demonstrate once again how important it is to maintain robust and consistent government policy that supports and encourages entrepreneurship and innovation.

In this context, the question of BIRD's relevance in an atmosphere of sizeable venture capital and private investment has arisen several times and at least twice from members of BIRD's Board of Governors. In 2011, the Board posed a basic question about BIRD's role in view of significant changes that arose from the innovation and commercialization environment. In 2019, the Board directed BIRD to perform an "Impact Study" which, in a way, posed similar questions to those raised in 2011.

In my view, the answer regarding BIRD's role as it relates to the technology industries in the present and future environments is best explained by the many entrepreneurs and young Israeli companies that have been supported by BIRD in the last two decades, as well as by the U.S. companies which have collaborated with them, all facilitated and supported by the BIRD framework.

The answer can also be found in the dynamics created by the new BIRD programs, all mutually beneficial to the U.S. and Israel, which apply the BIRD model to specific sectors and expand it by leveraging the experience and capabilities of the BIRD Team, guided and supported by BIRD's Board of Governors.

2022 was a very busy year for BIRD. The BIRD Energy program completed its 13th cycle (see page 10 of this report), BIRD HLS its 7th cycle (page 14) and a new program, BIRD Cyber, was launched in July, 2022. BIRD Cyber is sponsored by the U.S. Department of Homeland Security (DHS) and the Israel National Cybersecurity Directorate (INCD). More on BIRD Cyber can be found on page 15.

The U.S.-Israel Energy Center consortia have made significant progress, demonstrating outstanding collaboration between their U.S. and Israeli members (see page 12).

Year 2022 is my 17th and last year as Executive Director of the BIRD Foundation. In 2007, we published a booklet entitled "Partnering for Progress; BIRD: 30 Years of Collaboration 1977-2007." When that booklet was published, I had only been BIRD's Executive Director for 16 months. At that time, I wrote: "We have taken steps to enter new areas of great importance from a commercial and social point of view, such as Renewable and Alternative Energy," and summarized, "I hope to be able to fulfill my own role and continue driving BIRD forward towards new horizons of success."

The last 17 years have been an incredible chapter leading an extraordinary organization, working with a group of talented and dedicated people, who I will miss very much.



I wish **Jaron Lotan**, the new Executive Director, much success. I am positive that, together with the BIRD Team and the Board of Governors' support, Jaron will find new ways to advance BIRD's important mission.

# BOARD OF GOVERNORS AND ADVISORS

## U.S. GOVERNORS



**MS. MOJDEH BAHAR | co-Chair**

Associate Director for Innovation and  
Industry Services, NIST  
Department of Commerce



**MR. ANTHONY MARCUS**

Director  
Middle East and North Africa  
International Affairs  
Department of the Treasury



**DR. SARAH STATON**

Deputy Director  
Office of Science and Technology Cooperation  
Bureau of Oceans and International Environmental  
and Scientific Affairs  
Department of State

## ISRAEL GOVERNORS



**DR. AMIRAM APPELBAUM | co-Chair**

Chief Scientist of Innovation  
Ministry of Innovation, Science and Technology  
Chairman, Israel Innovation Authority



**MR. RAM BELINKOV**

Director General  
Ministry of Finance



**DR. RON MALKA**

Director General  
Ministry of Economy and Industry

## ADVISORS

Dr. Harry Hertz

Dr. Phillip Singerman



# BOARD OF GOVERNORS

## DESIGNEES WHO HAVE ACTED ON BEHALF OF THE BOARD DURING 2022

**Dr. Shmuel Abramzon** Israel Ministry of Finance

**Mr. Andrew Conn** NIST, U.S. Department of Commerce

**Mr. Inon Elroy** Israel Ministry of Economy and Industry

**Mr. Adam Friend** U.S. Department of State

## JOINING THE BOARD MEETINGS DURING 2022

**Dr. Ami Ben Shalom** Israel Innovation Authority

**Ms. Yifat Hadaya** Israel Innovation Authority

**Mr. Ofer Lapid** Israel Innovation Authority

**Dr. Hae-Jeong Lee** NIST, U.S. Department of Commerce

**Dr. Einat Magal** Israel Ministry of Innovation, Science and Technology

**Mr. David Osborne** Yigal Arnon & Co.

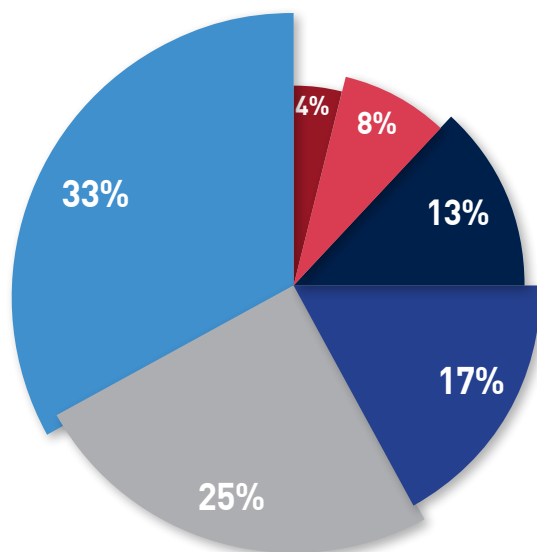
**Ms. Tara Shirazi** U.S. Department of the Treasury

## BIRD STAFF



# ACTIVITY SUMMARY

## STATISTICS - 2022



## APPROVED PROJECTS

| Sector                  | Total     |
|-------------------------|-----------|
| Agrotechnology          | 1         |
| Electronics             | 4         |
| Energy, Water, Envir. * | 6         |
| HLS & Cyber Security ** | 2         |
| Life Sciences/Med Dev.  | 8         |
| Software                | 3         |
| <b>Total</b>            | <b>24</b> |

\* includes 5 BIRD Energy projects

\*\* includes 1 BIRD HLS project

## FINANCIAL SUMMARY - 2022

|             | Income     |            |            |            | Grant Payments |            |
|-------------|------------|------------|------------|------------|----------------|------------|
|             | Endowment  |            | Repayments |            |                |            |
|             | Year (\$M) | Cum. (\$M) | Year (\$M) | Cum. (\$M) | Year (\$M)     | Cum. (\$M) |
| 2012        | 7          | 243        | 3          | 96         | 6              | 301        |
| 2013        | 8          | 251        | 3          | 99         | 8              | 309        |
| 2014        | 8          | 259        | 3          | 102        | 10             | 319        |
| 2015        | 7          | 266        | 2          | 104        | 10             | 329        |
| 2016        | 7          | 273        | 1.5        | 105        | 10             | 339        |
| 2017        | 8          | 281        | 0.9        | 106        | 7.4            | 346        |
| 2018        | 8          | 289        | 2.4        | 109        | 8.7            | 355        |
| 2019        | 8          | 297        | 1.9        | 111        | 7.8            | 363        |
| 2020        | 8          | 305        | 2.2        | 113        | 8.8            | 372        |
| 2021        | 8          | 313        | 2.3        | 115        | 9.0            | 381        |
| <b>2022</b> | <b>9</b>   | <b>322</b> | <b>0.6</b> | <b>116</b> | <b>9.0</b>     | <b>390</b> |

### Income

BIRD's annual income is comprised of interest on the Endowment Fund and Repayments from companies who have participated in projects that were successful. That annual income is at a level that allows BIRD to meet all its financial obligations.

Since its inception, BIRD has received interest of approximately \$322 million on the Endowment Fund and Repayments of approximately \$116 million from successful projects. Over that period, Grant Payments to companies have reached approximately \$390 million (all amounts are nominal, not adjusted to inflation).

## ACTIVITY SUMMARY - 2022

| Direct Sales                | Repayments                                       | Grant Payments              | Approved Projects                          |                                    |                                      |
|-----------------------------|--|-----------------------------|--|------------------------------------|--------------------------------------|
| 2022<br>\$20 million        | 2022<br>\$0.6 million                            | 2022<br>\$9 million         | Full-scale projects (2022)<br>18 projects* | Mini projects (2022)<br>0 projects | Total projects (2022)<br>18 projects |
| Cumulative<br>\$5.3 billion | Cumulative (from 477 companies)<br>\$115 million | Cumulative<br>\$390 million | Cumulative<br>872 projects                 | Cumulative<br>179 projects         | Cumulative<br><b>1,051</b> projects  |

\* Not including BIRD Energy and BIRD HLS Programs. Not including Emergency Program.

# ABOUT BIRD

The U.S.- Israel Binational Industrial Research and Development (BIRD) Foundation works to encourage cooperation between U.S. and Israeli companies in a wide range of technology sectors by providing funding and assistance in facilitating strategic partnerships for the development of joint products or technologies.

BIRD provides support of up to 50% of a project's budget (up to \$1.5 M per project), beginning with R&D and ending with the initial stages of sales and marketing. BIRD shares the risk and requires repayment only if the project achieves revenue. BIRD supports projects without receiving any equity or IP rights in the participating companies or technologies.

BIRD's scope extends to Advanced Manufacturing, Agrotechnology, Cleantech and Environment, Communications, Construction Tech, Electronics, FinTech, Gas, Healthcare IT, Homeland Security and Cyber Security, Life Sciences, Nanotechnology, Semiconductors, Software and other areas of innovative technology with commercial potential.

Since 1977, the Foundation has approved investments in over 1000 projects, which have yielded direct and indirect revenues of more than \$10 billion. BIRD approves projects twice a year. Projects are evaluated by expert reviewers appointed by the Israel Innovation Authority (IIA) and the National Institute of Standards and Technology (NIST), U.S. Department of Commerce.

The Foundation also manages BIRD Energy, a program which promotes and supports U.S.-Israel joint development projects relating to clean energy technologies. This program is the implementation of a cooperation agreement between the U.S. Department of Energy and the Israel Ministry of Energy, along with the Israel Innovation Authority. BIRD Energy adheres to the same rules and procedures as BIRD.

Another binational program managed by the BIRD Foundation is "BIRD Homeland Security (HLS)." BIRD HLS is a joint U.S.-Israel program that aims to foster and support

the development of advanced technologies for the homeland security mission. This program was established by the U.S. Department of Homeland Security (DHS) and the Israel Ministry of National Security (IMNS) as part of the agreement between the Government of the United States of America and the Government of the State of Israel on Cooperation in Science and Technology for Homeland Security Matters.

In 2018, the BIRD Foundation was selected to manage the U.S.-Israel Energy Center, fully named: The U.S.-Israel Center of Excellence for Energy, Engineering and Water Technology.

The goal of the Energy Center, established by the U.S. Department of Energy, Israel Ministry of Energy and the Israel Innovation Authority, is to promote energy security and economic development through the research and development of innovative energy technologies.

The Energy Center is a 5-year program, covering four topics: Fossil Energy, Energy Storage, Energy Cyber and Energy-Water Nexus. For each topic, a consortium of U.S. and Israeli companies and/or universities and/or research institutions jointly perform research and development, leading to know-how/technology transfer from academia to industry and significantly accelerating deployment of technologies.

BIRD Cyber is the most recent program to be added to those managed by BIRD. This brand new program was established by the U.S. Department of Homeland Security (DHS) and the Israel National Cyber Directorate (INCD) to promote collaboration on cybersecurity and emerging technologies aimed at enhancing the cyber resilience of critical infrastructure and economies of both countries by harnessing the innovation and ingenuity of the Israeli and the American technology sectors. The maximum conditional grant is \$1.5 M per project. The program was announced in July, 2022 and the first projects to be funded will be selected in March, 2023.

# APPROVED PROJECTS

## AGROTECHNOLOGY

| Israeli Co.                               | U.S. Co.                  | Title of Project                            | Additional Sector Info. |
|---|---------------------------|---|-------------------------|
| <b>TEVEL Aerobotics Technologies Ltd.</b> | <b>Vinergy, Inc. (CA)</b> | A Clean-Energy Autonomous Harvesting System | UAVs                    |

## ENERGY, WATER, ENVIRONMENT

| Israeli Co.          | U.S. Co.                                 | Title of Project   | Additional Sector Info. |
|----------------------|--|--|-------------------------|
| <b>FlyWorks Ltd.</b> | <b>DelMar Aerospace Corporation (NV)</b> | Novel High-performance UAS Solution for LargeScale Energy Infrastructure Inspections | Aeronautics             |

## HLS & CYBER

| Israeli Co.                      | U.S. Co.  | Title of Project                   | Additional Sector Info. |
|----------------------------------|---|------------------------------------|-------------------------|
| <b>High Lander Aviation Ltd.</b> | <b>Stephenson Technologies Corporation (LA)</b> | Enhanced Drone Digital Sensor Dome | Drones                  |

## ELECTRONICS/ SOFTWARE

| Israeli Co.                          | U.S. Co.                                    | Title of Project  | Additional Sector Info. |
|--------------------------------------|---|---|-------------------------|
| <b>AES Embedded Solutions Ltd.</b>   | <b>Setco Sales Company (OH)</b>             | Smart Spindle Platform Optimizing CNC Machines  | Advanced Manufacturing  |
| <b>Apeiro Motion</b>                 | <b>Hellbender Inc. (PA)</b>                 | Indoor/Outdoor Robotic Navigation System  | Robotics                |
| <b>Castor Technologies Ltd.</b>      | <b>Siemens Corporation, Technology (NC)</b> | Automatic CO2 Emission Calculation for Additive Manufacturing Process: Approach Supporting Industrial Decarbonization | Advanced Manufacturing  |
| <b>Cielo Inertial Solutions Ltd.</b> | <b>Guinn Partners LLC (TX)</b>              | Starlight-10: An Innovative Inertial Sensors Solution Designed to Fulfill "New Space" Requirements                    | Space Technology        |
| <b>Compentex</b>                     | <b>ChemImage Corporation (PA)</b>           | NurseSpace: Portable Error-Preventing Robot for Medication Verification, Dispensing and Administration                | Photonics/AI            |
| <b>Overwolf</b>                      | <b>Kidas Inc. (PA)</b>                      | Voice and Text Chat Protection in Gaming  | Voice Analysis/ NLP     |
| <b>ZutaCore Ltd.</b>                 | <b>World Wide Technology, LLC (MO)</b>      | Eco-Friendly Thermal Optimization Solution for Data Centers (ECOTH)   | Energy                  |



## LIFE SCIENCES/MEDICAL DEVICES

| Israeli Co.   | U.S. Co.  | Title of Project  | Additional Sector Info.       |
|---|---|---|-------------------------------|
| EyeFree Assisting Communication Ltd.                                      | Beth Israel Deaconess Medical Center (BIDMC) (MA) | Testing the Efficacy of the EyeControl-Pro Platform in Reducing ICU Delirium by Enabling Bidirectional Communication between Patients, Medical Teams, and Families          | Medical Devices               |
| Kadimastem Ltd.   | iTolerance, Inc. (FL)                             | Regenerative Technology to Potentially Cure Type 1 Diabetes without the Need for Chronic Immuno-Suppression   | Pharma                        |
| NewPhase Ltd.   | Ultraflex Power Technologies, Inc. (NY)           | Development of the NextGen RF Machine for Activation of Cancer Treatment Nanoparticles to Treat Metastatic Solid Tumors by Electromagnetic Hyperthermia in Stage 4 Patients | Medical Devices               |
| Xerient Pharma Ltd.   | Accuray Inc. (CA)                                 | Development of a Treatment that Combines Novel Gastrointestinal Radioprotectant with Precision Radiotherapy to Increase the Effectiveness of Treating Pancreatic Cancer     | Biotechnology                 |
| Tech Innosphere Engineering Ltd.  | Baylor College of Medicine (TX)                   | Wearable Brain Stimulation Medical Device for Treating ADHD   | Medical Devices               |
| Tel Aviv Sourasky Medical Center Ichilov represented by Ichilov Tech Ltd. | FIND Surgical Sciences Inc. (MA)                  | Clinical Decision Support System for Neurological and Psychiatric Disorders   | Software/AI                   |
| Extreme Simulations Ltd.  | SynDaver Labs (FL)                                | LifeSupport: A Patient Journey Manikin  | Healthcare Training           |
| Wavelength Enterprises Ltd.   | On Demand Pharmaceuticals, Inc. (MD)              | Strengthening the Medicine Supply Chain to Enable an Agile and Resilient Distributed Manufacturing Capability   | Pharma/Advanced Manufacturing |

# BIRD ENERGY

BIRD Energy develops innovation through U.S.-Israel cooperation in a range of clean energy technologies including renewable energy, energy efficiency, natural gas and energy-water technologies.

The program is the implementation of a cooperation agreement between the U.S. Department of Energy, the Israel Ministry of Energy jointly with the Israel Innovation Authority and the BIRD Foundation.

BIRD Energy projects address energy challenges and opportunities of interest to both countries while focusing on commercializing clean energy technologies that improve economic competitiveness, create jobs and support innovative companies.

Projects must include one U.S. and one Israeli company, or a company paired with a research institution. The partners need to present a project that involves innovation and demonstrates significant commercial potential. Awarded projects receive conditional grants of up to \$1M per project.

BIRD Energy was launched in 2009 and follows the BIRD Foundation's rules and procedures.

## BIRD ENERGY STATISTICS 2009-2022

| Approved Projects | Signed Projects <sup>(1)</sup> | Funding from Governments | Grant Payments <sup>(2)</sup> | Repayments <sup>(3)</sup> |
|-------------------|--------------------------------|--------------------------|-------------------------------|---------------------------|
| 77                | 58                             | \$49.70M                 | \$30.69M                      | \$1.39M                   |

1. Signed projects until December 31, 2022

2. Payments to projects in development phase

3. Repayments from 7 projects

## BIRD ENERGY EXECUTIVE COMMITTEE

### Members of the BIRD Energy Executive Committee during 2022 include:

**Mr. Josh Volz**, Deputy Assistant Secretary for the Middle East, Africa, Europe, and Eurasia, Office of International Affairs, U.S. Department of Energy

**Dr. Gideon Friedmann**, Chief Scientist, Israel Ministry of Energy

**Mr. James Jewell**, Deputy Director, Middle Eastern and African Affairs, Office of International Affairs, U.S. Department of Energy

**Mr. Avi Luvton**, Head of the International Collaboration Division, Israel Innovation Authority

**Dr. Einat Magal**, Deputy Chief Scientist of Innovation, Ministry of Innovation, Science and Technology (Representing BIRD's Board of Governors)

### Others who have acted on behalf of the Executive Committee during 2022

**Mr. Nick Sherman**, Office of International Affairs, U.S. Department of Energy

**Mr. John Michele**, Department of Energy Attaché, U.S. Embassy, Jerusalem

**Ms. Alla Polotsky**, Program Coordinator, U.S. Department of Energy, U.S. Embassy, Jerusalem

**Ms. Yifat Hadaya**, North America Desk, International Collaboration Division, Israel Innovation Authority

# BIRD ENERGY APPROVED PROJECTS BY SECTORS

## ENERGY EFFICIENCY



| Israeli Co.      | U.S. Co.                   | Title of Project  |
|------------------|----------------------------|---|
| KA Dynamic Color | Sign Expo Enterprises (NY) | Development of an Energy Efficient Digital Reflective Billboard |

## ENERGY - WATER NEXUS



| Israeli Co.                                      | U.S. Co.                              | Title of Project   |
|--|---------------------------------------|--|
| Ariel Scientific Innovations, Ltd.               | Nexus Energy Water Solutions LLC (NY) | Development of Integrated Water Resource Recovery and Energy Generation for Industry & Infrastructure                        |
| T.L. Environmental Protection Company Ltd. (EPC) | J.F. Allen Company (WV)               | Demonstration of a Microbiome-based, Solar Energy-operated, Remote-operated, and Self-sufficient Wastewater Treatment Plant. |

## ENERGY STORAGE / BATTERIES



| Israeli Co. | U.S. Co.                              | Title of Project  |
|-------------|---------------------------------------|---|
| Dr Ten Ltd. | DaBx Demand Side Solutions, Inc. (NY) | Development of a new Green Low-Cost Backup Power using Sea Salt Batteries for On-Grid Rooftop Solar and EV charging |

## SOLAR ENERGY



| Israeli Co. | U.S. Co.                     | Title of Project   |
|-------------|------------------------------|--|
| Xfloat Ltd. | Rettew Associates, Inc. (PA) | Demonstrating High-Performance Floating PV Solar System with HSAT Trackers and Smart Algorithmic Control |

# U.S.- ISRAEL ENERGY CENTER

The U.S.-Israel Energy Center (full name: The U.S.-Israel Center of Excellence in Energy, Engineering and Water Technology) was authorized by the U.S. Congress in the U.S.-Israel Strategic Partnership Act of 2014 and funded in the amount of \$4 M for each of the years FY 2018 - FY20 21. In 2016, the Israeli Government approved equivalent funding to expand the U.S.-Israel Cooperation.

The Israel Ministry of Energy (MOE), the Israel Innovation Authority (IIA) and the DOE approached the BIRD Foundation to manage and operate the program. BIRD's Board of Governors approved BIRD's involvement in September 2018.

In June 2018, the DOE and the MOE signed an Implementation Agreement of the U.S.-Israel Energy Center ("Energy Center"). The goal of the Energy Center is to promote energy security and economic development through the research and development of innovative energy technologies by facilitating cooperation between consortia comprised of U.S. and Israeli companies, universities and research institutions in four Topic Areas: (1) Fossil Energy; (2) Energy Storage; (3) Cyber Security for Energy Infrastructure; (4) Energy-Water Nexus. At the Energy Center Executive Committee Meeting which was held in Washington D.C., on March 4, 2020, three consortia were selected for Topics (1), (2) and (4) and were awarded \$27.6 M in grants (\$55.2 M total value, including cost-sharing). These three consortia started their activities in August and September of 2020.

A second Call for Proposals was issued for Topic (3) Cyber Security for Energy Infrastructure on July 2020 (a three-year program and the expected budget for this topic is up to \$12 M total value, including cost-sharing). On March 16, 2021; the Energy Center Executive Committee chose the Cyber consortium. The consortium started its activity in November 2021. The 2020-awarded consortia completed two years of activity, and the 2021-awarded consortium completed one year of activity. Once COVID restrictions ended in 2022, all the consortia held in-person meetings that strengthened the partnerships between the members and advanced the programs.

You can find more details about the ongoing consortia activities at <https://us-isr-energycenter.org/>.

## ENERGY CENTER FINANCES

| Funded Programs/<br>Consortia | Funding from the<br>Governments <sup>(1)</sup> | Total Grants<br>Approved <sup>(2)</sup> | Grant<br>Payments <sup>(3)</sup> |
|-------------------------------|--|---|----------------------------------|
| 4                             | \$ 35.8 M                                      | \$ 31.58 M                              | \$ 12.58 M                       |

1.Total received from both governments in the Years 2018-2022

2.Net of conditional amounts and EC management cost

3.Until December 31, 2022

## Energy Center Executive Committee

### U.S. Members

#### Mr. Nathaniel Mason

Israel Desk Officer, International Affairs,  
Department of Energy

#### Mr. Josh McKearin

Deputy Director for Europe-Eurasia  
Department of Energy

### Israeli Members

#### Dr. Gideon Friedmann

Chief Scientist  
Ministry of Energy

#### Mr. Dror Bin

CEO of the Israel  
Innovation Authority

## BIRD Board of Governors (in advisory role)

**Ms. Mojdeh Bahar** co-Chair, BIRD Board of Governors, Associate Director for Innovation and Industry Services at the National Institute of Standard and Technology, U.S. Department of Commerce

**Ms. Tara Shirazi** Israel Desk Officer, U.S. Department of the Treasury

**Mr. Jason McInerney** Science and Technology Cooperation Office, U.S. Department of State

## Joining the Executive Committee Meeting

#### Dr. Daniel Blumenthal

U.S. Department of Energy,  
Attaché at the U.S. Embassy, Jerusalem

#### Dr. Einat Magal

Deputy Chief Scientist of Innovation,  
Israel Ministry of Innovation,  
Science and Technology

#### Ms. Alla Polotsky

Program Coordinator, U.S.  
Department of Energy, U.S.  
Embassy, Jerusalem

#### Ms. Nili Shalev

VP for International Activities,  
Israel Innovation Authority

## Energy Center Management and Operations

**The Energy Center is managed and operated by the BIRD Team with the additional support of external consultants, as follows:**

**Ms. Tal Fischelovitch** Director of Partnerships

**Mr. Uri Attir** Energy Water Nexus Coordinator

**Dr. Ory Dor** Fossil Energy Coordinator

**Ms. Shiri Freund Koren\*** U.S. Coordinator

**Mr. Eynan Lichterman** Cyber Coordinator

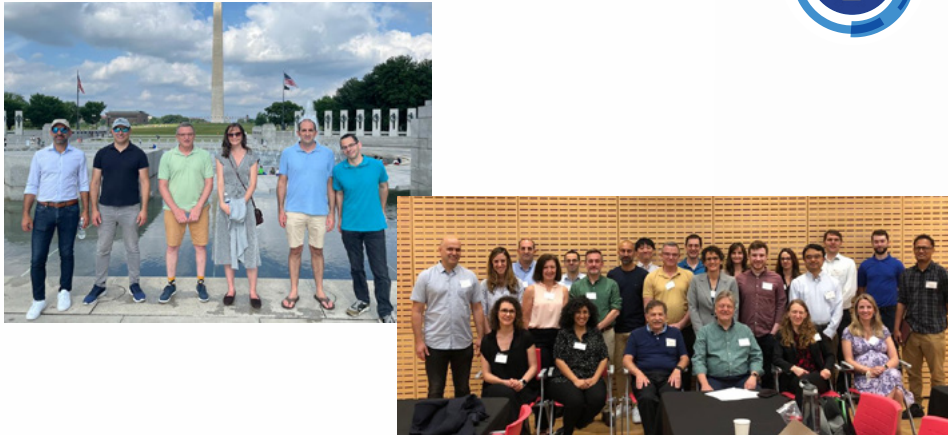
**Dr. Zvi Tamari** Energy Storage Coordinator

\*In addition to her Director of Business Development role at the BIRD Foundation



# ENERGY CENTER EVENTS

## ENERGY STORAGE CONSORTIUM



## FOSSIL ENERGY CONSORTIUM



## ENERGY-WATER NEXUS CONSORTIUM



## ENERGY CYBER CONSORTIUM





# BIRD HLS - HOMELAND SECURITY TECHNOLOGIES

Under the agreement between the Government of the United States of America and the Government of the State of Israel on Cooperation in Science and Technology for Homeland Security Matters, the U.S. Department of Homeland Security (DHS) and the Israel Ministry of National Security (IMNS) established a cooperative activity to foster and support U.S.-Israel joint development of advanced technologies for First Responders and Homeland Security Technologies.

BIRD HLS projects addressed six innovation areas as defined by DHS S&T and IMNS: Cyber Crime, Secure Critical Infrastructure and Public Facilities, Safe and Secure Cities, Border protection, Unmanned Aerial Systems and Technologies for First Responders and Homeland Security Technologies.

The BIRD HLS program is managed by the BIRD Foundation and follows the BIRD Foundation's rules and procedures.

## BIRD HLS STATISTICS 2016-2022

| Approved Projects | Signed Projects <sup>(1)</sup> | Funding from Governments | Grant Payments <sup>(2)</sup> |
|-------------------|--------------------------------|--------------------------|-------------------------------|
| 15                | 11                             | \$11.91M                 | \$6.59M                       |

1. Signed projects until December 31, 2022

2. Payments to all projects in development stage

## APPROVED PROJECT - 2022

| Israeli Co. | U.S. Co. | Title of Project  |
|-------------|----------|---|
| CyberBee    | EyeCloud | Personal Mini AI Autonomous In-Door UAV Fit for HLS Wide Deployment |

## LEAD PROGRAM REPRESENTATIVES

**Ms. Megan Mahle**, Director, Industry Partnerships, Office of Innovation and Collaboration, Science & Technology Directorate, U.S. Department of Homeland Security

**Dr. Gad Frishman**, Chief Scientist, Head of Technology Division, Israel Ministry of National Security

## BIRD BOARD OF GOVERNORS MEMBERS OR DESIGNEES

**Dr. Amiram Appelbaum**, Co-Chair of BIRD, Chairman, Israel Innovation Authority

**Ms. Mojdeh Bahar**, Co-Chair of BIRD, Associate Director for Innovation and Industry Services, NIST, U.S. Department of Commerce

**Dr. Shmuel Abramzon**, Deputy to the Chief Economist, Israel Ministry of Finance

**Mr. Inon Elroy**, Vice Director-General, Israel Ministry of Economy and Industry

**Mr. Adam Friend**, Office of Science and Technology Cooperation, covering the Middle East, U.S. Department of State

## ADVISORS AND OBSERVERS

For DHS

**Ms. Allison Garland**, Science & Technology Directorate, U.S. Department of Homeland Security

For IMNS

**Mr. Yaron Kron**, Head of Technology Section, Israel Ministry of National Security

**Mr. Yaron Shein**, R&D Division, Israel Ministry of National Security

## OTHERS

**Dr. Harry Hertz**, Advisor to BIRD

**Dr. Einat Magal**, Deputy Chief Scientist of Innovation, Israel Ministry of Innovation, Science and Technology

**Mr. Anthony Marcus**, Director for the Middle East and North Africa, the U.S. Department of the Treasury

**Ms. Tara Shirazi**, Israeli Desk, the U.S. Department of the Treasury

**Dr. Phillip Singerman**, Advisor to BIRD

# BIRD CYBER

In March 2022, the U.S. Department of Homeland Security (DHS) and the Israel National Cyber Directorate (INCD) issued a Joint Statement of Intent to “expand cooperative research and development, both bilaterally and by building on the framework of the Israel-U.S. Binational Industrial Research and Development (BIRD)” and to focus “on cybersecurity and emerging technologies.”

The BIRD Cyber program is the implementation of this statement and the result of agreements between BIRD and the U.S. Department of Homeland Security (DHS), and between BIRD and the Israel National Cyber Directorate (INCD).

The BIRD Cyber program is managed by the BIRD Foundation and follows the BIRD Foundation’s rules and procedures.

The first BIRD Cyber Call for Proposals was published in July, 2022, including four cyber challenges that were defined by DHS S&T and INCD:

1. Secured Architecture for Protecting Core Operational Processes
2. Small to Medium Airports or Seaports Real-Time Risk Assessment Solution Pilot
3. Piloting Resilience Centers for SMBs and Enterprises
4. Advanced Data Fusion and Analytics

“Through the BIRD Cyber program, DHS and INCD will harness the innovation and ingenuity of the Israeli and American technology sectors to drive security and resilience.”

DHS Under Secretary for Strategy, Policy, and Plans, Robert Silvers – July 2022

“The joint investment in public-private partnerships should advance innovative and jointly developed technologies to bring the next generation solutions for national level cybersecurity.”

INCD Director General, Gaby Portnoy – July 2022



DHS Under Secretary for Strategy, Policy and Plans, Robert Silvers (left), and INCD Director General, Gaby Portnoy (right), signing the Joint Statement of Intent, Israel, March 2022

Photo: Shilov Elenora  
Courtesy of Israel National Cyber Directorate

# BIRD SELECTION OF EVENTS 2022



**How to Find a Strategic Partner in the U.S.**  
January 6, 2022



**BIRD Call for Proposals: U.S.- Israel Joint R&D Projects**  
January 31, 2021



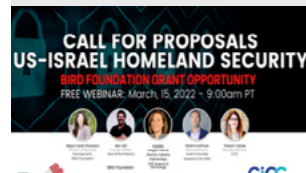
**IEI - BIRD Foundation - Accelerating Growth through Strategic Partnerships**  
February 1, 2022



**Funding Opportunities for Innovative U.S.- Israel R&D Projects**  
February 14, 2022



**NYC Israel Chamber of Commerce Launch Event**  
March 10, 2022



**BIRD HLS 2022 Call for Proposals - Webinar**  
March 15, 2022



**The Second Annual U.S.- Israel Energy Center Event**  
April 13, 2022



**BIRD Energy Non-Dilutive Funding for U.S.-Israel Collaboration**  
May 10, 2022



**BIRD Energy: Funding for U.S.-Israel Joint Innovation**  
May 25, 2022



**The Future of Smart Cities and Secured Infrastructure**  
June 8, 2022



**Cyber7 and BIRD Introducing BIRD Cyber**  
September 5, 2022



**Israel Security Business Union (ISBU) - Annual Event with the BIRD Foundation**  
September 7, 2022



**Israel - US Healthcare Innovation**  
September 12, 2022



**BIRD Cyber 2022 Call for Proposals Webinar**  
September 14, 2022



**Industrial R&D Grants: Utah & Israel**  
November 2, 2022

# SUCCESS STORIES

 **RunEL NGMT, Ltd.**

 **Anokiwave, Inc.**

## Fastest 5G Platform

Approved in December 2017

RunEL, of Israel, and Anokiwave, Inc. of San Diego, CA, developed an advanced 5G Radio Access Network (RAN) Platform (F5GP) for cellular infrastructure. The F5GP is record breaking in terms of latency. The platform combines RunEL's unique Sparq-2025 System on Chip (SoC) with Anokiwave's mmWave beam forming ICs creating a 5G infrastructure technology that can be used by 5G OEMs and 5G equipment vendors. Applications of this technology include 5G RAN network products like base stations, access points, small cells, remote radio heads (RRH), Radio Unit (5G RU), etc.

RunEL was founded in 2015 with the goal of developing a disruptive System on Chip (SoC) for 5G infrastructure. Anokiwave, founded in 1999, is a fabless semiconductor company providing highly integrated millimeter-wave silicon ICs to enable large scale commercialization of phased array active antennas for 5G, SATCOM, and A&D markets.

The R&D activities in this project included developing the beam forming technology which enables the simultaneous connection of multiple 5G terminals to the F5GP unit and supports applications that require ultra-fast and reliable responses.

The companies completed the integration and test demonstration of the F5GP capabilities, including very low latency, which was a main goal of the project.

Commercialization is ongoing and significant sales are expected as the 5G market develops.



 **Raicol Crystals, Ltd.**

 **Qubitekk, Inc.**

## Commercial Quantum Entangled Source for Quantum Computers based on PPKTP Crystal

Approved in December 2019

Raicol Crystals, of Israel, and Qubitekk, of Vista, CA, developed an efficient, miniaturized entangled photon light source with a narrow spectral output for quantum computing applications. Entangled photon sources are a critical component in the development of quantum-protected communication systems, quantum sensors, and quantum processors. Specifically, entangled photon sources with high spectral power density and narrow spectral output are needed for commercial applications related to quantum computing solutions.

Qubitekk is a leader in the design and manufacture of entangled photon sources based on non-linear crystals, as well as commercial quantum networks. Raicol Crystals is a leading developer and fabricator of high-efficiency, periodically-poled non-linear crystals. The partnership leveraged the unique expertise of each organization to develop an entangled photon source that is small, rugged, and has maximum conversion efficiency. The system is optimized to produce the high spectral brightness and narrow spectral bandwidth required for quantum communication and quantum computing devices.

The proposed technology has wide applications across the emerging quantum technology markets experiencing rapid growth over the past decade. Many applications of quantum technology will be deployed in space, including secure satellite communication networks, deep space laser communications (using terrestrial single photon counting arrays), and quantum sensors for atmospheric measurements. In addition to the aerospace industry, cybersecurity, finance and defense will constitute the largest market sectors benefiting from quantum computers.





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