HEROZ
JAPAN

Presentation Material for FY04/2019
Full Year Financial Results

June 12, 2019

HEROZ, Inc.（4382）

1. Business Overview

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Company Overview

Name	HEROZ, Inc.
Location	PMO Tamachi 2F, 5-31-17 Shiba, Minato-ku, Tokyo
Established	April 2009
Representatives	Takahiro Hayashi/Tomohiro Takahashi
Business Description	AI (B-to-B) services: HEROZ Kishin AI (B-to-C) services: "Shogi Wars", etc.
Membership	Japan Deep Learning Association, The Japanese Society for Artificial Intelligence

2018
Listed on Tokyo Stock Exchange (TSE) Mothers
Capital and business alliance with Netmarble Games Corporation

2017
Capital and business alliances with Takenaka Corporation and Koei Tecmo Games

2016
Capital and business alliance with Bandai Namco Entertainment

2013
Shogi AI, developed by HEROZ engineers, defeated a shogi professional

2012
Launched mobile app, "Shogi Wars"

Representative Director and CEO
Takahiro Hayashi

Graduated from Waseda University
Joined NEC as a technology engineer
Experience at IT strategy division, business planning division
Founded HEROZ

Shogi Track Record
Amateur 6th dan (highest rank after becoming national amateur champion)
7th dan, Shogi Wars
Amateur Kisen Champion (7-time title defender as national champion)
Played against Yoshiharu Habu (permanent 7 title holder)

Representative Director and COO
Tomohiro Takahashi

Graduated from Waseda University
Joined NEC as a technology engineer
Experience at Business Planning Division, BIGLOBE
Founded HEROZ

Director and CFO, Business Planning Manager
Daisuke Asahara

Graduated from Kyoto University Graduate School
MBA from Wharton School, University of Pennsylvania (delivered graduation speech as student body representative)
Investment Banking Division, Goldman Sachs

Creating the future through artificial intelligence (AI) revolutions

Global Leader in Mind Game AI

Chess AI

Deep Blue ('97) defeated a professional Chess player

IBM

Shogi AI

AI developed by our engineers defeated a professional Shogi (Japanese Chess) player ('13)

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Go AI

Google acquired Deep Mind ('14)
AlphaGo, developed by Deep Mind, defeated a professional Go player ('16)

Google

Shogi game records	Structural design data, financial data, etc.

HEROZ Kishin
Deep learning and other machine learning:
MLaaS (Machine Learning as a Service)

Shogi AI	Construction AI, Finance AI, etc.
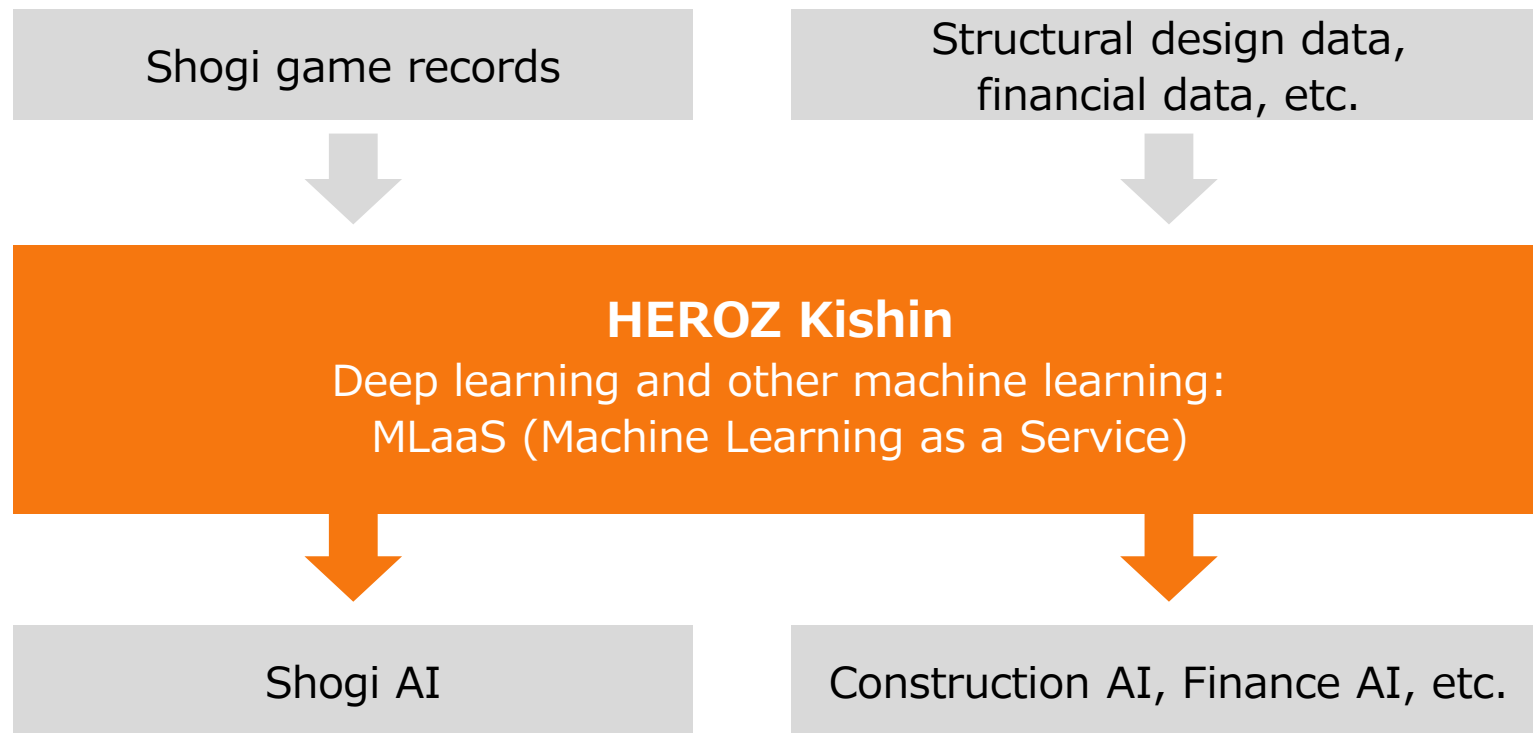
MLaaS : What is Machine Learning as a Service?
Business model which provides machine learning/deep learning as service, similar to
SaaS (Software as a Service) and IaaS (Infrastructure as a Service)

B-to-B Services: Profit Model and High Switching Costs

Client's data sent
to HEROZ Kishin

Output after machine
learning through
deep learning, etc.

Output applied in
business settings

Results measured and used for further
machine learning
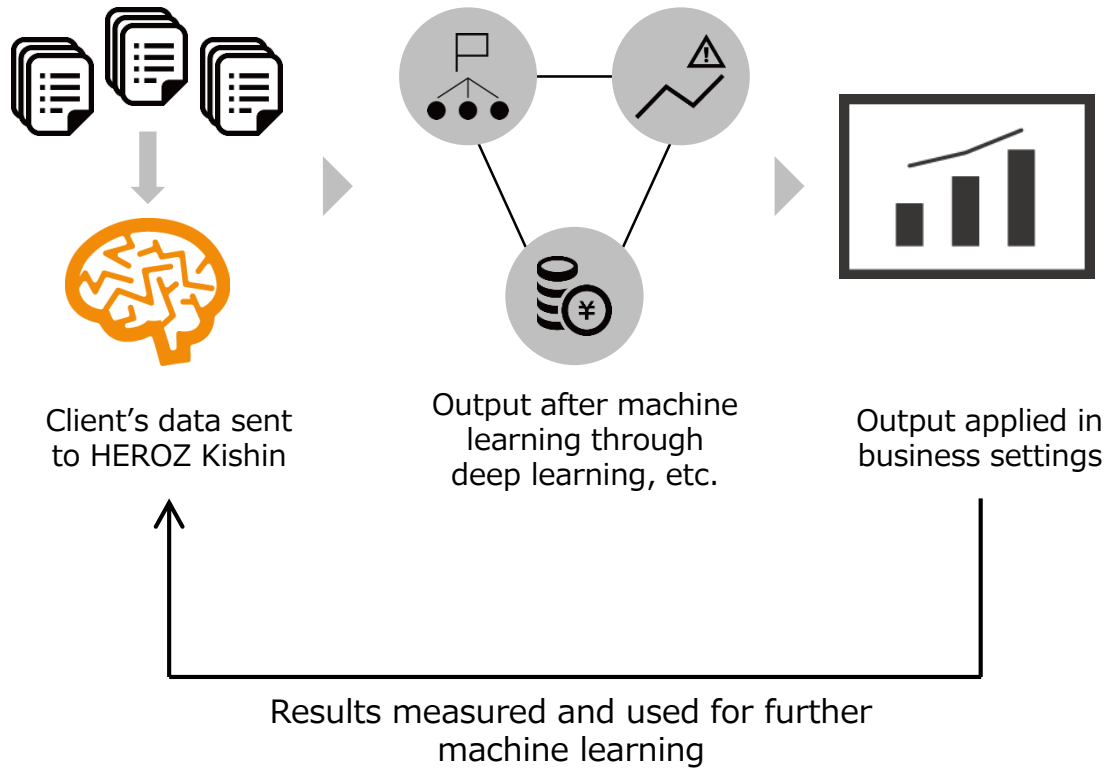
**Output precision increases through
repeated machine learning**

Research/develop Shogi AI

Standardize AI technology accumulated
through shogi AI

Establish "HEROZ Kishin"=MLaaS
（Machine Learning as a Service）

Establish an infrastructure which allows
HEROZ to provide AI services efficiently
to solve various challenges in various
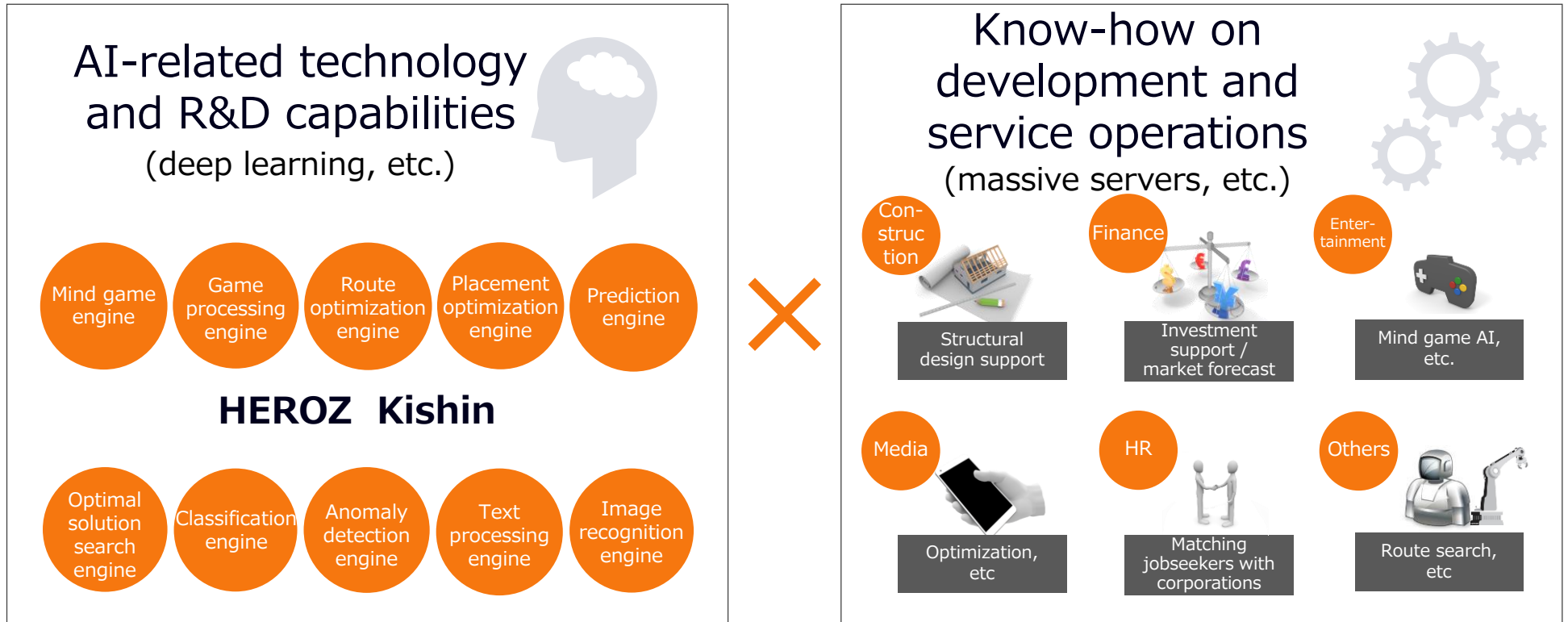industries just by changing input data

Provide comprehensive AI services with
massive servers

Achieve stable, sustained earnings and
high switching costs

**Earning structure: initial setup fee
and ongoing fees**

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B-to-B Services: Engines included in HEROZ Kishin and Examples of Applications

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■ Create AI products by combining engines and achieve an efficient operating structure

AI-related technology and R&D capabilities
(deep learning, etc.)

Mind game engine	Game processing engine	Route optimization engine	Placement optimization engine	Prediction engine

HEROZ Kishin

Optimal solution search engine	Classification engine	Anomaly detection engine	Text processing engine	Image recognition engine

×

Know-how on development and service operations
(massive servers, etc.)

Con-struc-tion
Structural design support

Finance
Investment support / market forecast

Enter-tainment
Mind game AI, etc.

Media
Optimization, etc

HR
Matching jobseekers with corporations

Others
Route search, etc

We aim to create the industry standard for AI in each sector through collaboration with companies which own high-quality private data

- Focusing on construction, finance, and entertainment for the foreseeable future
- Earning structure is initial setup fee and ongoing fees

*Examples of clients served

Construc-tion

想いをかたちに 未来へつなぐ
TAKENAKA

Structural design support, etc.

Fi-nance

SMBC日興証券
MONEX

Investment support, market forecasts, etc.

Enter-tainment

BANDAI NAMCO Entertainment
BANDAI
KT

netmarble

Creation of high-quality NPCs, game balance adjustment, etc. (In B-to-B service, HEROZ is not a game operator/publisher but a background AI provider)

Depending on the types of projects, ongoing fees in the form of revenue sharing is also introduced

Charging fees for B-to-C content which user AI

- Leveraging AI-related technology to provide mind games such as shogi, chess, and backgammon worldwide
- Shogi Wars has remained cash cow backed by organic increase of paid users

| Shogi Wars | Animal Shogi Wars | Igo Wars | CHESS HEROZ (English) | BackgammonAce (English) | Pokémon Comaster (Pokémon Duel) |

Earning structure: monthly membership fees, Kishin (AI) usage fees, etc.

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- We believe that EBITDA, as calculated below, is our key performance indicator

EBITDA = Operating Profit + Depreciation/Amortization Expenses

- In AI-related businesses, server investments, etc. are required to engage in advanced machine learning, leading to various depreciation/amortization expenses. We aim to continuously enhance enterprise value/equity value via EBITDA growth, without being concerned about fluctuations in one-time depreciation/amortization expenses.
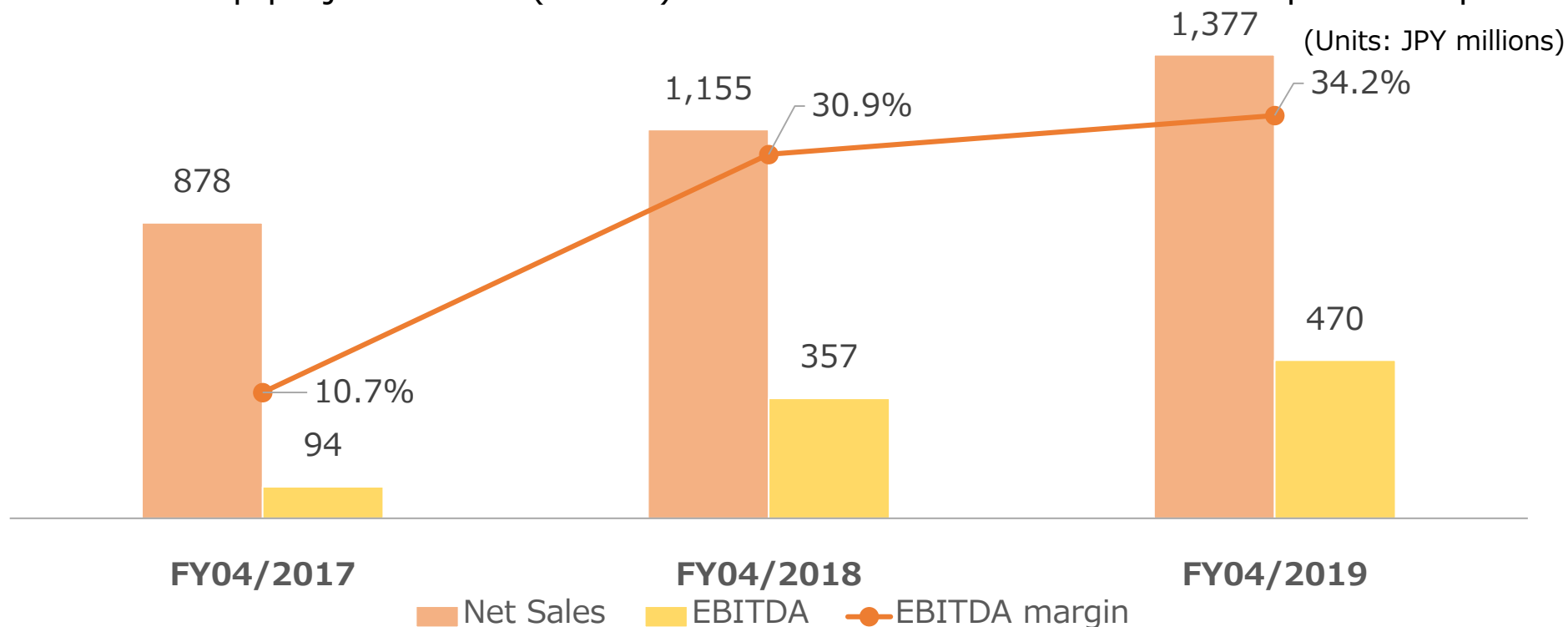
FY04/2019 Full Year Financial Performance

- In FY04/2019, net sales of 1,377 million yen (+19.2% year-on-year) and EBITDA of 470 million yen (+31.7% year-on-year) exceeded our forecast because of revenue contributions from AI (B-to-B) projects not included in our original pipeline, etc

- Net sales, EBITDA, operating profit, ordinary profit and net income in FY04/2019 were record-high, respectively

(Units: JPY millions)	FY04/2019 Actual	FY04/2019 Forecast	Actual to Forecast (%)	(Reference) FY04/2018 Results
Net Sales	1,377	1,300	105.9%	1,155
EBITDA*	470	450	104.6%	357
EBITDA Margin	*34.2%*	*34.6%*	*–*	*30.9%*
Operating Profit	420	400	105.1%	354
Operating Margin	*30.5%*	*30.8%*	*–*	*30.6%*
Ordinary Profit	415	400	103.8%	338
Net Income	296	280	106.0%	247

* EBITDA = Operating Profit + Depreciation Expenses + Amortization of Lease Deposits
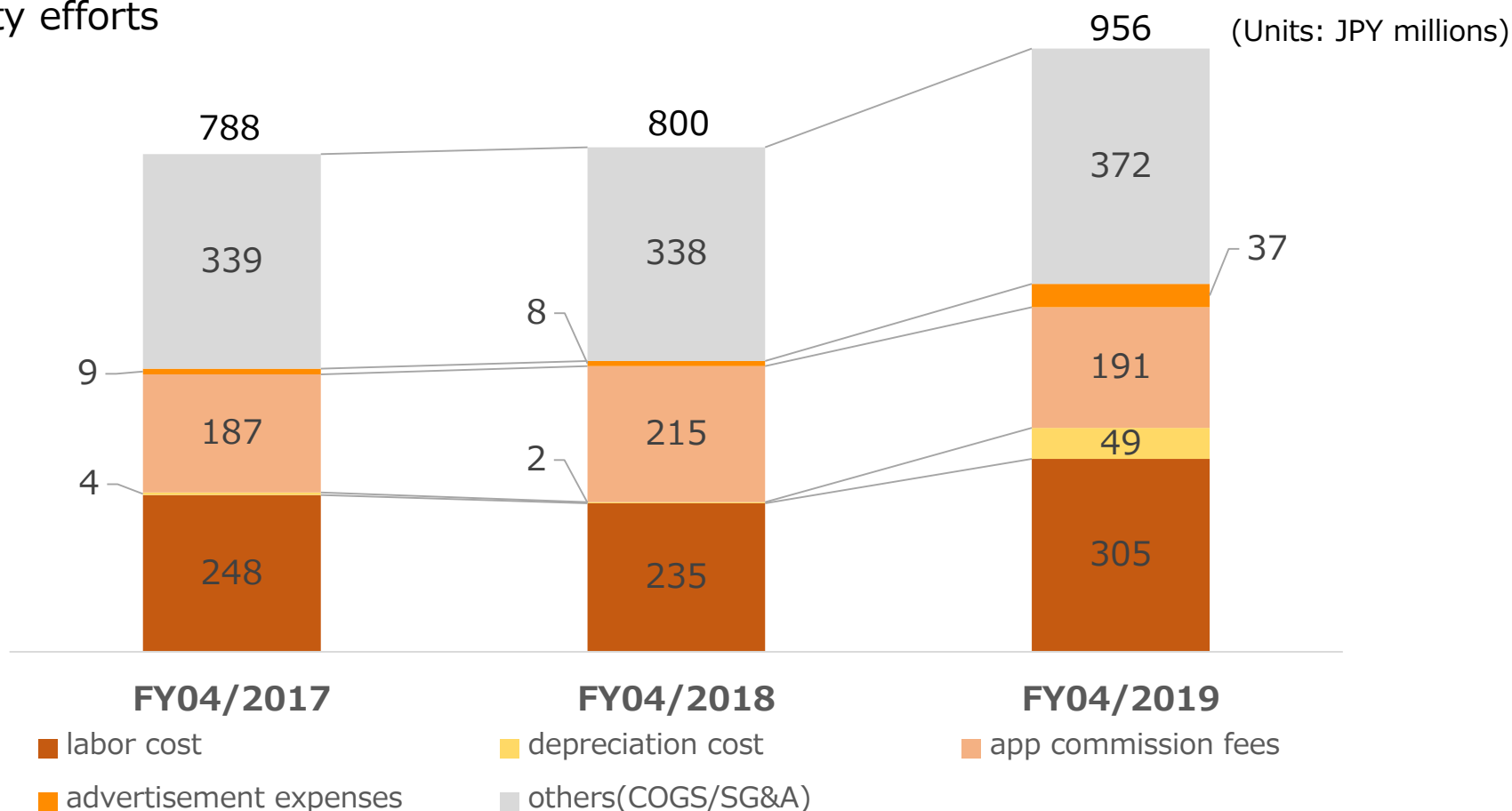
Net sales and EBITDA Trends

■ Net sales from AI (B-to-B) services and AI (B-to-C) services in FY04/2019 were about +120% and about -10% respectively on a year-on-year basis. (Revenues from AI (B-to-C) services decreased due to no revenue contributions from several unprofitable services terminated during the previous fiscal year. However, Revenues from Shogi Wars increased during this fiscal year)

■ Revenues in FY04/2019 Q4 decreased on a quarter-on-quarter basis because deliveries of initial setup projects for AI (B-to-B) services were concentrated in the previous quarter

(Units: JPY millions)

	FY04/2017	FY04/2018	FY04/2019
Net Sales	878	1,155	1,377
EBITDA	94	357	470
EBITDA margin	10.7%	30.9%	34.2%

Net Sales   EBITDA   EBITDA margin

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COGS and SG&A Trends

- Labor cost in FY04/2019 increased by about 30% because of newly hired engineers, etc
- COGS and SG&A increased in FY04/2019 Q4 because of a one time cost increase by proactive efforts to standardize development tools and to step up our advertising and publicity efforts

(Units: JPY millions)

FY04/2017 — 788: others(COGS/SG&A) 339, advertisement expenses 9, app commission fees 187, depreciation cost 4, labor cost 248

FY04/2018 — 800: others(COGS/SG&A) 338, advertisement expenses 8, app commission fees 215, depreciation cost 2, labor cost 235

FY04/2019 — 956: others(COGS/SG&A) 372, advertisement expenses 37, app commission fees 191, depreciation cost 49, labor cost 305

Legend:
- labor cost
- depreciation cost
- app commission fees
- advertisement expenses
- others(COGS/SG&A)

- Characteristics of AI (B-to-B) and AI (B-to-C) services are summarized below

Service	AI（B-to-B) Services	AI（B-to-C) Services
Summary	B-to-B machine learning service HEROZ Kishin	Shogi Wars, etc.
Input Data	Structural Design data, financial data, etc.	Shogi game records
Earning Structure	Initial setup and ongoing fees	Monthly membership fees, Kishin (AI) usage fees, etc.
Major Costs of Goods/Services	(Fixed) labor cost, server related cost	(Fixed) labor cost, server related cost (Variable) app commission fees, royalties

- HEROZ's overall marginal profit ratio, defined as "(net sales – app commission fees – royalties)/net sales," is as shown on the right.

- Note that marginal profit ratio improves as the composition of AI (B-to-B) services increases.

marginal profit ratio

67.6%

76.3%

83.8%

FY04/2017   FY04/2018   FY04/2019
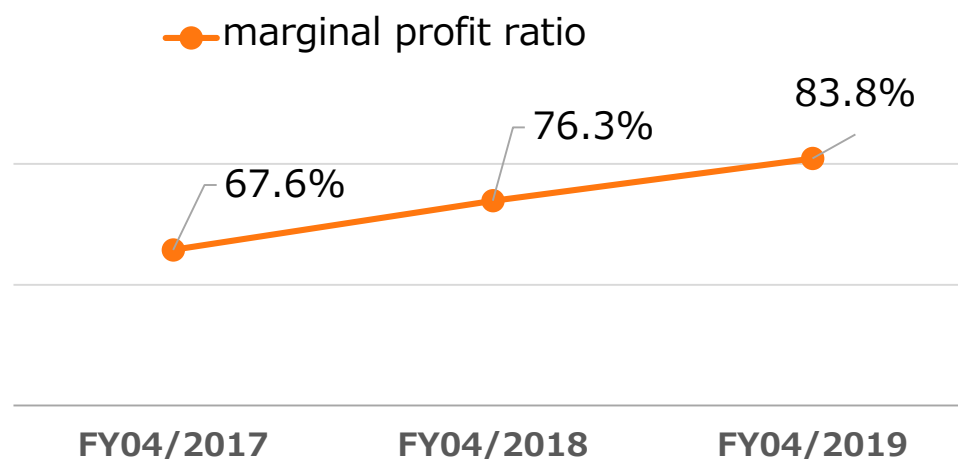
Balance Sheet (as of April 30, 2019)

- We have continued to invest cash and deposits in efforts to achieve the medium-to-long-term growth strategy (computing servers, R&D, etc.)
- Increased PP&E, computing servers for about 200 million yen adopting 5-year declining balance method, have enabled us to process larger, more complicated data (e.g. CAD or BIM data) for machine learning. Investments and other assets also increased as a result of the capital/business alliance and other strategic investments

Units: JPY millions	As of 4/30/2019	As of 4/30/2018
Current Assets	1,659	1,684
Cash and deposits	1,494	1,555
Fixed Assets	498	63
Property, plant and equipment	150	30
Intangible assets	5	0
Investments and other assets	342	32
Total Assets	2,157	1,748
Current Liabilities	178	243
Fixed Liabilities	-	-
Net Assets	1,979	1,504

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FY04/2020 Financial Forecast

- Net sales of AI (B-to-B) services are forecasted to exceed those of AI (B-to-C) services in FY04/2020.
- We forecast revenues of ¥1,630 million, EBITDA of ¥570 million and an EBITDA margin of 35.0%. We expect each figure to increase relative to the previous year, through the expansion of AI (B-to-B) services

（単位：百万円）

(Units: JPY millions)	FY04/2019 Actual	FY04/2020 Forecast	YoY (%)
Net Sales	1,377	1,630	+18.3%
EBITDA*	470	570	+21.1%
EBITDA Margin	*34.2%*	*35.0%*	
Operating Profit	420	520	+23.7%
Operating Margin	*30.5%*	*31.9%*	
Ordinary Profit	415	510	+22.9%
Net Income	296	350	+18.0%

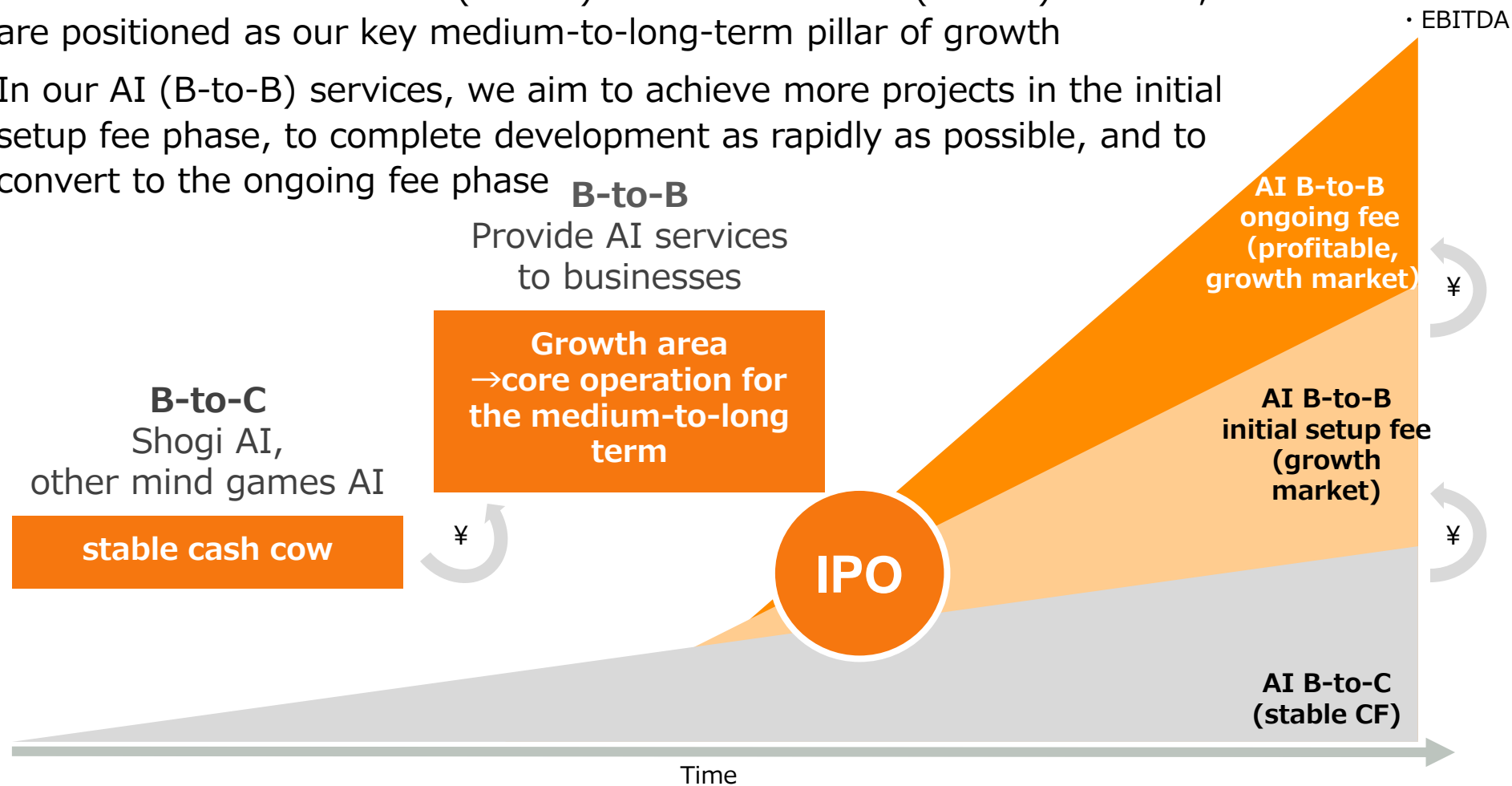* EBITDA = Operating Profit + Depreciation Expenses + Amortization of Lease Deposits

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Medium-to-long term Growth Strategy

- We aim to achieve EBITDA growth by investing our cash flows and leveraging our know-how from our AI (B-to-C) services to our AI (B-to-B) services, which are positioned as our key medium-to-long-term pillar of growth

- In our AI (B-to-B) services, we aim to achieve more projects in the initial setup fee phase, to complete development as rapidly as possible, and to convert to the ongoing fee phase

·EBITDA

B-to-B
Provide AI services
to businesses

AI B-to-B ongoing fee (profitable, growth market)

B-to-C
Shogi AI,
other mind games AI

Growth area →core operation for the medium-to-long term

AI B-to-B initial setup fee (growth market)

stable cash cow

IPO

AI B-to-C (stable CF)

¥

¥

¥

Time

Global Market Forecasts: AI Software (B-to-B)

- AI demand is accelerating globally in each industry, leading us to believe that our AI (B-to-B) service carries strong growth potential

- AI software market in Japan is also required to grow so rapidly due to the decrease of the domestic working population that AI will support to increase labor productivity.

- Our AI (B-to-B) service is growing up faster than the overall market. In FY04/2020, revenues from our AI (B-to-B) service are forecasted to grow up by more than 43%, the expected market growth

Expected market growth in global AI software
CAGR: about 43% from 2025(E) to 2018(A)

Annual AI Software Revenue, World Markets (US$ billion)

118.6

9.5

2018(A)

2025(E)
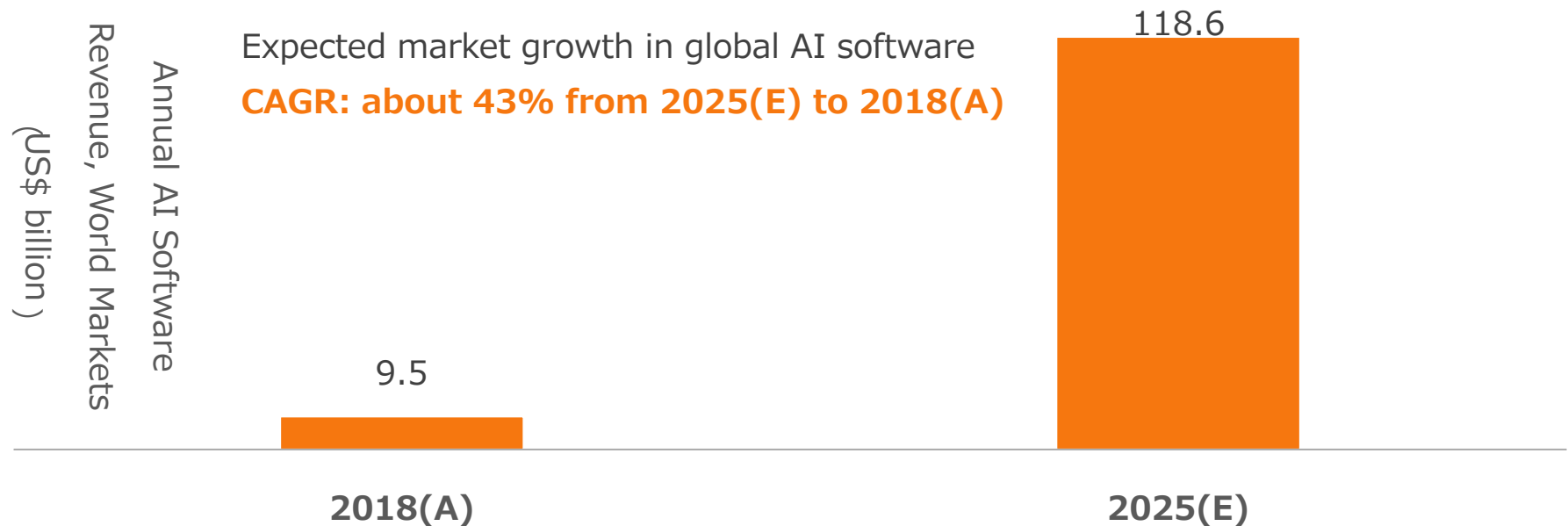
Source: Tractica, Artificial Intelligence Market Forecasts (1Q 2019)

■ Potential AI demand in Japan can be expected to be among the largest worldwide, as the working population is expected to decrease significantly going forward

Projection of Population Age 15-64

(Median Prediction Interval, 2015=100)

About 29% decrease

Legend: Global, Japan, US, China
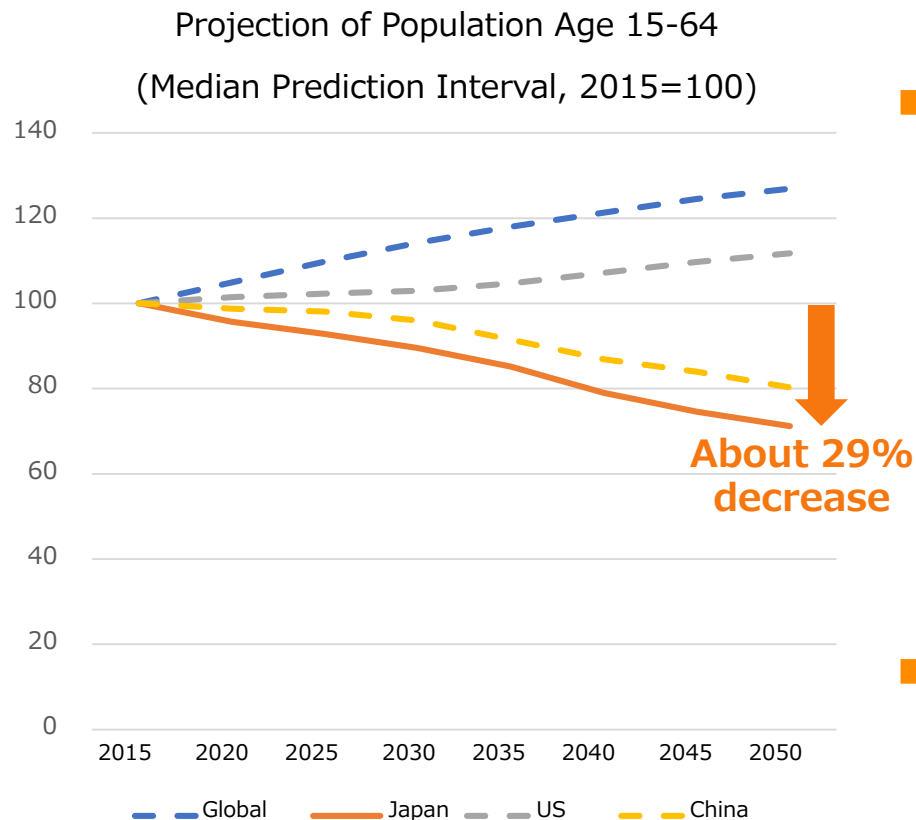
■ When defining the working population as those aged 15-64, the world average is forecasted to increase by about 14% from 2015 to 2030 and by about 27% from 2015 to 2050. On the other hand, the working population is expected to decrease by about 10% and about 29% during the same periods, respectively

■ Based on such forecasts, the Japanese working population will show the largest decrease among leading GDP nations

Source: Prepared by HEROZ based on United Nations, World Population Prospects, The 2017 revision

Potential AI Demand in Our Areas of Focus

- We believe there is also significant potential demand for enhancing operational efficiency through AI in the construction industry, which is one of our areas of focus

Challenges faced by the Construction Industry	Chronic Shortage of Man-power	- There will be a shortage of 110,000 construction technicians by 2025 (source: Human Touch Research Institute, "status quo" scenario in the Proprietary Analysis Monthly Report, December 2017)
		- Over 1/3 of first-class registered architects are over 60 (average: 56.2 years old) (source: Report on Construction-related Administration Aimed at Securing Safety of Architecture, Social Infrastructure Council, August 2016)
		- The number of construction and mining industry workers is expected to decrease from 5.05 million in 2014 to 4.16–4.24 million in 2030, with some variability depending on future economic growth and labor market participation trends (source: JILPT, 2015 Estimated Labor Supply/Demand)
	Soaring Materials Prices	- The national construction materials price index has increased by 17% since 2010 (source: Economic Research Association)

- We entered into a capital and business alliance with Takenaka Corporation in 2017 and became a member of i-Construction. We aim to create the industry standard AI for the construction industry, enhancing productivity and creating a new, attractive construction site

i-Construction

Initiatives in Finance AI

- Launched AI Equity Portfolio Diagnosis (patented), co-developed with SMBC Nikko Securities, for individual customers

    - AI makes proposals on equity portfolios for each retail investor
      AI proposes a more efficient portfolio individually based on each investors' available cash, stocks owned, and tolerance for risk

    - AI forecasts expected returns
      AI forecasts expected returns from each stock, learned through deep learning

    - SMBC Nikko Securities and HEROZ will continue to create various services using the latest AI technology going forward, including "AI Stock Price Watch Service", which is expected to be launched in the first half of fiscal year 2019

■ We cooperated in the development of ZENONZARD, the first title in the new digital card game brand AI CARDDASS developed by Bandai Co., Ltd., by developing AI devoted to card games which leverages HEROZ Kishin

- ■ AI to support players (= Partner AI)
  The partner AI provides recommendations for players on the next move during battles, post-battle analyses, and advice on deck composition

- ■ AI to evolve
  The partner AI grows by learning the user's preferences and thought processes through deep learnings and other types of machine learning

- ■ AI to battle
  AI has been set at various levels, allowing users to enjoy battles with AI at the level most suited for them

ZENONZARD

(illustrative screenshots)
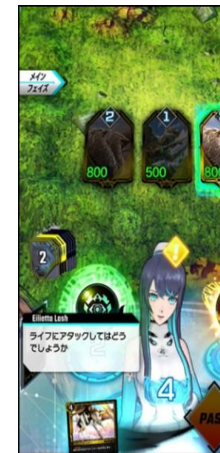
"AI Support" function   "Battle Analysis" function
Advice from AI   Battle report

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