



## DIGITAL HEARTS HOLDINGS / 3676

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**How to read a Shared Research report:** This report begins with the trends and outlook section, which discusses the company’s most recent earnings. First-time readers should start at the business section later in the report.

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## Executive summary

### Business overview

- DIGITAL HEARTS HOLDINGS provides debugging services to software development companies. Founded by current group chairman Eiichi Miyazawa in 2001, the company initially offered debugging services for console games. Today, the company's Entertainment segment includes software debugging for console games, mobile games, and amusement equipment, as well as promotional support services and game development. The Entertainment segment accounted for 89.2% of sales in FY03/18. The Enterprise segment provides system testing to detect bugs in enterprise systems, system development outsourcing and IT support, and security (10.8% sales share).
- In June 2017, Genichi Tamatsuka took over as president and CEO for founder Eiichi Miyazawa. Under a new management team, the company embarked on a "second stage of growth" and changed course toward growing the Enterprise segment as a second earnings pillar. This "second stage" entails continuing to grow the Entertainment segment (mainly Debugging services in the game business) while aggressively capturing enterprise system testing demand—a business still in its infancy—and seeking to solidify the company's position as the leading company for testing solutions in Asia. Like the entertainment sector, the company expects outsourcing of system testing (which is currently limited) to increase in the enterprise sector amid labor shortages. The company therefore began aggressive upfront spending in 2H FY03/18 to build a solid foundation in anticipation of rapid expansion in the Enterprise business. Specifically, the company is aiming to qualitatively and quantitatively strengthen its work force in the Enterprise segment by actively hiring test engineers and conducting internal human resource training. The company is also endeavoring to strengthen its technical capabilities through business alliances and M&A.
- The company's medium- to long-term roadmap targets sales of JPY50.0bn and EBITDA of JPY10.0bn. The company plans to strengthen its human capital and technology to increase the sales of the Entertainment segment (mainly debugging services) and the Enterprise segment to similar levels, raising the former to JPY25.0bn and the latter to JPY20.0bn (through expansion of the system testing and security businesses).

### Trends and outlook

- In FY03/18, sales were JPY17.4bn (+12.4% YoY), operating profit was JPY1.7bn (-9.0% YoY), recurring profit was JPY1.8bn (-10.7% YoY), and net income attributable to parent company shareholders was JPY1.2bn (+51.0% YoY).
- In FY03/19, the company forecasts sales of JPY21.0bn (+21.0% YoY), operating profit of JPY2.2bn (+26.7% YoY), recurring profit of JPY2.2bn (+24.8% YoY), and net income attributable to parent company shareholders of JPY1.5bn (+27.7% YoY). The company targets record sales and operating profit. Progress toward full-year company forecasts is 44% for sales and 35% for operating profit, but the company says earnings are on track. The peak earnings season (mainly for Debugging services for games) occurs during 2H and the company expects profit margins to improve as upfront spending that was conducted through 1H FY03/19 comes to an end.
- The company believes that ensuring the hiring and training of upstream process engineers who are capable of handling upstream test design processes and planning and who are key to service quality is the top priority for Enterprise segment expansion. Therefore, the company is investing accordingly. Its initial target is to add around 100 upstream process engineers from end-FY03/18. Progress is on track, with about 60 new engineers hired in 1H.

### Strengths and weaknesses

Strengths include DIGITAL HEARTS HOLDINGS' strong position in the fast-growing debugging services market, the earnings structure of its core business, which generates stable cash flow, and adept labor management that allows the company to respond quickly to diverse testing demand. The company's weaknesses are limited experience (and lack of name recognition) in industries other than games, a shortage of personnel with specialized skills, and delay in expanding overseas in the

labor-intensive debugging services business. We are closely following the impact of the company's "second stage of growth" initiatives in addressing these weaknesses.



## Recent updates

### Highlights

On **December 21, 2018**, DIGITAL HEARTS HOLDINGS Co., Ltd. announced early redemption of bonds and dissolution of a business alliance.

The company announced its decision to redeem a part of the first series unsecured convertible bonds with stock acquisition rights placed through third party allotment in advance of the maturity date and terminate its business alliance with Whiz Partners, Inc.

#### Overview of bonds to be redeemed

▷ Name of bonds:	First series unsecured convertible bonds with stock acquisition rights
▷ Date of issue:	June 9, 2016
▷ Issue price:	JPY1,017,200,000
▷ Remaining balance:	JPY1,017,200,000
▷ Amounts to be redeemed:	JPY508,600,000 (JPY101.50 per face value of JPY100)
▷ Date of redemption:	January 7, 2019 (tentative)
▷ Conversion price:	JPY1,229.90

#### Reasons for early redemption and dissolution of the business alliance

In entering the debugging business in the Chinese market, DIGITAL HEARTS HOLDINGS signed a business alliance with Whiz Partners on May 13, 2016 to build a strong relationship with the said company, which has a solid network with prominent Chinese companies including game publishers and extensive experience in supporting business developments. Further, the company issued the unsecured convertible bonds on June 9, 2016 to secure flexible funding for developing its business in China, such as conducting M&A.

Then, the company launched its business in China through establishing a wholly owned subsidiary DIGITAL HEARTS (Shanghai) Co., Ltd. (DHS). In addition to the game debugging business, the company has aggressively expanded its business into areas of translation services for Chinese companies wishing to enter the Japanese market and movie and music production support services. As a result, DHS has steadily improved its performance and expects to move into the black in FY03/19. As such, the company has become able to grow its business in China without relying on M&A. Further, the company has also made progress in establishing new fund procurement schemes such as concluding a purchase agreement with Deutsche Bank AG, London Branch regarding stock acquisition rights (under the Target Issue Program [TIP]). Hence, the company has decided to redeem JPY508mn of the bonds in advance.

Because the company has determined that it has made a certain level of progress in developing the group's Chinese business, upon consulting with Whiz Partners, it has decided to dissolve their business alliance. Regardless, the company intends to maintain a cooperative relationship with Whiz Partners while aiming to strengthen its Chinese business.

The early redemption of bonds is expected to have a negligible impact on FY03/19 results. However, in case of an event that requires revisions to the earnings forecast and subsequent disclosure of such revisions, the company will make prompt announcements.

On **December 19, 2018**, Shared Research updated the report following interviews with the company.

On **November 30, 2018**, the company announced that ISTQB had certified it as a Platinum Partner.

DIGITAL HEARTS Co., Ltd., a subsidiary of the company which provides systems testing services, announced that it had been certified as a Platinum Partner in the Partner Program of the International Software Testing Qualifications Board (ISTQB), an international qualification certification organization for software testing (as of November 30, 2018, there are only three Platinum Partner companies in Japan).

ISTQB is an international qualification certification organization in the software testing field. By establishing qualifications which certify the professional status of software testing, this organization was established in order to develop software testing technicians. The Japan Software Testing Qualifications Board (JSTQB) is certified as a member organization of the ISTQB and operates software testing technician qualification certification in Japan.

The member organizations of ISTQB in each country conduct mutual confirmation of qualification, educational, and training organization authentication. The software testing technician qualifications operated by JSTQB are also valid overseas. In August 2018, over 200 testers from the company passed a JSTQB-certified qualifications exam. As of the end of October 2018, there were eight Advanced Level technicians and 325 Foundation Level technicians in the company group who held qualifications from JSTQB (total number, including previous qualification holders). This led to the company group boasting an industry leading number of certified technicians. At the same time, the subsidiary ANET Corporation was also certified as a Gold Partner.

On **November 9, 2018**, the company announced earnings results for 1H FY03/19; see the results section for details.

On **October 16, 2018**, Shared Research updated the report following interviews with the company.

On **August 24, 2018**, the company announced it had concluded a business partnership agreement with VALTES Co., Ltd.

Since announcing on May 11, 2018, that it had concluded a basic agreement for a business and capital alliance with VALTES, the company has been in negotiations with VALTES to work out the details. The two companies were unable to reach an agreement on some of the terms of the proposed capital alliance, so instead of a capital and business alliance, they concluded a business partnership agreement that covers early-stage employee training and sharing of technical and other resources.

#### Circumstances leading to the business alliance

Since the basic agreement was reached the two companies have been in talks to discuss how to assure a steady supply of high value-added test services by providing training for test engineers and also how they might work together on joint projects, which would allow them to pursue orders for larger projects. During the course of the talks, prior to the formal business partnership agreement, the two companies reached an agreement under which the company's subsidiary, DIGITAL HEARTS Co., Ltd. would, on a trial basis, send more than ten of its testers from game and entertainment equipment testing units for roughly two months of training at VALTES to help them become enterprise system test engineers. The two companies also began to lay the groundwork for an information sharing network and take other steps that would help them win joint orders in the future.

During the course of these preparations, the two companies recognized that prospects for winning orders for joint projects depended on early-stage employee training and the sharing of technical and other resources, leading them to finalize a business partnership agreement that would set out the terms of their ongoing relationship and bring together their strengths in an effort to make further inroads into the testing market in the future.

#### Overview of business alliance

The business alliance is aimed at making maximum use of the strengths of both companies, namely, the large staff of testers at DIGITAL HEARTS and the top-flight training programs of VALTES. With regard to personnel training, the partnership agreement

calls for candidates to be selected from DIGITAL HEARTS' staff of more than 8,000 testers for training at VALTES, where they will go through a training program combining classroom and practical training that, in a relatively short period of time, will turn them into test engineers that can do test design work or project managers with comprehensive knowledge of the entire testing process. The partnership agreement also calls for sharing of client networks, a move aimed at helping the two companies win orders for joint projects in a wider range of industries, and win orders for large-scale system testing (covering everything from test design to the actual testing process) and for more complex testing work in highly specialized areas.

#### Impact of business alliance on FY03/19 forecast

The business partnership agreement is expected to have little impact on FY03/19 performance, but the company said it would be quick to make an announcement if it needed to make a revision to its forecast or the situation otherwise warranted.

**For previous releases and developments, please refer to the News and topics section.**



## Trends and outlook

### Quarterly trends and results

Cumulative (JPYmn)	FY03/17				FY03/18				FY03/19		FY03/19	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	% of FY	FY Est.
Sales	3,810	7,593	11,616	15,445	4,039	8,263	12,960	17,353	4,451	9,334	44.4%	21,000
YoY	7.2%	2.7%	4.2%	2.9%	6.0%	8.8%	11.6%	12.4%	10.2%	13.0%		21.0%
Gross profit	1,088	2,162	3,364	4,506	1,182	2,479	3,874	4,959	1,204	2,653		
YoY	17.4%	6.1%	7.5%	4.3%	8.6%	14.6%	15.2%	10.0%	1.8%	7.0%		
GPM	28.6%	28.5%	29.0%	29.2%	29.3%	30.0%	29.9%	28.6%	27.0%	28.4%		
SG&A expenses	607	1,284	1,963	2,600	642	1,475	2,323	3,223	902	1,875		
YoY	-11.1%	3.3%	8.8%	10.3%	5.8%	14.9%	18.3%	24.0%	40.4%	27.1%		
SG&A-to-sales ratio	15.9%	16.9%	16.9%	16.8%	15.9%	17.9%	17.9%	18.6%	20.3%	20.1%		
Operating profit	481	878	1,401	1,907	540	1,004	1,551	1,736	302	778	35.3%	2,200
YoY	96.5%	10.4%	5.8%	-2.9%	12.2%	14.3%	10.7%	-9.0%	-44.0%	-22.5%		26.7%
OPM	12.6%	11.6%	12.1%	12.3%	13.4%	12.1%	12.0%	10.0%	6.8%	8.3%		10.5%
Recurring profit	527	936	1,459	1,997	533	1,009	1,567	1,783	301	755	33.9%	2,224
YoY	116.8%	17.0%	9.8%	2.0%	1.1%	7.8%	7.4%	-10.7%	-43.5%	-25.2%		24.8%
RPM	13.8%	12.3%	12.6%	12.9%	13.2%	12.2%	12.1%	10.3%	6.8%	8.1%		10.6%
Net income	299	674	1,003	795	361	674	1,003	1,200	182	509	33.2%	1,533
YoY	187.1%	20.9%	76.9%	119.7%	20.7%	0.0%	0.0%	51.0%	-49.5%	-24.6%		27.7%
Net margin	7.8%	8.9%	8.6%	5.1%	8.9%	8.2%	7.7%	6.9%	4.1%	5.5%		7.3%

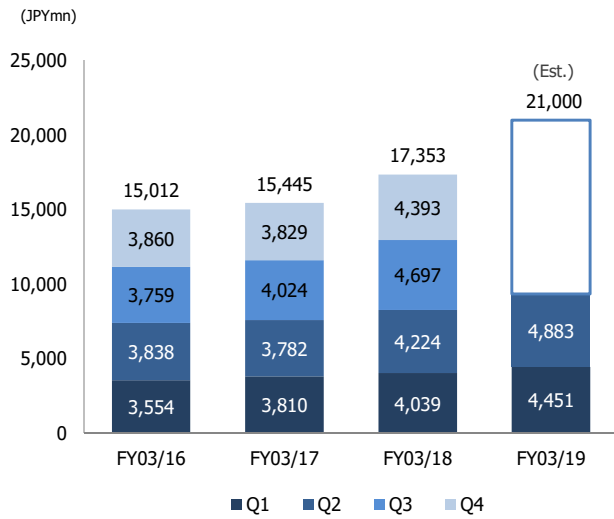
  

Quarterly (JPYmn)	FY03/17				FY03/18				FY03/19	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Sales	3,810	3,782	4,024	3,829	4,039	4,224	4,697	4,393	4,451	4,883
YoY	7.2%	-1.5%	7.0%	-0.8%	6.0%	11.7%	16.7%	14.7%	10.2%	15.6%
Gross profit	1,088	1,074	1,202	1,143	1,182	1,297	1,396	1,085	1,204	1,449
YoY	17.4%	-3.3%	10.2%	-4.2%	8.6%	20.7%	16.1%	-5.1%	1.8%	11.8%
GPM	28.6%	28.4%	29.9%	29.8%	29.3%	30.7%	29.7%	24.7%	27.0%	29.7%
SG&A expenses	607	677	679	637	642	833	848	900	902	974
YoY	-11.1%	20.8%	20.9%	15.3%	5.8%	23.0%	24.9%	41.4%	40.4%	16.9%
SG&A-to-sales ratio	15.9%	17.9%	16.9%	16.6%	15.9%	19.7%	18.1%	20.5%	20.3%	19.9%
Operating profit	481	397	523	506	540	464	548	185	302	475
YoY	96.5%	-27.9%	-1.1%	-21.0%	12.2%	16.9%	4.7%	-63.5%	-44.0%	2.5%
OPM	12.6%	10.5%	13.0%	13.2%	13.4%	11.0%	11.7%	4.2%	6.8%	9.7%
Recurring profit	527	409	523	538	533	476	558	215	301	454
YoY	116.8%	-26.6%	-1.2%	-14.4%	1.1%	16.4%	6.7%	-60.0%	-43.5%	-4.6%
RPM	13.8%	10.8%	13.0%	14.1%	13.2%	11.3%	11.9%	4.9%	6.8%	9.3%
Net income	299	376	329	-208	361	314	329	197	182	327
YoY	187.1%	-17.2%	3436.8%	-	20.7%	-16.5%	0.0%	-	-49.5%	4.1%
Net margin	7.8%	9.9%	8.2%	-	8.9%	7.4%	7.0%	4.5%	4.1%	6.7%

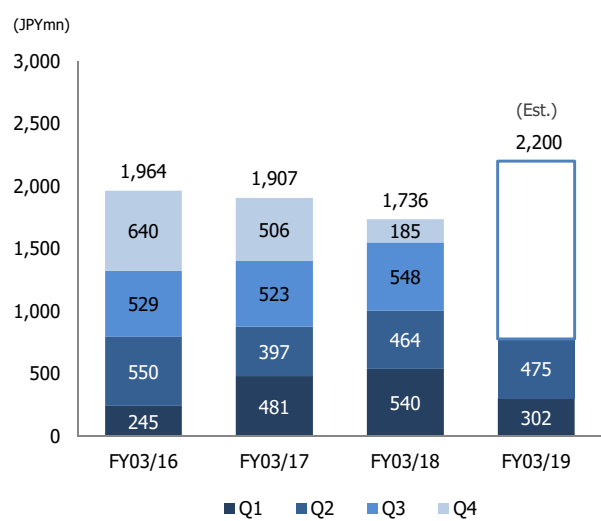
Source: Shared Research, based on company data

Note: Figures may differ from company materials due to differences in rounding methods.

## Quarterly sales



## Quarterly operating profit



Source: Shared Research based on company data  
Note: Figures may differ from company materials due to differences in rounding methods.

## Performance by segment

Sales and profit by segment (JPYmn)	FY03/14				FY03/18			FY03/19			
	Act.	Act.	Act.	Act.	Q1 Act.	Q2 Act.	FY Act.	Q1 Act.	Q2 Act.	FY Est.	Diff., % of FY
<b>Sales</b>	<b>10,138</b>	<b>13,285</b>	<b>15,012</b>	<b>15,445</b>	<b>4,039</b>	<b>8,263</b>	<b>17,353</b>	<b>4,451</b>	<b>9,334</b>	<b>21,000</b>	<b>16,549</b>
YoY	47.2%	31.0%	13.0%	2.9%	6.0%	8.8%	12.4%	10.2%	13.0%	21.0%	44.4%
Entertainment	9,360	11,609	12,696	13,544	3,727	7,604	15,568	3,798	7,874	17,000	13,202
YoY	-	24.0%	9.4%	6.7%	-	-	14.9%	1.9%	3.6%	9.2%	46.3%
% of total sales	92.1%	87.1%	84.2%	87.2%	92.3%	90.8%	89.2%	85.3%	84.4%	81.0%	-
Debugging service	8,435	9,430	10,455	11,524	3,261	6,597	13,186	3,111	6,393	13,765	-
YoY	-	11.8%	10.9%	10.2%	-	-	14.4%	-4.6%	-3.1%	4.4%	-
% of total sales	83.0%	70.8%	69.3%	74.2%	80.7%	78.8%	75.6%	69.9%	68.5%	65.5%	-
Game console (GC)	3,392	3,604	3,449	3,483	1,099	2,056	4,174	979	1,981	-	-
YoY	-	6.3%	-4.3%	1.0%	-	-	19.8%	-10.9%	80.3%	-	-
% of total sales	33.4%	27.0%	22.9%	22.4%	27.2%	24.9%	23.9%	22.0%	21.2%	-	-
Mobile solutions (MS)	2,655	3,554	4,994	6,262	1,716	3,492	7,399	1,993	4,128	-	-
YoY	-	33.9%	40.5%	25.4%	-	-	18.2%	16.1%	140.6%	-	-
% of total sales	26.1%	26.7%	33.1%	40.3%	42.5%	42.3%	42.4%	44.8%	44.2%	-	-
Amusement (AM)	2,388	2,272	2,012	1,778	444	1,047	1,612	138	282	-	-
YoY	-	-4.9%	-11.4%	-11.6%	-	-	-9.3%	-68.9%	-36.5%	-	-
% of total sales	23.5%	17.1%	13.3%	11.4%	11.0%	12.7%	9.2%	3.1%	3.0%	-	-
Creative service	442	1,675	1,729	1,465	340	735	1,743	511	1,073	3,235	-
YoY	-	279.0%	3.2%	-15.3%	-	-	19.0%	50.4%	45.9%	85.6%	-
% of total sales	4.3%	12.6%	11.5%	9.4%	8.4%	8.8%	10.0%	11.5%	11.5%	15.4%	-
Media, other	483	504	512	554	127	272	638	176	408	-	-
YoY	-	4.3%	1.6%	8.2%	-	-	15.2%	39.8%	50.1%	-	-
% of total sales	4.8%	3.8%	3.4%	3.6%	3.1%	3.2%	3.7%	4.0%	4.4%	-	-
Enterprise	798	1,713	2,382	1,952	312	767	1,878	652	1,459	4,000	3,348
YoY	-	114.7%	39.1%	-18.1%	-	-	-3.8%	109.1%	90.2%	113.0%	36.5%
% of total sales	7.9%	12.9%	15.8%	12.6%	7.7%	9.2%	10.8%	14.7%	15.6%	19.0%	-
System testing	360	380	681	778	165	346	1,084	260	546	1,700	-
YoY	-	5.6%	79.2%	14.2%	-	-	39.3%	57.4%	58.0%	56.8%	-
% of total sales	3.5%	2.9%	4.5%	5.0%	4.1%	4.1%	6.2%	5.8%	5.8%	8.1%	-
IT service and security	438	1,333	1,701	1,193	147	422	794	393	913	2,300	-
YoY	-	204.3%	27.6%	-29.9%	-	-	-33.4%	168.9%	116.6%	189.7%	-
% of total sales	4.3%	10.0%	11.3%	7.7%	3.6%	5.0%	4.6%	8.8%	9.8%	11.0%	-
Adjustments	-24	-39	-70	-94	-	-108	-94	-	-1	-	-
<b>Operating profit</b>	<b>1,781</b>	<b>1,517</b>	<b>1,964</b>	<b>1,907</b>	<b>540</b>	<b>1,004</b>	<b>1,736</b>	<b>302</b>	<b>778</b>	<b>2,200</b>	<b>1,898</b>
YoY	79.1%	-14.8%	29.4%	-2.9%	12.2%	14.3%	-9.0%	-44.0%	-22.5%	26.7%	13.7%
Entertainment	na	1,915	2,379	2,453	812	1,645	2,956	677	1,512	-	-
YoY	-	-	24.2%	3.1%	-	-	20.5%	-16.6%	-8.1%	-	-
% of operating profit	-	97.5%	97.1%	79.3%	-	102.4%	-	-	108.6%	-	-
Enterprise	na	50	71	203	-28	-39	-34	-58	-120	-	-
YoY	-	-	42.0%	185.9%	-	-	-	-	-	-	-
% of operating profit	-	2.5%	2.9%	6.6%	-	-	-	-	-	-	-
Adjustments	-353	-447	-486	-1,186	-244	-602	-1,186	-317	-614	-	-

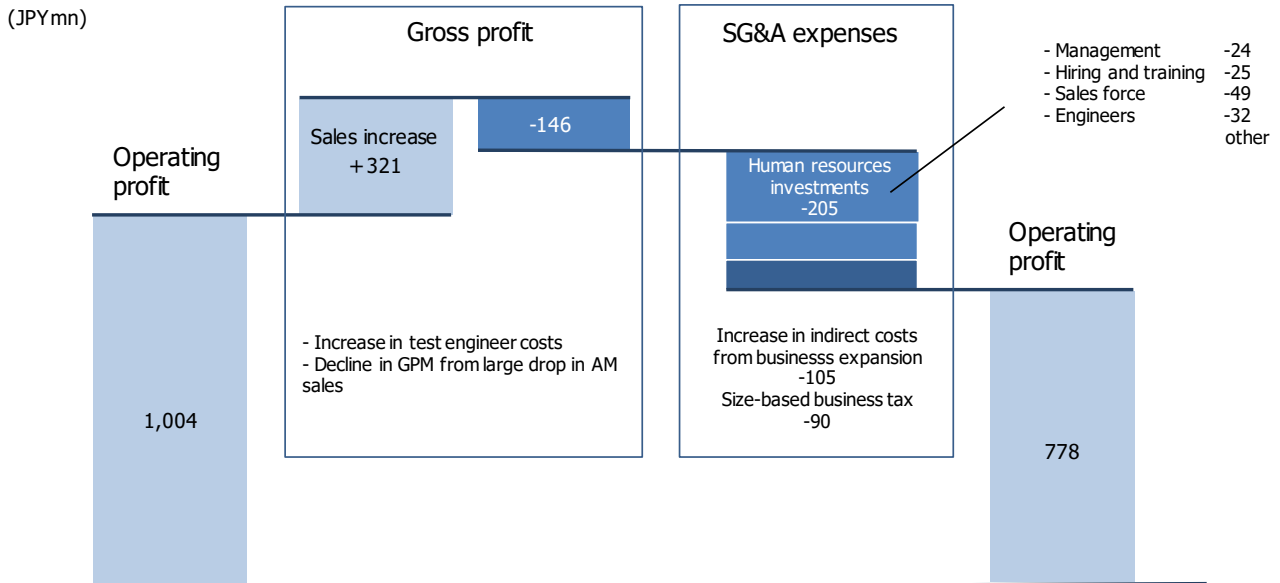
Source: Shared Research based on company data  
Note: Segment sales include intragroup eliminations.

## 1H FY03/19 results (out November 9, 2018)

### Results overview: Progress in line with company forecast

For 1H FY03/19, DIGITAL HEARTS reported consolidated sales of JPY9.3bn (+13.0% YoY), an operating profit of JPY778mn (-22.5% YoY), recurring profit of JPY755mn (-25.2% YoY), and net income attributable to parent company shareholders of JPY509mn (-24.6% YoY). The top-line growth was underpinned by steady growth at the mainstay Entertainment business and more than a two-fold YoY increase in sales from IT and security services under the Enterprise business. Meanwhile, a sharp drop in sales from debugging services for amusement equipment (pachinko and pachislot machines) at the Entertainment business and an increase in costs due to active upfront spending in the Enterprise business led to a decline in operating profit.

#### Analysis of operating profit



Source: Shared Research based on company data

### 1H results by segment

The company has changed its reportable segments as of Q1 FY03/19.

#### Entertainment business

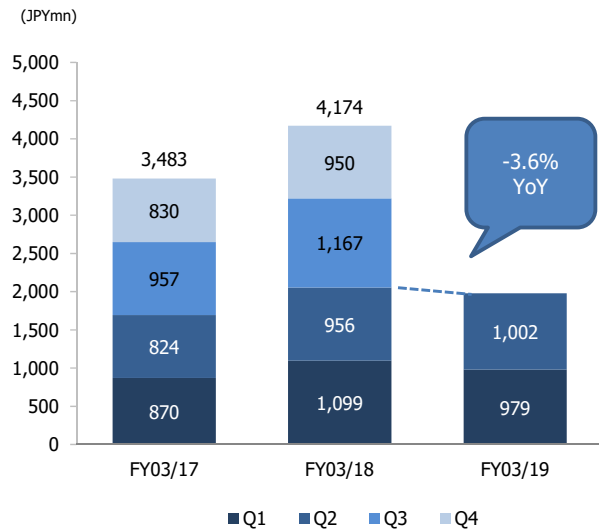
Under the Entertainment business, the company provides debugging services for console games, mobile games, and amusement equipment, as well as other support services such as contract development and promotion. The Entertainment business reported 1H sales of JPY7.9bn (+3.6% YoY). Segment sales were 46.3% of the company's full-year forecast in 1H. However, segment profit fell to JPY1.5bn (-8.1% YoY) due to the lack of last-minute demand for amusement equipment in the debugging services business that occurred ahead of tightening regulations in the previous fiscal year.

#### Debugging services

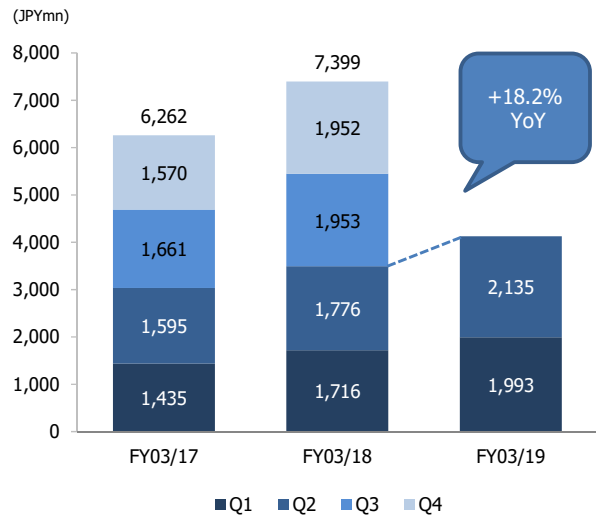
Debugging services involves checking for software bugs in console game, mobile game, and amusement equipment from a user perspective and reporting the findings to clients. Sales from Debugging service in 1H declined 3.1% YoY to JPY6.4bn. Sales broke down as follows: Services for console games (GC) JPY2.0bn (-3.6% YoY), services for mobile games (MS) JPY4.1bn (+18.2%), and services for amusement equipment (AM) JPY282mn (-73.1%). Sales in AM unit fell sharply because development of new equipment has been slow in FY03/19, due to tightened regulations that went into force in February 2018. In contrast, sales at the Mobile solutions (MS) unit, which provides services for mobile games, logged strong gains on the back of ongoing growth in debugging demand, particularly in the post-launch phase, helping to curtail the drop in sales for the Debugging services as a whole.

**Earnings trends by unit (Entertainment segment)**

**Console games**

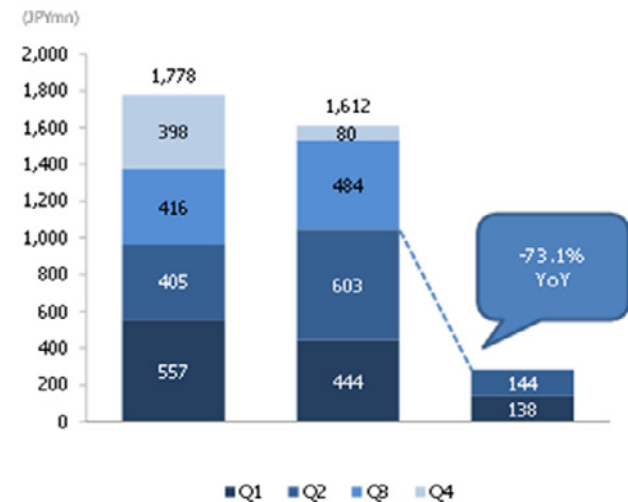


**Mobile solutions**



Source: Shared Research based on company data

**Amusement**



Source: Shared Research based on company data

**Creative services**

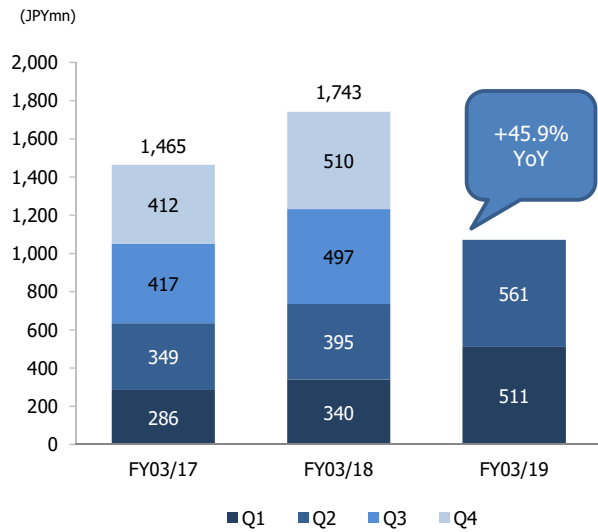
Under Creative services, the company offers a full range of content production support services, including game development and production of 2D and 3D graphics. In 1H, sales from Creative services came in at JPY1.1bn (+45.9% YoY) on the back of ongoing game development work and new project wins as the company stepped up hiring and employee training in a successful effort to strengthen production capabilities and improve service quality.

**Media and other services**

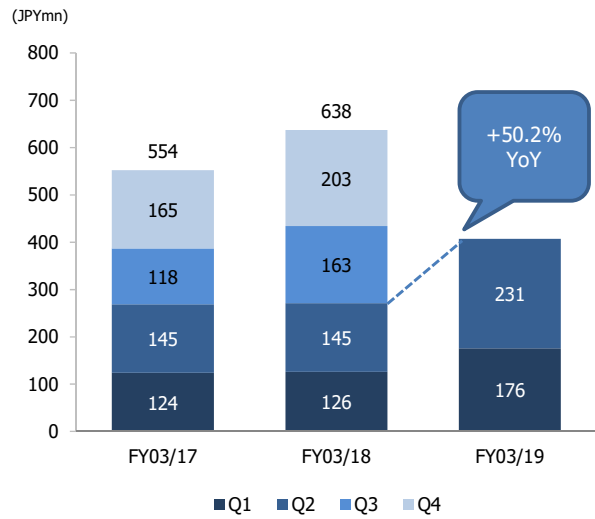
Media and other services comprise the media service, which is the operation of 4Gamer.net (one of Japan's largest game information websites), and other services including customer support. In addition to ongoing efforts providing speedy and high value-added original reporting to increase the media value of its websites (mainly 4Gamer.net), the company's customer support business (established last year) added to sales with a steady stream of new contract wins. As a result, sales of Media and other services sharply grew by 50.1% YoY to JPY408mn in 1H FY03/19.

## Earnings trends by unit (Entertainment segment)

### Creative services



### Media and other services



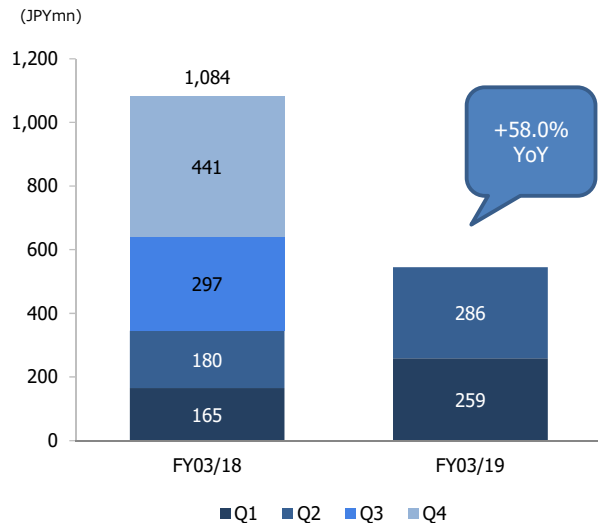
Source: Shared Research based on company data

## Enterprise business

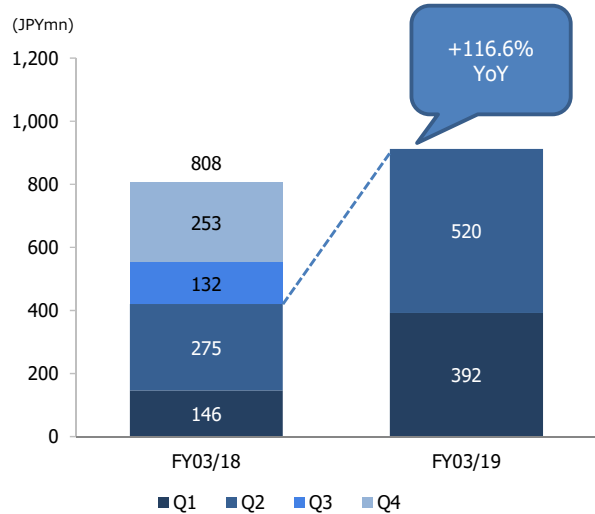
The Enterprise business encompasses a range of services for corporate IT systems, including system testing, contract software development, IT support services, and security. 1H sales of JPY1.5bn were up 90.2% YoY. Segment sales in 1H were 36.5% of the company's full-year forecast. The large top-line gains notwithstanding, the Enterprise business finished 1H in the red with a loss of JPY120mn as earnings were weighed down by heavy upfront spending, including additions to its staff of specialists.

## Earnings trends by unit (Enterprise segment)

### System testing



### IT service and security



Source: Shared Research based on company data

## System testing

The company's System testing service involves finding bugs in corporate IT systems. 1H sales of JPY546mn were up 58.0% YoY. The strong gains in this area reflect the company's successful efforts to win new clients and expand business with existing client companies through precise identification of client needs and active marketing activities. To facilitate further growth in this area the company established business alliances with GNT (a specialist in offshore development services based in Vietnam) and

VALTES (a testing company with well-developed training programs), with a view to focusing on hiring and training test engineers with specialized knowledge, thereby increasing its capacity to undertake new projects and improve service qualities.

The company noted that the group's structure for business expansion in 2H is coming together. This structure includes business alliances aimed at expanding the company's client base and strengthening human capital and technology. Although progress in 1H in the system testing business was slow compared to other businesses, at only 32.1% of the company's full-year forecast of JPY1.7bn, Shared Research believes that new clients and a strengthened group structure will contribute toward sales growth in 2H.

#### IT service and security

The company's IT and security services encompass contract system development, IT support, and security services. 1H sales were robust at JPY913mn (+116.6% YoY). Sales in 1H have already exceeded full-year totals for FY03/18, but progress toward the full-year company forecast for FY03/19 was only 39.7%. During the period the company built a business structure to offer a one-stop service (operated in conjunction with NTT East) from providing network circuits to IT security, and formed alliances with two US-based IT security startups (Aella Data and Synack) to expand new services and establish structures for growth in 2H and onward.

#### Overview of financial position: changes in assets, liabilities, and net assets

As of the end of 1H FY03/19, the company's balance sheet showed total assets of JPY9.4bn, up JPY848mn versus the end of FY03/18. Current assets declined by JPY79mn while fixed assets increased by JPY927mn. The decline in current assets was due in large part to a JPY127mn decline in cash and deposits. The increase in fixed assets was due mainly to a JPY645mn increase in the value of investment securities (using mark-to-market valuations).

On the liability side, the company's balance sheet showed total liabilities of JPY4.9bn, down JPY119mn versus the end of FY03/18. The decline in total liabilities was due to the decline in current liabilities, which declined by JPY220mn while fixed liabilities increased by JPY102mn. The decline in current liabilities was due in large part to a JPY193mn decline in accrued expenses payable.

Net assets at the end of 1H FY03/19 came to JPY4.5bn, a JPY967mn increase over the end of FY03/18. The rise in net assets was due in large part to the booking of net income attributable to parent company shareholders, which added JPY367mn to retained earnings, and a JPY464 gain in the valuation difference of available-for-sale securities.

#### Breakdown of cash flow

As of the end of 1H FY03/19, the company's balance sheet showed total cash and cash equivalents of JPY3.7bn, down JPY162mn versus the end of FY03/18.

##### Cash flow from operating activities

Cash flow from operating activities was a positive JPY315mn (versus JPY858mn during the same period last year). Major contributions to operating cash flow came from a pre-tax profit of JPY734mn, which offset the impact of negative cash flow in other areas such as JPY244mn in taxes paid.

##### Cash flow from investing activities

Cash flow from investing activities was a negative JPY450mn (versus a negative JPY332mn during the same period last year). The negative cash flow from investing activities was due in large part to an outlay of JPY310mn to purchase shares of a subsidiary and another outlay of JPY97mn to acquire a business.

##### Cash flow from financing activities

Cash flow from financing activities was a negative JPY40mn (versus a negative JPY153mn during the same period last year).

The negative cash flow from financing activities was due in large part to the payment of JPY132mn in cash dividends during the period.

**For details on previous quarterly and annual results, please refer to the Historical performance section.**

## Full-year company forecasts

(JPYmn)	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18	FY03/19	Change
	Act.	Act.	Act.	Act.	Act.	Act.	Est.	
Sales	6,886	10,138	13,285	15,012	15,445	17,353	21,000	+3,647
Entertainment business	-	9,360	11,609	12,696	13,589	15,568	17,000	+1,432
Debugging service	-	8,435	9,430	10,455	11,524	13,186	13,765	+579
Game console (GC) unit	-	3,392	3,604	3,449	3,483	4,174	-	
Mobile solutions (MS) unit	-	2,655	3,554	4,994	6,262	7,399	-	
Amusement (AM) unit	-	2,388	2,272	2,012	1,778	1,612	-	
Media service	-	483	504	512	554	638	-	
Creative service	-	442	1,675	1,729	1,465	1,743	-	
Enterprise business	-	798	1,713	2,382	1,952	1,878	4,000	+2,122
System testing	-	360	380	681	758	1,084	1,700	+616
IT service and security	-	438	1,333	1,701	1,193	794	2,300	+1,506
YoY	27.8%	47.2%	31.0%	13.0%	2.9%	12.4%	21.0%	
Entertainment business			24.0%	9.4%	7.0%	14.6%	9.2%	
Debugging service			11.8%	10.9%	10.2%	14.4%	4.4%	
Game console (GC) unit			6.3%	-4.3%	1.0%	19.8%	-	
Mobile solutions (MS) unit			33.9%	40.5%	25.4%	18.2%	-	
Amusement (AM) unit			-4.9%	-11.4%	-11.6%	-9.3%	-	
Media service			4.3%	1.6%	8.2%	15.2%	-	
Creative service			279.0%	3.2%	-15.3%	19.0%	-	
Enterprise business			114.7%	39.1%	-18.1%	-3.8%	113.0%	
System testing			5.6%	79.2%	11.3%	43.0%	56.8%	
IT service and security			204.3%	27.6%	-29.9%	-33.4%	189.7%	
Adjustments		-24	-39	-70	-52	-94		
Operating profit	994	1,781	1,517	1,964	1,907	1,736	2,200	+464
Entertainment business	-	-	1,915	2,379	2,453	2,956	-	
Enterprise business	-	-	50	71	203	-34	-	
Adjustments	-	-353	-447	-486	-750	-1,186	-	
YOY	19.2%	79.1%	-14.8%	29.4%	-2.9%	-9.0%	26.7%	
OPM	14.4%	17.6%	11.4%	13.1%	12.3%	10.0%	10.5%	+0.5pp
Entertainment business	-	-	16.5%	18.7%	18.1%	19.0%	-	
Enterprise business	-	-	2.9%	3.0%	10.4%	-1.8%	-	
Recurring profit	997	1,789	1,526	1,958	1,997	1,783	2,224	+441
YoY	23.5%	79.5%	-14.7%	28.4%	2.0%	-10.7%	24.8%	
RPM	14.5%	17.6%	11.5%	13.0%	12.9%	10.3%	10.6%	+0.3pp
Net income	580	1,088	540	362	795	1,200	1,533	+333
YoY	31.5%	87.7%	-50.4%	-33.0%	119.7%	51.0%	27.7%	
Net margin	8.4%	10.7%	4.1%	2.4%	5.1%	6.9%	7.3%	+0.4pp

Source: Shared Research based on company data

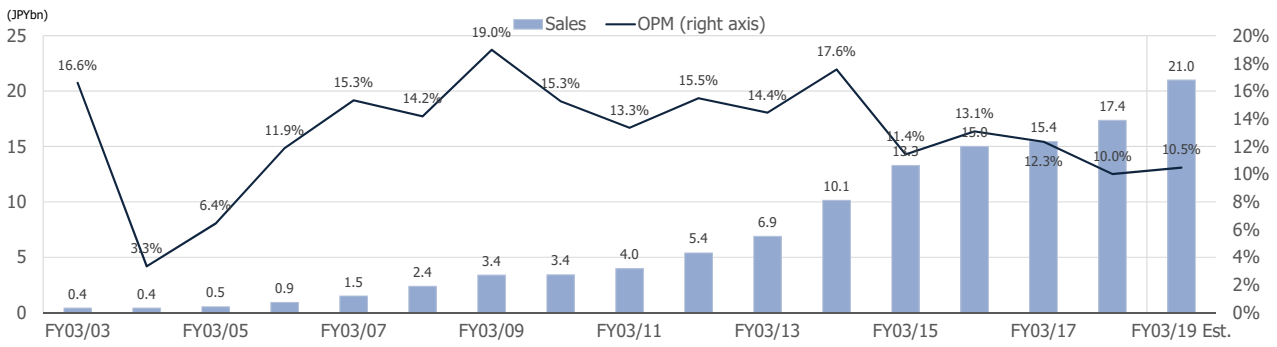
Note: On October 1, 2016, DIGITAL HEARTS carried out a 2-for-1 stock split. The EPS starting in FY03/17 reflects this split

### Targets sales growth 15 years running and record operating profit; upfront spending continues in Enterprise business, but profitability to improve from 2H

Amid its second stage of growth, DIGITAL HEARTS expects to see returns on investments to start coming to the fore during FY03/19. For the full year, the company is forecasting sales of JPY21.0bn (+21% YoY or +JPY3.6bn) and operating profit of JPY2.2bn (+27% YoY or +JPY500mn); the operating profit margin is projected to come in at 10.5% (+0.5pp YoY). Of the projected JPY3.6bn increase in sales, JPY1.4bn is expected to come from the Entertainment business and JPY2.1bn from the Enterprise business as existing businesses post steady growth and new businesses serve as the main driver for sales growth. With respect to earnings, because the upfront spending will run through the first half of the year, the company is expecting profitability to start improving from 2H (see figure below).



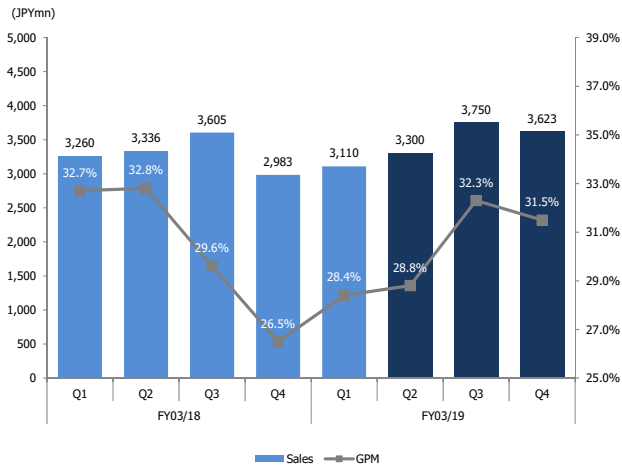
## Earnings



Source: Shared Research based on company data

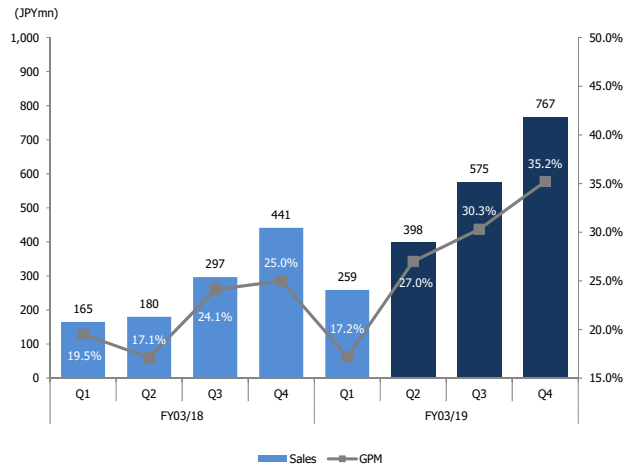
## Sales and gross profit by segment (figures from Q2 FY03/19 onwards represent company forecasts)

### Entertainment business: Debugging service



Source: Shared Research based on company data

### Enterprise business: System testing



Source: Shared Research based on company data

## Entertainment business

In Debugging service, the company is expecting higher game-related sales due to strong performance in Game console (GC) (formerly consumer games) and Mobile solutions (MS) units. However, the Amusement (AM) unit suffered a steep reactionary slump in 1H following the sharp jump in sales last year as client companies rushed to beat the implementation of tighter regulations on pachinko and pachislot machines in February 2018. Although the company expects some operational recovery in 2H, it also projects that the pace will be slow. On the operating profit front, the company plans to raise its profitability in 2H by implementing a range of measures, including procedural reforms at Lab. locations aimed at lowering costs to offset both the drop in sales and the resulting decline in profitability at the Amusement unit. At the growing Mobile solutions unit in particular, the company has a good handle on demand trends at its long-time customers and, based on this, is expecting sales to start benefiting from the demand build-up starting in Q2.

The Entertainment business (like the former Debugging business) will remain an important core business for the company, delivering continued growth to underpin investment in the Enterprise business. In FY03/19, the company will focus on the following:

- ▷ Growth of existing businesses: Continue to strengthen relationship with customers and improve service quality to capture further debugging demand
- ▷ Develop new services that harness its extensive knowledge of games and market positioning acquired over the years. The company commented that its goal is to become a “total supporter” of the entertainment industry.

### Debugging service: favorable market environment for Game console and Mobile solutions units, turnaround for Amusement unit starting in 2H

The company thinks the existing market for the Debugging service will continue to grow (particularly demand for the post-launch phase) in light of the following trends, and that it can expand market share by capturing resulting demands.

- ▷ Game console (GC): Rising expectation that software development for the Nintendo Switch will pick up
- ▷ Mobile solutions (MS): Smartphone games expected to become more sophisticated (greater functionality/higher performance)

Meanwhile, the Amusement (AM) unit will likely continue to see gross profit erode accompanying a drop in sales. This is because the reactionary slump from the last minute demand rise prior to the regulatory reforms in February 2018 seems to be dragging on, and although a large share of debugging-related expenses are variable expenses, the AM unit has overheads, such as specialist staff and labs. The company expects a recovery in 2H, stemming from the results of business process reforms and higher operating rates in the AM unit, and targets GPM of 30.6% (+0.1pp YoY) for the Debugging service business in FY03/19. With respect to the new regulations governing amusement equipment, some are thinking that development of the new 6.0 model pachinko and pachislot machines will start picking up in earnest but other developers and manufacturers are still sitting on the fence. We will need to keep a close eye on development trends in new models.

6.0 model machines: With regard to restrictions placed on amusement equipment (pachinko and pachislot machines) under the Act on Control and Improvement of Amusement Business, etc., commercial establishments with such equipment are required to have only those machines that conform to the voluntary industry standards governing the aspects of the game (such as its gambling nature). 6.0 models are the latest equipment (specification announced on January 31, 2018) that comply with the industry's voluntary regulatory measure for pachinko and pachislot machines, replacing the 5.9 models.

#### Game console (GC) unit

- ▷ Operating environment: The company expects a continuation of large-scale game titles as PS4 gains more popularity. The release of Nintendo Switch in March 2017 is expected to further accelerate the development of new titles.
- ▷ China business: The company continues to position China as an attractive market as part of its long-term plan to achieve overseas sales of JPY5.0bn.

#### Mobile solutions (MS) unit

- ▷ Operating environment: The number of titles released for mobile phones has declined slightly. However, the development of high quality game apps is accelerating, and developers are expected to keep outsourcing more debugging work as they seek to improve the quality of apps.
- ▷ Debugging for post-release mobile content: Related sales accounted for over half of the unit's FY03/18 sales and continues to increase its share. The number of projects also rose, which made contribution to stable earnings growth.

#### Amusement (AM) unit

- ▷ Operating environment: Regulations are being strengthened in stages, affecting the development of amusement machines by the company's major clients.
- ▷ Earnings: The effect of the reactionary slump after the rush of extraordinary demand ahead of tightening regulations in February 2018 continued through 1H. The unit is anticipating a gradual turnaround in demand starting in 2H and is seeking to rebound along with this in terms of profitability.

#### Creative service

FLAME Hearts, which was created through a merger of three subsidiaries in January 2016, is now refocusing its strategy and putting more emphasis on the creation of characters, backgrounds, and assets to be used in games in an effort to achieve more stable earnings. FLAME Hearts operated in the black every quarter during FY03/18 and is building up a successful game

development track record. In FY03/19, FLAME Hearts will continue providing development support to clients with a team of around 150 engineers.

### Media and other services

The company looks for stable sales and profit of the mainstay 4Gamer.net. Regarding e-sports event EVO Japan, based on the experience and problems encountered in the competition DIGITAL HEARTS sponsored in January 2018, the company indicated it did not intend to sponsor another EVO Japan event during the current fiscal year. The customer support services for games launched in FY03/18 made steady progress winning new contracts.

### Enterprise business

The company targets steep sales growth in the Enterprise business by combining system development, IT support, and security to ensure steadily capture system testing demand. It plans to maintain upfront spending such as for hiring specialist staff. Due to the chronic shortage of software engineers at IT and other companies, more and more companies are starting to outsource the labor-intensive testing process to outside contractors. In the Enterprise business, DIGITAL HEARTS is seeking to capture more of this demand by strengthening its workforce. The company intends to take advantage of the strong demand environment by improving corresponding management structures and also expects to see profitability in this area improve steadily as the top-line continues to grow from Q2 onward.

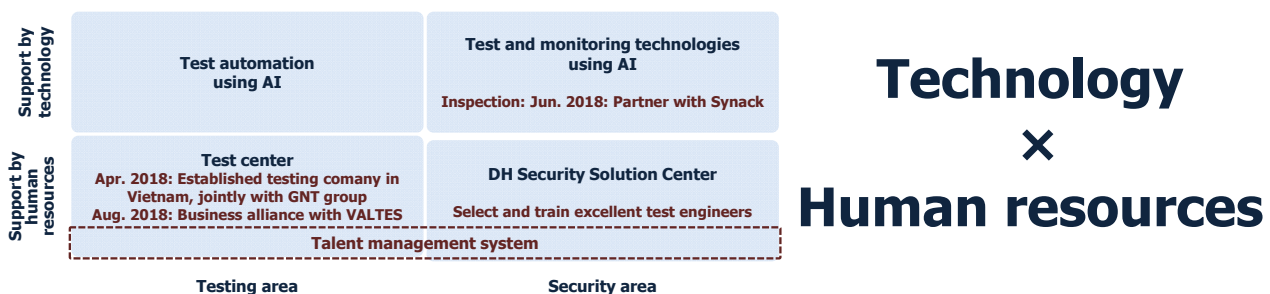
The company established a new Enterprise business division adopting a division-based management structure, positioning expansion in the corporate business as a new growth driver. Over the medium to long term, the company will work to see sales of the Enterprise business match the sales from the Entertainment business. To this end, it is pushing ahead with investment and is bolstering the business structure (including management changes) with a view to quickly and firmly establishing itself in a rapidly expanding enterprise market while achieving sustained growth.

On the M&A front, the company acquired the system development business of Keepahead Co., Ltd. in 1H and made it a consolidated subsidiary in June 2018. The company also made A-net, Inc., which excels in medical systems testing (a new business for the company), a subsidiary (consolidated subsidiary from September 2018).

### Two business opportunities

The company sees the following two business opportunities in the current operating environment: 1) Medium to long term: The spread of devices and equipment that run software in all areas of daily life, as represented in IoT; and 2) Short to medium term: Severe labor shortage in the service sector as a result of the accelerating rate of decline in Japan’s working-age population. In this context, the Enterprise business aims to expand the scope of its business and progress automation by harnessing multiple technologies as expressed in its keyword “Technology x Human resources,” and will be utilizing the over 8,000 testers employed by the Entertainment business for deployment in the Enterprise business.

### Business strategy



Source: Shared Research based on company data

### Market still in early days

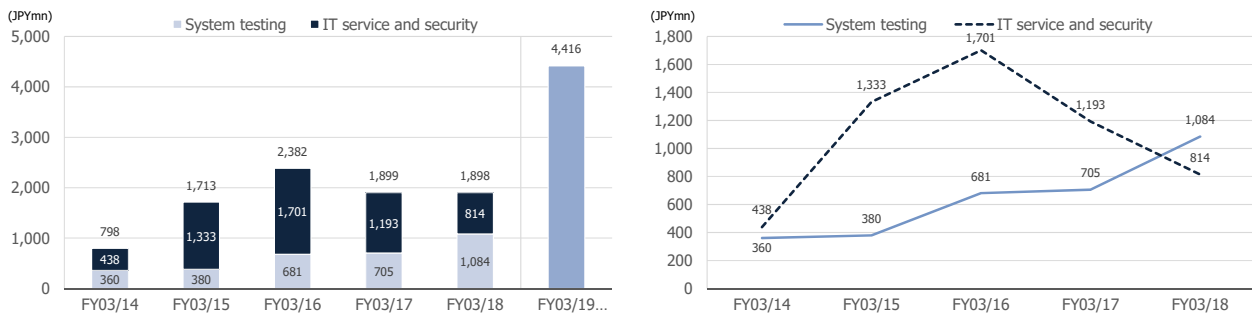
The company sees testing demand in the Enterprise business to still be in its formative stages. Some form of testing is said to account for 30–40% of IT companies’ software development processes. However, since these companies should be devoting their management resources to the development of proprietary products and services, the company believes there is substantial

latent demand for outsourcing amid burgeoning development demand and labor shortage. Services that DIGITAL HEARTS provides as of June 2018 can be broadly divided into system testing and IT support and security. Brief descriptions of each service are provided below. The company has quickly laid the groundwork for pioneering the new security market by harnessing the technologies it has nurtured in the system testing and IT support businesses.

In FY03/18, the company quickly took actions to acquire missing resources needed to capture new markets, including management personnel, specialist salespeople and engineers, and complementary services and technologies through alliances. Although this meant upfront spending, these measures have already shown positive effects on sales from 2H FY03/18. The company plans to continue strengthening its management resources in the Enterprise business in FY03/19.

An outline of each service and our views on new technologies and human resources are provided below.

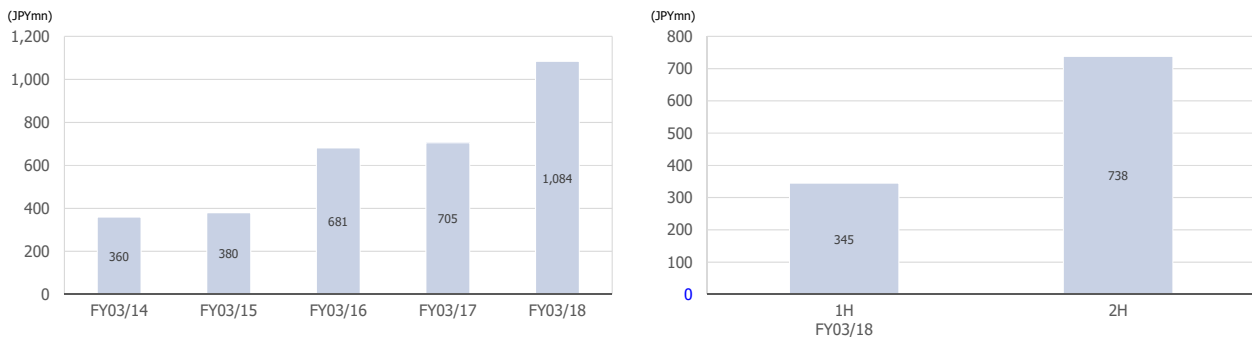
### Enterprise sales (JPYmn)



Source: Shared Research based on company data

### System testing (test solutions)

#### Sales

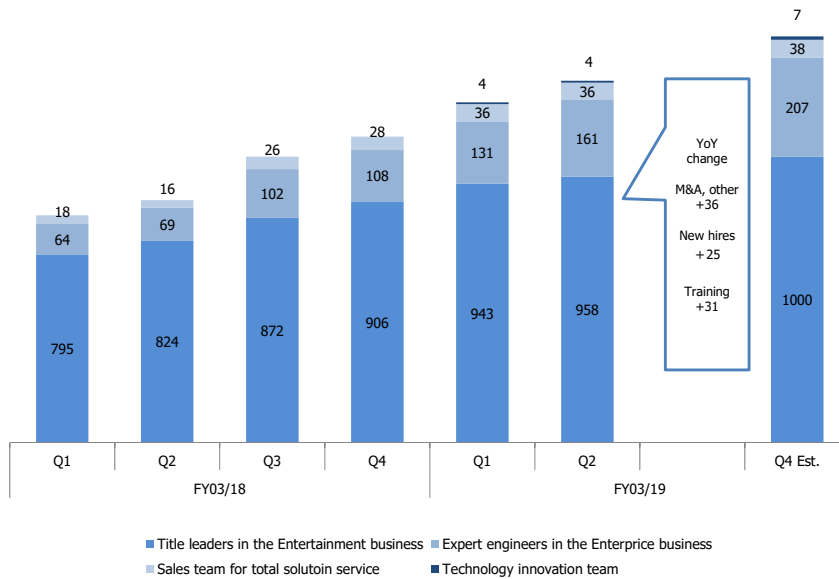


Source: Shared Research based on company data

System testing supports upstream processes in system development from test design to implementation, maintenance, and operation. Services offered range from test process improvement consulting to source code diagnosis, functional testing, load testing, website content checks, external network vulnerability assessment, field tests (for in-car software), and website operation and monitoring.

Shared Research is focusing on how DIGITAL HEARTS can get its business up and running quickly in the system testing market as a blue ocean strategy. The company aims to provide a high value-added testing service by combining testing by engineers with automation tools and AI. By building up a track record, we think one-off testing projects could lead to orders for various other services such as planning support, preparing test scripts, and operation support in the test automation process. Customers that outsource pre-launch testing in particular are likely to require the company's services such as writing test scripts when adding new features or progressing automation further. The company also has a team of developers who can do the actual development as well. We intend to keep a close eye on the company's potential to build up a customer base. Strengthening its team of upstream process engineers (a key management resource) will determine the ability to win projects (see below).

## Strengthening human resources



Source: Shared Research based on company data

## IT service and security

IT service and security essentially started up in earnest in FY03/19 as a new business founded on the technologies nurtured by the company in system testing and IT support operations. The company has positioned testing, monitoring, and education as the three main pillars for growing the business, actively engaging in alliances to accelerate the launch, and train personnel responsible for growth via the DH Security Solution Center (see below). We think the company will aggressively sell the products and services acquired through alliances in FY03/19 to establish a position in the security business.

### Expanding scope of business quickly through alliances

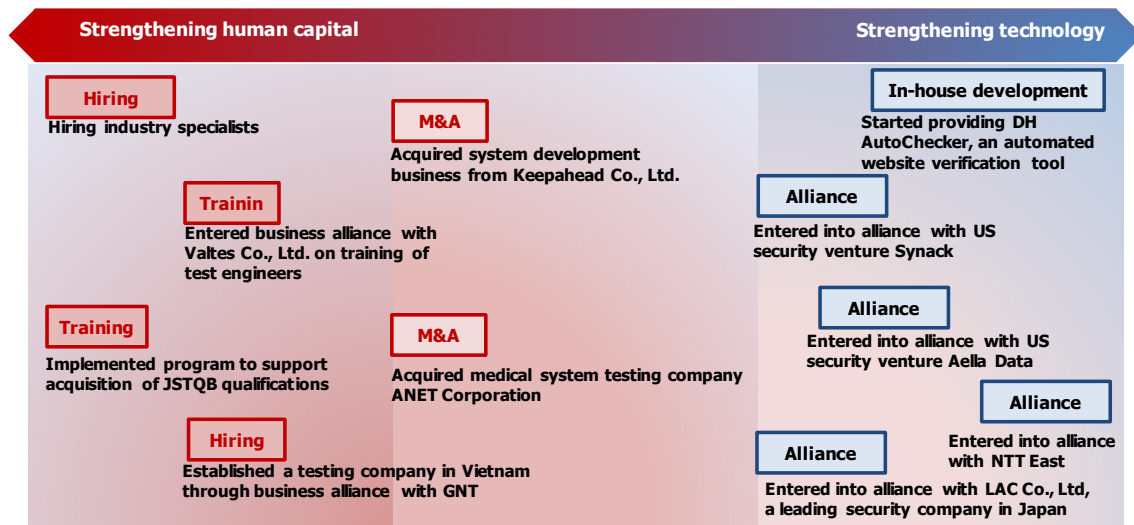
The company formed its first alliance with NTT East in April 2018 to launch DH Secure\*, which offers security support from company intranets to internal IT systems. In June, the company collaborated with US company Synack to start a crowdsourced security vulnerability detection service, and joined forces with another US company Aella Data to launch a security solution that automatically detects suspicious events in virtual and cloud environments.

The company has high hopes of the solutions launched in June with two US security startups, which it expects to develop into a core business in testing and monitoring. According to the manager of the security business division, the difficulties of starting in the business are as follows: "There are hundreds of security expert companies. How do we make a case for ourselves as latecomers to this market? Our main problem was not only the shortage of personnel, but more specifically the shortage of experts in monitoring and testing (there aren't enough of them in the business to start with). We really struggled to solve this problem." One of the solutions was to form alliances with the two US companies, which gave the company an edge in testing and monitoring solutions.

The company stresses that these services are only the first few of many to be offered, and it would take on various challenges in the process of selling security solutions and follow-up as new technologies appear almost daily. Details of alliances with two companies to lead the initial phase of the business are provided below.

DH Secure service details (as of June 2018): Internet connection sales from JPY3,200/month, intrusion prevention from JPY10,000/month, load assessment from JPY2.2mn per month, external vulnerability assessment (priced by project), vulnerability assessment of company IT assets (JPY20,000/month), endpoint security from JPY700/month, information system support service (outsourcing of IT equipment asset management, system integration, and operation) from JPY33,000/month

## Strengthening technology and human resources through alliances



Source: Shared Research based on company data

**Testing:** Security vulnerability testing service by crowdsourcing

A service that tests security vulnerabilities provided jointly with US company Synack. The point of difference is Synack Red Team (SRT), a world-class team of ethical hackers. SRT has more than 1,000 members from over 50 nations around the world with a diverse set of skills, including mobile apps and cryptanalysis. The service can set up a testing team in 24 hours after receiving a request from the client, run a cloud-based test for two weeks and submit a report.

SRT uses a proprietary Synack tool called Hydra to examine the client’s system network and servers and attack target networks and servers. Hydra uses the latest tools and techniques shared by hacker communities and allows clients to monitor progress of testing. According to the company, 75% of vulnerabilities are found within the first 24 hours of receiving a client request, because hackers are paid according to vulnerabilities discovered.

The company noted that it is the first to market the Synack service (used by the US Department of Defense) in Japan. According to a company news release, prices start from around JPY7mn per set, with free retesting offered within 30 days of the initial test.

**Monitoring:** A security solution that offers comprehensive automatic detection of suspicious events in virtual and cloud environments

A solution offered in collaboration with US company Aella Data that detects and monitors security breaches. It stands out for enabling a quick response, because it quickly detects network attacks and clarifies specifically where breaches occur. According to the company, it differs from other solutions because of its focus on broadly-based data gathering and Distributed Security Intelligence™ architecture.

The company commented that when a hacker attacks a gap in security, the solution will detect it in 1/30,000<sup>th</sup> of the time it takes for human analysis. It can perform processes that would cost JPY650mn if done manually for JPY20,000 or 200 days’ worth of work in 10 minutes, and is capable of detecting intrusions and reasons for data leaks. Prices start from JPY5.44mn per year.

### Supplementary information: New technologies

To reiterate, the company needs to acquire new technologies and human resources to get the two new solutions off the ground quickly. In 1H FY03/18, it appointed a new CTO who founded IP Infusion Inc., a Silicon Valley network business startup, and played a key role in attracting cutting-edge development engineers. The company aims to accelerate its Second Stage of Growth by evolving its own technologies and accessing those of alliance partners.

**Supplementary information: Human resources**

Projects in the system testing market are becoming larger in scale and increasingly complex. Increasing supply capability has become a challenge for companies for increasing demand for testing. Acquiring human resources such as upper process engineers and solution-focused salespeople is essential to building a solid business foundation in a blue ocean market. The company employed 108 upper process engineers at end March 2018, which is not enough to establish its position quickly and grow the business further.

Upper process engineers: Engineers capable of test design for upper processes (i.e., able to detail the system requirement definition into the specification) and system development.

**Test center**

DIGITAL HEARTS' assets are an advantage here. The company employs 8,000 specialists (with at least 3,000 on duty at any time) in testing from the user's perspective, i.e., user debugging, with a track record of detecting more than 1mn bugs in the Entertainment business. By utilizing this team of specialists in the Enterprise business, the company can gain a competitive advantage in human resources, train engineers more quickly than starting from scratch, and reduce costs (including recruitment costs). Among the 8,000 testers, many are motivated and skilled, and the company intends to actively provide in-house training for them.

**Training personnel**

In August 2018, DIGITAL HEARTS announced that it had concluded a business alliance with VALTES, which has a specialist education program for upper process engineers. DIGITAL HEARTS believes that the partnership will combine each partner's strengths so they can respond to the increasing scale and diversity of testing needs and establish itself as a leading company in the business. The company aims to train 50–100 test engineers in FY03/19.

The company has also formed the following alliances to increase its engineer head count in the short term: 1) a business alliance in April 2018 with GNT Japan Inc., with an agreement to establish DIGITAL HEARTS GNT Vietnam (specializing in testing) and put together a workforce of 50 engineers by the end of the fiscal year with the help of GNT VN Co., Ltd., a Vietnamese company in the GNT Group; and 2) business succession of Keepahead Co., Ltd, which employs 15 engineers.

**DH Security Solution Center**

Another positive for the Security business is that the company's 8,000 testers are likely to have a strong affinity with security. In 1H FY0319, the company invited well-known ethical hackers to teach at a two-week DH Security Boot Camp. Promising testers from Lab. locations around the country attended. The response has been positive, with a number of attendees starting on-the-job training in the security business. The company plans to run regular boot camps to train testers as security specialists.

## Historical forecast accuracy

Results versus company forecasts (JPYmm)			FY03/09	FY03/10	FY03/11	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18
			Parent	Parent	Parent	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
Sales	Initial Est.	(a)	3,100	4,325	4,068	4,509	6,599	9,109	15,002	16,034	16,705	17,622
	Mid-year (revised) Est.	(b)	3,285	3,985	4,068	5,057	6,922	9,777	15,002	16,034	16,705	17,622
	Results	(c)	3,378	3,416	3,958	5,386	6,886	10,138	13,285	15,012	15,445	17,353
	<b>Difference</b>	<b>(c)/(a)-1</b>	<b>9.0%</b>	<b>-21.0%</b>	<b>-2.7%</b>	<b>19.5%</b>	<b>4.3%</b>	<b>11.3%</b>	<b>-11.4%</b>	<b>-6.4%</b>	<b>-7.5%</b>	<b>-1.5%</b>
	<b>Difference</b>	<b>(c)/(b)-1</b>	<b>2.8%</b>	<b>-14.3%</b>	<b>-2.7%</b>	<b>6.5%</b>	<b>-0.5%</b>	<b>3.7%</b>	<b>-11.4%</b>	<b>-6.4%</b>	<b>-7.5%</b>	<b>-1.5%</b>
Operating profit	Initial Est.	(a)	471	853	620	645	1,033	1,451	2,223	2,252	2,572	2,200
	Mid-year (revised) Est.	(b)	575	795	620	721	1,088	1,660	2,223	2,252	2,572	2,200
	Results	(c)	641	521	528	834	994	1,781	1,517	1,964	1,907	1,736
	<b>Difference</b>	<b>(c)/(a)-1</b>	<b>36.1%</b>	<b>-38.9%</b>	<b>-14.8%</b>	<b>29.3%</b>	<b>-3.8%</b>	<b>22.7%</b>	<b>-31.8%</b>	<b>-12.8%</b>	<b>-25.9%</b>	<b>-21.1%</b>
	<b>Difference</b>	<b>(c)/(b)-1</b>	<b>11.5%</b>	<b>-34.4%</b>	<b>-14.8%</b>	<b>15.7%</b>	<b>-8.6%</b>	<b>7.3%</b>	<b>-31.8%</b>	<b>-12.8%</b>	<b>-25.9%</b>	<b>-21.1%</b>
Recurring profit	Initial Est.	(a)	473	857	618	646	1,030	1,447	2,201	2,314	2,579	2,225
	Mid-year (revised) Est.	(b)	578	801	618	701	1,092	1,658	2,201	2,314	2,579	2,225
	Results	(c)	644	526	495	807	997	1,789	1,526	1,958	1,997	1,783
	<b>Difference</b>	<b>(c)/(a)-1</b>	<b>36.1%</b>	<b>-38.6%</b>	<b>-19.9%</b>	<b>24.9%</b>	<b>-3.3%</b>	<b>23.6%</b>	<b>-30.7%</b>	<b>-15.4%</b>	<b>-22.6%</b>	<b>-19.9%</b>
	<b>Difference</b>	<b>(c)/(b)-1</b>	<b>11.4%</b>	<b>-34.3%</b>	<b>-19.9%</b>	<b>15.1%</b>	<b>-8.7%</b>	<b>7.9%</b>	<b>-30.7%</b>	<b>-15.4%</b>	<b>-22.6%</b>	<b>-19.9%</b>
Net income attributable to parent company shareholders	Initial Est.	(a)	250	451	330	355	568	852	1,211	1,437	1,608	1,382
	Mid-year (revised) Est.	(b)	308	429	330	357	596	956	1,211	1,239	1,608	1,382
	Results	(c)	348	306	279	441	580	1,088	540	362	795	1,200
	<b>Difference</b>	<b>(c)/(a)-1</b>	<b>39.1%</b>	<b>-32.1%</b>	<b>-15.6%</b>	<b>24.2%</b>	<b>2.0%</b>	<b>27.7%</b>	<b>-55.4%</b>	<b>-74.8%</b>	<b>-50.6%</b>	<b>-13.2%</b>
	<b>Difference</b>	<b>(c)/(b)-1</b>	<b>12.9%</b>	<b>-28.6%</b>	<b>-15.6%</b>	<b>23.5%</b>	<b>-2.8%</b>	<b>13.8%</b>	<b>-55.4%</b>	<b>-70.8%</b>	<b>-50.6%</b>	<b>-13.2%</b>

Source: Shared Research based on company data

DIGITAL HEARTS has undershot initial forecasts since FY03/15 for the following reasons:

- ▷ FY03/15: Toughened regulations surrounding the Amusement (AM) unit; unprofitable projects in the Creative business
- ▷ FY03/16: Worse-than-expected earnings slump in the AM unit; delays in restructuring subsidiaries in the Creative business
- ▷ FY03/17: Effects of delays in development of a revenue share project in the Creative business and missing targets in the IP business
- ▷ FY03/18: Higher-than-expected increase in expenses associated with an e-sports (Media business); company's decision to make upfront spending in the Enterprise business

Overall, core businesses (GC and MS units of the Debugging service) generally performed well, especially MS.

## Long-term strategy

### Second Stage of Growth project

In June 2017, Genichi Tamatsuka took over from founder, president and CEO Eiichi Miyazawa. Under a new management team, the company changed course toward the Enterprise business in the start of "the Second Stage of Growth." In this stage, the company changed course in its management to targeting Enterprise demand, which is still in its early stages, but holds potential for further growth, while continuing to expand debugging services in the Entertainment business (mainly games), which has been its core business.

In FY03/18, the company worked on building foundations for growth in its management team, organization, human resource training and recruitment, developing technologies and tools, and business alliances. We note that the management team in particular has appointed new members other than Tamatsuka, such as Yasumasa Ninomiya (VP in charge of sales strategy), Kunihiro Ishiguro (CTO), and Toshiya Tsukushi (CFO), with a focus on pioneering the Enterprise market to grasp growth opportunities.

#### Reference: Business environment and strategy

DIGITAL HEARTS believes it likely that outsourcing demand for testing processes\* in the enterprise field will experience dramatic growth. As the development environment saw a greater degree of complication with devices growing more sophisticated, IoT-enabled, and geared to cloud technology and big data, the testing environment is witnessing an increased need for technical specialization and expertise, and increased quality control and testing work, resulting in higher volumes of outsourcing to companies with specialized expertise. The company aims to secure a position in this growth market through rapid, aggressive initiatives.

\* The company differentiates its testing processes as "debug" for the entertainment field and "test" for the enterprise field.



**Group business strategy**

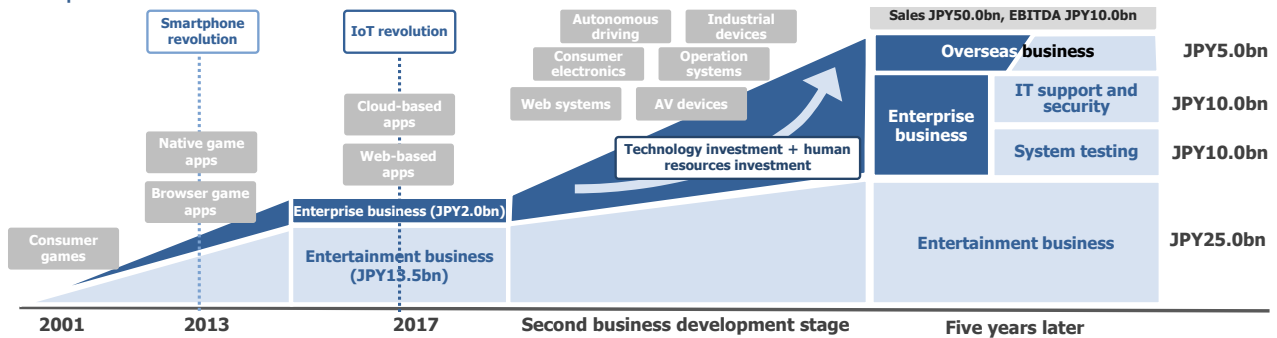
The company sees opportunity in the changing business environment and greater demand for outsourcing and plans to expand its business domain from the entertainment field to the enterprise field. It is working on expanding its business domain to System testing in the enterprise field leveraging its debugging expertise in the entertainment field; improving service quality through technological improvement, automation of testing, and AI; and launching a new business (including IT support and security) that includes ongoing initiatives that are highly compatible with System testing and providing a comprehensive IT solutions service in combination with the testing service.

In the entertainment field, the company is angling to rise to first place as a game supporter by leveraging its unique position as a dominant gaming expert to maximize opportunities to generate earnings. In addition to development (in the Creative business) and quality control (in the Debugging business), in the operating phase involving regular game events and updates, it plans to launch a new customer support business, which requires gaming expertise. In the enterprise field, the company is looking to harness its strength in existing businesses to accelerate its venture into a new market and to develop it into a second business pillar. It is set to target the expanding markets with an increasing need for high quality (e.g., related to IoT and automated driving) and to expand its testing service domain on the strength of its expertise.

**Targets sales of JPY50bn and EBITDA of JPY10bn**

The company’s vision is to become the leading company for testing solutions in Asia, targeting sales of JPY50.0bn (versus JPY17.4bn in FY03/18) and EBITDA of JPY10.0bn (JPY1.9bn) in three to five years’ time. Its strategy for existing businesses (Entertainment) is to maintain growth by further strengthening its work force and technologies mainly in the Debugging service. Its strategy for growth businesses (Enterprise, which the company positions as its future growth driver) is to expand the System testing and IT service and security into a similar size as Entertainment.

**Roadmap**



Source: Shared Research based on company data

**Catchphrase is “Technology x Human resources”**

The company sees the System testing and IT service and security as growth businesses, and is focused on changing the labor-intensive business structure of the Debugging service into more technology-intensive one to raise profitability. The catchphrase representing this change is “Technology x Human resources.” The company anticipates increased demand for outsourcing the labor-intensive debugging process amid the IT industry’s chronic engineer shortage and the growing scale and complexity of system development projects. In this context, DIGITAL HEARTS aims to be competitive with a technology-intensive debugging model that combines its wealth of know-how with AI and other technologies to drive earnings growth. The company seeks to be the leading company in Asia by expanding overseas at the same time.

**Financing**

On May 16, 2018, the company announced the issuance of share acquisition rights and their private placement with Deutsche Bank London Branch. Reasons for the financing are investment in human resource and technological development and need for capital alliances and M&A.

The company has announced the issuance of series four to six share acquisition rights via third party allotment and the conclusion of a share acquisition rights purchase agreement with allottee Deutsche Bank London Branch under a Target Issue Program.

Share acquisition rights to be issued by the company comprise three tranches: series four share acquisition rights (exercise price: JPY2,100; underlying shares: 2 million shares; proceeds from exercised rights: JPY4.2bn), series five share acquisition rights

(JPY3,000; 1.4 million shares; JPY4.2bn); and series six share acquisition rights (JPY3,850; 680 thousand shares; JPY2.6bn). The terms of the three tranches have been set so that the rights could be exercised in sequence, allowing the company to flexibly procure funds and fortify its capital based on the progress of its businesses. The rights, which can be exercised during a three-year period ending on June 3, 2021, also include a provision to suspend exercise. When all rights are exercised, the company raises JPY11.0bn (net of expenses) at a 17.1% dilution. However, the company plans to allocate treasury stock (2.097mn shares at end-FY03/18) to series four, in which case dilution will be 8.7%.

Regarding the use of proceeds, the company plans to invest JPY3.5bn internally (JPY1.0bn to hire specialists like engineers from outside while nurturing internal resources, and JPY2.5bn to develop AI and testing automation tools and acquire licenses). The remaining 7.5bn will be used to obtain external management resources. The company plans on acquisitions and capital alliances, through which it hopes to gain specialized personnel, technologies, and expertise in software testing and security businesses.

The company has started hiring, and stepping up collaboration and capital alliances mainly in the Enterprise business (see below), but commented that it plans to accelerate these strategies with finance in place. The latest financing scheme assumes issue prices higher than the closing price on May 16, 2018 of JPY1,666, increasing in stages, seeking flexible financing depending on its need for funds and market conditions while keeping existing shareholders happy. The provision to suspend exercise allows the company some control over timing and volume.

#### M&A and business alliances in Second Stage of Growth

		Outline	Category	Description
July 2017	HEROZ	Capital and business alliance	Overall	Bought CB worth JPY108mn; provides system testing and security services using HEROZ's AI technology
September 2017	NTT Marketing Act	Partnering	System testing	Partners on malfunction test and usability verification prior to launch of product or service of client companies; and leverage the knowledge to provide technical support services
November 2017	HP Japan, Micro Focus K.K.	Partnering	System testing	Provides load testing services using Micro Focus LoadRunner, a de facto standard of load testing tool (HP Japan provides technical support)
November 2017	F-Secure	Partnering	Security	Started providing vulnerability testing services for corporate networks, using F-Secure Radar, a vulnerability management solution
February 2018	Studio Bent Stuff	Business acquisition	Entertainment	Acquired business of producing game strategy books
February 2018	Opt	Business alliance	Entertainment	Plans and operates website for game strategies
April 2018	GNT group	Business alliance	System testing	Established a testing specialist joint venture in Vietnam in May 2018
April 2018	NTT East	Partnering	Security	Started marketing optical line connection service DH Secure, adding its own security solutions to NTT's connection services
June 2018	Synack	Partnering	Security	Provides cloud sourcing vulnerability testing services, using world's leading ethical hackers at the partner
June 2018	Aella Data	Partnering	Security	Provides security monitoring services leveraging partner's AI-based pervasive breach detection system (PBDS)
June 2018	Keepahead	Business acquisition	Security	Entered (through the business acquisition) the business of online system development, operation and maintenance; added expert engineers in the Enterprise business
August 2018	ANET	Consolidation	System testing	Expansion of system testing analysis, particularly in medical and healthcare areas
August 2018	Valtes	Business alliance	System testing	Training of engineers for system testing

Source: Shared Research based on company data

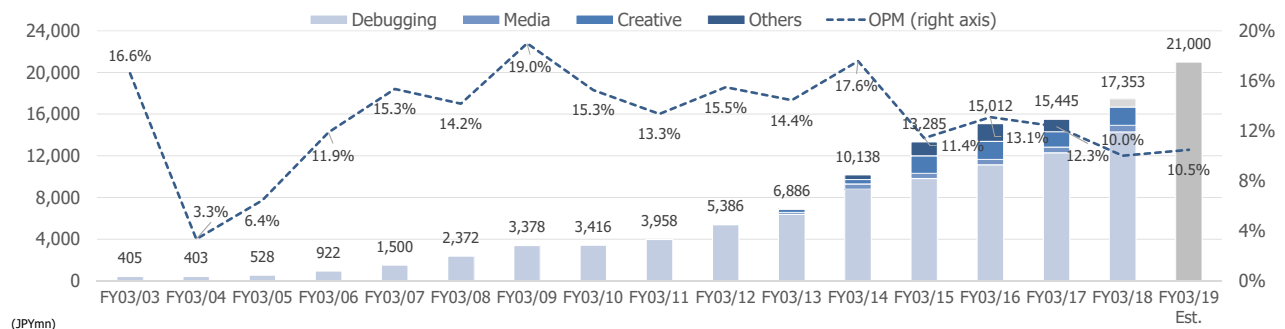
## Business

### Description

While continuing to position Debugging service as its main businesses, DIGITAL HEARTS HOLDINGS Co., Ltd. aims to expand other businesses centered on the Enterprise business. The company was established as the holding company of DIGITAL HEARTS Co., Ltd. in October 2013, via simple transfer of shares. Its new management structure started up in June 2017, which marked the start of its Second Stage of Growth, progressed business reforms to make the Enterprise business the new growth engine while continuing to grow the existing Entertainment business. The company name was changed to DIGITAL HEARTS HOLDINGS in July 2018.

The company changed its business segments from Debugging, Media, and Creative (businesses not included in these three segments were grouped as "Other businesses") to Entertainment and Enterprise.

### Trends in earnings



(JPYmn)	FY03/13						FY03/14				FY03/15				FY03/16				FY03/17				FY03/18			
	FY	FY	FY	FY	FY	FY	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
<b>Sales</b>	<b>6,886</b>	<b>10,138</b>	<b>13,285</b>	<b>15,012</b>	<b>15,445</b>	<b>17,353</b>	<b>3,554</b>	<b>3,838</b>	<b>3,759</b>	<b>3,860</b>	<b>3,810</b>	<b>3,782</b>	<b>4,024</b>	<b>3,829</b>	<b>4,039</b>	<b>4,224</b>	<b>4,697</b>	<b>4,393</b>								
Entertainment		9,360	11,609	12,696	13,589	15,568																				
Enterprise		798	1,713	2,382	1,899	1,898																				
Debugging (old)	6,381	8,798	9,812	11,138	12,283	14,284	2,586	2,823	2,809	2,920	3,009	2,994	3,243	3,037	3,427	3,518	3,904	3,435								
Media (old)	175	484	504	513	554	639	121	135	133	123	124	145	119	166	127	145	163	204								
Creative (old)	335	443	1,675	1,729	1,466	1,750	485	499	377	368	286	350	418	413	340	400	500	511								
Others (old)	9	438	1,333	1,702	1,194	814	379	402	457	465	403	306	253	232	153	275	133	254								
Adjustments (old)	-16	-24	-40	-70	-53	-134	-17	-20	-16	-16	-12	-13	-9	-20	-7	-114	-3	-10								
<b>YoY</b>	<b>27.8%</b>	<b>47.2%</b>	<b>31.0%</b>	<b>13.0%</b>	<b>2.9%</b>	<b>12.4%</b>	<b>14.5%</b>	<b>24.0%</b>	<b>5.7%</b>	<b>9.4%</b>	<b>7.2%</b>	<b>-1.5%</b>	<b>7.0%</b>	<b>-0.8%</b>	<b>6.0%</b>	<b>11.7%</b>	<b>16.7%</b>	<b>14.7%</b>								
Debugging (old)	18.7%	37.9%	11.5%	13.5%	10.3%	16.3%	13.2%	25.7%	7.1%	9.7%	16.4%	6.1%	15.5%	4.0%	13.9%	17.5%	20.4%	13.1%								
Media (old)		175.6%	4.2%	1.7%	8.1%	15.2%	1.5%	16.6%	-3.0%	-6.3%	2.6%	7.3%	-10.4%	34.4%	1.8%	0.0%	37.3%	22.8%								
Creative (old)		32.1%	278.5%	3.2%	-15.2%	19.4%	22.8%	19.9%	-16.6%	-10.6%	-41.0%	-29.9%	10.7%	12.0%	18.9%	14.3%	19.7%	23.8%								
Others (old)	-27.5%	4,767.3%	204.4%	27.6%	-29.8%	-31.8%	22.5%	21.5%	28.5%	37.5%	6.2%	-23.8%	-44.6%	-50.1%	-62.1%	-10.1%	-47.6%	9.4%								
<b>Operating profit</b>	<b>994</b>	<b>1,781</b>	<b>1,517</b>	<b>1,964</b>	<b>1,907</b>	<b>1,736</b>	<b>245</b>	<b>550</b>	<b>529</b>	<b>640</b>	<b>481</b>	<b>397</b>	<b>523</b>	<b>506</b>	<b>540</b>	<b>464</b>	<b>548</b>	<b>185</b>								
Entertainment		-	1,915	2,379	2,583	2,948																				
Enterprise		-	50	71	149	-9																				
Adjustments		-353	-447	-486	-826	-1,202																				
Debugging (old)	1,434	2,145	2,377	2,556	2,740	2,816	478	686	644	747	709	652	736	643	840	754	731	491								
Media (old)	28	35	32	36	-25	-179	9	10	14	3	0	-18	-27	20	-68	-12	13	-112								
Creative (old)	-85	-27	-496	-224	-116	219	-138	-55	-35	4	-86	-69	-3	42	24	58	90	48								
Others (old)	-14	-19	52	83	57	7	4	22	25	31	9	23	16	10	-33	-5	-11	56								
Adjustments	-369	-354	-448	-486	-750	-1,127	-110	-112	-120	-145	-152	-191	-199	-209	-223	-331	-274	-298								
<b>OPM</b>	<b>14.4%</b>	<b>17.6%</b>	<b>11.4%</b>	<b>13.1%</b>	<b>12.3%</b>	<b>10.0%</b>	<b>6.9%</b>	<b>14.3%</b>	<b>14.1%</b>	<b>16.6%</b>	<b>12.6%</b>	<b>10.5%</b>	<b>13.0%</b>	<b>13.2%</b>	<b>13.4%</b>	<b>11.0%</b>	<b>11.7%</b>	<b>4.2%</b>								
Entertainment		16.5%	18.7%	19.0%	18.9%																					
Enterprise			2.9%	3.0%	7.8%	-0.5%																				
Debugging (old)	22.5%	24.4%	24.2%	22.9%	22.3%	19.7%	18.5%	24.3%	22.9%	25.6%	23.6%	21.8%	22.7%	21.2%	24.5%	21.4%	18.7%	14.3%								
Media (old)	15.8%	7.3%	6.4%	7.0%	-4.5%	-28.1%	7.4%	7.0%	10.4%	2.7%	0.4%	-12.4%	-22.8%	12.0%	-53.9%	-8.3%	7.9%	-55.0%								
Creative (old)	-25.4%	-6.1%	-29.6%	-13.0%	-7.9%	12.5%	-28.4%	-11.1%	-9.3%	1.0%	-30.0%	-19.8%	-0.8%	10.2%	7.0%	14.5%	17.9%	9.3%								
Others (old)	-155.6%	-4.3%	3.9%	4.9%	4.8%	0.9%	1.2%	5.6%	5.5%	6.8%	2.2%	7.4%	6.3%	4.1%	-21.5%	-1.9%	-8.4%	22.2%								

Source: Shared Research based on company data

### Entertainment business

The Entertainment business comprises Debugging service (former debugging business minus sales in the Enterprise business), Media service (previous Media business), and Creative service (previous Creative business). Each business is outlined below.

## Debugging service

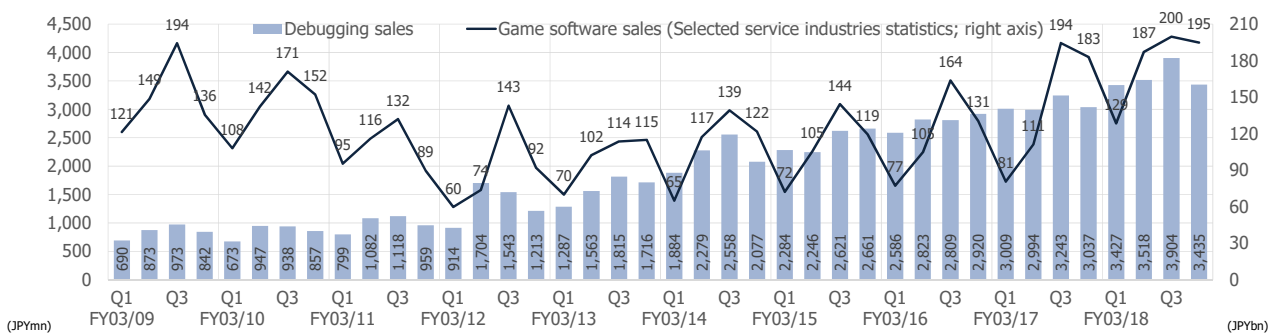
In the Debugging service, the company checks for bugs in software prior to release and reports the results to the client. It comprises three units: the Game console (GC) unit (previously CS), the Mobile games (MS) unit (previously DS), and the Amusement (AM) unit.

The GC unit, which tests consumer game software, previously accounted for the largest share of sales (excluding intragroup transactions), but the MS unit's share surpassed that of the GC unit in FY03/15, with 40.1% and 36.7%, respectively (note that part of the Enterprise business was still included under the MS [former DS] unit in FY03/15). The AM unit is largely affected by changes in regulations, and its earnings remain on a downward trend. The company's client base is diversified across large, medium-sized, and small companies, thus reducing risk.

### Subsegment snapshot and profit trends

Subsegment	% of sales (FY03/18)	Service type	Application
Game console	32%	Debugging, other	Consumer games (including PS4 and Nintendo 3DS), online games, arcade games; localization of consumer games (e.g. creating the Japanese version of an English game)
Mobile games	56%	Debugging, other	Mobile OS apps, social network games; operational support for social network games; app localization
Amusement	12%	Debugging, other	Pachinko, pachislot, development support services

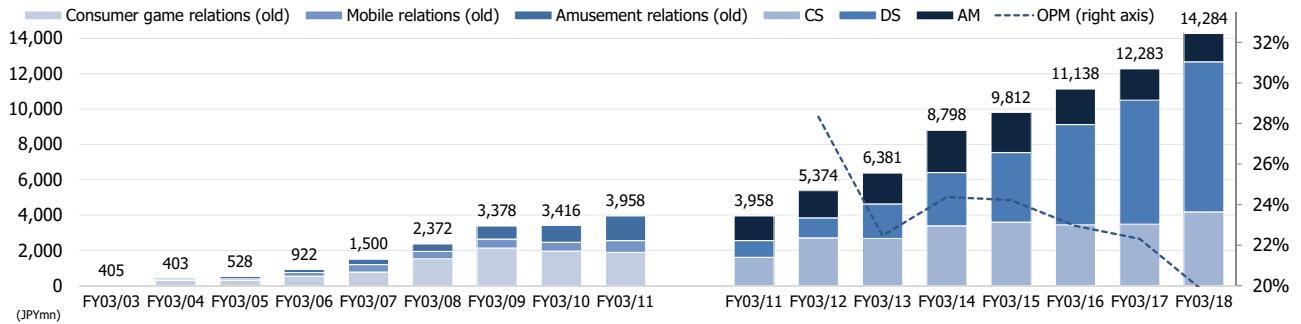
(JPYmn)	FY03/13						FY03/14						FY03/15						FY03/16						FY03/17						FY03/18					
	FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY		FY					
<b>Sales</b>	<b>6,886</b>	<b>10,138</b>	<b>13,285</b>	<b>15,012</b>	<b>15,445</b>	<b>17,353</b>	<b>3,554</b>	<b>3,838</b>	<b>3,759</b>	<b>3,860</b>	<b>3,810</b>	<b>3,782</b>	<b>4,024</b>	<b>3,829</b>	<b>4,039</b>	<b>4,224</b>	<b>4,697</b>	<b>4,393</b>																		
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Enterprise		798	1,713	2,382	1,899	1,898																														
Debugging (old)	6,381	8,798	9,812	11,138	12,283	14,284	2,586	2,823	2,809	2,920	3,009	2,994	3,243	3,037	3,427	3,518	3,904	3,435																		
Media (old)	175	484	504	513	554	639	121	135	133	123	124	145	119	166	127	145	163	204																		
Creative (old)	335	443	1,675	1,729	1,466	1,750	485	499	377	368	286	350	418	413	340	400	500	511																		
Others (old)	9	438	1,333	1,702	1,194	814	379	402	457	465	403	306	253	232	153	275	133	254																		
Adjustments (old)	-16	-24	-40	-70	-53	-134	-17	-20	-16	-16	-12	-13	-9	-20	-7	-114	-3	-10																		
<b>YoY</b>	<b>27.8%</b>	<b>47.2%</b>	<b>31.0%</b>	<b>13.0%</b>	<b>2.9%</b>	<b>12.4%</b>	<b>14.5%</b>	<b>24.0%</b>	<b>5.7%</b>	<b>9.4%</b>	<b>7.2%</b>	<b>-1.5%</b>	<b>7.0%</b>	<b>-0.8%</b>	<b>6.0%</b>	<b>11.7%</b>	<b>16.7%</b>	<b>14.7%</b>																		
Debugging (old)	18.7%	37.9%	11.5%	13.5%	10.3%	16.3%	13.2%	25.7%	7.1%	9.7%	16.4%	6.1%	15.5%	4.0%	13.9%	17.5%	20.4%	13.1%																		
Media (old)		175.6%	4.2%	1.7%	8.1%	15.2%	1.5%	16.6%	-3.0%	-6.3%	2.6%	7.3%	-10.4%	34.4%	1.8%	0.0%	37.3%	22.8%																		
Creative (old)		32.1%	278.5%	3.2%	-15.2%	19.4%	22.8%	19.9%	-16.6%	-10.6%	-41.0%	-29.9%	10.7%	12.0%	18.9%	14.3%	19.7%	23.8%																		
Others (old)	-27.5%	4,767.3%	204.4%	27.6%	-29.8%	-31.8%	22.5%	21.5%	28.5%	37.5%	6.2%	-23.8%	-44.6%	-50.1%	-62.1%	-10.1%	-47.6%	9.4%																		
<b>Operating profit</b>	<b>994</b>	<b>1,781</b>	<b>1,517</b>	<b>1,964</b>	<b>1,907</b>	<b>1,736</b>	<b>245</b>	<b>550</b>	<b>529</b>	<b>640</b>	<b>481</b>	<b>397</b>	<b>523</b>	<b>506</b>	<b>540</b>	<b>464</b>	<b>548</b>	<b>185</b>																		
Entertainment		-	1,915	2,379	2,583	2,948																														
Enterprise		-	50	71	149	-9																														
Adjustments		-353	-447	-486	-826	-1,202																														
Debugging (old)	1,434	2,145	2,377	2,556	2,740	2,816	478	686	644	747	709	652	736	643	840	754	731	491																		
Media (old)	28	35	32	36	-25	-179	9	10	14	3	0	-18	-27	20	-68	-12	13	-112																		
Creative (old)	-85	-27	-496	-224	-116	219	-138	-55	-35	4	-86	-69	-3	42	24	58	90	48																		
Others (old)	-14	-19	52	83	57	7	4	22	25	31	9	23	16	10	-33	-5	-11	56																		
Adjustments	-369	-354	-448	-486	-750	-1,127	-110	-112	-120	-145	-152	-191	-199	-209	-223	-331	-274	-298																		
<b>OPM</b>	<b>14.4%</b>	<b>17.6%</b>	<b>11.4%</b>	<b>13.1%</b>	<b>12.3%</b>	<b>10.0%</b>	<b>6.9%</b>	<b>14.3%</b>	<b>14.1%</b>	<b>16.6%</b>	<b>12.6%</b>	<b>10.5%</b>	<b>13.0%</b>	<b>13.2%</b>	<b>13.4%</b>	<b>11.0%</b>	<b>11.7%</b>	<b>4.2%</b>																		
Entertainment		16.5%	18.7%	19.0%	18.9%																															
Enterprise			2.9%	3.0%	7.8%	-0.5%																														
Debugging (old)	22.5%	24.4%	24.2%	22.9%	22.3%	19.7%	18.5%	24.3%	22.9%	25.6%	23.6%	21.8%	22.7%	21.2%	24.5%	21.4%	18.7%	14.3%																		
Media (old)	15.8%	7.3%	6.4%	7.0%	-4.5%	-28.1%	7.4%	7.0%	10.4%	2.7%	0.4%	-12.4%	-22.8%	12.0%	-53.9%	-8.3%	7.9%	-55.0%																		
Creative (old)	-25.4%	-6.1%	-29.6%	-13.0%	-7.9%	12.5%	-28.4%	-11.1%	-9.3%	1.0%	-30.0%	-19.8%	-0.8%	10.2%	7.0%	14.5%	17.9%	9.3%																		
Others (old)	-155.6%	-4.3%	3.9%	4.9%	4.8%	0.9%	1.2%	5.6%	5.5%	6.8%	2.2%	7.4%	6.3%	4.1%	-21.5%	-1.9%	-8.4%	22.2%																		



Source: Shared Research based on company data

## Segment performance

### Debugging sales by subsegment



Source: Shared Research based on company data  
 Note: The company changed reporting segment in FY03/11. Both new and old segments are shown for that year.

### Growth continues as platforms spread

DIGITAL HEARTS' first business was debugging services for consumer games. Earnings grew rapidly soon after the company's founding, when it was contracted by Microsoft to provide debugging services. At the time, game developers generally conducted pre-release debugging in-house. Although it was a break from industry convention, the company's debugging work was well received, and it proved the potential cost advantages for developers of outsourcing this type of work.

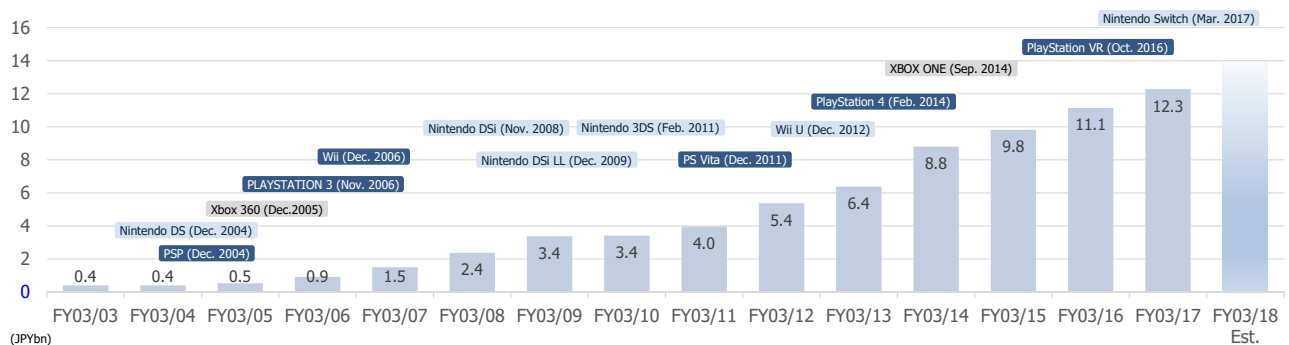
As the company built a track record in the industry, developers increasingly turned to contractors for consumer game debugging. A wider range of platforms beyond consumer games also resulted in an expanded scope of operations and growth for the company. This included pachinko and pachislot machines—subject to more development processes—and an increasingly diverse range of mobile contents.

### 2016 marks the 15th anniversary

April 2016 marked the 15th anniversary of the founding of DIGITAL HEARTS Co., Ltd., from which DIGITAL HEARTS HOLDINGS Co., Ltd. was born. The company's major accomplishments include:

- First in Japan: The company is the first Japanese company to win Microsoft Corp.'s AXP certification, which grants authorization to test XBOX 360 games.
- Taking on challenges: It is the first Japanese debugging company to list shares (TSE Mothers in February 2008 and TSE First Section in January 2011)
- Growth: Earnings grew tenfold after the company went public. (For FY03/07, sales were JPY1.5bn, operating profit was JPY230mn; for FY03/16, sales were JPY15.0bn, operating profit was JPY2.0bn)
- Job creation: It created more than 15,000 jobs
- Proprietary expertise: It maintains data on more than 1mn debugging cases

### Debugging service sales and major console releases (JPYbn)



Source: Shared Research based on company data

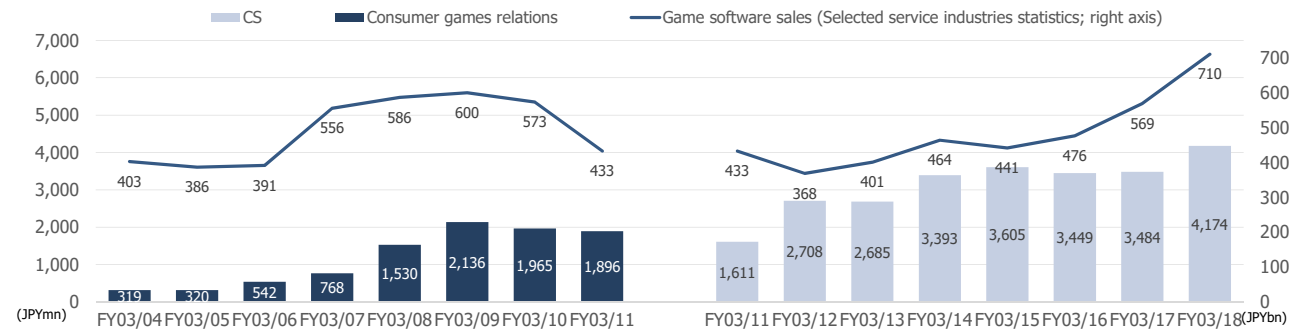
## History of arcade games and game consoles (year of release in Japan)

	1975	1980	1985	1990	1995	2000	2005	2010	2015
Handheld game consoles	Nintendo	Game & Watch		Game Boy			Game Boy Advance Nintendo DS	Nintendo 3DS	Switch
	SONY						PSP	PlayStation Vita	
	Other			Game Gear (Sega) Lynx (Atari)		Tamagotchi WonderSwan (Bandai) Neo Geo Pocket (SNK)			
Video game consoles	Nintendo	Color TV-Game 6/Color TV-Game 15	NES Famicom Disk System	SNES Virtual Boy	Nintendo 64 Virtual Boy	GameCube	Wii	Wii U	Switch
	SONY				PlayStation	PlayStation 2	PlayStation 3	Playstation 4 PSVR	
	SEGA		SC-3000 SG-1000III	SG-1000IV Mega Drive	Sega CD Sega Saturn	Dreamcast			
	Microsoft						Xbox Xbox 360		Xbox One Xbox One X
	Other	Epoch Electrotennis	Sord M5 Tomy Tutor		Neo Geo (SNK)				
Arcade games		Galaga, Donkey Kong Galaxian Space Invaders	Pac-Man 1942 Libble Rabble, Xevious Pengo, Mr. Do!	Fantasy Zone Gradius Parodius!	Ridge Racer Puyo Puyo Street Fighter II Tekken		Mr. Driller Beatmania		

Source: Shared Research based on company data and other

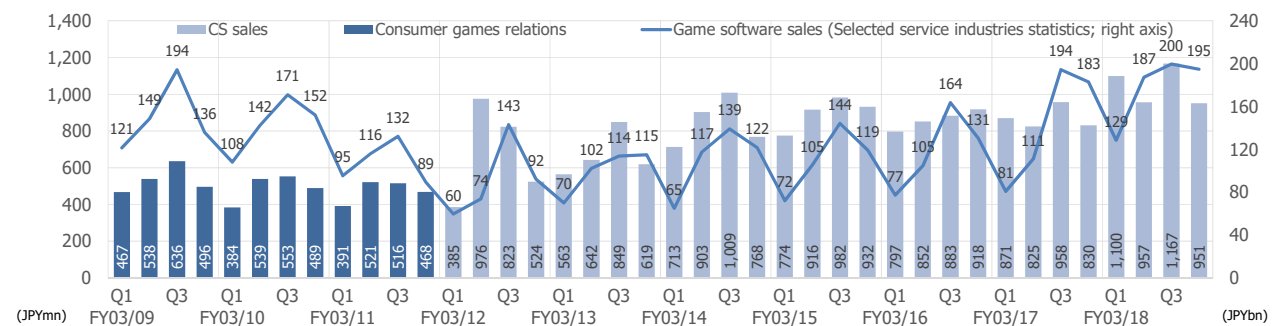
## Game console (GC) unit (previously CS unit)

### Sales (including internal transactions)



Source: Shared Research based on METI Survey on Selected Service Industries data  
Note: The company changed reporting segments in FY03/11. Both new and old segments are shown for that year.

### Quarterly sales (including internal transactions)



Source: Shared Research based on METI Survey on Selected Service Industries data

### Tailwinds: developers' focus on core businesses, complex development, multiple platforms

The GC unit provides mainly outsourced testing and localization services for the likes of consumer games for PS4 and Nintendo 3DS consoles, online PC games, and arcade games. The increasing cost of developing consumer games and a shift by developers to focus on core businesses has driven outsourcing of software testing.

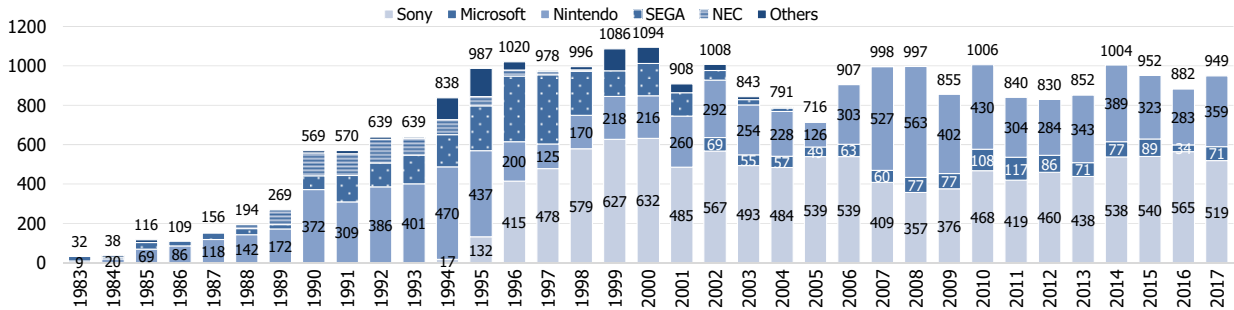
### Debugging work increasing with the shift to multiplatform games

A growing trend since the 2010s is that one particular game title will be released on multiple platforms (including PCs). For game software companies, it is possible to reduce costs and development time by using common elements, rather than releasing individual titles for each platform. More sales opportunities mean lower risk from a management perspective, so multiplatform releases have been increasing. We note that multiplatform releases require debugging work for each platform, thus driving up the total amount of work.

## Increase in number of debugging processes due to development advances

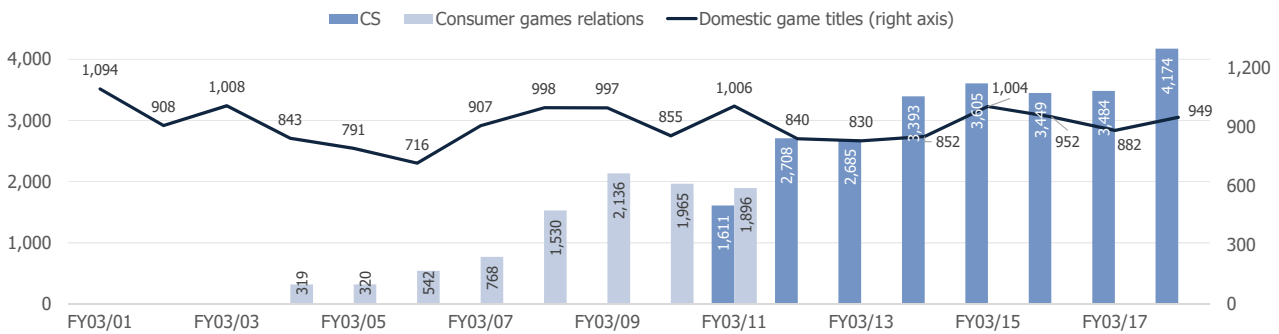
The appearance of state-of-the-art consoles with new, advanced features such as the PS4 and Nintendo Switch requires an increase in the number of software titles developed and greater sophistication, resulting in an increase in the number of debugging processes. Trends in the number of domestic game titles by company are shown below.

Number of domestic game titles per calendar year



Source: Shared Research based on company data, various

Sales in the CS unit and domestic game titles



Source: Shared Research based on company data, various  
 Note: The number of domestic game software titles applies to the calendar (e.g. FY04/13 shows figures for 2013).  
 Note: The company changed reporting segments in FY03/11. Both new and old segments are shown for that year.

The chart above shows that even as the number of new titles released in the domestic market has been declining, sales have been on a rising trend. As explained later, price setting in the debugging business is a function of unit price times hours; there is little variation in prices. Considering that time is more or less equal to man-hours, it is apparent from the company's results that testing man-hours are increasing. Even considering the high ratio of outsourcing and movements in its market share, sales growth is rapid.

## Overseas initiatives

The DIGITAL HEARTS group also includes local subsidiaries performing debugging and localization work in the US and China. The company is especially focusing on growing the business in China. It is focusing on sales to local corporations and expects further growth.

### China Hero Project: DIGITAL HEARTS plans to be in charge of debugging game titles from China-based developers under the China Hero Project

The China Hero Project is a project to develop software for the PlayStation platform that is being led by Sony Interactive Entertainment Japan Asia (SIEJA). The project will seek to create successful global titles through the PlayStation platform, and contribute to the growth and development of China's software industry. SIEJA announced the China Hero Project at the "2016 PlayStation Press Conference in China" in Shanghai (July 27, 2016) as an initiative to collaborate with participating companies to provide strong support to Chinese-owned startups.

The company is participating in the China Hero Project, providing services for improving quality (assisting in improving quality assurance and user experience) for games developed under the project. The company expects companies looking to successfully develop games on the PlayStation platform to join the project, and will be responsible for providing debugging services for select global titles developed in China under the project.

**Mobile games (MS) unit (previously DS unit)**

**Continued sales growth on rise of social network games and spread of smartphones**

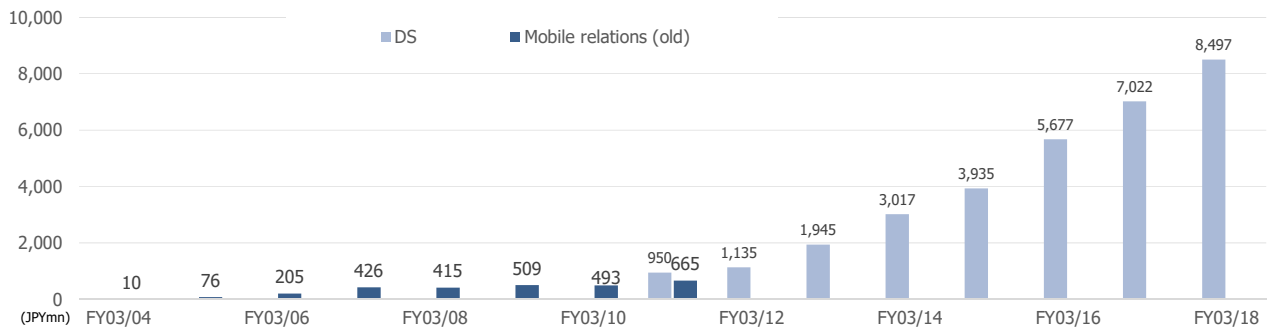
The MS unit focuses on providing debugging services for mobile games. MS will mainly continue to grow as the functions and apps used by smartphones and other mobile devices become increasingly large and sophisticated. The rapid growth of mobile games and swift penetration of smartphones is further accelerating growth of the MS unit.

**Debugging demand for post-release games may help the company achieve more stable earnings**

Shared Research is observing three major developments: 1) More developers are creating apps with game-like features; 2) These companies are also increasing outsourcing as they seek to improve the quality of their services; 3) The company is generating more revenue from debugging services for games that are already available on the market.

Debugging services for post-release games may help the company further stabilize its earnings because the need for debugging is expected to occur frequently until the app is withdrawn. In FY03/18, sales of the post-release debugging services grew to over half of the segment sales.

**Sales in the digital solutions (DS) unit**



Source: Shared Research based on company data  
 Note: The company changed reporting segments in FY3/11. Both new and old segments are shown for that year.

**System testing and security services (moved to Enterprise business)**

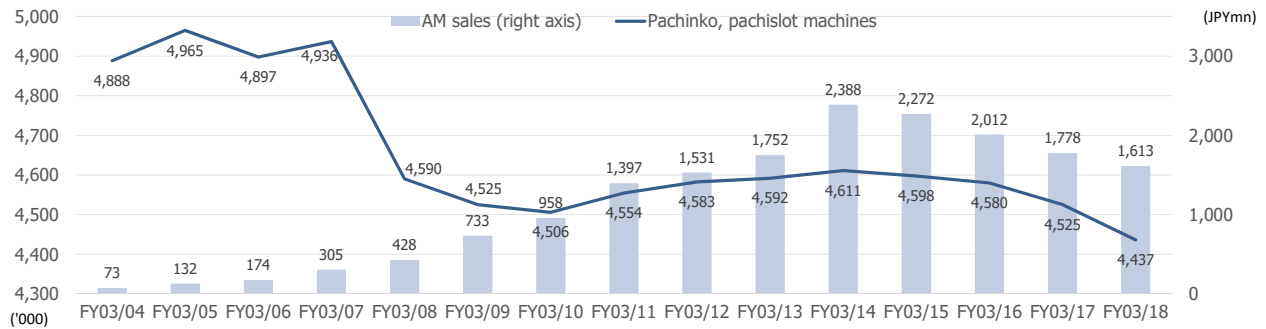
The former Digital solutions (DS) unit included earnings from testing web systems, business systems and consumer electronics. Although the company wins many orders from banks and e-commerce companies seeking to have their website checked, it did not focus on any particular sector in growing this business. System testing was one of the areas where the company seeks to expand in the medium to long term as the second core business.

In January 2015, the company entered the debugging service for the automotive industry with the establishment of ZEG Co., Ltd., a joint venture with ZMP Inc., a company with strength in development of automated driving technologies. (The company's stake in ZEG: 49%; unconsolidated affiliate). Its wholly owned subsidiary DIGITAL HEARTS Co., Ltd., engages in debugging work and provides testers. We note that these debugging services have been moved to the Enterprise business after the company changed its segments.



## Amusement (AM) unit

### Amusement (AM) unit sales



Source: Shared Research based on company data

### Climate remains tough

The main business of the amusement unit is debugging work for pachinko and pachislot equipment. The outsourcing of debugging work is taking root in the amusement industry. The amusement industry is highly susceptible to legislative changes. The company's AM Unit is thus similarly susceptible.

Under revised regulations that took effect in July 2004, amusement machines (pachinko and pachislot machines) that had been certified before June 2004 had to be removed by September 2007. The aim of the revisions was to increase the game-playing aspect amid an excessive focus on gambling. A couple of factors drove increasing polarization that is seeing the number of small- and medium-sized pachinko halls decline and large halls increase: the fall in the playing population and the withdrawal of the gambling oriented No. 4 type pachislot machines.

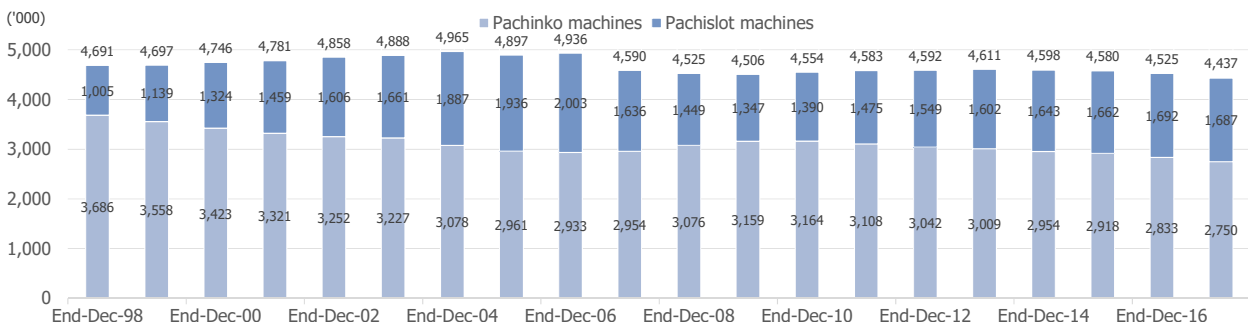
Game machine makers had to win fans for both pachinko and pachislot machines, so turned away from the traditional gambling-oriented machines to ones that offered superior entertainment, high specifications and high capacity. The accompanying increase in software capacity and complexity led to an increase in debugging work, an ongoing trend.

### Changes to testing protocols for pachislot machines in September 2014 a turning point

Pachinko and pachislot manufacturers were forced to substantially change their development schedules, in light of the changes to the testing protocols for pachislot machines from September 16, 2014. As debugging services for pachinko (not pachislot) machines accounted for about 70% of total sales in the AM unit, the direct impact of the new testing protocols for pachislot machines was negligible. However, as there were delays in development of new titles at clients not only of pachislot machines, but also of pachinko machines, the company's business results were affected sharply.

Regulations were imposed in November and December of 2015 to make changes to pachinko and pachislot machines. These regulations—enacted in November for pachinko and December for pachislot—will be implemented in different stages. The move has made the development schedule for pachinko and pachislot machines, and the work flow to the company, less predictable. As well, the AM unit's earnings have been weak since Q4 FY03/18 due to a reactionary slump after last-minute demand to beat the new regulations that took effect in February 2018. Such regulatory risks must be closely monitored.

### Number of installed pachinko and pachislot machines



Source: Shared Research based on National Police Agency

## Debugging service

### User debugging: debugging from the user perspective

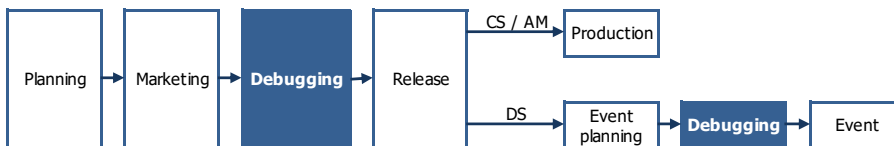
#### Active debugging: a hallmark of the company's operations

Software testing comprises “passive” and “active” tests. Passive tests focus on the program structure and checking several hundred to several thousand types of behavior. Active tests are designed to discover bugs through operating procedures that the game software companies may not have anticipated. The company’s focus is on active testing.

In active testing, from the developer’s perspective, faults or bugs are a manufacturing problem: i.e., unwanted phenomena in the design or manufacturing process. From the user’s perspective, anything the user finds troublesome is a fault. For example, controller buttons do not operate properly, or in order to get the desired action they have to push the button numerous times. The company’s testing discovers bugs from the user perspective. The company thus describes it as “user debugging.”

Passive testing confirms that machines operate according to testing documents, and requires no particular expertise. However, active debugging may reveal more unexpected bugs. This process requires expertise and adds value. The company said its combination of both passive and active testing enables it to offer a more complete debugging service.

#### Game development and debugging process

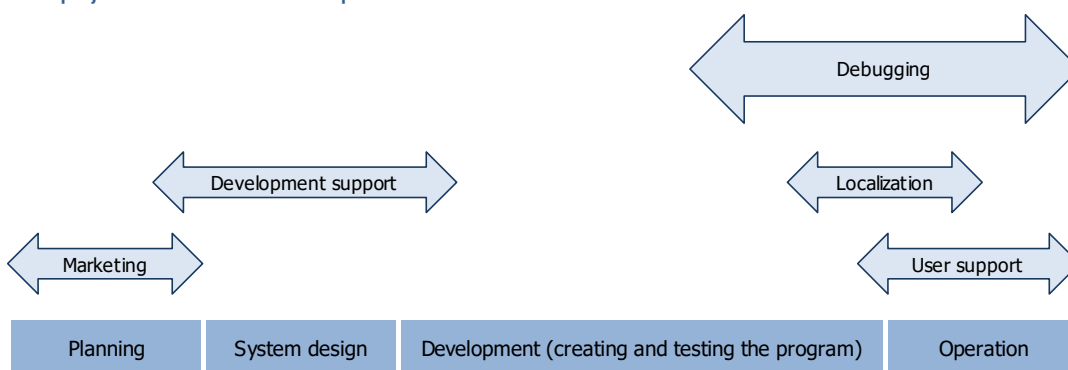


Source: Shared Research based on company data

The chart above shows a typical software development process. The company performs debugging processes under contract at every phase. Debugging typically refers to bug discovery, testing and rectification. The company offers discovery and testing but not rectification. Some titles—such as social network games and online games—are updated at regular intervals. In such cases, there is an ongoing need for debugging.

The company also increasingly offers additional services besides debugging for upper process phases in software development, including development support, localization, and user support services.

#### The company's services for software developers



Source: Shared Research based on company data

### Contract prices

#### Price setting is simple—number of personnel times hourly unit price times hours

Price setting is straightforward. Contract value is a function of the hourly unit price times hours, with little price variation. At the time the contract is signed, the parties discuss the price and maximum number of hours. The estimate of the maximum number of hours is based on the game description and items to be debugged. Thanks to the extensive experience in the field, the company’s budget estimates tend to be accurate.

### What happens when the budgeted hours are used up and the project is not complete?

Assume there is a contract to do up to 100 hours work at JPY3,000/hour (JPY300,000 in total) and the work takes more than 100 hours. The company will discuss with customer whether to extend the contract and continue working or end the contract even though the work is not complete.

This type of extra debugging work (in excess of the contracted hours) presents an opportunity for revenues—the company cannot even consider performing debugging work free of charge.

### Testers: droves of core gamers

#### Expert at managing testers

The table below shows the number of testers registered with the company as well as temporary employees (testers). The number of testers is growing with profits.

When the company contracts to debug a certain title, it selects personnel whose characteristics match the type of game (e.g., racing, puzzle, first-person shooter), and timing. The company can fulfill an order the next day if it receives an order the previous night: 365 days/year, 24 hours/day. There are cases where the company has accepted a debugging order for delivery at 6PM the next day. The company has intimate knowledge of both the character and the characteristics of its core testers to the extent that it knows a certain individual will be sure to participate in a certain project. It has a system that enables it to assemble the right personnel in the right place immediately, to complete testing for a particular title to a deadline. This is where the company's expertise lies. The company also has a comprehensive training system developed in-house.

#### Experienced in employing socially awkward young people with deep knowledge of gaming

The company has 15 debugging labs in 12 cities in Japan where it carries out tests. Testers are dispersed around the country from Sapporo to Okinawa. Despite declining working population and labor shortages in contract labor space, the company has been managing to secure skilled testers Japan's falling birthrate. The company receives many applications from those who want to earn money doing something they like: playing games. Many of these introverted young people—including those described as lacking fixed employment—are actually highly active as the company's testers.

### Strict security

Debugging operations involve handling software that is not available for general sale or has not been published, which is tantamount to trade secrets. Measures are in place to ensure that no information leaks: entry into rooms is through fingerprint verification; surveillance cameras prevent illicit activity; specialists destroy information; and testers are often required to have a guarantor. It also does not let testers register with other companies in the industry.

### Competition

#### Main competitor: PPHD

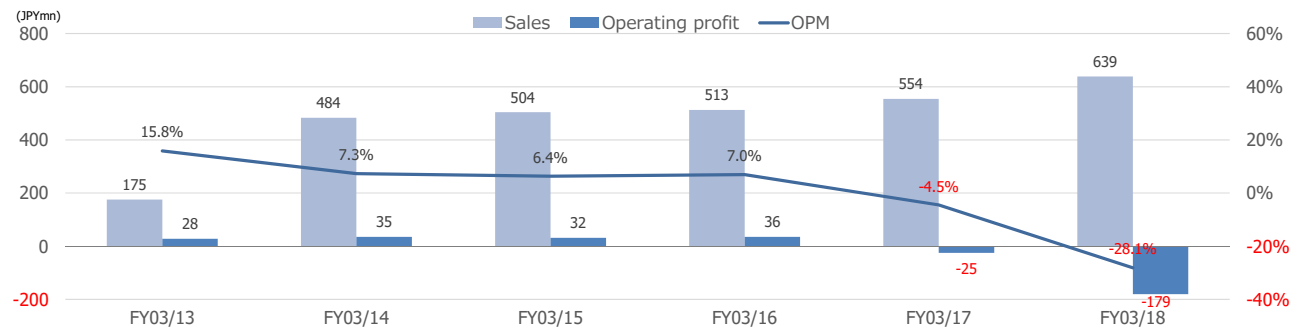
In the debugging business, DIGITAL HEARTS competes with PPHD (Poletowin Pitcrew Holdings, Inc.; TSE1: 3657). The pair have different strengths and weaknesses according to device type.

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### Media service

DIGITAL HEARTS created the former Media business after making Aetas, Inc. a consolidated subsidiary in Q3 FY03/13. Aetas makes a major earnings contribution to the Media service. Aetas operates one of Japan's largest gaming information sites 4Gamer.net, and the Media service is composed of its earnings. The 4Gamer.net site features a range of contents in response to varied user demand. Recently this includes game apps for smartphones in addition to online and consumer games. The company is also focusing on securing advertising clients over the long-term, in a bid to build a stable source of revenue.

## Former Media business performance



Source: Shared Research based on company data

### EVO: Hosted “EVO Japan,” the first EVO tournament held outside the US, in January 2018

The company formed a capital and operational alliance with Shochiku Broadcasting in FY03/16 and has been working on creating new services beyond game software. As part of this initiative, the company, Shochiku Broadcasting, and Aetas (the company’s subsidiary and a Shochiku Broadcasting affiliate) entered into an agreement to partner with SRKX Productions, LLC, the company that hosts EVO (Evolution Championship Series), one of the largest fighting game tournaments in the world. This EVO tournament was hosted in Japan in January 2018, making it the first EVO tournament outside of the US. EVO Japan attracted 7,000 visitors (30% from overseas), filling the tournament venue as well as recording high online audience ratings.

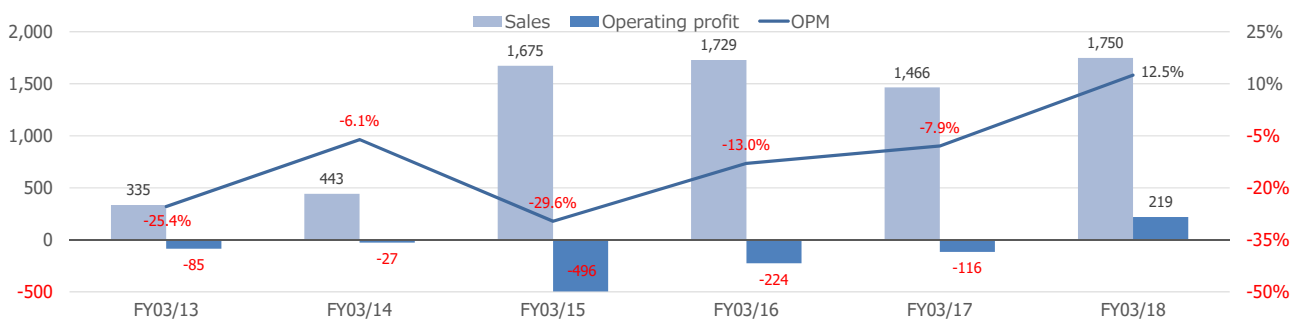
EVO: An event that has been held annually for over 20 years. EVO is a well-known gaming event, and EVO 2015 had more than 10,000 entrants and roughly 250,000 live-stream viewers on Twitch, an online video-streaming service. The tournament is quickly gaining popularity in Japan with roughly 1.4mn online viewers (number two in the world) and tours to watch the tournament.

## Creative service

The Creative service includes services in the Entertainment business that are not part of the Debugging or Media services. This includes the following:

- ▷ Development outsourcing: game development support
- ▷ Video production: various video processing technologies

### Former Creative business earnings (JPYmn)



Source: Shared Research based on company data

## Enterprise business

See Full-year company forecasts section for an overview of the Enterprise business.

## Profitability snapshot

### SG&A expenses

(JPYmm)	FY03/09	FY03/10	FY03/11	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/09	FY03/10	FY03/11	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17
<b>Sales</b>	<b>3,378</b>	<b>3,416</b>	<b>3,958</b>	<b>5,386</b>	<b>6,886</b>	<b>10,138</b>	<b>13,285</b>	<b>15,012</b>	<b>15,445</b>									
YoY	42.4%	1.1%	15.8%	36.1%	27.8%	47.2%	31.0%	13.0%	2.9%									
<b>SG&amp;A expenses</b>	<b>760</b>	<b>830</b>	<b>1,001</b>	<b>1,090</b>	<b>1,355</b>	<b>1,704</b>	<b>2,431</b>	<b>2,357</b>	<b>2,600</b>	<b>22.5%</b>	<b>24.3%</b>	<b>25.3%</b>	<b>20.2%</b>	<b>19.7%</b>	<b>16.8%</b>	<b>18.3%</b>	<b>15.7%</b>	<b>16.8%</b>
YoY	22.5%	24.3%	25.3%	20.2%	19.7%	16.8%	18.3%	15.7%	16.8%									
<b>Personnel, and directors' compensations</b>	<b>363</b>	<b>411</b>	<b>494</b>	<b>511</b>	<b>630</b>	<b>701</b>	<b>992</b>	<b>1,009</b>	<b>1,102</b>	<b>10.7%</b>	<b>12.0%</b>	<b>12.5%</b>	<b>9.5%</b>	<b>9.1%</b>	<b>6.9%</b>	<b>7.5%</b>	<b>6.7%</b>	<b>7.1%</b>
Directors' compensations	95	99	86	110	182	195	313	267	242	2.8%	2.9%	2.2%	2.0%	2.6%	1.9%	2.4%	1.8%	1.6%
YoY	4.6%	3.9%	-12.5%	27.8%	65.5%	6.8%	60.9%	-14.7%	-9.4%									
Parent	95	99	86	98	132	39	94	96		2.8%	2.9%	2.2%	1.8%	1.9%	0.4%	0.7%	0.6%	
Cons.- Parent difference	-	-	-	12	51	156	219	171		-	-	-	0.2%	0.7%	1.5%	1.7%	1.1%	
Personnel expenses	268	312	408	400	447	506	678	741	860	7.9%	9.1%	10.3%	7.4%	6.5%	5.0%	5.1%	4.9%	5.6%
YoY	50.9%	16.6%	30.6%	-1.7%	11.6%	13.2%	34.0%	9.3%	16.0%	0.0%	0.0%	0.0%	-0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Salaries and allowances	253	302	390	388	435	491	670	719	832	7.5%	8.8%	9.9%	7.2%	6.3%	4.8%	5.0%	4.8%	5.4%
Provision for bonuses	14	10	17	12	12	15	9	22	28	0.4%	0.3%	0.4%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%
Total employees (year-end)	135	153	151	176	216	277	474	597		-	-	-	-	-	-	-	-	-
<b>Other operating expenses</b>	<b>397</b>	<b>419</b>	<b>507</b>	<b>579</b>	<b>725</b>	<b>1,003</b>	<b>1,440</b>	<b>1,348</b>	<b>1,498</b>	<b>11.8%</b>	<b>12.3%</b>	<b>12.8%</b>	<b>10.7%</b>	<b>10.5%</b>	<b>9.9%</b>	<b>10.8%</b>	<b>9.0%</b>	<b>9.7%</b>
Depreciation (parent)	15	23	34	30	27	-	5	4		0.5%	0.7%	0.9%	0.6%	0.4%	0.0%	0.0%		
Amortization of goodwill	-	-	-	-	25	81	89	162	164					0.4%	0.8%	0.7%	1.1%	1.1%
Rents	-	45	98	91	75	-	-	-			1.3%	2.5%	1.7%	1.1%				
Commissions paid (parent)	92	78	63	49	76	-	-	-			2.3%	1.6%	0.9%	1.1%				
Provisions for doubtful accounts	1	0	1	-1	0	8	31	-0	21	0.0%	0.0%	0.0%	-0.0%	0.0%	0.1%	0.2%	-0.0%	0.1%
Other operating expenses (estimated)	288	273	311	410	522	914	1,314	1,183	1,312	8.5%	8.0%	7.9%	7.6%	7.6%	9.0%	9.9%	7.9%	8.5%

Source: Shared Research based on company data

### SG&A expenses continue rising due to increases in personnel and consolidated subsidiaries

SG&A expenses continue rising, mainly due to increasing personnel costs as sales grow. Further, after the establishment of a subsidiary, M&A related expenses are expected to increase.

#### Major subsidiaries and M&A

Date		Company name
July 2011	Established as subsidiary	DIGITAL Hearts Korea Co., Ltd. (South Korea)
October 2011	Established as subsidiary	DIGITAL Hearts USA Inc. (US)
December 2011	Established as subsidiary	DIGITAL Hearts (Thailand) Co., Ltd. (Thailand)
November 2012	Acquired	Aetas, Inc.
November 2013	Acquired	Network 21 Co., Ltd. (made a wholly owned subsidiary in April 2016)
March 2014	Acquired	Network 21 Co., Ltd. Made System Laboratory Inc. a subsidiary
April 2014	Acquired	Premium Agency (now Flame Hearts Co., Ltd., made a wholly owned subsidiary in July 2015)
July 2016	Established as subsidiary	Digital Hearts (Shanghai) Co., Ltd. (China)

Source: Shared Research based on company data

## Strengths and weaknesses

### Strengths

- ▼ **Strong market position in growing debugging services.** DIGITAL HEARTS and PPHD have Japan's outsourced debugging market to themselves. More debugging work, driven by proliferation of games across various platforms and greater game complexity should drive continue to drive growth without much competitive pressure.
- ▼ **Solid cash flow to fund growth.** The structure of debugging services—from price setting to cost control—makes it stable and highly cash generative. Labor costs are largely variable at more than 80% of expenses. Diversifying risk, the company has a broad client base comprising major companies through small- and medium-sized game software development companies. High, stable profitability underpins plans to grow the Enterprise business.
- ▼ **Ample pool of testers and expertise in personnel management:** Temporary employees in FY03/18 averaged 3,206. The number varies from quarter to quarter. As debugging contracts are signed, the company backed by years of experience, quickly deploys the appropriate personnel. It has intimate knowledge of both the character and characteristics of its core testers—to the extent that it can estimate the probability of a certain tester wanting to work for a certain project. This enables it to assemble the right team in the right place in short time, to complete testing for a particular title to a deadline. And underpins strict security.

### Weaknesses

#### ▼ Low profile outside of the computer game industry

DIGITAL HEARTS is keen to expand its business outside of the current computer game debugging core. However, it lacks experience and recognition outside of the small circle of its current, highly specialized clients. This creates a barrier to growth that the company is trying to break down through acquisitions. However, it may compensate for this weakness under its new management team. We expect a strong performance of the new management team, led by Genichi Tamatsuka, who became president in June 2017 (Mr. Tamatsuka was representative director and president of Fast Retailing Co., Ltd. and those of Lawson, Inc.).

#### ▼ Lack of specialist personnel

The company has carved itself a unique niche and developed a hard-to-imitate “gaming nerd recruiting and outsourcing” model. From FY03/18 onward, the company is shifting its emphasis to the new Enterprise business by providing an education system, because gaming nerds have a strong affinity with the business. One problem is that training has yet to catch up with demand.

Mr. Miyazawa, the founder of DIGITAL HEARTS, is convinced that the company is on the brink of a large growth opportunity and has a chance of becoming a representative company of Japan. Comparing CEO Tamatsuka and employees to an elite top executive and nerds respectively (both in a positive sense), he believes that synergy between the elite top executive and nerds will make a large contribution to the next growth.

#### ▼ Slow overseas development in labor-intensive debugging services

Debugging services require many testers and is labor-intensive. It requires a system capable of training testers and making them better at their job, while also preventing information leaks. All this takes time to build, thus slowing overseas development. However, this may be understood as one aspect of the company's overseas strategy.

The company is shifting labor-intensive debugging business structure to a technology-intensive one. It is combining its accumulated know-how and technologies including AI and introducing a technology-intensive debugging model into development projects to secure competitive advantage and achieve a significant growth in profitability. In FY03/18, it created a new research and development team in the holding company so that the team may lead the business structure shifting.



## Balance sheet

Balance sheet (JPYmn)	FY03/03	FY03/04	FY03/05	FY03/06	FY03/07	FY03/08	FY03/09	FY03/10	FY03/11	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18
	Parent	Parent	Parent	Parent	Parent	Parent	Parent	Parent	Parent	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
<b>Current assets</b>	<b>102</b>	<b>147</b>	<b>235</b>	<b>379</b>	<b>506</b>	<b>985</b>	<b>1,350</b>	<b>1,350</b>	<b>1,669</b>	<b>2,452</b>	<b>3,608</b>	<b>5,549</b>	<b>5,757</b>	<b>5,065</b>	<b>6,221</b>	<b>6,814</b>
Cash and cash equivalents	66	85	127	211	265	617	913	869	1,055	1,598	2,185	3,693	3,059	2,198	3,345	3,894
Accounts receivable	32	48	86	147	212	329	382	432	545	764	1,274	1,484	2,374	2,230	1,942	2,481
Inventories	4	2	-	-	-	-	-	0	2	1	9	16	12	25	8	15
Others	-0	12	22	21	29	40	55	49	67	89	140	356	311	612	926	424
Tangible fixed assets	6	9	14	15	33	47	75	94	138	208	263	323	368	299	298	474
Intangible fixed assets	1	1	4	18	56	70	68	57	59	63	609	696	1,506	580	239	287
Goodwill	-	-	-	-	-	-	-	-	-	-	503	596	1,170	438	201	150
Investments and other assets	5	5	24	39	91	309	375	448	478	438	382	592	642	590	894	1,001
Investment securities	-	-	-	-	-	100	146	143	138	134	184	129	127	129	299	268
Long-term deposits	-	-	-	-	-	100	100	100	100	100	-	-	-	-	-	-
Others	5	5	24	39	91	109	129	205	239	204	198	463	515	461	594	733
<b>Fixed assets</b>	<b>12</b>	<b>15</b>	<b>42</b>	<b>72</b>	<b>180</b>	<b>426</b>	<b>519</b>	<b>600</b>	<b>675</b>	<b>708</b>	<b>1,253</b>	<b>1,611</b>	<b>2,516</b>	<b>1,469</b>	<b>1,430</b>	<b>1,762</b>
<b>Total assets</b>	<b>114</b>	<b>161</b>	<b>277</b>	<b>451</b>	<b>686</b>	<b>1,411</b>	<b>1,869</b>	<b>1,950</b>	<b>2,343</b>	<b>3,160</b>	<b>4,861</b>	<b>7,161</b>	<b>8,273</b>	<b>6,534</b>	<b>7,652</b>	<b>8,575</b>
<b>Current liabilities</b>	<b>55</b>	<b>58</b>	<b>112</b>	<b>185</b>	<b>264</b>	<b>437</b>	<b>548</b>	<b>351</b>	<b>484</b>	<b>862</b>	<b>2,055</b>	<b>3,373</b>	<b>3,824</b>	<b>3,374</b>	<b>3,759</b>	<b>3,929</b>
Trade payables	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Short-term debt	4	10	2	-	-	-	-	-	-	-	1,000	1,610	1,603	1,300	1,631	1,600
Current portion of debt	1	10	24	19	-	50	-	-	-	-	-	-	-	-	-	-
Accrued expenses	23	24	39	67	109	157	187	188	238	347	433	524	674	736	779	986
Accrued income tax	24	0	15	52	79	110	229	81	123	276	284	518	415	430	687	259
Other current liabilities	3	14	32	46	76	121	132	82	123	240	338	720	1,131	909	663	1,084
<b>Fixed liabilities</b>	<b>3</b>	<b>27</b>	<b>40</b>	<b>60</b>	<b>50</b>	-	-	-	<b>11</b>	<b>31</b>	<b>19</b>	<b>21</b>	<b>281</b>	<b>70</b>	<b>1,034</b>	<b>1,076</b>
Convertible bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,017	1,017
Long-term debt	3	27	40	60	50	-	-	-	-	-	12	217	46	3	-	-
Others	-	-	-	-	-	-	-	-	11	31	19	9	64	23	14	59
<b>Total liabilities</b>	<b>58</b>	<b>85</b>	<b>152</b>	<b>245</b>	<b>314</b>	<b>437</b>	<b>548</b>	<b>351</b>	<b>495</b>	<b>893</b>	<b>2,074</b>	<b>3,394</b>	<b>4,104</b>	<b>3,444</b>	<b>4,793</b>	<b>5,005</b>
<b>Net assets</b>	<b>56</b>	<b>76</b>	<b>125</b>	<b>206</b>	<b>372</b>	<b>974</b>	<b>1,321</b>	<b>1,599</b>	<b>1,848</b>	<b>2,266</b>	<b>2,787</b>	<b>3,767</b>	<b>4,169</b>	<b>3,090</b>	<b>2,858</b>	<b>3,570</b>
Shareholders' equity	56	76	125	206	372	974	1,322	1,599	1,849	2,247	2,736	3,688	4,037	2,774	2,591	3,341
Valuation adjustments	-	-	-	-	-	-0	-1	-1	-1	-5	19	30	56	41	42	29
Share subscription rights	-	-	-	-	-	-	-	-	-	-	-	-	15	15	-	-
Minority interests	-	-	-	-	-	-	-	-	-	24	32	49	62	260	226	201
<b>Total liabilities and equity</b>	<b>114</b>	<b>161</b>	<b>277</b>	<b>451</b>	<b>686</b>	<b>1,411</b>	<b>1,869</b>	<b>1,950</b>	<b>2,343</b>	<b>3,160</b>	<b>4,861</b>	<b>7,161</b>	<b>8,273</b>	<b>6,534</b>	<b>7,652</b>	<b>8,575</b>
Capital expenditures	-	-	-	-	68	46	54	50	105	154	199	198	161	168	-	-
Depreciation	-	-	-	6	10	20	29	41	56	84	109	143	-	197	119	197
Amortization of goodwill	-	-	-	-	-	-	-	-	-	-	25	81	-	164	112	77
Working capital	36	50	86	147	212	329	382	432	547	765	1,283	1,500	2,386	2,255	1,950	2,496
Total interest-bearing debt	8	47	65	80	50	50	-	-	-	-	1,000	1,622	1,820	1,346	1,633	1,600
Net cash	58	37	62	131	215	667	1,013	969	1,155	1,698	1,185	2,071	1,239	852	1,711	2,294
Current ratio	185%	252%	210%	205%	192%	225%	247%	385%	345%	284%	176%	165%	151%	150%	165%	173%
Fixed ratio	20.7%	19.4%	33.6%	35.1%	48.4%	43.7%	39.3%	37.5%	36.5%	31.6%	45.5%	43.3%	61.5%	52.2%	54.3%	52.3%
Equity ratio	48.9%	47.1%	45.3%	45.7%	54.2%	69.0%	70.7%	82.0%	78.9%	71.0%	56.7%	51.9%	49.5%	43.1%	34.4%	39.3%

Source: Shared Research based on company data



## Cash flow statement

Cash flow statement (JPYmm)	FY03/06	FY03/07	FY03/08	FY03/09	FY03/10	FY03/11	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18
	Parent	Parent	Parent	Parent	Parent	Parent	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.	Cons.
<b>Cash flows from operating activities</b>													
Pre-tax profit	133	237	320	638	536	495	804	1,017	1,792	1,526	1,132	1,441	1,633
Depreciation, amortization of long-term prepaid expenses	6	10	20	29	41	56	84	109	143	276	197	119	197
Amortization of goodwill	-	-	-	-	-	-	-	25	81	162	164	112	77
Impairment losses	-	-	-	-	-	-	-	-	-	-	595	495	3
Change in accounts receivable	-61	-65	-117	-54	-49	-113	-219	-433	-92	-395	105	290	-539
Change in accounts payable, accrued expenses, consumption tax payable	32	63	79	23	-29	76	192	138	167	285	-231	-128	103
Others	19	2	28	12	-12	16	60	-64	-40	-172	316	-92	389
<b>Subtotal</b>	<b>129</b>	<b>246</b>	<b>331</b>	<b>648</b>	<b>486</b>	<b>531</b>	<b>921</b>	<b>792</b>	<b>2,052</b>	<b>1,682</b>	<b>2,278</b>	<b>2,238</b>	<b>1,863</b>
Interest and dividends income and expenses	-1	-0	0	2	3	2	2	-3	-5	-25	-11	-3	-2
Security deposits paid, collected	-	-	-	-	-	-40	13	-	-	-	-	-	-
Income taxes paid	-23	-82	-140	-184	-364	-185	-230	-458	-498	-940	-1,187	-773	-684
<b>Cash flows from operating activities</b>	<b>105</b>	<b>164</b>	<b>191</b>	<b>466</b>	<b>124</b>	<b>308</b>	<b>705</b>	<b>331</b>	<b>1,562</b>	<b>870</b>	<b>1,080</b>	<b>1,825</b>	<b>1,436</b>
<b>Cash flows from investing activities</b>													
Change in payments, withdrawals from time deposits	-	-	-100	0	-	-	-6	100	-	-	-	-	-
Acquisition of tangible fixed assets	-6	-29	-25	-39	-50	-77	-104	-118	-142	-104	-86	-109	-293
Acquisition of intangible fixed assets	-15	-36	-23	-10	-8	-15	-23	-63	-29	-126	-94	-34	-69
Purchase, sale, redemption of investment securities	-	-	-101	-50	-	-	0	-50	56	-	-0	-212	-119
Acquisition of subsidiary shares resulting in change in scope of consolidation	-	-	-	-	-	-	-	-584	-20	-215	-	-	-
Payments and collections of leases and guarantee deposits	-16	-46	-14	-22	-59	8	5	-7	-77	-145	10	-120	-254
Decrease (increase) in insurance funds	-	-	-	-	-23	-7	-11	65	-10	8	5	-	-
Others	-	3	-0	-	-	-1	2	7	-145	13	148	-136	116
<b>Cash flows from investing activities</b>	<b>-37</b>	<b>-109</b>	<b>-263</b>	<b>-120</b>	<b>-140</b>	<b>-93</b>	<b>-138</b>	<b>-650</b>	<b>-368</b>	<b>-569</b>	<b>-17</b>	<b>-610</b>	<b>-619</b>
<b>Cash flows from financing activities</b>													
Change in loans and bonds	12	-30	-	-50	-	-	-	1,000	450	-733	-474	1,303	-35
Repayment of lease obligations	-	-	-	-	-	-0	-2	-16	-7	-24	-38	-9	-2
Proceeds from issuance of shares	3	29	424	0	0	0	0	2	5	0	-	-	-
Dividends paid	-	-	-	-	-29	-29	-43	-92	-140	-190	-211	-233	-253
Others	-	0	-	0	-	-	24	-0	-0	-3	-1,191	-1,131	40
<b>Cash flows from financing activities</b>	<b>15</b>	<b>-1</b>	<b>424</b>	<b>-50</b>	<b>-28</b>	<b>-29</b>	<b>-21</b>	<b>894</b>	<b>308</b>	<b>-950</b>	<b>-1,913</b>	<b>-70</b>	<b>-251</b>
Effect of exchange rate on cash and cash equivalents	-	-	-0	-0	-0	-0	-3	12	7	14	-11	1	-2
Change in cash and cash equivalents	84	54	352	296	-44	186	543	587	1,509	-634	-861	1,147	565
Cash and cash equivalents (beginning of year)	127	211	265	617	913	869	1,055	1,598	2,185	3,693	3,059	2,198	3,345
<b>Cash and cash equivalents (year end)</b>	<b>211</b>	<b>265</b>	<b>617</b>	<b>913</b>	<b>869</b>	<b>1,055</b>	<b>1,598</b>	<b>2,185</b>	<b>3,693</b>	<b>3,059</b>	<b>2,198</b>	<b>3,345</b>	<b>3,894</b>

Source: Shared Research based on company data

## Historical performance

### Q1 FY03/19 results

#### Results overview

For Q1 FY03/19, DIGITAL HEARTS reported consolidated sales of JPY4.5bn (+10.2% YoY), an operating profit of JPY302mn (-44.0% YoY), recurring profit of JPY301mn (-43.5% YoY), and net income attributable to parent company shareholders of JPY182mn (-49.5% YoY). The solid top-line growth was underpinned by steady growth at the mainstay Entertainment business and more than a two-fold YoY increase in sales at the Enterprise business. Meanwhile, a sharp drop in sales from debugging services for amusement equipment (pachinko and pachislot machines) at the Entertainment business and an increase in costs due to active upfront spending in the Enterprise business led to a decline in operating profit.

In this relation, we note that at the beginning of the fiscal year the company said it expected the change in regulations governing pachinko and pachislot machines to lead to a decline in revenues from related debugging services, and that it was also planning to continue investing in its Enterprise business. Taking into further consideration the varied response of amusement equipment manufacturers on the new equipment development front as well as the company's commitment to making investments aimed at mid- to long-term growth of its Enterprise business, Share Research concludes that Q1 results were in line with the company's expectations.

#### Q1 results by segment

The company has changed its reportable segments as of Q1 FY03/19. The comparisons and analysis of the results for individual segments below reflect the new segmentation.

#### Entertainment business

In the Entertainment business, the company provides a range of support services for console games, mobile games, and amusement equipment including debugging, contract development, and promotion. The Entertainment business reported Q1 sales of JPY3.8bn (+1.9% YoY) but segment profit of JPY678mn was down 16.6% YoY, hurt by a sharp drop in sales from debugging services for amusement equipment.

#### Debugging service

Debugging service involves checking for bugs in console game, mobile game, and amusement equipment software from a user perspective and reporting the findings to clients. Sales from Debugging service in Q1 declined 4.6% YoY to JPY3.1bn. Within Debugging service, the Amusement (AM) unit suffered a 68.9% YoY sales decline as demand continued to fall following the surge in demand last year ahead of the February 2018 imposition of stricter regulations on pachinko and pachislot machines. In contrast, sales at the Mobile solutions (MS) unit, which provides services for mobile games, logged strong gains on the back of ongoing growth in debugging demand, particularly in the post-launch phase. The 16.1% YoY increase in sales at the Mobile solutions unit was enough to cover most of the drop in sales for the Debugging service as a whole.

#### Creative service

Under Creative service, the company offers a full range of content production support services, including game development and production of 2D and 3D graphics. In Q1, sales from Creative service came in at JPY511mn (+50.3% YoY) on the back of ongoing game development work and new project wins as the company stepped up hiring and employee training in a successful effort to strengthen production capabilities and improve service quality.

#### Media and other services

Media and other services comprise the media service, which is the operation of 4Gamer.net (one of Japan's largest game information websites), and other services including customer support. Q1 sales of JPY176mn were up 39.7% YoY. In addition to ongoing efforts providing speedy and high value-added original reporting to increase the media value of its websites (mainly 4Gamer.net), the company's customer support business (established last year) added to sales with a steady stream of new contract wins.

**Enterprise business**

The Enterprise business encompasses a range of services for corporate IT systems, including system testing, contract software development, IT support services, and security. Q1 sales of JPY652mn were up 168.5% YoY, or more than double the amount at this time last year. The top-line gains notwithstanding, the enterprise business finished Q1 in the red with a loss of JPY58mn as earnings were weighed down by heavy investment, including additions to its staff of specialists.

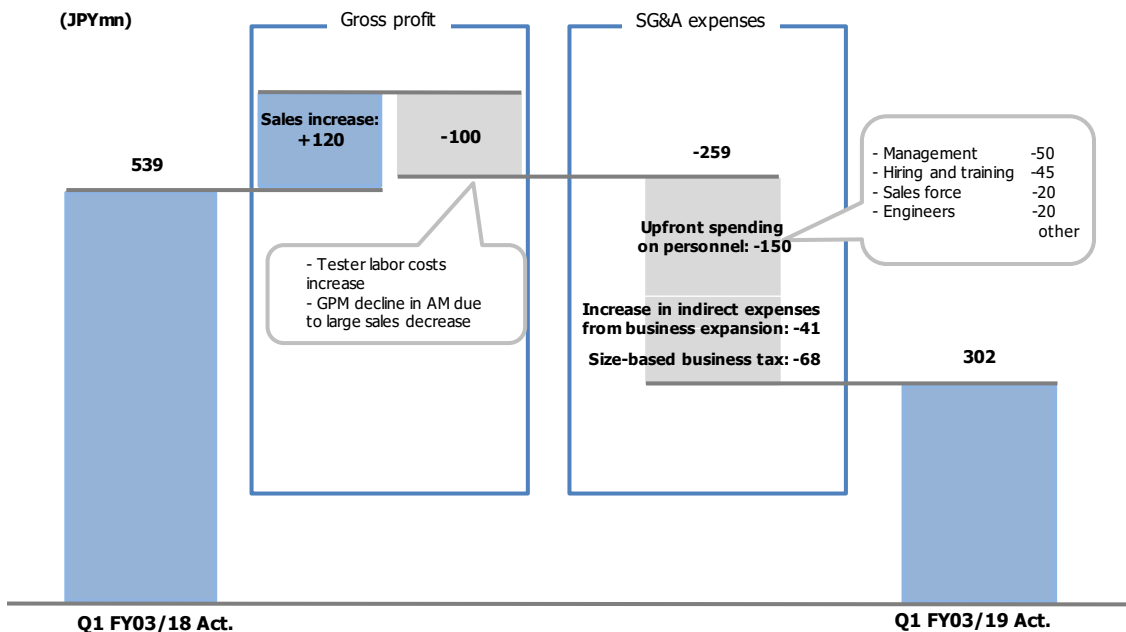
**System testing**

The company's System testing service involves finding bugs in corporate IT systems. Q1 sales of JPY260mn were up 57.0% YoY. The strong gains in this area reflect the company's successful efforts to win new clients and expand business with existing client companies through precise identification of client needs and active marketing activities. To facilitate further growth in this area the company established business alliances with GNT (a specialist in offshore development services based in Vietnam) and VALTES (a testing company with well-developed training programs), with a view to focusing on hiring and training test engineers with specialized knowledge, thereby increasing its capacity to undertake new projects and improve service qualities.

**IT service and security**

The company's IT and security services encompass contract system development, IT support, and security services. Q1 sales were robust at JPY393mn (+168.5% YoY). During the quarter, the company built a business structure to offer a one-stop service (operated in conjunction with NTT East) from providing network circuits to IT security, and formed alliances with two US-based IT security startups (Aella Data and Synack) to expand new services.

**Profitability analysis**



Source: Shared Research based on company data

At the operating profit level, we find a number of factors weighing on earnings but the largest was the cost incurred on reinforcing personnel, which both impacted gross profit and added to SG&A expenses. Outside the company, market forces played a role in reducing sales at the Amusement (AM) unit under the Debugging services (Entertainment business), but the environment remained favorable for the rest of the Entertainment segment and the rapidly growing Enterprise business.

For example, within the Debugging service the Mobile solution (MS) unit was able to steadily capture rising demand, particularly in the post-launch phase of mobile games. Further, the company saw demand for its localization services and language quality assurance services increase in line with expectations as more and more Japanese game titles were adapted for overseas distribution. In Creative service as well, the company secured a new contract for work on a game app from a major client Square Enix Co., Ltd. (TSE1: 9684), leading us to believe the Entertainment business (with the exception of the AM unit) is enjoying a favorable order environment. The company's Enterprise business also enjoyed strong growth in Q1, seeing sales more than

double YoY thanks in part to the investments the company has been making since FY03/18. However, the favorable business environment notwithstanding, operating profit was down YoY, largely due to the company's heavy upfront spending, especially on personnel. In particular, we would note the jump in personnel spending over Q1 FY03/18 was due in large part to the addition of management personnel that started back in June 2017, when Genichi Tamatsuka took over as president and CEO.

The company also beefed up staffing at its Enterprise business, increasing the training of upper level engineers from 64 in Q1 FY03/18 to 131, and increasing the number of active system testers from 346 to 483.

Localization: Localization refers to altering software that was originally designed for use in one country to make it suitable for use in other countries that speak different languages. The term localization is frequently used to refer to the translation of the software's display, but it can also go beyond simple translation of terms to include the addition of new features to accommodate the peculiarities of a particular language. For example, in Japan and other countries that use writing systems based on Chinese characters, software adjustments must be made to accommodate double-byte character sets. In addition, in the case of Japan, software adjustments must also be made to allow words entered using the Japanese phonetic alphabet to be converted into Chinese characters.

### Financial conditions

As of the end of Q1 FY03/19, the company's balance sheet showed total assets of JPY8.6bn, which was largely on par with the level at end-FY03/18 with an increase of only JPY64mn. Current assets declined by JPY571mn since end-FY03/18 while fixed assets increased by JPY636mn. The decline in current assets was due in large part to a JPY438mn decline in cash and deposits. The increase in fixed assets was due mainly to a JPY639mn increase in the value of investment securities (using mark-to-market valuations).

On the liability side, the company's balance sheet showed total liabilities of JPY4.6bn, down JPY433mn versus end-FY03/18. The decline in total liabilities was due entirely to the decline in current liabilities, which declined by JPY545mn while fixed liabilities increased by JPY111mn. The decline in current liabilities was due in large part to a JPY154mn decline in accrued expenses payable and a JPY156mn decline in income taxes payable.

Net assets at the end of Q1 FY03/19 came to JPY4.1bn, a JPY498mn increase over end-FY03/18. The rise in net assets was due in large part to the booking of net income attributable to parent company shareholders, adding JPY182mn to retained earnings, and the JPY447mn gains in the valuation difference of available-for-sale securities, which together offset the JPY131mn decline in retained earnings stemming from the payment of year-end dividends.

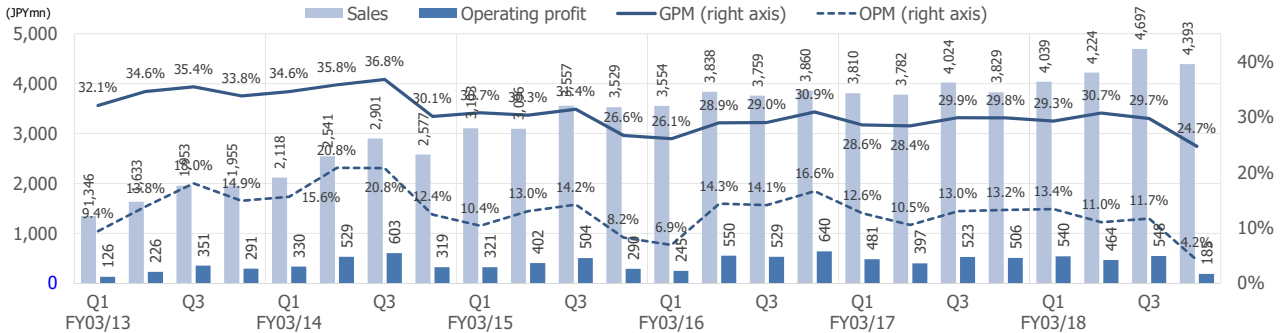
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## Full-year FY03/18 results (out May 11, 2018; based on new segments)

- ▷ FY03/18: Debugging for games was brisk and marked record high sales, but operating profit declined, because of booking a loss on its first e-sports event, sharp downturn in debugging for pachinko and pachislot machines, and investment in human resources for business expansion
- ▷ Entertainment: Mainstay debugging services drove earnings, with double-digit growth in sales and segment profit
  - Debugging: Brisk consumer (GC) and mobile (MS) game services result in record sales and profit
    - ◇ GC: Sales increased 20% YoY, performing well thanks to high capacity utilization of major title projects and expansion of share of transactions with major clients
    - ◇ MS: Sales were up 17% YoY. Debugging for mobile games remained robust, primarily for the post-release phase.
    - ◇ AM: Sales declined 9% YoY due to a reactionary falloff in Q4, despite capturing the rush of extraordinary demand ahead tightening of regulations in February 2018
- ▷ Media: EVO Japan in January 2018 was a great success as it attracted more visitors than expected, but the company booked a loss on the event
- ▷ Creative: Sharp profit growth brought on by acquisition of new projects and thorough project management

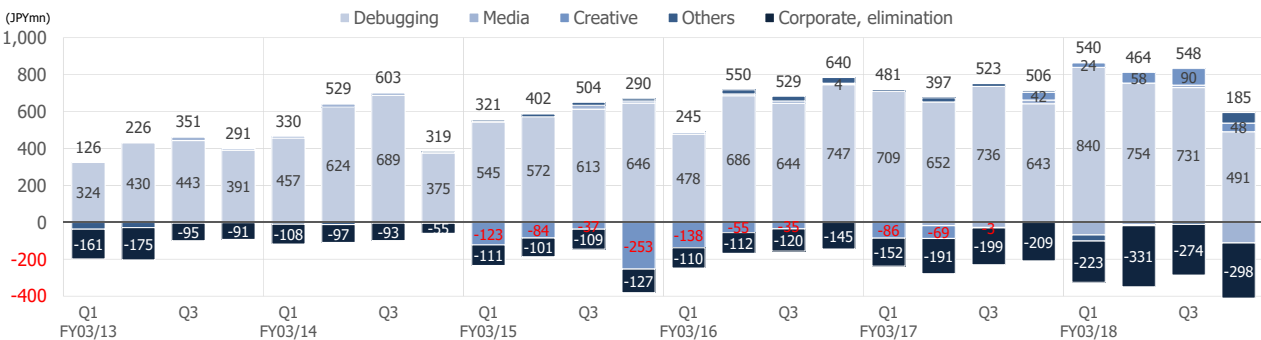
- ▷ Enterprise: Invested aggressively in specialist staff and other resources to accelerate growth of System testing. The investment is beginning to pay off in 2H, with sales of the System testing doubling in 2H from 1H
  - May 2018: Concluded basic agreement on capital and business alliance with VALTES Co., Ltd. for early training of test engineers in System testing
  - June 2018: Announced collaboration with two US security startups to boost move into security market
- ▷ FY03/19: Continue investment phase in 1H, expect contributions to earnings in 2H. Forecasts a record high full-year operating profit of JPY2.2bn (+27% YoY)

### Quarterly earnings (JPYmn)



Source: Shared Research based on company data

### Reference: Operating profit breakdown by previous segments (JPYmn)



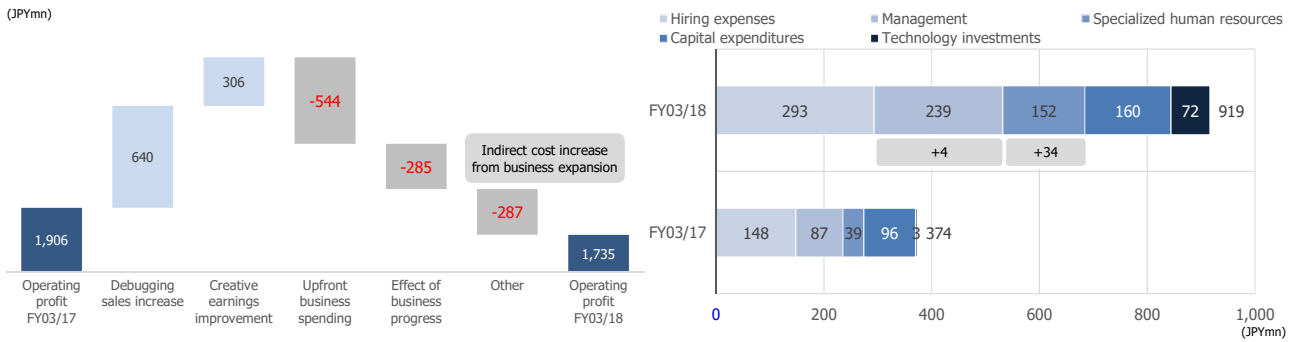
Source: Shared Research based on company data

### Earnings overview

In full-year FY03/18, sales were JPY17.4bn (+12.4% YoY) and operating profit was JPY1.7bn (-9.0%). The Debugging service in the Entertainment business saw double-digit sales growth (+13.9%). In particular, the Mobile games (MS) unit maintained robust growth at 17.4% YoY (+JPY1.5bn). The consumer games (GC unit) also grew a sharp 19.5% YoY, because a large title project began high capacity utilization. The two main units were earnings drivers, showing strong growth. Shared Research is also focusing on the Enterprise business, which recorded more than 50% sales growth in System testing and showing signs of earnings accelerating in FY03/19 and beyond.

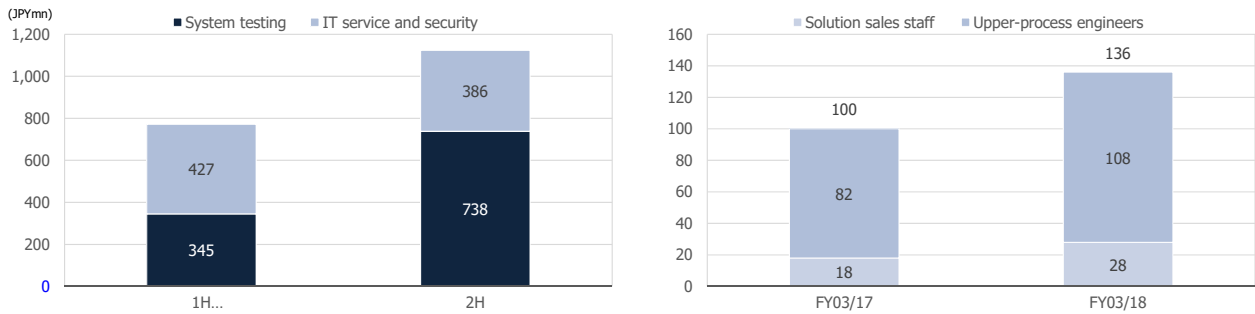
Operating profit increased sharply due to the sales growth effect of the Debugging service and substantial profit growth of the Creative service, but not enough to compensate for the following negative factors: a) Aggressive investment in human resources primarily at the management level and in the enterprise field (see the chart below), b) booking a loss on the EVO Japan fighting game competition held in January 2018 in the Media service (former Media business), and c) a sharp reactionary slump in debugging services for amusement (AM unit) in Q4 after the rush of extraordinary demand in preparation for regulatory reforms in February 2018. Consequently, consolidated operating profit decreased by JPY171mn (-9.0% YoY).

**Left: increase/decrease in operating profit, right: breakdown of investment (JPYmn)**



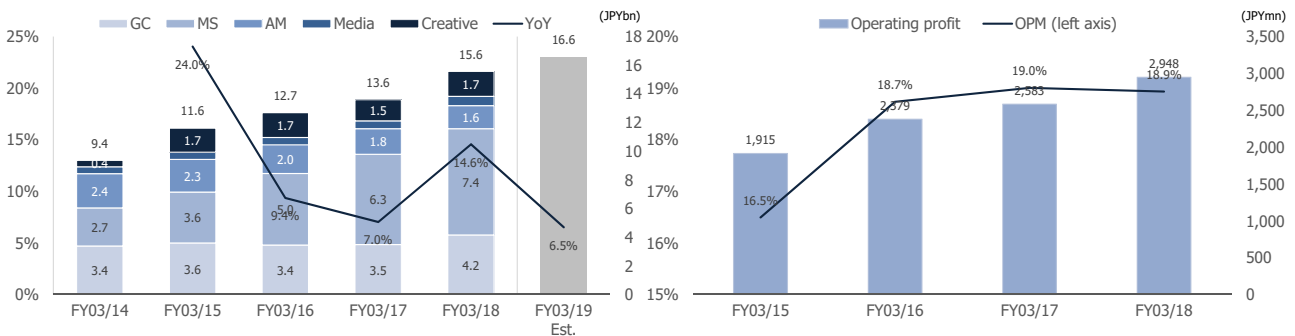
Source: Shared Research based on company data

**Left: Enterprise sales by subsegment (JPYmn), right: breakdown of specialist personnel (persons)**



Source: Shared Research based on company data

## Entertainment business



Source: Shared Research based on company data

## Debugging service (previously Debugging business minus System testing, which was part of former DS unit)

- ▷ Debugging service: GC and MS continued to drive earnings.
  - GC: Sales increased 20% YoY, performing well thanks to high capacity utilization of major title projects and increased share of transactions with major clients to total transactions
  - MS: Sales were up 17% YoY. Debugging for mobile games remained robust, primarily for the post-release phase.
  - AM: Sales fell 9% YoY despite the rush of extraordinary demand in preparation for regulatory reforms in February 2018, because of a steep reactionary falloff in Q4

**Demand for debugging services for existing games:** After release, games are continually improved through patches and downloadable content. Users demand large patches that include new content, and developers try to retain many gamers for as long as possible by improving the quality of a game and living up to user expectations. Major patches significantly change gameplay and often include additional content such as in-game items and areas. Demand for debugging services grows in line with the size of game patches.

## Media service (previously Media business)

- ▷ Mainstay 4Gamer.net sales were stable, maintaining an operating profit

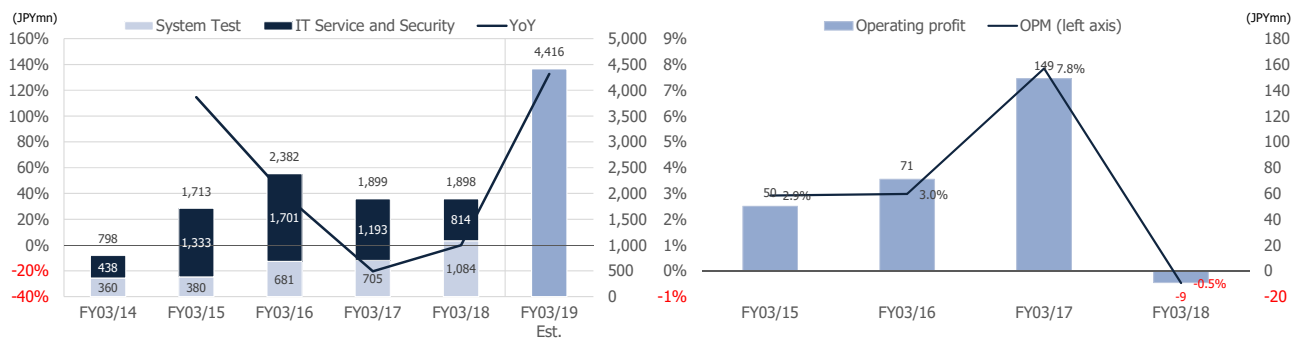
- ▷ EVO Japan, which was held in January 2018, was a big success, attracting more than 7,000 entrants. However, the company booked an operating loss due to lower-than-expected sponsorship revenue and running costs going over budget.

**EVO Japan:** Japanese portion of the Evolution Championship Series, one of the largest fighting game tournaments in the world. The company hosted the event for the first time in Japan in FY03/18.

## Creative service (previously Creative business)

- ▷ Turned profitable at operating profit level in Q4 FY03/17 due to the effects of structural reforms. Maintained momentum since Q1 to post operating profit again in FY03/18
  - Sharp profit growth brought on by acquisition of new projects and thorough project management

## Enterprise business

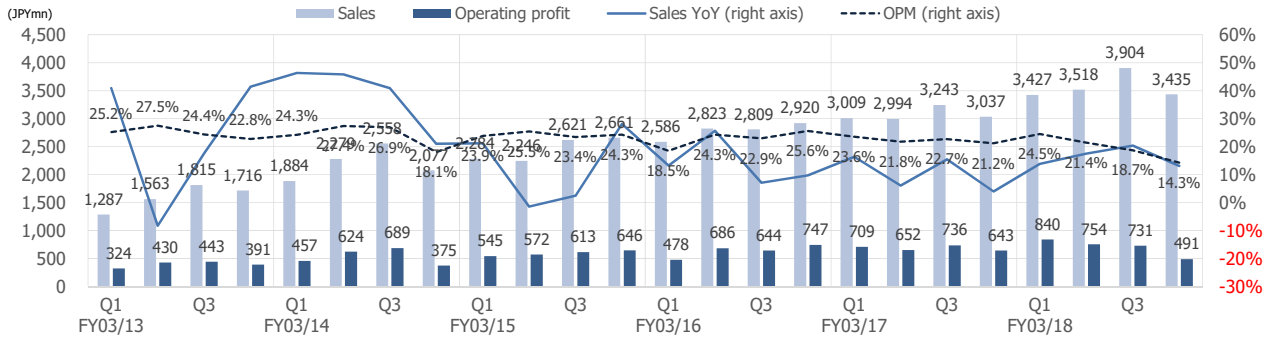


Source: Shared Research based on company data

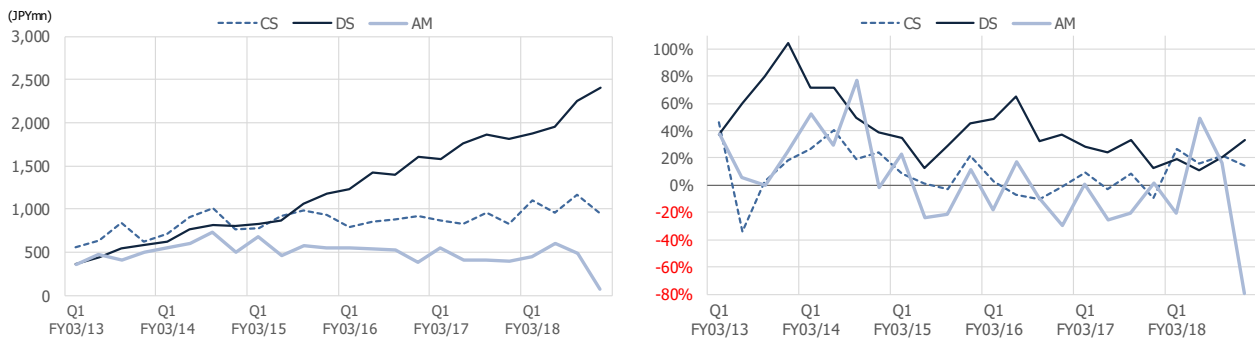
- ▷ Enterprise: Invested aggressively in specialist staff and other resources to accelerate growth of System testing. The investment is beginning to pay off in 2H, with sales of System testing doubling in 2H from 1H
  - May 2018: Concluded basic agreement on capital and business alliance with VALTES Co., Ltd. for early training of test engineers in system testing market
  - June 2018: Announced collaboration with two US security startups, to boost move into security market
- ▷ System testing: See above
- ▷ IT service and security (previously Other businesses): Merger between NetWork21 Co., Ltd. (main subsidiary in Other businesses) and main debugging subsidiary DIGITAL HEARTS Co., Ltd. on October 1, 2017; accelerated efforts to select and focus businesses and reduced fixed expenses to achieve profitability in Q4

## Reference on earnings of former segments

### Previous Debugging business quarterly performance (including internal transactions; JPYmn)

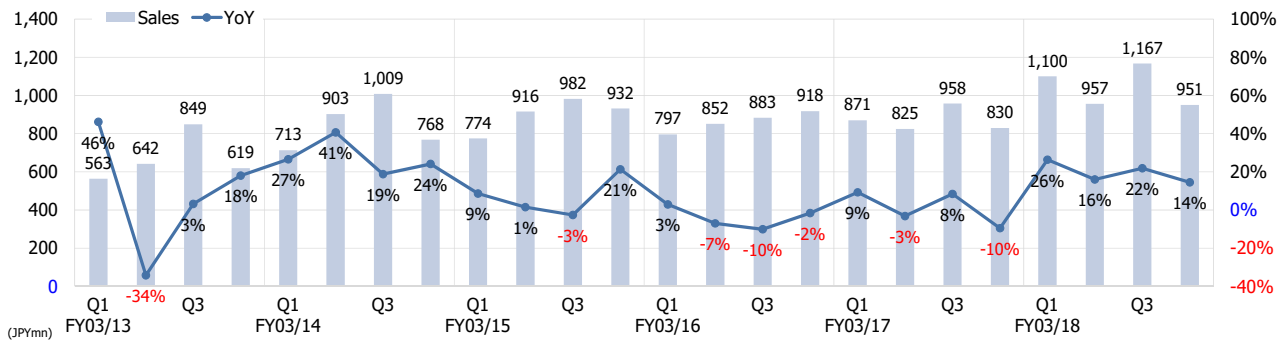


### Previous Debugging business sales by unit (left, JPYmn) and YoY change (right)



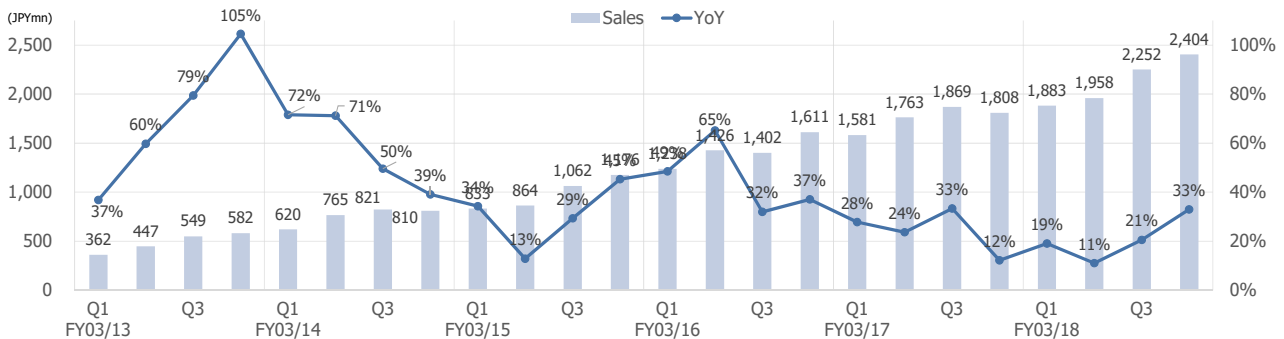
Source: Shared Research based on company data

### Previous CS unit sales quarterly performance (JPYmn)



Source: Shared Research based on company data

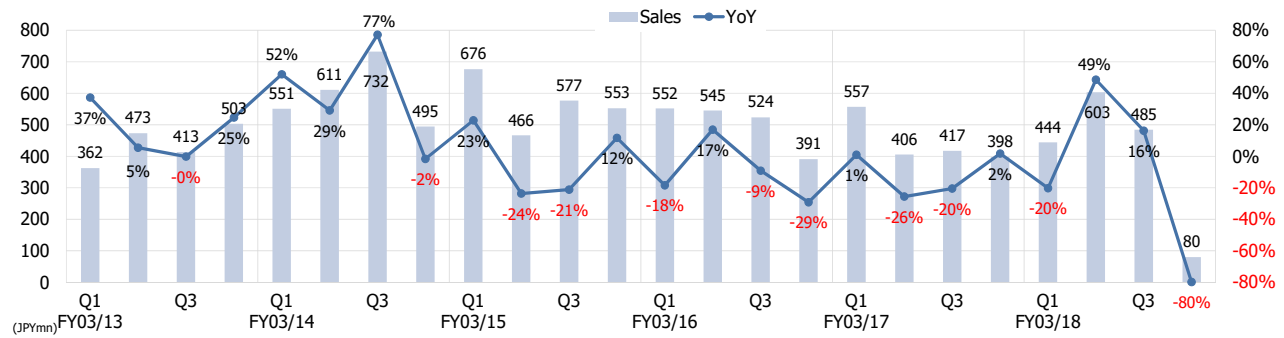
### Previous DS unit sales quarterly performance (JPYmn)



Source: Shared Research based on company data

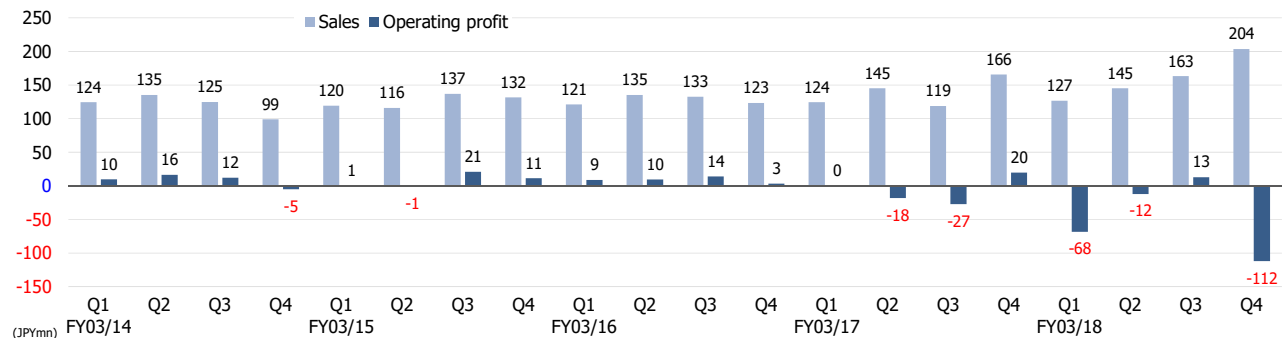


## Previous AM unit sales quarterly performance (JPYmn)



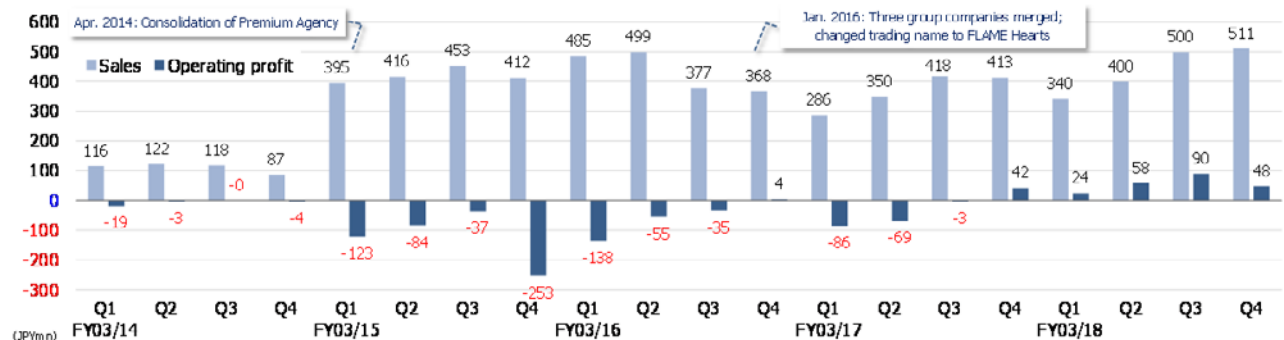
Source: Shared Research based on company data

## Previous Media business earnings (JPYmn)



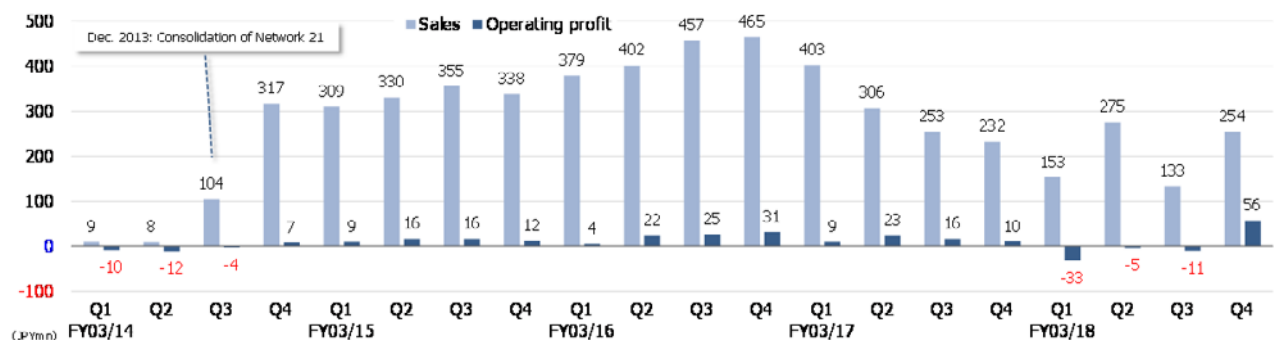
Source: Shared Research based on company data

## Previous Creative business earnings (JPYmn)



Source: Shared Research based on company data

## Previous Other businesses earnings (JPYmn)



Source: Shared Research based on company data

## Other information

### Top management

In April 2001, President and CEO Eiichi Miyazawa established the company's predecessor, DIGITAL HEARTS Ltd. His aim was to raise the profile of outsourced debugging (testing). He grew the business, and in February 2008 listed the company on Tokyo's Mothers Market. Multiplatform subcontracted software testing drove further growth. In October 2013, he formed a holding company to allow expansion in non-debugging businesses.

In June 2017, Genichi Tamatsuka succeeded the founder Eiichi Miyazawa as representative director, president, and CEO and Mr. Miyazawa became director and chairman of the board. The new CEO Tamatsuka had been representative director and president of Fast Retailing Co., Ltd. and those of Lawson, Inc.

### Employees

#### Consolidated employees

	FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18		FY03/12	FY03/13	FY03/14	FY03/15	FY03/16	FY03/17	FY03/18
<b>Employees</b>	<b>176</b>	<b>216</b>	<b>277</b>	<b>474</b>	<b>597</b>	<b>648</b>	<b>750</b>	<b>Temporary employees (avg.)</b>	<b>1,270</b>	<b>1,492</b>	<b>2,143</b>	<b>2,417</b>	<b>2,829</b>	<b>2,780</b>	<b>3,206</b>
Debugging business	120	130	137	149	320	377	461	Debugging business	1,239	1,449	2,091	2,358	2,781	2,723	3,134
Media business	-	22	24	22	22	25	25	Media business	-	7	5	9	11	13	15
Creative business	-	-	-	164	121	104	123	Creative business	-	-	-	28	19	24	21
Other businesses	18	22	78	112	103	83	80	Other businesses	23	9	19	17	8	8	7
Corporate	38	42	38	27	31	59	61	Corporate	8	27	28	5	10	12	29

Source: Shared Research based on company data

### Major shareholders

Top shareholders	Shares held ('000 shares)	Shareholding ratio
Eiichi Miyazawa	6,987.7	32.06%
Japan Trustee Services Bank, Ltd. (Trust account)	2,839.8	13.03%
A-1 G.K.	1,200.0	5.51%
A&G Co-creation Investment No.1 Investment Limited Partnership	1,096.0	5.03%
State Street London Care of State Street Bank and Trust, Boston SSBTC A/C UK London Branch Clients-United Kingdom	620.0	2.84%
The Master Trust Bank of Japan, Ltd.	555.0	2.55%
Yasuyuki Wakasa	440.0	2.02%
MSIP Client Securities	394.0	1.81%
MSCO Customer Securities	241.7	1.11%
Japan Trustee Services Bank, Ltd. (Trust account 5)	198.4	0.91%
<b>SUM</b>	<b>14,572.5</b>	<b>66.87%</b>
Total shares issued	21,793.4	100.00%

Source: Shared Research based on company data  
As of March 31, 2018

## Company profile

<b>Company Name</b>	<b>Head Office</b>
DIGITAL HEARTS HOLDINGS Co., Ltd.	41F Tokyo Opera City Building 3-20-2, Nishi-Shinjuku, Shinjuku-ku Tokyo, Japan
<b>Phone</b>	<b>Listed On</b>
+81-3373-0082	Tokyo Stock Exchange First Section
<b>Established</b>	<b>Exchange Listing</b>
October 1, 2013	October 1, 2013
<b>Website</b>	<b>Fiscal Year-End</b>
<a href="https://en.DIGITAL HEARTS-hd.com/">https://en.DIGITAL HEARTS-hd.com/</a>	March
<b>IR Web</b>	
<a href="https://en.DIGITAL HEARTS-hd.com/ir/">https://en.DIGITAL HEARTS-hd.com/ir/</a>	

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Aeon Fantasy Co., Ltd.	GCA Corporation	RESORTTRUST, INC.
Ai Holdings Corporation	Grandy House Corporation	ROUND ONE Corporation
AnGes Inc.	Hakuto Co., Ltd.	RVH Inc.
Anicom Holdings, Inc.	Happinet Corporation	RYOHIN KEIKAKU CO., LTD.
Anritsu Corporation	Harmonic Drive Systems Inc.	SanBio Company Limited
Apaman Co., Ltd.	HOUSEDO Co., Ltd.	SANIX INCORPORATED
Arealink Co.,Ltd.	IDOM Inc.	Sanrio Company, Ltd.
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AS ONE CORPORATION	Inabata & Co., Ltd.	SBS Holdings, Inc.
Ateam Inc.	Infocom Corporation	Seikagaku Corporation
Aucfan Co., Ltd.	Infomart Corporation	Seria Co.,Ltd.
AVANT CORPORATION	Intelligent Wave, Inc.	SHIP HEALTHCARE HOLDINGS, INC.
Axell Corporation	istyle Inc.	<b>SIGMAXYZ Inc.</b>
Azbil Corporation	Itochu Enex Co., Ltd.	SMS Co., Ltd.
AZIA CO., LTD.	JSB Co., Ltd.	Snow Peak, Inc.
BEENOS Inc.	JTEC Corporation	Solasia Pharma K.K.
Bell-Park Co., Ltd.	J Trust Co., Ltd	SOURCENEXT Corporation
Benefit One Inc.	Japan Best Rescue System Co., Ltd.	Star Mica Co., Ltd.
B-lot Co.,Ltd.	JINS Inc.	Strike Co., Ltd.
Canon Marketing Japan Inc.	JP-HOLDINGS, INC.	SymBio Pharmaceuticals Limited
Carna Biosciences, Inc.	KAMEDA SEIKA CO., LTD.	Synchro Food Co., Ltd.
CERES INC.	Kenedix, Inc.	TAIYO HOLDINGS CO., LTD.
Chiyoda Co., Ltd.	KFC Holdings Japan, Ltd.	Takashimaya Company, Limited
Chugoku Marine Paints, Ltd.	KI-Star Real Estate Co., Ltd.	Take and Give Needs Co., Ltd.
cocokara fine Inc.	Kumiai Chemical Industry Co., Ltd.	Takihyo Co., Ltd.
COMSYS Holdings Corporation	Lasertec Corporation	TAMAGAWA HOLDINGS CO., LTD.
CRE, Inc.	LUCKLAND CO., LTD.	TEAR Corporation
CREEK & RIVER Co., Ltd.	MATSUI SECURITIES CO., LTD.	<b>Tenpo Innovation Inc.</b>
Daiseki Co., Ltd.	Medical System Network Co., Ltd.	3-D Matrix, Ltd.
DIC Corporation	MEDINET Co., Ltd.	TKC Corporation
Digital Arts Inc.	Milbon Co., Ltd.	TOKAI Holdings Corporation
Digital Garage Inc.	MIRAIT Holdings Corporation	Tri-Stage Inc.
DIGITAL HEARTS HOLDINGS Co., Ltd	Monex Goup Inc.	VISION INC.
Don Quijote Holdings Co., Ltd.	NAGASE & CO., LTD	VISIONARY HOLDINGS CO., LTD.
Dream Incubator Inc.	NAIGAI TRANS LINE LTD.	VOYAGE GROUP, INC.
EARTH CHEMICAL CO., LTD.	NanoCarrier Co., Ltd.	WirelessGate, Inc.
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Emergency Assistance Japan Co., Ltd.	Nichi-Iko Pharmaceutical Co., Ltd.	YOSHINOYA HOLDINGS CO., LTD.
en-Japan Inc.	Nihon Denkei Co., Ltd.	YUMESHIN HOLDINGS CO., LTD.
euglena Co., Ltd.	NIPPON PARKING DEVELOPMENT Co., Ltd.	Yume no Machi Souzou Iinkai Co., Ltd.
Evolable Asia Corp.	Nisshinbo Holdings Inc.	Yushiro Chemical Industry Co., Ltd.
Ferrotec Holdings Corporation	NS TOOL CO., LTD.	ZAPPALLAS, INC.
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FreeBit Co., Ltd.	ONO SOKKI Co., Ltd.	

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## Contact Details

Shared Research Inc.  
 3-31-12 Sendagi Bunkyo-ku Tokyo, Japan  
 URL: <https://sharedresearch.jp>  
 Phone: +81 (0)3 5834-8787  
 Email: [info@sharedresearch.jp](mailto:info@sharedresearch.jp)