



# Technology/Project Description Summary

## Technology and Innovation Marketplace

<p><b>Expert</b> (50 words for each bio)</p>	<p>Podsawat Worakuldumrongdej is a co-founder and CEO of ANT Robotics (focusing on customized efficient solution enabled by advanced robotics). He developed an innovative drone for rice seed sowing during his master degree study at Institute of Field Robotics (FIBO), KMUTT. He was also involved in building a solar farm cleaning robot and other autonomous vehicles.</p> <p><a href="https://www.linkedin.com/in/podsawat-worakuldumrongdej-538958189/">https://www.linkedin.com/in/podsawat-worakuldumrongdej-538958189/</a></p>
<p><b>Photo(s) of Expert(s)</b></p>	
<p><b>Contact Details of the Expert(s)</b></p>	<p>Podsawat Worakuldumrongdej, Co-Founder &amp; CEO, ANT Robotics Co., Ltd. <a href="mailto:Podsawat_w@hotmail.com">Podsawat_w@hotmail.com</a> +66 899021162 (Line)</p>
<p><b>Title</b> (15 words)</p>	<p>Rice Seed Sowing Drone for Agriculture</p>
<p><b>Keywords</b></p>	<p>Agriculture 4.0, Drone, Rice Seed Sowing, Precision farming</p>
<p><b>Short one-sentence blurb</b> (Up to 150 characters, including spaces)</p>	<p>“Rice seed sowing drone by using rice capsule is a new way to do rice farming in the future. Everyone can do farming like playing a game”</p>
<p><b>Overview</b> (150 words)</p>	<p>Rice seed sowing drone for rice farming with high precision and automatic flight. The rice seed is planted inside a capsule to provide more effective, precise and uniformly distributed seed sowing</p>

<p><b>Summary</b>—Main argument(s) and supporting argument(s) (800 words)</p>	<p>Using drone in the rice seed sowing process of the wet seeded rice farming. A seed sowing mechanism was designed to be attached to a quadrotor which allows the process of rice seed sowing to be more precise and uniformly distributed. The rice seed in this experiment is planted inside a capsule filled with peat moss to prevent seedling damage as well as to provide more effective seed sowing. The seed sowing mechanism is designed based on a spiral spinner which can provide sufficient amount of release force that can overcome disturbances and can propel the seed toward the desired target position. From the result of experiment show that seed sowing mechanism can control the position of capsule within 2 centimeters.</p>
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# Rice Seed Sowing Drone

Automated & Precision Agriculture



**WHY** **1.3%** of ASEAN population increasing each year More rice consumption  
**5%** of rice farmers decreasing each year

"HARD WORK  
 BACK PAIN  
 SKIN CANCER TIME  
 CONSUMING"



Seed sowing by hand  
 - 3 hours per acre  
 - Waste rice seeds & fertilizer  
 - less yield

## WHAT

OUR SOLUTION?

### DRONE TECHNOLOGY



- Save time
- More efficient



- Automatic flight
- Record data, IOT

### UNIFORM DISTRIBUTION



- Easy to cultivate
- Use less seed & fertilizer
- Better Production & growth

### RICE CAPSULE



- Better seeding
- Prevent pest

### SHOOTER



- Accuracy 1 cm
- Adjustable distance
- 30 min. per acre

## IMPACT

1. Create new generation farmer
2. Save time and worker
3. Environment friendly
4. Applicable for rice terrace farming
5. Agriculture 4.0



## HOW

TO GROW THE BUSINESS?

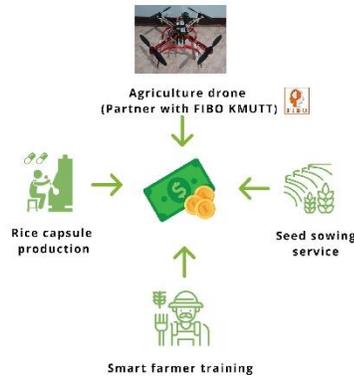
### MARKET SIZE ASEAN

**28%** of global rice farming area

### Global rice production



### Capture the Entire Value Chain



STEAM Platform  
 STEAM KMUTT  
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**Key findings at a glance** (only when appropriate)

**Competitive Advantage**





Feature	Manual	Seed Planter	Drone
Operation	Manual	Manual	Automation
Efficiency (Acre/Hr.)	0.02	1	2
Source of Energy	Worker	Diesel	Battery
Cost of seed sowing per acre (USD)	8	16	TD *
Farming area	Small area	Large area	Large & Small area
Terrace farm 	Slow	Not applicable	Applicable

\* To be determined

**Photos** (only when appropriate)



Prototype of Rice Seed Sowing Drone



Result of Seed Sowing Drone

**Resources**

- [https://drive.google.com/file/d/10x1MEfy0BFh10\\_FNG80F0dz3HLB9cI4J/view](https://drive.google.com/file/d/10x1MEfy0BFh10_FNG80F0dz3HLB9cI4J/view)

## Link to ADB Agriculture and Natural Resources Subsectors

<b>Which subsector does this article primarily focus on? Please select (✓) more than one but not more than three subsectors.</b>			
	Agricultural drainage		Livestock
✓	Agricultural policy, institutional and capacity development		Rural flood protection
✓	Agricultural production		Rural market infrastructure
✓	Agriculture research and application		Rural sanitation
	Agro-industry, marketing and trade		Rural solid waste management
	Fishery		Rural water policy, institutional and capacity development
	Forestry		Rural water supply services
	Irrigation		Water-based natural resources management
	Land-based natural resources management		

## Link to ADB Sectors and Themes

<b>Which sector does this article primarily address? Please select (✓) more than one but not more than three sectors.</b>			
✓	Agriculture and natural resources		Health
✓	Capacity development		Industry and trade
	Climate change		Information and communications technology
	Economics		Poverty
	Education		Private sector development
	Energy	✓	Regional cooperation and integration
	Environment		Social development and protection
	Finance sector development		Transport
	Gender		Urban development
	Governance and public sector management		Water



## Link to Sustainable Development Goals

Choose which Sustainable Development Goal (SDGs) is most relevant to this article. Please select (✓) up to 3 SDGs only.			
✓	Goal 1: No Poverty		Goal 10: Reduced Inequalities
✓	Goal 2: Zero Hunger		Goal 11: Sustainable Cities and Communities
✓	Goal 3: Good Health and Well-being	✓	Goal 12: Responsible Consumption and Production
✓	Goal 4: Quality Education		Goal 13: Climate Action
	Goal 5: Gender Equality		Goal 14: Life Below Water
	Goal 6: Clean Water and Sanitation		Goal 15: Life on Land
	Goal 7: Affordable and Clean Energy		Goal 16: Peace, Justice and Strong Institutions
✓	Goal 8: Decent Work and Economic Growth	✓	Goal 17: Partnerships for the Goals
✓	Goal 9: Industry, Innovation and Infrastructure		