



Funded by
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LIRA Innovation Program



**CALL FOR
applications
Year 2024**

PROGRAM COORDINATOR



PROGRAM PARTNERS



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Section I

LIRA INNOVATION PROGRAM

CALL FOR PROJECTS

The poster features a central lightbulb graphic with the text "APPLY NOW & GET" inside. Surrounding the lightbulb are icons and labels for "ACCELERATION", "INCUBATION", "HACKATHON", and "HEALTHCARE AGRIFOOD ICT". A "GRANTS 65,000 €" label is positioned to the right of the lightbulb. At the top, logos for the European Union, Lebanon Innovate, and IRA are displayed. The bottom section lists the program coordinator (Berytech) and partners (ANIMA, ebn, IRI, IRA, LEITET). A QR code is located at the bottom right of the poster.

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LEBANON INNOVATE

POWERED BY IRA Industrial Research Achievements - Lebanon إنجازات البحوث الصناعية - لبنان

LIRA Innovation Program
FOR YOUTH INDUSTRIAL RESEARCH PROJECTS

ACCELERATION

INCUBATION

HACKATHON

HEALTHCARE AGRIFOOD ICT

GRANTS 65,000 €

FOR MORE INFO WWW.IRALEB.ORG

DEADLINE: 29 FEBRUARY 2024

PROGRAM COORDINATOR: Berytech

PROGRAM PARTNERS: ANIMA, ebn, IRI, IRA, LEITET

The poster has a dark background with a blurred image of an industrial event. The text "Real Industrial Challenges 2024" is at the top, followed by "Call for Interest for Industrial Partnership". A large QR code is centered on the poster, with the IRA logo and name below it.

Real Industrial Challenges 2024

Call for Interest for Industrial Partnership

IRA Industrial Research Achievements - Lebanon إنجازات البحوث الصناعية - لبنان

I. Background

During the past decades the “Lebanese Industrial Research Achievements Program” (LIRA) has been intensively working in bridging University and Industry to foster cooperation and to help in transferring applied research to become useful in the socio-economic development. This program is now part of the IRALEB NGO that has a broader goal to play a significant role in the development of a national innovative ecosystem. The organisation was founded by the Ministry of Industry, the Association of Lebanese Industrialists, and the National Council for Scientific Research. IRALEB has officially partnered to date with 13 well-known Lebanese universities and several leading local industries.

The national LIRA programme (turned into an independent organisation) brings an extensive track record of supporting local researchers and a valuable network of industrialists and academia. For the last 24 years, 14 forums and exhibitions were held. 653 projects from 15 universities, in addition to projects from professional Lebanese innovators resident in Lebanon and abroad, have participated in the competition, of which 168 projects were adopted by industrialists and 202 were funded by IRALEB. Projects are mostly integrated into the industries with few start ups.

In light of its partnership with the consortium formed by Berytech, IRI and three European partners Anima, EBN and Leitat; IRALEB is currently launching the revitalization of the L.I.R.A. national program. This pioneering initiative conducted under the umbrella of "Lebanon Innovate" and funded by the “European Union” has a core mission to support youth and foster industrial advancements. This uplifting has been made possible through the collaborative efforts and support of IRALEB Lebanese and European partners (Berytech, IRI, Anima, EBN, Leitat). These partners will bring their knowledge, expertise, networks, and support in different fields to multiply the impact of the innovation process by reinforcing the work of the start-ups and innovation driven companies. These partners work on scaling entrepreneurship start-ups from Lebanon with innovative projects by providing them with exposure, business development, financing, access to market and funding opportunities, to grow regionally and internationally.

With a legacy of over 25 years, the LIRA national competition continues to evolve, aiming to go beyond its initial mission by encouraging youth to explore a broader spectrum of experiences and opportunities. In this iteration, the focus extends from supporting early-phase innovation to encompassing the entire journey, from the inception of innovative projects to the launch of startups, complete with entrepreneurship components such as hackathons, acceleration, incubation and access to EU networks and the Lebanese diaspora.

Therefore, the revamped program seeks to encourage creative students to launch pioneering start-up companies and move from the model presented in the LIRA forum to production and integration into the industrial sector. The uplifted LIRA program design new acceleration programs adapted to researchers. Inventors often miss the opportunity to protect their inventions because they lack information on the necessary steps or confidence in the way to protect their rights. Our LIRA model respecting acceleration based on IP clarifies stakeholders’ rights. Understanding the importance of an efficient IP commercialization process and mastering the opportunities for creating new businesses and companies can help the researcher create viable and commercial spin-offs and valorize innovations.

A new LIRA model respecting acceleration based on IP is now launched through Lebanon Innovate. Two editions of the LIRA program will be implemented throughout the LI project lifetime.

Iraleb and all Lebanon Innovate partners encourage students and faculty members to submit their innovative projects and partake in the revitalized L.I.R.A. program, emphasizing that IRALEB, within its mission in empowering innovations, is committed to provide an ongoing support along with its partners to innovators in their journey.

II. LIRA Innovation Call for projects

IRALEB, is launching the first edition of a Call for Innovative Youth Industrial Research Applied Projects through L.I.R.A Innovation competition for Lebanese Academic Researchers.

The ongoing LIRA program seeks to attract distinguished faculty researchers, talented students, and cultivate valuable partnerships with industries and European research institutions. In the context of Lebanon Innovate, Financial support of €50,000 will be allocated for 5 to 7 researchers/innovators to collaboratively develop prototypes and commercially viable products preferably in sponsorship with the industrial sector leading to a spinoff/startup. **(track 1)**

Complimentary to this Fund, IRALEB Board of Trustees is proposing a Fund for projects addressing industrial innovative challenges. This track involves collaboration with industrial partners to enhance new products, upgrade production lines, or develop entirely new production lines. IRALEB commits to co-funding 50% of at least three high-caliber projects, with a cap of 5,000 Euros per project. The total allocation for Track 2 is anticipated to be a minimum of 15,000 Euros, subject to the number of submitted high-caliber projects. The remaining budget will be the responsibility of the industrial partner. **(track 2)**

The call, launched for year 2024 involves:

- the selection of 25 teams for an innovation Olympics with a **capacity-building program run by Iraleb** covering **innovation management, commercialisation and support for creating spin-off companies**. Innovators will learn how pitch their proposed solutions to a panel of judges to get the chance to be selected to join the 3-months acceleration.
- The selection of 10 teams by IRALEB judging panel to participate in an **Acceleration Bootcamp, led by Berytech**, focusing on **market validation, Commercialization and IP Strategy**. Teams will also benefit from **acceleration support to develop their deliverables, prototype & investment pitches**.
- Post-acceleration, the screening committee from IRALEB will select five teams for incubation. **The incubation program, run by Berytech**, includes assistance focused on **developing business plans and prototypes, Commercialization and Product Development along with support in accessing business and technical development and funding networks**.
- **Grants, managed by IRALEB**, will be disbursed along with the incubation, leading to an award event where funded and non-funded projects will compete for the first prize.

Beneficiaries of Track 2, numbering three at least, will not only receive funding but will also participate in a capacity-building program. Notably, they are not obliged to undergo acceleration

and incubation phases. In the event of a mutual agreement with the industrialist to spin off their invention, these beneficiaries retain the option to apply for commercialization through Track 1 in the subsequent year.

III. Eligible Sectors

The call will prioritize projects and innovative solutions targeting agrifood, healthcare, pharmaceuticals, cosmetics, ICT and creative industries and their value chains.

1. Agri-Food Value Chain Sector

- Agriculture and farming
- Agricultural input
- Food Processing and Manufacturing
- Food and Beverage production
- Food Technology and innovation
- Food Packaging

2. Health care value chain sector

- Pharmaceutical companies:
- Medical Devices, equipment and accessories:
- Para-medical:
- Personal care Companies:
- Biotechnology, diagnostic and medical testing

3. ICT Value Chain Sector

- Computer hardware:
- Software development:
- Information technology (IT) services:
- Telecommunications:
- Media and entertainment:
- Cybersecurity:
- Internet of Things (IoT):
- Artificial intelligence (AI)
- Blockchain
- Digital Content Creation & Distribution

The applicant has to specify in the application the value chain sector he is targeting with the appropriate sub- sector based on the project focus. The L.I.R.A program encourages innovative solutions across the entire value chain in these sectors. Only projects within these three sectors (Agri-Food, Healthcare, ICT) are covered under Lebanon Innovate.

If the project falls into another category not listed, researcher will not be eligible for the current LIRA Fund but still he will have the opportunity to participate in the forum to be held on November 2024 and compete for prizes.

IV. Eligible Researchers

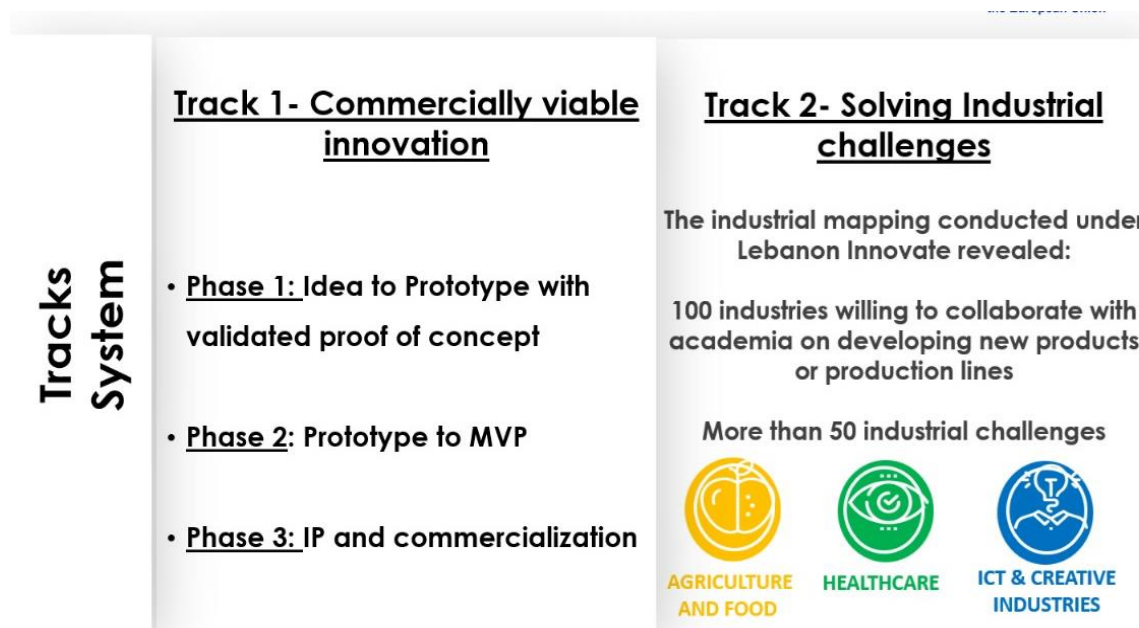
To be eligible for consideration in the **LIRA Innovation Program 2024**, projects must meet the following criteria:

- Applied research projects prepared by students under the supervision of faculty members, either on their final year of an accredited bachelor of engineering program, a masters of sciences or engineering program, or within doctorate programs. Students should be enrolled in a recognized university.
- Applied research projects submitted by professionals, affiliated with a university in Lebanon, specifically faculty members of universities.
- Strongly leading to tangible industrial development.
- Submitted through the online application portal before the specified deadline.
- Indicative of rigorous applied research outcomes.
- Preferably with published and validated proof of concept
- Leading to a functional prototype that would be showcased during the LIRA 17 Forum
- Preferably developed with a partner Industrialist or a sponsor industrialist.

V. Two distinct Tracks of LIRA Innovative Program

To diversify the support offered by the LIRA Program, IRALEB establish a dual-track system. Alongside the existing track designed for commercially viable innovations, a second track was introduced specifically for projects with industrial applications. This track would cater to initiatives aimed at enhancing industry operations, such as optimizing production processes, increasing efficiency, or developing improved material mixtures.

Both tracks run concurrently, offering a diverse range of support for projects with either commercially viable innovations or industrial applications.



Track 1: Applications aiming to ***develop commercially viable innovations***, encompassing all stages from idea to prototype, prototype to minimum viable product (MVP), and MVP to Research Commercialization & intellectual property (IP). The outcome is an ***innovative startup or spinoff (funded through Lebanon Innovate)***. These innovations can be supported by an industrialist (he is a sponsor in this case).

Track 2: Other applications can advance ***proposals to address real industrial challenges, developed directly in partnership with related industries***. IRALEB will co- fund at least three projects undertaken by academics with the purpose of upgrading new products and production lines or developing new production lines or products with partner industries. The industrialist engages to finance the remaining cost of the developed project. In this track, a Letter of engagement from a valid industrialist should be provided in case the project is developed in partnership with an industry based on an industrial challenge (a template can be downloaded from the application).

This industrial track would parallel the original innovation track, incorporating some overlapping elements while also providing targeted technical workshops pertinent to the projects' focus areas. These could include sessions on cutting-edge AI algorithms, recent advancements in manufacturing processes, or specialized knowledge from European experts to bolster project development.

VI. Real Industrial challenges & Potential Partnerships

To guide researchers, IRALEB conducted a mapping encompassing over 100 industries interested in collaboration across industrial challenges in agrifood, ICT, and the health sector identifying over 50 challenges.

Generic challenges mapped in October 2023 are available on IRALEB website. The list of challenges is not restrictive, giving you the flexibility to address other industrial challenges.

Looking for a Lebanese Industrial Partner?

For those seeking Lebanese Industrial Partners, here are the steps:

- Researchers interested in partnering with Lebanese Industrialists to address real industrial challenges can fill out an [online registration form](#). This partnership is not restrictive, allowing researchers to collaborate with other industrialists and apply for LIRA funding.
- IRALEB assists in matching researchers' interests with challenges proposed by Industrialists, facilitating connections with the right partner.

Partnering Opportunities

Online Call for Interest for a Potential Industrial Partnership under LIRA

If you are interested in addressing Real industrial Challenges in collaboration with an industrial Partner, IRALEB will connect you with the right partner. We will match your field of interest with the challenges proposed by the industrialists.

The Industrial Mapping conducted in October 2023 under Lebanon Innovate near over 100 industries engaged in the above selected fields, revealed more than 50 challenges distributed as follows: 20 in Agrifood, 20 in Healthcare and 10 in ICT. All these challenges, that could be used for the LIRA 2024 call were grouped into 5 Generic challenges for the agri-food sector, 8 for the Healthcare and 9 for the ICT sector.

This list is not restrictive: You can still partner with other industrialists and apply for LIRA funding.

Watch the teaser to know more <https://rb.gy/fjo3fi>

How to Engage:

1. Fill [the online Form](#) of the Call for interest:
Express your interest for partnership by filling out the online form provided by IRALEB.
2. Field of Interest Matching:
IRALEB will match your field of interest with challenges proposed by industrialists.
3. List of Interested Partners:
IRALEB will connect you with interested industrial partners.
4. Schedule a Visit:
Arrange a visit to the premises of potential partners for a detailed discussion and potential collaboration.
5. Researcher co-apply with industry sponsor
Fill the LIRA application supported by your industrial partner who will co-fund your project along with IRALEB.

This initiative aims to connect innovators with industrial partners, fostering collaborative solutions to significant challenges. Participate in the LIRA program, and IRALEB will guide you in establishing valuable industrial partnerships.

Fill the [Online Form](#) and embark on a journey of industrial collaboration in the LIRA program!



<https://forms.office.com/r/n81pMmYPGK>

Having collaboration with other Lebanese and international partners?

- LIRA call prioritizes applications resulting **from collaborative efforts between Lebanese universities, and projects undertaken in cooperation with international academic institutions.**

By fostering such collaborations, we aim to enhance the quality and impact of the projects, leveraging the diverse expertise and resources available through these partnerships. This approach reflects IRALEB commitment to promoting cross-disciplinary and international collaboration for the benefit of innovation and knowledge exchange in various fields.

VII. Screening

IRALEB qualified specialists will evaluate and assess received applications based on the criteria and conditions outlined in the Grant management strategy published on IRALEB website. Final decisions on accepted projects will be communicated two weeks after the application closing date.

Beneficiaries will be selected based on a transparent call for application, screening process and grades rated by an evaluation committee.

70% is based on grades for Innovation

30% is allocated for applicability to the market.

The evaluation criteria will privilege:

For Track 1:

- Teams committed to be established as legal entities to access funding with a clear governance model;
- Researchers with Implemented Prototypes aiming for MVP
- Teams having an applied research or innovation project/prototype with IP component;
- Innovative Projects with potential to create commercial spin offs that create impact
- Projects Focused on Research Commercialization and Intellectual Property (IP)
- Applications supported by industrial partners will be given special consideration.

For Track 2:

- Projects addressing and solving industrial challenges
- Researchers Co-applying with Industry Partners with financial engagement.

VIII. Application Process:

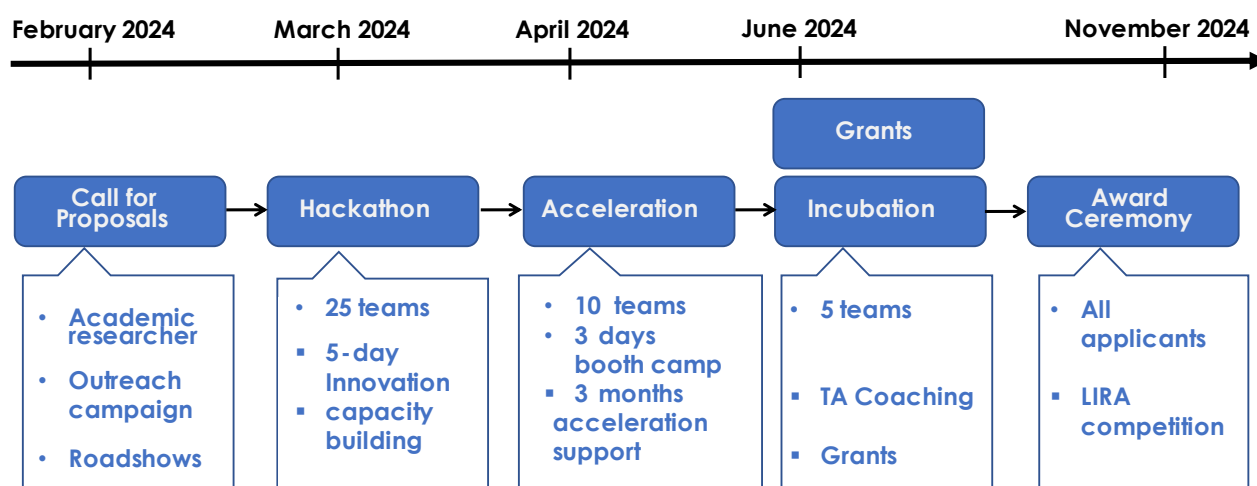
- Once accepted, applicants are notified to provide a hard copy of the submitted proposal.
- The proposal retained for funding must be signed by the Academic Supervisor(s), Dean (or authorized signatory) of the concerned Faculty, and the Industrial Partner if exists.
- Applications supported by an endorsement letter from industrialists, specifying their contribution to the project, are privileged for track 1.
- Engagement letter from the industrialist is a prerequisite for Track 2.

Hackathon and Selection:

- 25 successful teams will participate in the hackathon, presenting their innovative ideas with supervisors.
- The LIRA screening committee selects 10 teams for the next step in acceleration (Track 1) and three teams for the Fund (Track 2).

IX. LIRA activities and Phases

The LIRA Program' Track 1 comprises multiple phases such as the Hackathon Phase, Acceleration Phase, Incubation Phase, Award ceremony each with specific objectives and activities. Eligibility for all four stages will be assessed by IRALEB Jury Committee based on the researcher idea, performance, innovation, participation and accomplishments. Applicants meeting these criteria will progress through the different phases of the LIRA Program, ultimately contributing to the program's goal of fostering innovation and research commercialization.



Innovators engaged in LIRA Program' Track 2 will not undergo acceleration and incubation support. They will participate in the hackathon only and move to the next phase of Grants starting April 2024. They will expose their prototype in the award ceremony in November 2024.

Phase I: Capacity-building Hackaton [by IRALEB experts]. (March 2024)

The hackathon will host innovators willing to expose commercially innovative ideas or solve Industry Challenges and will receive capacity building focused on innovation management. The hackathon will focus on: Innovation Management, Result Commercialization, Creating SpinOffs.

Capacity building: Students and researchers will be invited to participate in the innovation olympics to present their technological solutions to industrial challenges in the identified priority sectors. Then, they will undergo a capacity-building program covering topics such as innovation management, commercialization of research results, and support for creating spin-off companies, all dedicated to researchers in academia. A practical approach based on exercises and case studies will be adopted; in 40 hours, participants will be trained to submit a project work by the end of the training program. A minimum of 50 researchers will be trained. The first program edition will select 10 ideas for the following acceleration phase.

Phase 2: Acceleration [by Berytech experts]. (April - June, 2024):

An acceleration bootcamp of up to 25 hours will gather 10 teams to empower them on the essence of validating their innovation project in the market, defining their commercialization and IP strategies. The Bootcamp will focus on: Market validation, Commercialization, IP Strategy.

Tailored research acceleration support for researchers and industrialists in the form of group coaching sessions totaling 20 hours over 3 months to assist entrepreneurs in developing their deliverables, prototypes and investment pitch deck. At the end of the acceleration path, 5 to 7 teams will be selected by a professional screening committee to benefit from incubation by Berytech in first edition.

Phase 3a: Incubation [by Berytech experts]. (June - October, 2024)

The incubation program for the selected teams includes technical assistance in developing the business plan and prototype in the form of coaching in-depth follow up providing support in accessing business and funding networks, in addition to managing grants to assist the teams in spending on their business and technical development and access external markets.

Phase 3b: Grants [by IRALEB]. (June – October, 2024)

LIRA innovation program, under Lebanon Innovate will provide financial support for 5 to 7 researchers and innovators with a total envelope of € 50,000 for year 2024 to enable them to develop prototypes and minimum viable products, validate their innovations in the market, explore commercialization opportunities, develop their IP rights and business plans and be able to raise funds.

In addition, IRALEB will co-fund for not less than 15,000 euros three applied research projects (5000 euros per project) answering industrial challenges in partnership with an industry.

Grant budget will be based on the detailed budget provided by the applicant and will be subject to review and re-evaluation by IRALEB specialists.

Furthermore, the issuance of any reimbursement will follow the assessment of submitted official invoices and receipts, as well as the milestones achieved. The final settlement is conditional on engaging in all incubation steps, the execution, and demonstration of the project's functional prototype in the LIRA Forum.

Phase 4: Award Ceremony (November 2024)

Closing Event with award distribution: an Award ceremony will be organized to exhibit prototypes in the forum and give special price awards.

X. Eligible expenses

Phase 1: Idea to Prototype Track & Prototype to MVP Track:

The investment costs include: production machineries, equipment; non customized computer programmes; construction works. The running costs include: raw materials, consumables; rental of production equipment; subscription plans for information services; technical assistance, testing, visibility material.

Phase 2 & 3: Research Commercialization & IP Track:

Expenses covered under this component include:

- Prototyping , Testing, Certification, Intellectual Property Protection, IT component development, Process improvement, Launch strategy, Marketing strategy, Business development, Feasibility of new product: basic research, opportunity analysis, market research, concept development, prototyping and testing
- Software development: (front-end, backend algorithm development)
- Hardware development (engineering, industrial product design, product adaptation)
- Formula development for non-tech innovation, such as recipes/shelf life for agrifood, mixes of inputs for new products, etc.

Grants managed by IRALEB will be disbursed based on a clear growth roadmap according to a Published Grant management Procedure.

XI. Expected achievements & KPI under Lebanon Innovate

- a) 50 teams of researchers trained in bootcamp (2 editions)
- b) 20 teams received acceleration bootcamp and support (2 editions)
- c) 10 teams incubated (2 LIRA editions) & 10 Grants for 100.000 euros
- d) 10 spinoff/startups projects launched

XII. Submission

LIRA Fund applications should be filled online by visiting our website, and following the detailed steps, at: www.iraleb.org. <https://iraleb.org/applyforfunding/>

Before starting the application, applicant has to carefully read the eligibility conditions, and LIRA assessment criteria.

The application requires to provide a thorough and detailed description of the project, uniqueness and innovation, detailed design, detailed budget, proof of viable industrial application of the project, expected deliverables and virtual render of the proposed project.

XIII. Deadline

Online applications for the LIRA Innovation competition are open from February 10, 2024, and will close on February 29, 2024.

Each applicant is provided with a unique username and password to save, update, and submit the application at any time before the deadline.

Additionally, applicants can track their application status and receive notifications for updates or requested materials such as videos or photos.

The final deadline for all applications is February 29, 2024. After this date, no further applications or modifications will be accepted.

Applicants are encouraged to refer to the website and application guide to start preparing the required information.

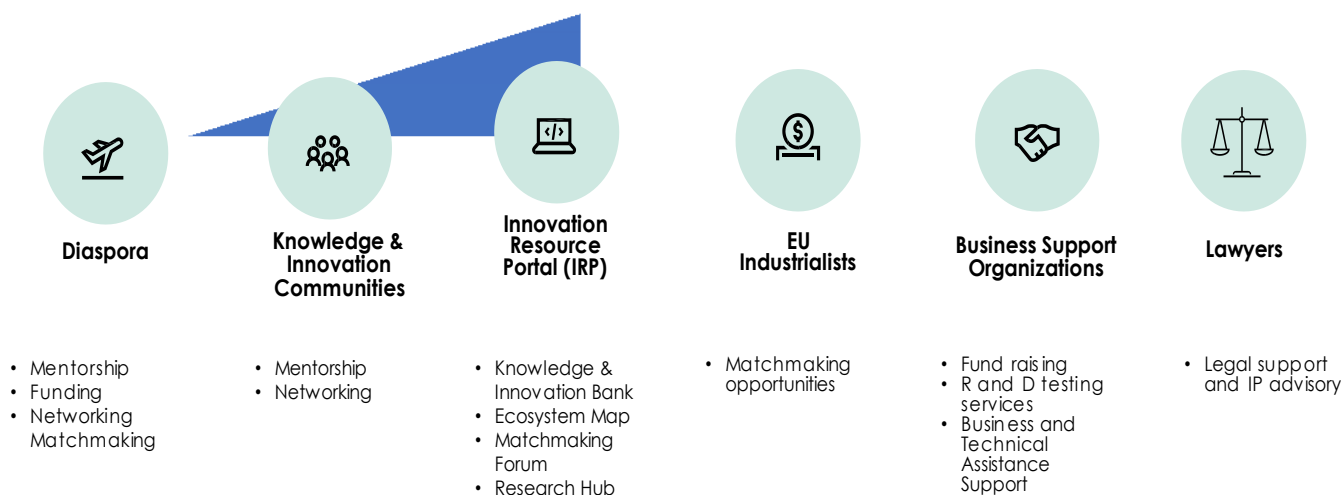
XIV. Opportunity & Partnerships

Emphasizing the expansion of the revamped LIRA program, there is a heightened focus on entrepreneurship components. This includes providing access to EU networks, diaspora connections, and mentorship, along with support for intellectual property and matchmaking with EU industrialists.

To maximize the industrial impact produced from the collaborative research between industry and academia; the uplifted call will include a series of programmes and trainings complementary to the LIRA Fund.

The awards provided by IRALEB, based on specialized Jury evaluation, encompass various components:

- Allocating Grants for 5 to 7 winning teams per edition for researchers and innovators, amounting up to 10,000 euros per project (Track 1).
- Co-funding up to 50% of the applied research project materials cost, with a ceiling of 5,000 euros for selected projects developed directly with valid industrialists and addressing industrial challenges (Track 2).
- Honorary awards for Excellence in Applied research and certificates.
- Capacity-building training provided by IRALEB innovation experts.
- Acceleration and Incubation awards provided by Berytech.
- Participation in a forum for investors to present the research to professionals in the field.
- Legal Assistance for top innovators to apply for local and international patents (IP advisory).
- Possibility of sharing expertise with international markets, creating collaboration agreements between local and foreign scientists or industrialists.
- Matchmaking Opportunities between Local and European Stakeholders through Lebanon Connect, a series of International matchmaking events in Lebanon and Europe facilitating collaborative opportunities, discussions, and partnerships between LIRA Top innovators and stakeholders in Lebanon and Europe (events hold by Anima in coordination with Berytech and IRALEB).



XV. Appendix: The Value Chain Structure

1. Agri-Food Value Chain Sector

The agri-food industry can be defined as the sector which includes all operations related to processing, preserving, preparing and packaging agricultural and food products carried out in industrial production units. Businesses involved in this sector:

1. **Agricultural inputs:** Businesses involved in seeds, fertilizers, pesticides, machinery, equipment and accessories used in farming and food processing.
2. **Agriculture and farming:** crop cultivation, vertical farming, hydroponic, livestock rearing, poultry and dairy farming, and aquaculture.
3. **Food Processing and Manufacturing:** such as companies involved in the post-harvest process as well as the processing of raw agricultural products into food items including activities like milling, baking, freezing, fermenting, and packaging.
4. **Food and Beverage production:** snacks, beverages, dairy products, baked goods, processed meats, etc..
5. **Food Packaging:** businesses involved in packaging and labelling.
6. **Food Technology and innovation:** such as precision agriculture, food safety systems, biotechnology, food waste management, and recycling

2. Health care value chain sector

The healthcare value chain structure represents the sequence of activities and processes involved in delivering healthcare products and services from conception to the end user. It encompasses a range of interconnected public and private institutions contributing to the overall functioning of the healthcare system. In Lebanon, the healthcare sector encompasses the following entities:

- **Hospitals & Healthcare Centers** including hospitals, clinics, and medical professionals, play a central role in delivering healthcare services. This involves diagnosis, treatment, and care for patients in addition to research, biotechnology and medical testing.
- **Pharmaceutical companies:** research, development and manufacturing of drugs, supplements, vitamins, and over-the-counter drugs.
- **Medical Devices and Equipment:** manufacturing of surgical and imaging equipment, implants, diagnostic tools, prosthetics, and accessories for medical devices and testing.
- **Para-medical:** dental labs, optometry, equipment manufacturing.
- **Beauty & Personal Care Companies:** Skincare manufacturing companies.

- **Hygiene products and medical consumables:** sanitizers, disinfectants, and other types of consumables.

3. ICT Value Chain Sector

The structure of the ICT value chain involves diverse components that play roles in generating, evolving, and delivering associated products and services. Together, these components constitute the ICT value chain, illustrating the interconnected stages and procedures essential for the progression and provision of ICT products and services. Each stage within this chain contributes value, fostering the expansion and development of the ICT sector.

- **Computer Hardware:** production of physical components of computing devices, including processors, memory, storage, and peripherals.
- **Software Development:** creating, testing, and maintaining software applications. new programming languages, methodologies, and tools for efficient development
- **Information Technology (IT) Services:** IT consulting, system integration, and cloud services, emerging service models and technologies.
- **Telecommunications:** communication networks and technologies, 5G networks, network virtualization, and the integration of telecommunications with other technologies.
- **Media and Entertainment:** content creation, distribution, and consumption. Trends may include virtual reality (VR), augmented reality (AR), and streaming innovations.
- **Cybersecurity:** protecting systems, networks, and data from cyber threats, threat detection, encryption, and AI-driven security solutions.
- **Internet of Things (IoT):** connecting devices to the internet to collect and share data. Trends may include the integration of AI algorithms for data analysis in smart cities.
- **Artificial Intelligence (AI):** intelligent machines that can perform tasks without human intervention. Trends may include developments in machine learning, natural language processing, and AI ethics.
- **Blockchain:** record-keeping through a distributed ledger. Trends may include applications beyond cryptocurrencies, such as supply chain management and smart contracts.
- **Robotics:** automation, human-robot collaboration, and applications in various industries.
- **Energy Saving and Safety-related Projects:** Innovations in energy-efficient technologies and safety-related projects contribute to sustainable development and workplace safety.

Section II

GENERIC INDUSTRIAL CHALLENGES

The poster features the logos of the European Union, Lebanon Innovate, and IRA (Industrial Research Achievements - Lebanon) at the top. Below them is the LIRA Innovation Program logo with the text "FOR YOUTH INDUSTRIAL RESEARCH PROJECTS". The central graphic is a lightbulb with "APPLY NOW & GET" inside. Surrounding the lightbulb are icons and labels for "ACCELERATION", "INCUBATION", "HACKATHON", and "GRANTS 65,000 €". Below the lightbulb, it lists sectors: "HEALTHCARE", "AGRIFOOD", and "ICT". A QR code is located to the right of the lightbulb. At the bottom left, it states "DEADLINE: 29 FEBRUARY 2024". At the bottom right, it says "FOR MORE INFO WWW.IHALEB.ORG". The bottom of the poster lists logos for Berytech, ANIMA, ebn, IRI, IPA, and LEITET.

The poster has a dark background with a blurred image of an industrial event. At the top, it reads "Real Industrial Challenges 2024" and "Call for Interest for Industrial Partnership". In the center, there is a large QR code with the IRA logo overlaid on it.

IRALEB Industrial Mapping dated October 2023

In the context of “Lebanon Innovate”

Five Generic challenges for the agri-food sector

1. Agricultural inputs:

- 1.1. The Improvement of greenhouse structures and resilience to adverse weather conditions linked to climate change, all while maintaining cost-effectiveness.
- 1.2. The development of organic pesticides to promote sustainability and reduce the occurrence of detectable chemical residues in tests. This development shall provide effective solutions while prioritizing environmentally friendly and natural alternatives, aligning with a commitment to organic and sustainable agricultural practices.
- 1.3. The transformation of liquid waste into fertilizers is intended to boost plant growth and provide an eco-friendly solution.

2. Agriculture & Farming:

- 2.1 Enhance and increase the yield of specific types of crops (wheat and grapes) without the application of synthetic chemicals.
- 2.2 The application of an automated process allowing the segregation of high-quality wheat germs for cultivation.
- 2.3 Optimizing feed quality for ruminants through different fermentation processes.

3. Agri-Food Production:

- 3.1 Development of agri-food products in terms of formulation, quality, shelf-life extension or enhancement of specific product characteristics, within the below categories:
 - 3.1.1 Cheese
 - 3.1.2 Bread
 - 3.1.3 Snacks
 - 3.1.4 Pastes, Sauces, & Olive Oil
 - 3.1.5 Pasta
- 3.2 The development of an organic solution aimed at prolonging the shelf life of particular fruits, ensuring their sustained freshness.
- 3.3 To provide a solution for addressing fungus development in fruits and vegetables stored in cold storage rooms.

4. Food Processing & Manufacturing:

- 4.1 Enhancement of industrial automation through the integration of different logic controllers and barcode readers.
- 4.2 The development of automated solutions related to dough sensorial analysis.

5. Food Packaging:

- 5.1 The creation of a cost-effective, plastic-free packaging solution designed to uphold the quality and freshness of products.

Seven Generic Challenges for ICT Sector:

1. ***AI-Enabled Cloud computing & Security Integration:***
Develop innovative solutions for seamlessly integrating AI technology into cloud management services, ensuring enhanced security, availability, and optimal performance.
2. ***Advanced AI Document Digitization:***
Create AI-driven solutions for efficient and secure digitization of company documents, addressing the evolving needs of businesses in the digital era.
3. ***End-to-End AI in UX/UI Design:***
Tackle challenges related to integrating AI throughout the entire UX process, starting from research to prototype, revolutionizing user experience and product design.
4. ***Tailored ERP for Industrial Efficiency:***
Provide external support in crafting customized ERP systems for seamless integration with existing digital solutions and AI integration, aiming to elevate customer experiences in industrial settings.
5. ***Innovative MQTT Server:***
Address the challenge of creating a MQTT server without relying on traditional Virtual Machines or Cloud infrastructure, exploring unconventional technologies for increased efficiency.
6. ***Optimizing Machine Learning***
Enhancing and fine-tuning machine learning models to analyze traffic flow behavior. This involves the optimization of algorithms and methodologies to gain deeper insights into how traffic patterns evolve and behave, to improve overall efficiency and understanding in traffic management systems.
7. ***Integration of Graphic interfaces***
Integration of graphic interfaces into specific modules to enhance user experience.

Nine Generic Challenges for the Healthcare sector:

1. ***Automated Quality Assurance in Medical Equipment:***
Develop advanced software solutions to automate quality control processes in the production of medical equipment and accessories, ensuring accurate sealing and stringent quality standards.
2. *** Pharmaceutical Packaging Automation***
the development and integration of an automated system that enables the customization of packaging equipment according to product specifications. This innovation aims to streamline and optimize the packaging process by automatically adjusting equipment settings, ensuring efficiency, accuracy, and adaptability to diverse product requirements.
3. ***Efficient Testing Procedures:***
Innovate time-efficient testing procedures for antibiotics and antimicrobial products, streamlining the testing process to reduce time consumption and improve accuracy in the pharmaceutical industry.

4. ***Environmentally Friendly Healthcare Products:***
Address the challenge of developing environmentally friendly healthcare and personal care products, promoting sustainability in manufacturing processes, enhancing products' shelf life, and formulating chemical-free and stable solutions.
5. ***Validation of Disinfectant Products in Agriculture:***
Validate the application of disinfectant products in agriculture and animal farm sectors, ensuring effectiveness against microorganisms without causing harm to crops or animals.
6. ***Streamlining Soap Production for Efficiency:***
Develop innovative solutions to streamline soap production processes, reducing processing time and enhancing efficiency in personal care product manufacturing.
7. ***Enhancing the Manufacturing Process***
Innovative solutions to surpass conventional practices in the manufacturing of pharmaceutical products, aiming to elevate overall efficiency and capabilities within the manufacturing domain.
8. *** Testing and Validation***
Support in the execution of tests and process validation related to the production of medical-grade hygiene, disinfectant solutions and medical accessories. This assistance covers a range of elements, such as quality control, efficacy evaluations, and adherence to industry standards, ensuring the creation of medical solutions that are both safe and effective.
9. *** Product Development***
Support in the development of medical-grade hygiene and disinfectant solutions, along with sophisticated medical accessories that demand the amalgamation of engineering, chemistry, and biochemistry.