



# CELTIC-NEXT Proposers Day



7<sup>th</sup> of September 2022, Online via WebEx

**Pitch of the Project Proposal**

**VACUSTORAGE**

**Latheacond Technologies**

Dr. Isakov Dmitry, Director  
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# Teaser

*Today postharvest losses amount due to inefficiency of traditional cold storage are significant and prohibitive*

- *UN predicts 70% increase in food demand by 2050 but currently almost **50%** of agricultural products never reaches consumers – losses of more than **\$1 Trillion per year** globally*
- *UN also estimates that in developing countries traditional refrigeration sector can consume up to **40%** of total national electricity demand*

*Vacuum cold storage outperforms traditional refrigerated storage by up to **x7**  
Low adoption due to **LARGE WEIGHT, HIGH COST AND HIGH ENERGY DEMAND***

*At Latheacond we have developed a new VACUSTORAGE solution that has benefits of vacuum without penalty on **WEIGHT, COST and ENERGY***

*Adoption of **VACUSTORAGE** by cold supply chain require **SMART** control to ensure reliability and ease of use*

# Organisation Profile



Dr. Isakov Dmitry

## *Academic qualifications:*

*M.Sc.(Physics), Ph.D. (Engineering)*

## *Work experience:*

*Scientist in A\*STAR for 11 years*

*CEO of Latheacond Technologies for 4 years*

*Local and International R&D Awards: 7*

# Latheacond Technologies

- *4 patents, 8 Know-How*
- *Funds raised: >S\$1,200,000*
- *Current Headcount: 3*
- *On-going R&D projects: 2*
- *Areas of R&D: Cold Supply  
Chain, Energy efficiency*

# Proposal Introduction

6 Ft and 20 Ft prototypes



- *4x lighter chamber*
- *3x longer food storage*

## Innovation

- *Customized SMART and IoT system*
- *In vacuum environmental modifier for optimum residual atmosphere control*



R&D target

- *Precise environmental control*
- *30% better energy efficiency than standard reefer*

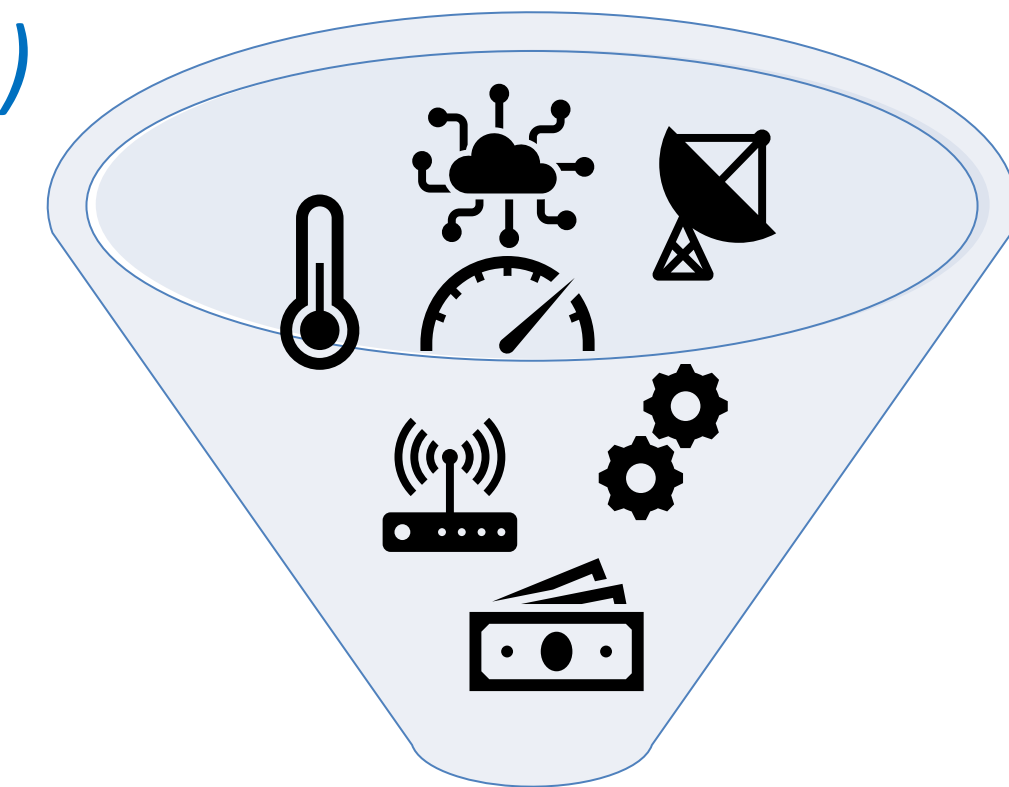
## Vision

- *Higher food security in the world*
- *Reduced environmental footprint of cold supply chain*



# Proposal Introduction

- *Develop cost effective sensing suitable for low pressure environment (<0.2 atm)*
  - *Mapping and visualization of latent heat transfer*
  - *Mapping and visualization of temperature and pressure non-uniformities*
  - *Non-chemical detection of trace gases (CO<sub>2</sub>, Ethylene, CH<sub>4</sub>, etc)*
- *Develop cost effective SMART controller and IoT link*
  - *Library of critical parameters (cargo specific)*
  - *Power or speed control for pumps and compressors*
- *Develop industry ready operations and business model*



Superior cold supply  
chain

*Duration 24-36 month*

# Partners



*We are supported by Yan San Metals Pte Ltd for main chamber manufacturing and cost optimization*

*We look for partners to develop SMART and IoT systems for VACUSTORAGE increased reliability and ease of use.*

*We look partners from cold supply chain for developing operations based on VACUSTORAGE compliant with industry standards and regulations*

*We also invite food science experts for developing optimum recipes for food storage in low pressure environment.*



# Contact Info



**For more information and for interest to participate please contact:**

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**Presentation available via:**



# 9th Sept. 10 CET

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