

# Supplementary Documentation to the financial report for the third quarter of the fiscal year ending March 2024

February 14, 2024

Eyes to the all machines

### **3Q Highlights**

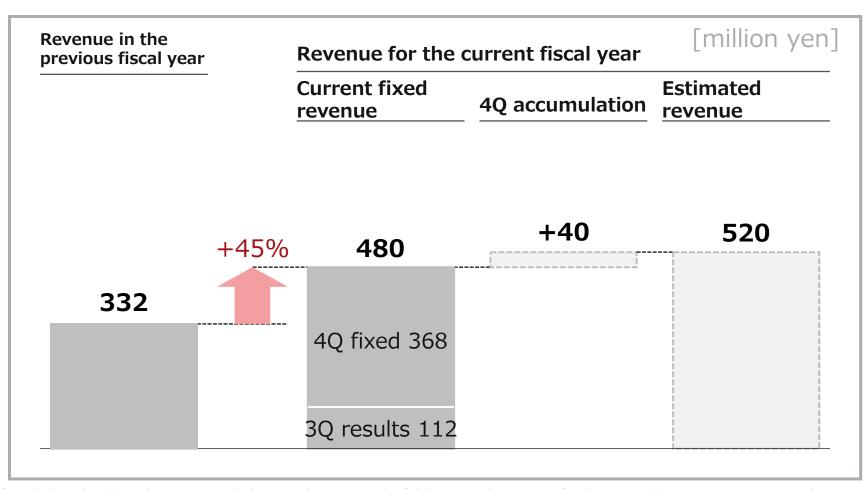


- Annual revenue forecast of 520 million yen remains unchanged, with fixed revenue of 480 million yen at this time. Foreign exchange and government subsidy factors resulted in an upturn forecast in the net profit/loss<sup>1</sup>
- Revenue expansion through the two pillars of growth, "Acustomer commercialization" and "Bsolution," is progressing steadily, and these will be boosted by financing
  - A In expanding product licensing from customer commercialization;
    - Kudan continues to expand commercialization with Inertial Lab (U.S.), drone provider (Japan), DatesMetron (India), etc
    - Agreement with WD for product licensing (300 million yen) to harvest customer commercialization projects
  - B In sales expansion through solutions;
    - Full-fledged launch of European energy industry's facility management DX projects
    - Started working with the German government and expect to expand projects with the railroad, automotive, and manufacturing industries in the future

### Steady growth in revenue



- Current fixed revenue<sup>1</sup> are 480 million yen, already growing 45% over the previous annual revenue
- Steady progress toward achieving the revenue budget of 520 million yen for the current fiscal year



<sup>1</sup> Revenue for which orders have been received, there is almost no risk of delivery in the current fiscal year, and revenue are certain to be recorded in the current fiscal year.

### Profitability is on an improving trend



- As for Operating profit Net profit, the annual forecast was revised on December 18, 2023 (Revenue forecast remains unchanged)
- Significant upturn in non-operating income due to increase in foreign exchange gains from intra-group receivables and payables and R&D subsidies from foreign governments, and significant improvement is also expected compared to the previous fiscal year

		3Q Profit/Loss		Annual Profit/	[million yen]
			Before <u>revision</u>		Latest
	Operating Profit	Current	□598	<del>□560</del>	□550
		Previous	<i>□</i> 477		<b>598</b>
	Ordinary Profit	Current	□409	<del>□520</del>	□240
		Previous	<b>315</b>		<i>□</i> 394
	Net Profit <sup>3</sup>	Current	□419	<del>□550</del>	□270
		Previous	<i>□</i> 323		<i>□</i> 413

### (Reference) Performance overview



				©Kudan. All Rights Reserv	
3Q performance comparison					
(million yen)	Performance for 3Q of FY2023	Performance for 3Q of FY2024	Change	Change (%)	
Net Sales	223	112	<b>△111</b>	△49.8%	
<b>Operating Profit</b>	<b>△477</b>	△598	<b>△120</b>	_	
<b>Ordinary Profit</b>	<b>△315</b>	△409	△93	_	
<b>Profit</b> Attributable to Owners of Parent	△323	△419	△95	_	
Revision of annual forecast					
	Revision	or arritual fore	Cast		
/ ····· \	FY2023	FY2024	Change	Change (%)	

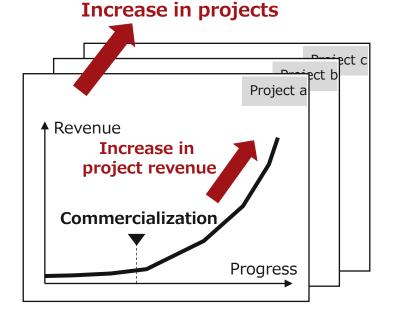
Revision of annual forecast					
	FY2023	FY2024		Change	Change (%)
(million yen)	Performance (Reference)	Before revision	Latest	(from "Before revision")	(from "Before revision")
Net Sales	332	520	520	_	_
<b>Operating Profit</b>	△598	△560	△550	+10	+1.8%
<b>Ordinary Profit</b>	△394	△520	△240	+280	+53.8%
<b>Profit</b> Attributable to Owners of Parent	△413	△550	△270	+280	+50.9%

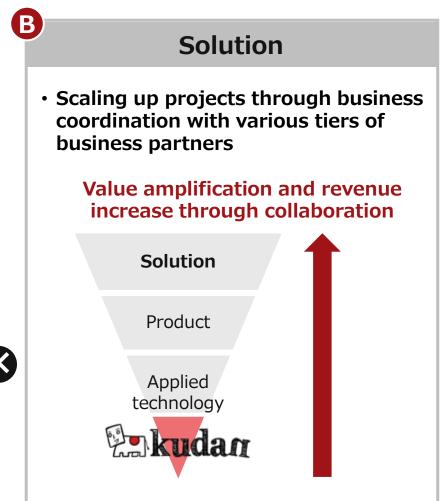
# Accelerate "two pillars" for revenue expansion and aim for growth





 Increase the number of customer commercialization projects and aim for increase of revenue in each project





### Financing to boost the "two pillars" of growth



### Plans to finance 1.9 billion yen through share acquisition rights 1



# Customer commercializa tion

#### **Progress Summary**

- Continued customer commercialization
- Concluded product license agreement with WD
- Expand product-related revenue

#### Use of funds for growth

- Continue and expand customer commercialization
- Expand revenue by strengthening alliance with WD
- Revenue growth in each project



#### Solution

- Building a business ecosystem
- Participation in European government public projects
- Launch of digital twin projects

- Large scale digital twin projects in Europe and global expansion
- Development of solution business in the robotics area

A Customer commercialization

### Maintaining expansion of customer commercialization and expect to its further expansion



With 3 new projects (7 in total) and 1 planned project at the current fiscal year,
 Kudan expects to increase product-related revenue<sup>1</sup> through growth in each project

Newly commercialized projects	Target Products	Added value	Market expansion	Image
Inertial Labs  Disclosed	Mapping and 3D measurement device for drones	Enables surveying not only in the air, but also with ground-based equipment (dual-use air/land) for	A wide range of demand is expected in the forestry, civil engineering and construction, and	RESPONDED
Drone solution provider		comprehensive and highly efficient surveying	public sectors, and Kudan aims to expand globally to more than 30 countries	Coming soon
Disclosed  DM DATES METRON	Mobile mapping system	Significantly reduces development and product costs while maintaining accuracy	Expanding into the mining, civil engineering and construction industries backed by national policy (DX)	
Robot manufacturer	Logistics robot	Stable localization in diverse environments, greatly improving the practicality of autonomous mobility	Aim for expansion in Japan and Asia with the investor (major Japanese logistics company)	Coming soon

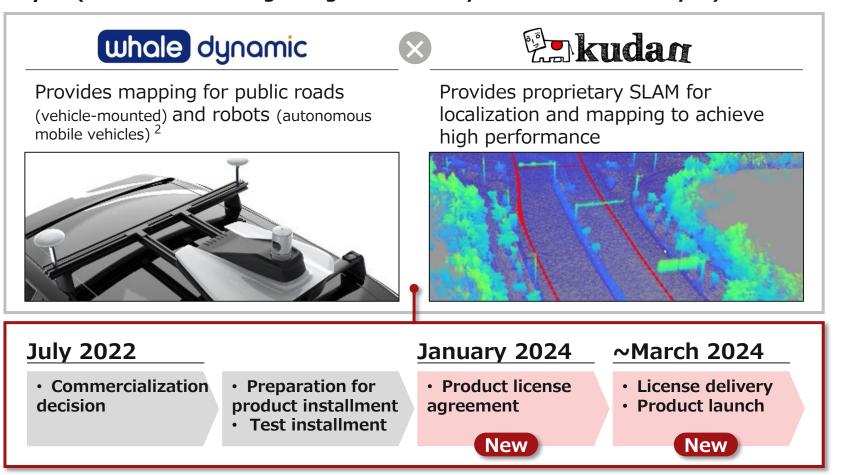
- In addition, several customer projects are progressing toward commercialization near in the
- future including EU robotics, US mapping

A Customer commercialization

### Progress in commercialization projects and shift to harvesting product license revenue



- 300 million yen in product licenses agreed with WD, 240 million yen of which will be delivered this fiscal year<sup>1</sup>
- Product-related revenue for this fiscal year are expected to be revised upward to 300 million yen (Forecast at the beginning of the fiscal year was 150 million yen)



**B** Solution

### Utilize Kudan's Deep Tech as Solutions in response to demand for facility and infrastructure management DX



 Structure Kudan's spatial recognition technologies as solutions for end customers and scale up the projects

Digital twin demand is growing, driven by promotional measures in major countries

Energy facilities management



Infrastructure management



Building survey



Green cadastre



Launched DAMS<sup>1</sup>, an integrated solution from digitization of all assets to database management, with partners<sup>2</sup>

Mapping equipment / scanning

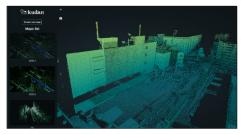




Information assignment / Database management



3D digitization by point cloud



#### **Expected Impact**

- Data collection efficiency: 10~20x
- Data use efficiency: 2~5x
- Realization of innovation
  - Expand assets that can be managed
  - New business through information sharing
  - Work decentralization, etc.
- 1 Assets are any equipment or buildings that need to be managed, and DAMS (Digital Asset Management Solution) can digitalize the management and operation of those assets.
- 2 Established collaboration with 10+ companies for system integration, data management, survey, application development, etc. and developed and launched the solutions

**B** Solution

### Project orders and agreements for new energy facilities management in Europe are growing



 Photovoltaic infrastructure management projects are progressing, driven by investment trends that are gaining social and public momentum

Tailwind for growth of new energy facilities management projects in Europe

### Acceleration of the decarbonization shift

 Increased decarbonization investment in industry and public sector, including the European Green Deal<sup>1</sup>

### The move away from Russian natural gas is rapidly increasing

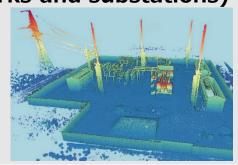
 Security measures are further boosting investment in new energy equipment

### Kudan works with government and public sector projects

 Started collaboration with the German Ministry of Transport and Digital Infrastructure for expanding DX in Europe Started solution projects in the current fiscal year

### Ordered photovoltaic infrastructure (transmission networks and substations)





Orders expected to be received in the current fiscal year

Orders expected to be received in the next fiscal year (example)

- Over 500 MW of Photovoltaic infrastructure
- Over 100 km of transmission
- Around 10 large substations
- Multi-GW solar Photovoltaic infrastructure
- Over 300 km of transmission
- Around 30 large substations, etc.

B Solution

### Seize expanding business opportunities through solutions and aim for sales growth



 Growing business opportunities with a view to expanding into other regions and into public and industrial infrastructures

### **Business opportunities aiming to achieve**



<sup>1</sup> Projects for energy facilities management expected to be ordered or agreed (to the implementation policy) this fiscal year, and sales are expected to be recorded from the next fiscal year onwards

<sup>2</sup> Revenue opportunities that are currently being planned with customers and expected within 3 years

<sup>3</sup> Estimated amount for the entire market (by Kudan based on market opportunities in each country, etc.), and Kudan may receive a part of the order.

### (Reference) Other 3Q project highlights<sup>1</sup>



	Customer	3Q progress
	Robots related company	Technical verification of autonomous mobile robots in multiple environments has been completed and discussions are being finalized for a product license agreement
	Robots related company	Decision made to develop a product after adopting a productization package for robots <sup>2</sup> . Development and verification work is in progress for commercialization in the next fiscal year
Robotics	Robots related company	Development progresses toward commercialization of next- generation of autonomous mobile robot that provides delivery services for commercial facilities. Development was accelerated after the adoption of a productization package for robots <sup>2</sup>
	Major heavy industries manufacturer	Completed demonstration experiments on autonomous mobility of industrial equipment for transportation within factory premises
	Major heavy industries manufacturer	Decided to introduce a productization package of autonomous robots <sup>2</sup> for logistics
	Mapping system company	Started integrating technologies to develop mapping products for construction sites
Mapping	Mapping system company	Completed initial phase of validation for next generation release to enhance existing mapping products
	Several companies	Expanded introduction of productization packages <sup>2</sup> for mapping in the regions of Japan, the U.S., and Europe

<sup>1</sup> This slide shows a selection of projects that made particularly strong progress during the quarter. Projects not listed such as major Japanese telecom companies, ERASMO, etc. are still ongoing. Please refer to P8-12 for highlights of commercialized projects and solution projects

<sup>2</sup> A package that reduces the time required to develop and test customer products, and also enables them to be commercialized directly as products.

Mapping package has been introduced since 2022 and robot package has been introduced on a trial basis to a limited number of customers since 2023 and will be officially available soon

### **Appendix: Company Overview**

### **Business Model**

## AP will be the basis for broad range of industries alongside AI



The artificial perception technology provided by Kudan (providing machines with "eyes") both complements and operates in unison with artificial intelligence (providing machines with "brains") to allow a range of machinery (robots and computers) to move and function autonomously

### **A**rtificial **P**erception



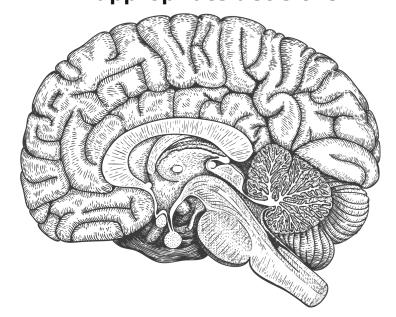
### Artificial Intelligence

The "eyes" of machines, allowing them to perceive and understand their environment





The "brains" of machines, allowing them to make appropriate decisions



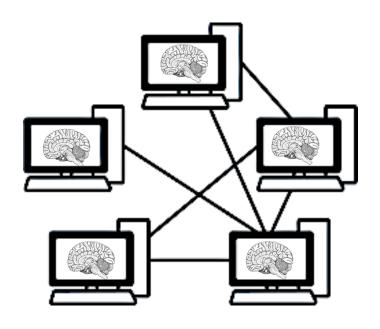
#### Relation to the evolution of AI



 With the evolution of AI, the need for AP to connect machines and real space will continue to grow

### From "Internet AI" that does not act directly in real space

### To "Embodied AI" that can act directly in real space

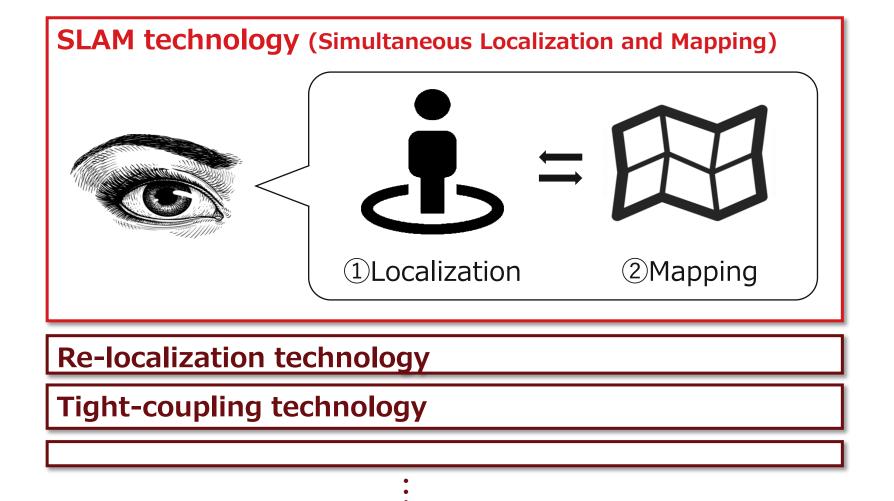




### SLAM (Simultaneous Localization and Mapping) as the core of AP technology



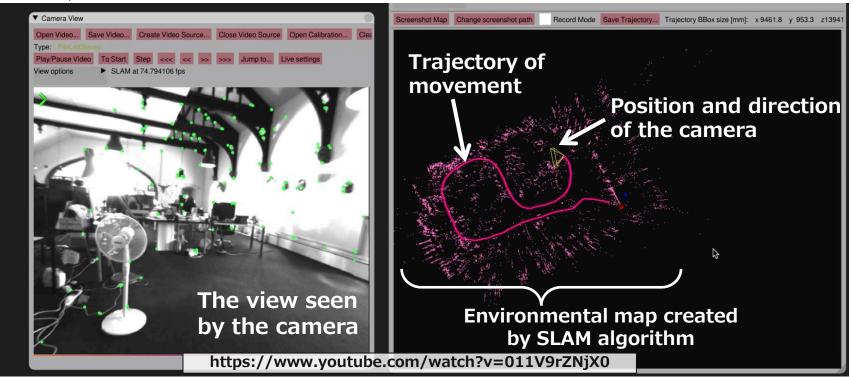
 AP technology is a group of Deep Tech centered on SLAM (Simultaneous Localization and Mapping)



### What is SLAM (Simultaneous Localization and Mapping)?

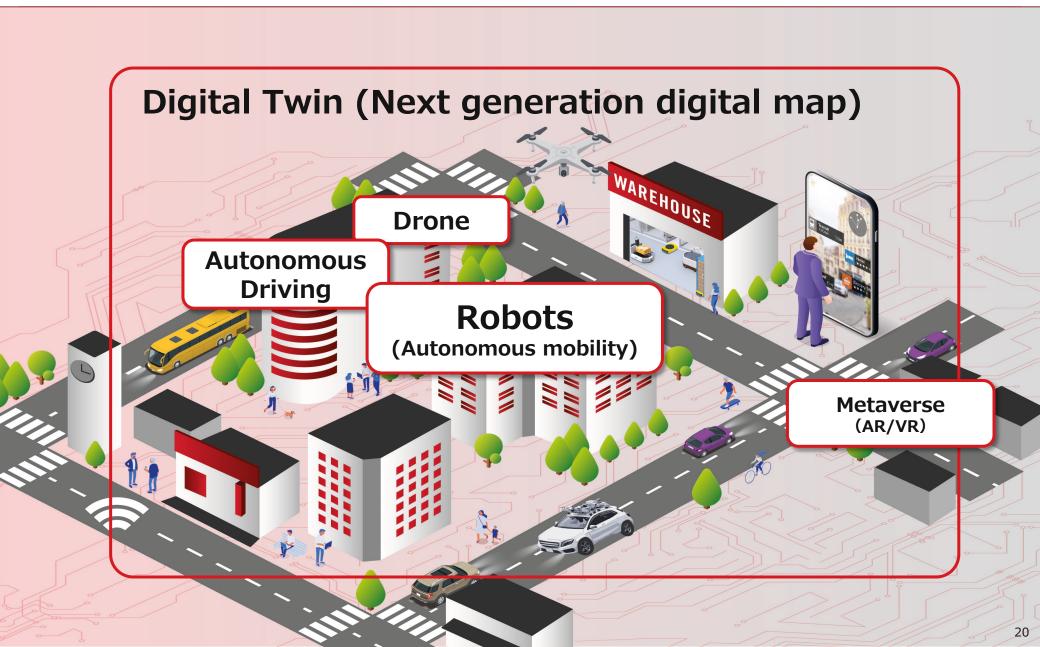


- Technology that simultaneously determines where we are (Localization) and what our surroundings look like (Mapping) based on input from sensors such as cameras and Lidars
- We can keep a track of how we move while creating a map in a new environment (tracking), and recognize where we are based on a map we created beforehand (re-localization)
- Unlike GPS and beacons, which use external radio waves to detect location, SLAM can recognize
  its own location as a stand-alone software and can be used in a wider range of environments,
  situations, and use cases



### Broad range of SLAM application





### "ARM-like position" targeted by our small number of professionals



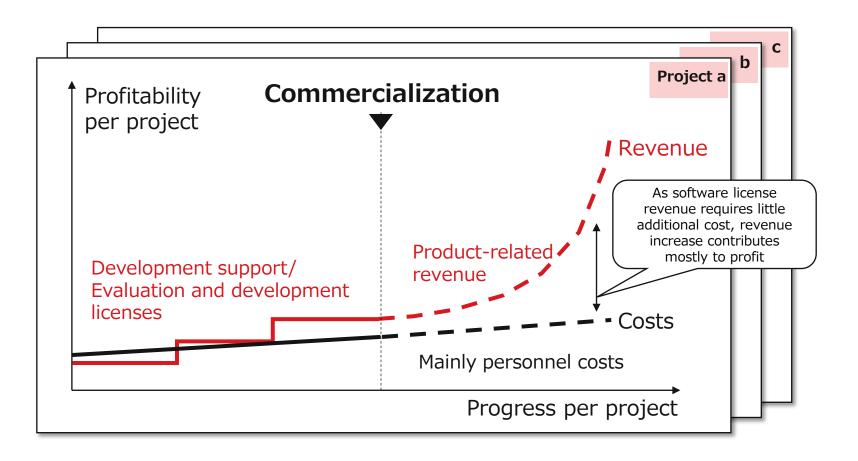
Layers of technology industries	Players in Artificial Perception		
Solution	<ul> <li>Operation and added-value services</li> </ul>		
Product	<ul> <li>Products in robotics / wearable / mobility fields</li> </ul>		
Applied technology	<ul> <li>Packages with sensors and semiconductors</li> </ul>		
Deep Tech	<ul> <li>Algorithms kudan         (Software development &amp; licensing business)</li> </ul>		
Maximum value with a small number of professionals,			

difficult to replace

#### Revenue model



- Currently, the majority of projects are in the "evaluation and development" phase, a business
  phase that is in the red due to prior investment in R&D expenses
- A certain scale of profitability and growth is expected in evaluation and development licenses/customer development support, but we aim to dramatically increase profit by building up significant product-related revenue through market penetration of technology by popularization of customer products



### **Source of competitiveness**

### A "globally born" technical group



### GB Bristol (R&D/Sales)

Kudan group founded in
 2011



### JP Tokyo (Admin/Sales)

- Established in 2014
- Listed on TSE Mothers (currently, Growth) in 2018





#### **US Sillicon Valley (Sales)**

Established in 2020

#### DE Munich (R&D/Sales)

- Artisense founded in 2017
- Kudan's investment in Artisense in 2020
- Kudan's acquisition of Artisense in 2021

An elite company led by a world-class SLAM researcher

- Dr. Cremers, Chief Professor, Technical University of Munich
- 63,000 citations of his work in academic papers, h-index 116

# Demand for technology that is not open-source and has been professionally developed for commercial use



	Artificial Intelligence	Artificial Perception
Characteristic	<ul> <li>Algorithm is simple (several hundreds of lines)</li> </ul>	<ul> <li>Algorithm is complex (several hundred thousand lines)</li> </ul>
Development environment	<ul><li>Can be completed on Internet</li></ul>	<ul> <li>Hardware integration and demonstration in a real-world environment are essential</li> </ul>
Open-source	<ul><li>Practical</li></ul>	<ul><li>Not practical</li></ul>
Technological competitiveness	<ul> <li>Quality and quantity of data (= capital strength)</li> </ul>	<ul> <li>Accumulation of development capabilities and technological demonstrations</li> </ul>
	(= capital strength )	

Specialized companies like Kudan are developing the technology with a rare talent pool

### Acquired world-class technical team to support R&D



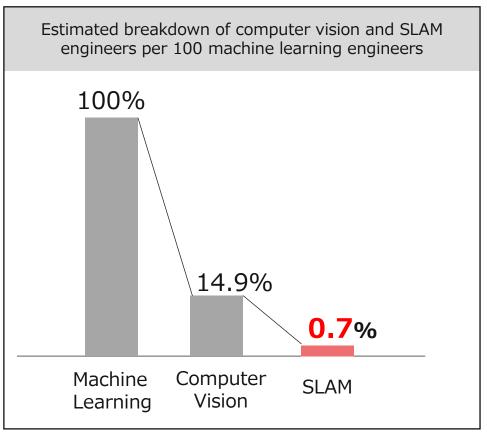
Researchers and engineers specializing in SLAM technology are extremely rare, even in the field of computer vision. Despite this, Kudan and Artisense employ many world-class professionals with PhDs in the field







There is our CSO, Professor Cremers

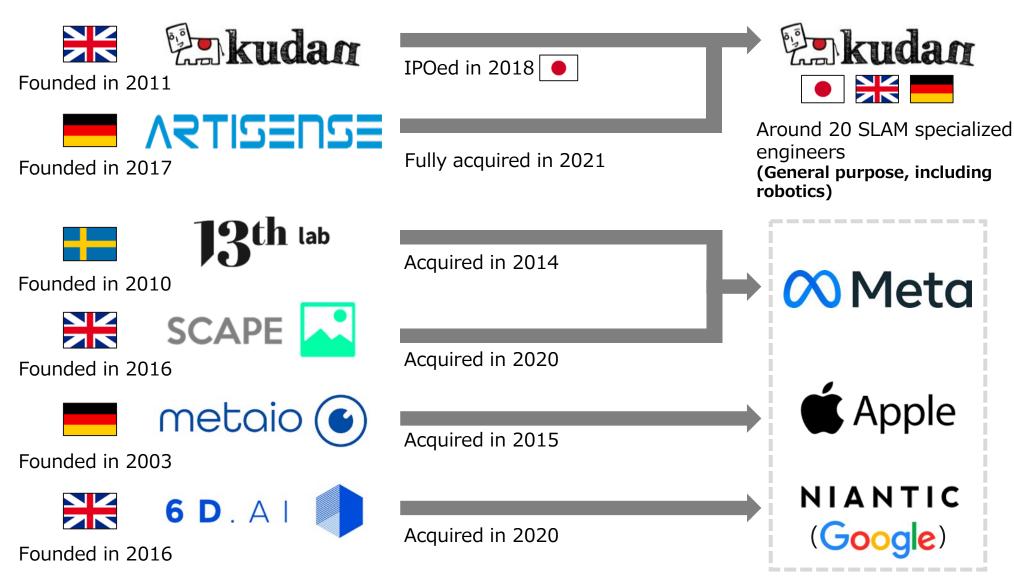




Other companies trying to organize SLAM engineer teams of the same level and scale will require large investments in both recruitment and labor costs

### Related technologies are acquired in the world, only a few independent SLAM development companies left





### While the increase of acquisitions of the related technologies, Kudan leads the market in track record and awareness



- More limited numbers of SLAM-focus / SLAM-feature software companies due to acquisitions by larger technology companies
- Kudan has been in a leading position in terms of breadth of offering, track record and awareness in the market

#### **SLAM-focus / SLAM-feature software player**



- Offers Indirect & Direct Visual SLAM and Lidar-SLAM
- Flexible sensor options
- Track records in various applications such as AR, robotics and autonomous driving

### **SLAMORE**

- Only Indirect Visual SLAM
- Optimized for limited camera models



#### sevensense

- Only Indirect Visual SLAM
- Optimized for specific cameras, focus only on robotics area



Focus on very specific medical application

### outsight

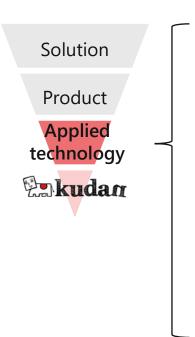
- Only Lidar-SLAM
- Optimize for their own hardware kit

### Structured ecosystem with major sensor/semiconductor OEMs



### **Business co-creation/ Co-development**

#### Commercialized customer

















Semicon ductor









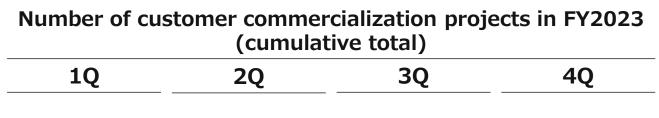




### Achieve commercial-level customer commercialization (FY2023~)



- Achieved 4 customer commercialization in FY2023, mainly for robotics and mapping
- Among them, full-adoption of commercial SLAM in a major semiconductor product is the world's first achievement (Intel).



Achievements in FY2023 (4 in total)







### Product1: About Whale Dynamic





- Leverages proprietary LV4-5 technologies for a wide range of product offerings including autonomous mobile robots and autonomous driving
- Not only targets the rapidly evolving Chinese market, but also expands its business extensively into the global market

Founder & CEO (David Chang)

■ Led the development in "Apollo", the country's largest autonomous driving project by Chinese IT giant, Baidu, as a senior product manager. M.S., University of Cambridge, U.K.

Clients/ Partners









Global expansion

■ The only company in the world to be a member of both "Apollo" and "Autoware", the globally recognized open-source ecosystem for autonomous driving

### Product1: Whale Dynamic's Product Release



 Product commercialization by WD utilizing Kudan technology was realized in July 2022, and product introduction is in progress

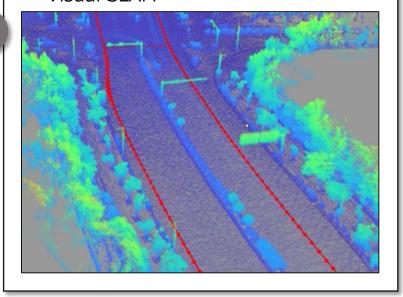
### whale dynamic

 Provides mapping for public roads (vehicle-mounted) and robot (autonomous mobile vehicle) \*





- Provide SLAM technology for localization and high-precision mapping
- Achieve higher performance with proprietary technology related to the integration of Lidar SLAM and Visual SLAM

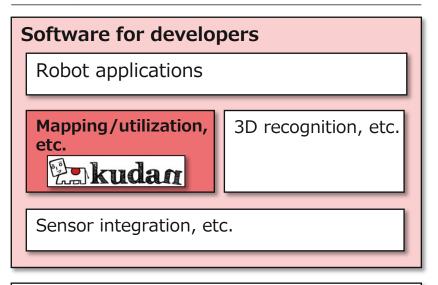


### Product2: Adoption for the Intel product



- The world's first commercial SLAM fully adopted on a major semiconductor platform, as a company specializing in this technology area
- Intel's platform provides comprehensive software functions, in which our technology is a core module, for elemental technologies of next-generation autonomous mobility capabilities that robot manufacturers need to invest significantly in to develop in-house
- In addition, dedicated customization specifically for the linked Intel hardware chip delivers a significant improvement in SLAM performance
- This is expected to greatly eliminate hurdles to commercial development for robot manufacturers adopting Intel products and expand efficient and rapid practical application of autonomous mobile robots

#### Intel's package for robots\*



Semiconductor processors for robots

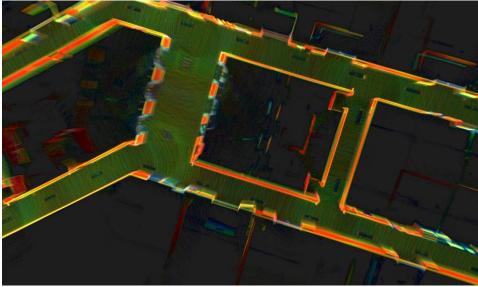
- Among the various software required for robot development, the mapping and utilization module is at the core of the product's autonomous mobility capability
- The software processing method is optimized to match the characteristics of Intel's semiconductor circuits, enabling extremely high-speed processing. This was achieved through joint development with Intel

### Product3: Product release with UCS



- Developed a handheld mapping device implementing Kudan technology in about 6 months with UCS, a
  Korean mapping solution provider, and have already sold several units. This proves the maturity of Kudan
  technology, which enables a customer to quickly develop and complete integration to a customer product.
- Kudan 3D-Lidar SLAM enables accurate mapping with an inexpensive sensor set, realizing product commercialization at a competitive price
- We will meet the high market demand for simple and affordable mapping solutions on a global level for a variety of applications, including research, surveying and inspection of forests, roads, buildings, and indoor facilities





### Product4: Product release with Movel AI



- Kudan Visual SLAM/3D-Lidar SLAM is incorporated into Seirios, an all-in-one commercial software solution for autonomous mobile robots (AMR) from Movel AI, a Singapore-based robot software company
- This will enable us to offer highly accurate navigation and fleet management solutions to our customers in the future
- The Kudan SLAM integrated solution is now available for the global market and is expected to have a commercial deployment on customer sites



## Completed integration of hybrid technology into customers' products



- Succeeded in making the world's first hybrid technology of indirect and direct SLAM as a commercial SLAM technology. By integrating the advantages of both methods, a significant improvement in basic performance has been achieved, which is expected to contribute to the expansion of the customer base in a wider range of applications
- In addition to application of the technology in customers' projects, integration of the technology into customers' products has been completed, and is expected to contribute to product-related revenue in FY24 onward

#### **Hybrid SLAM**

- Faster processing without sacrificing recognition accuracy
- Higher stability without relying on individually optimized implementations

#### **Indirect SLAM**

Fast processing, versatile





#### **Direct SLAM**

Precise recognition, high stability



### **Future Growth Potential**

### Business progress toward growth (short- and midterm)



 Aiming to increase product-related revenue through the introduction and market penetration of customers' products, Kudan will continue to strategically promote measures to accelerate it, using the progress stage of customers' products as an indicator

#### Business phases along with the progress of customers' products **Preparation** Shift **Harvest** Customer **Preparation for** Full-scale Product Initial **Expansion of** commerciali Penetration development introduction introduction introduction introduction zation **Progress** forecast in 🔀 Current Progress focus areas FY22 FY23 **FY25 Robotics** FY26 ~ FY27 FY28 ~ FY22 FY23 FY24 **FY25 Mapping** FY26 ~ FY27 FY28~ 50-100 Scale of expected product-related 25-35 revenue\* 10-15 0 - 13-5 0

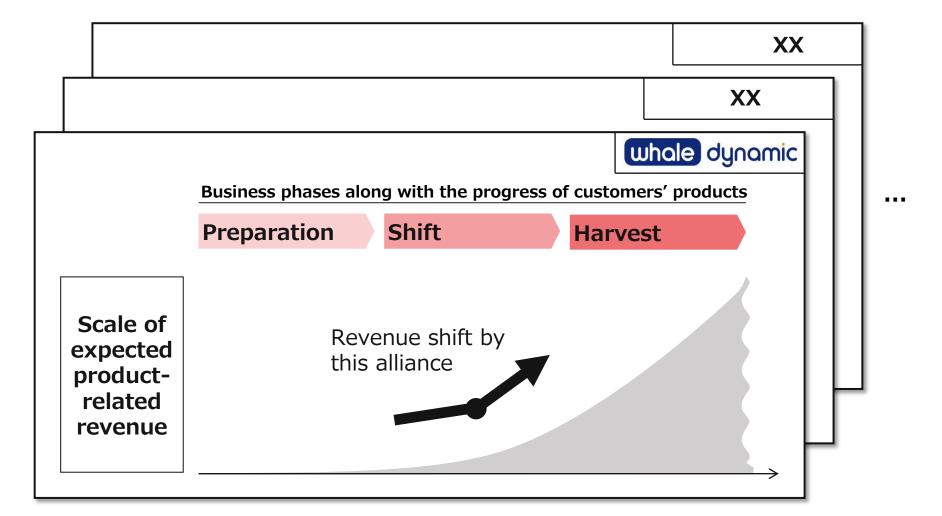
 $<sup>\</sup>frak{MThe}$  penetration phase is set at 100

<sup>1.</sup> Due to the progress of the business phase, the indicator of emphasis in the business has been changed from the number of customer commercialization to the progress stage of customer commercialization

### Future growth of product-related revenue



Beginning with Whale Dynamic, Kudan aims to further expand product-related revenue,
 by promoting the progress of the business phase with customers in each of their commercialized projects



### Expansion of solution business

earnings pillar



Build and expand solutions for end customers with ecosystem partners to meet growing market demand

#### Type and structure of packages offered

commercialization

#### **Productization Algorithm** Solution package package Solution Solution Operation and added-Solution value services Product Product **Product** Robots / mapping devices / mobility fields **Applied** Applied **Applied** Packages with sensors technology technology technology and semiconductors **Deep Tech** Deep Tech Deep Tech Core algorithm (Kudan) (Kudan) (Kudan) The root of Started in 2022 as Leverage productization package and offer to differentiation and "priming" for the market jointly with further customer mid- to long-term

ecosystem partners

### Growing market demand on a global scale, for digital twin and spatial DX promotion in mapping application



7.7T Yen

~10T Yen



#### **Industry 4.0**

- The "Digital Twin," one of the core technologies of the "Industry 4.0" has evolved.
- Major manufacturing companies such as Deutsche Bahn, Siemens, Mercedes, Bosch, etc. announced their multibillion euro digital twin implementation plans one after another



### **Digital Compass 2030**

 The EU government will take the lead in promoting the development of Europe's digital infrastructure by 2030, utilizing AI, IoT, and other technologies



Budget by each governmental policy

#### The comprehensive national development plan for digital lifelines

- A large-scale public-private sector project led by the Ministry of Economy, Trade and Industry (METI) to promote the automation and digitization of social infrastructure from FY2024
- Promote the implementation of spatial DX technologies including 3D map, data connection infrastructure, infrastructure management DX, autonomous driving support infrastructure

#### **Digital China**

- A government-led project to promote the digitization of the entire social economy, including 3D map creation and spatial digitization toward 2035
- Collaborating with many domestic companies such as Baidu and Beijing Automotive Group, as well as overseas companies such as Audi



### Examples of next-generation technology demonstrations

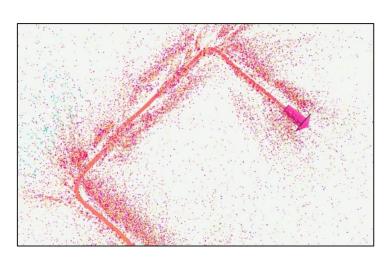


- In areas other than the focus area (robotics and mapping), select projects and work on demonstrations from mid- to long-term perspectives
- In addition to hybrid SLAM, AI-embedded localization and sensor integration for autonomous driving were demonstrated, achieving effective results.

#### Project image (e,g., major European automotive company)

Collaboration with GPS manufacturers and automotive companies to establish vehicle location recognition technology in urban areas, which is difficult even with next-generation high-precision GPS

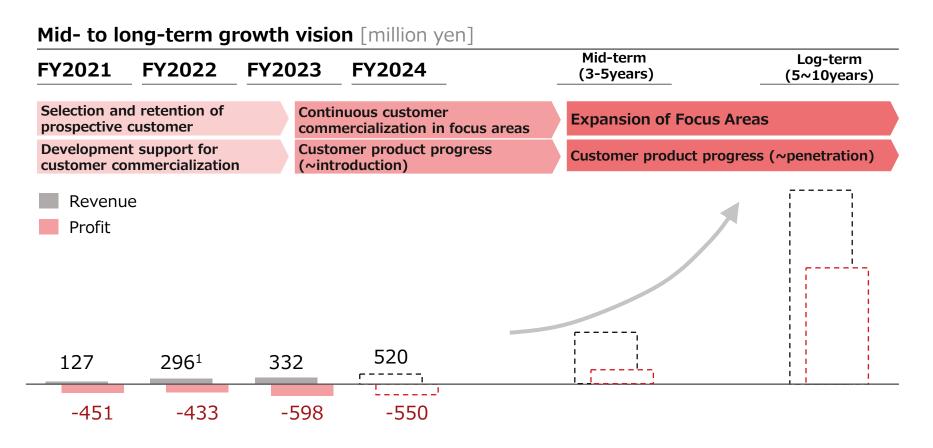




### Future growth potential (mid- to long-term)



- Continuously push forward customer commercialization and progress of customer products to quickly achieve the transformation of the earnings structure
- Aim for dramatic profit growth by building up significant product-related revenue through market penetration of technology by expanding focus areas and spreading customer products



### Important Notice



- This document contains Kudan's plans, estimates and expectations for the future based on its current business situation and industry trends.
- All such projections for the future inherently involve uncertainty and a wide variety of risks.
- It is conceivable that risks both understood and unforeseen, uncertainties and other factors may cause actual results to differ from the projections contained within this document.
- Kudan offers no guarantee of the accuracy of its projections for the future and accepts that they may differ significantly from actual results.
- All projections for the future included in this document are based upon information available to Kudan as of February 14th, 2024, and may not be updated or changed to reflect future developments or changes in status.