Interview Summary from the Study on the Concept of An Estonian Center for Applied Research

February 2019

This study was commissioned by the Estonian Chamber of Commerce and paid for by over 30 of its members who are committed to helping the Estonian economy evolve and improve.

The overall results of the study were presented at the Estonian Chamber of Commerce in Tallinn on 13 February 2019, with over 40 people present. The attendees included representatives of government, academia, and enterprises. The slides for the presentation can be found at https://www.koda.ee/et/sisu/rakendusuuringute-keskus and a video recording of the presentation can be found at https://youtu.be/YqLg_w9NtW4.

This briefing is a slightly more detailed summary of the results of the interviews that were conducted by the team.

To gather the initial data for this study, a team of individuals conducted a series of interviews and meetings with both the universities in Estonia and a sampling of companies from different industries (both large and small) in Estonia.

In October, 2018 we spent a week and met with representatives of over 25 different organizations and companies in Estonia. The people we met with were:

Anne Sulling—Member of the Parliament of Estonia
Seth Lackman—CEO of Fujitsu Estonia
Robert Kitt & team - Swedbank
Bo Henriksson, former CEO of ABB
Siim Espenberg and Alo Lilles—specialists in business development at Tartu City government
Katrin Pihor, Head of Research Policy Department, Ministry of Education.
Jaak Vilo, head of the institute of Computer Science, Tartu University
Ene Tammsaar, CEO of Bio CC
Mait Klaassen, Rector of the University of Life Sciences
Ülle Jaakma, Vice Rector of Research, University of Life Sciences
Meelis Kadaja, Director of Business Development of Icosagen
Ulo Såre, CEO of Reach-U
Toomas Asser, Rector of Tartu University
Erik Puura, Vice rector for development, Tartu University
Kristjan Vassil, Vice rector for research
Andres Koppel, Director General of the Estonian Research Council
Hanno Tomberg, Member of the Board of the Archimedes Foundation
Indrek Reimand, Deputy Secretary General, Ministry of Education and Research

Raivo Vilu, Director of Development & Aavo Sõrmus, Chairman of the Council of TFTAK (Center of Food and Fermentation Technologies)
Jaak Aaviksoo, Rector of Tallinn University of Technology,
Mario Kadastik, Deputy Director of the National Institute of Chemical Physics and Biophysics.
Kaupo Reede, Director of the Economic Development Department
Sigrid Rajalo, Strategy Adviser to the Economic Development Department
Oliver Väärtnõu, CEO of Cybernetica
Karin Kivimåe, COO of Guardtime
Sigrid Harjo, Member of the Board, Enterprise Estonia
Triin Nõlvak, Area manager, Enterprise Estonia
Meelis Kitsing, head of the Foresight Center and his team (Mari Rell, Johanna Vallistu)
Kristjan Mändmaa, Dean of Design at the Academy of Arts, and his team (Martin Pärn, professor of strategical design in the Estonian Academy of Arts, Ruth Melioranski, researcher at the Estonian Academy of Arts, and Maarja Mõtus, Head of Product Design at the Estonian Academy of Arts).
Mr. Rene Tammist, Minister of Entrepreneurship and IT
Tiit Land, Rector of Tallinn University,
Tarmo Soomere, President of the Estonian Academy of Sciences

In addition, the team conducted company interviews – here is the list of companies that were interviewed:

Wood and forestry
Estonian Cell AS
Lemeks AS
Peetri Puit OÜ
Graanulinvest

Chemical industry
Chemi-Pharm AS
Mayeri Industries AS
JOIK OÜ

Energy
Viru Keemia Grupp AS
Eesti Energia AS
Elektrilevi

Logistics
Cleveron

Wooden houses
MATEK AS

Metal industry
Hyrles

Machinery
Hekotek AS
Equa

Electrical appliances
Estel
Harju Elekter

Biotechnology
Icosagen

Food
Salvest AS
E-PIIM TOOTMINE AS
TERE

Electronics
Rantelon OÜ
Skeleton Technologies OÜ
Artec Design OÜ

Plastic packaging
Estiko-Plastar

Construction materials
Bauroc

Textile and sewing industry
Baltika
Conectra

ICT locals	**ICT Multinationals**	**Startups**
Proekspert	Fujitsu	UBIK
GuardTime	Ericsson	Starship Technologies
Reach-U	Tieto	Plumbr
Fortumo	Playtech	Geneto

In general, through all these data gathering processes and interviews, we were trying to understand if these organizations agreed with the challenge facing Estonia, and we were trying to find out how they are dealing with it today. More specifically,

- From the universities:
    - How they fund R&D
    - How they choose what R&D to support (how they allocate resources)
    - Where their R&D is strong
    - Where they are conducting applied R&D
    - Where/how they have had success working with companies on R&D
- From the companies:
    - How they see their need for R&D
    - How they conduct R&D today
        - Internally (in their company) &/or with outside institutions (inside or outside of Estonia)
    - Where there may be unmet needs for R&D capabilities
- From the financial institutions
    - Their perception of the challenge facing Estonia, and how it will impact their business moving forward
    - Availability of “risk capital” to support R&D, new product development, new company formation
- From the government
    - What instruments/agencies exist to help address the challenge, and
    - How have they structured their programs/offerings, and
    - How effective are they being

Here is a summary of what we learned:

Interpretation and main takeaways from data supplied by the universities.

- The research areas and topics in the universities are driven by academic priorities and teaching requirements – not a focus on industry or markets – which is appropriate for a teaching institution.
- Most university research is TRL 1-3 (basic, not applied)
- The funding and resources for research are allocated "the way it has always been"
- Not surprisingly the universities are defensive/protective of their existing R&D funding, and they would like to see more
- University researchers in general have little contact or cooperation with companies or enterprises, and do not understand their needs or the way that companies do business
- There is no ability for Estonian universities to profit from applied research,
- And so, there is little incentive to increase company cooperation, or focus on applied research, and transitioning research to industry

From the company interviews, we heard things at several levels. At the highest level we heard:

- There is a widespread understanding of the challenge facing Estonia and their companies and the need to innovate, improve. Companies understand that their biggest competition comes from outside Estonia and that they are at a disadvantage given Estonia's scale and location.
- There is little cooperation/research with Estonian universities

At a slightly lower level, these interviews confirmed that companies want/need applied research & technical services – and they have a wide variety of needs based on their industry, their company size, and their levels of internal expertise. These requirements ranged from:

- Testing and certification services – for the dairy, food, wood/timber, electrical equipment, and other industries – that Estonian companies currently get from outside Estonia
- Product Management and Development assistance – where companies currently do not have the staff or expertise to do this internally today
- Digitalization and Automation assistance – where companies want to modernize their infrastructure and processes – and again currently do not have the staff or expertise to do this internally today
- Advanced Research Projects – in a variety of industries – ranging from Artificial Intelligence (AI) and Big Data Analytics – to Pharmaceutical or Probiotic Identification and Development – to Cellulose Extraction and Applications – to Oil Shale Extraction and Treatment – as examples.

And at a more detailed level, here is a chart that illustrates the diversity of the needs mentioned by some of the companies we interviewed:

Industry Sector	Research Interests	Technical Services Needed
Wood, Forestry	plywood enhancements cellulose, wood chemistry biological fermentation forestry robots	wood pellet testing, chara Glue-lam beam strength a fire & sound-proofing test paper products testing
Chemistry	cosmetics development pharmaceutical development packaging for chemicals, detergents	cosmetics certification clinical trials robotic production lines biological analysis, DNA sy eco-certification e-commerce
Energy	oil shale refinement, processing green energy alternatives AI/network management energy demand management data analytics energy storage, distributed generation	
ICT	data science/AI radio, power technologies battery/energy technology	product development product design business development product safety certificatio
Food/Dairy	probiotics animal feed supplements packaging for food food science	factory automation food safety certifications applied food scientists

Some additional observations on the company requirements:

- Today these needs are usually being addressed by using universities or research institutions or certification labs from outside Estonia - often from Finland, Sweden, or Germany

- And one of the important challenges given the scale of Estonia is whether there are enough companies in a sector with sufficient demand for either the research or services to sustain a team at ECAR. A way to supplement that is to offer these services to companies from outside Estonia, but that may dilute its (ECAR's) focus.
- A big issue across Estonian industry = company size, lack of scale/resources/critical mass to be able to focus on R&D
- The biggest stated common obstacle = lack of people with the necessary skills
- Another common obstacle that was often mentioned is Estonian culture - a lack of ambition or aggressiveness in terms of wanting to grow a company to compete on the global level.
- All the companies who would consider using ECAR expressed an expectation of confidentiality and protection of company IP when thinking about doing research with ECAR
- Several companies mentioned a shortage of financing in general in Estonia – not just risk capital, but also for larger infrastructure investments that would enable them to grow faster.
- And for those companies who has used or who thought about using government support programs, there was a common complaint about the bureaucracy and reporting requirements with government programs.

IF ECAR is part of the coalition agreement as the new government is formed, then a more thorough understanding of company requirements would help the new ECAR management team decide on its focus areas.