EDISON

Nano Dimension

FY16 results

Major milestones on schedule

Tech hardware & equipment

FY16 was a very successful year for Nano Dimension as it delivered the first six DragonFly systems to potential customers for evaluation and raised US$13.8m (gross) to provide finance as it moves into the commercial phase of development. The company appears on track to complete the beta testing phase in mid-2017 and to deliver 50 printers during FY17. We leave our estimates and valuation broadly unchanged.

Year end	Revenue (US$m)	EBITDA* (US$m)	PBT* (US$m)	EPADS ($)	DPADS ($)	P/E (x)
12/15	0.0	(2.4)	(2.1)	(0.39)	0.0	N/A
12/16	0.0	(6.5)	(6.8)	(0.83)	0.0	N/A
12/17e	5.2	(7.7)	(8.8)	(0.89)	0.0	N/A
12/18e	35.7	12.2	11.0	0.93	0.0	7.0

Note: *PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Major milestones to commercialisation reached

Nano Dimension delivered the first six DragonFly 2020 printers for evaluation during H216, as per its stated target. Management notes that feedback so far has been generally positive, with customers using the printers extensively to create multi-layer PCBs. The company remains on track to deliver a total of around 50 printers during FY17, including around 35 in the commercial roll-out during H217 and to scale this up further during FY18. During FY16 Nano Dimension also successfully lab-tested a proof-of-concept 3D BioPrinter for stem cells using an adapted 3D printer. Management is in the process of establishing a structure for creating a separate entity to pursue the bioprinting opportunity, which will secure its own sources of funding.

First revenues reported during FY16

Nano Dimension generated US$46k revenues during FY16 from leasing DragonFly printers to customers participating in the beta testing programme. Operating losses increased by 57% year-on-year to US$9.0m as the number of employees, most of whom are engaged in R&D, doubled to almost 90. Nano Dimension raised US$12.0m (gross) during H216 through a placing and a further $1.8m (gross) through an over-allotment option, both at US$6.50/ADS. The funds are being used to support the ramp-up in volume, including a c US$1.5m investment in expanding the ink production capability.

Valuation: Significant upside on volume roll-out

Delivery to our estimates and key milestones over the next year would justify significant share price appreciation, with our base case valuation returning a fair value of US$12.97/ADS (unchanged)/NIS9.57/ordinary share (from NIS9.87/share on FX moves). This excludes any additional potential contribution from third-party ink sales or early-stage development programmes. The current share price factors in the risks of setbacks to the commercialisation plan, which is common in early-stage technology companies.

15 March 2017

Price	**NIS4.44**
Market cap	**NIS221m**
Priced at 10 March 2017	NIS3.69:US$
Net cash ($m) at end December 2016	12.4
Shares in issue	49.7m
ADRs in issue	9.9m
Free float	68%
Code	NNDM
Primary exchange	TASE
Secondary exchange	NASDAQ

Share price performance

%	1m	3m	12m
Abs	(9.7)	(6.4)	(13.4)
Rel (local)	(16.5)	(6.6)	(15.5)
52-week high/low		NIS6.5	NIS4.2

Business description

Nano Dimension focuses on the development of advanced 3D printed electronics systems and advanced additive manufacturing. The company's initial products include a 3D printer for rapid prototyping of multi-layer PCBs and associated nanotechnology conductive and dielectric inks.

Next events

Q117 results	May 2017

Analysts

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Edison profile page

PCB sector roll-out programme on track

In August 2016 Nano Dimension delivered the first DragonFly 2020 system for creating multi-layer printed circuit boards to a leading defence company in Israel for evaluation. Less than a month later, it delivered the first DragonFly to the US. This system is being used by FATHOM, Nano Dimension's partner, to support demonstrations and product evaluations in the US, especially to potential customers in Silicon Valley and the greater West Coast area. Initial feedback from the first two beta sites was positive, so the initial two shipments were followed by four others by the end of December, in line with management's stated target. The other four recipients are a US-based Fortune 100 multinational in the technology sector, one of the top 10 largest defence companies globally, Germany-headquartered PHYTEC Messtechnik and a Fortune 500 company that is one of the 10 largest bank holding companies in the US, which will install the printer in its hardware development centre. These beta site customers are keen to bring PCB prototyping in house, thus reducing time to market and ensuring that IP security is not compromised.

The feedback so far has been mainly positive. Customers have been using the printers extensively, in some cases manufacturing five or six PCBs each week with the equipment. The customers have successfully output PCBs with up to 12 layers. The beta testing has uncovered a minor problem with the printer construction, which caused it to leak ink but has now been fixed. In some situations the dielectric ink has cracked when components are soldered to the completed PCB. The formulation of this ink is being adjusted. Management expects to resolve this problem satisfactorily within a few weeks. The resolution of this type of teething problem is to be expected during a beta test phase and highlights why Nano Dimension was keen to have an extended beta test phase with customers that will provide detailed feedback.

Management has confirmed that the roll-out programme is on track, with 50 printers scheduled for delivery during FY17. Management expects to make the first six deliveries for 2017 later this month and to deliver a larger number, also to beta site customers, during Q217. Then around 35 printers will be delivered for the commercial roll-out during H217. The beta site printers will be manufactured in house and manufacturing will be outsourced to Flextronics for the commercial volumes. Deliveries will be scaled up further during FY18. Management has adopted a leasing model for the beta phase rather than a straight sales model. This means that revenues will not be recognised upfront, depressing the top-line P&L, but enables Nano Dimension to select beta site partners on the basis of their ability to provide useful feedback and, ultimately, to become long-term customers.

Nano Dimension is using some of the funds raised to expand the ink production facility so that it can provide the quantity needed once it enters the commercial phase and the volumes of printers being sold ramps up. It has leased another floor in its existing facility in Ness Ziona near Tel Aviv to accommodate ink production. Management expects the new facility, which will cost an estimated $1.5m, to be opened ahead of volume shipments for the commercial roll-out in H217. We model most of the cost of this as falling in FY17.

Technology progress

Although Nano Dimension is highly focused on completing the beta test phase for the PCB printer and software, it has made significant progress in developing 3D print systems for other sectors and the next-generation 3D print system for PCBs. Importantly, it is protecting this IP through patent applications.

Next-generation PCB printing

In January 2017 Nano Dimension announced that it had successfully 3D printed a series of multi-layered rigid PCBs, connected through printed flexible conductive connections. This process provides a solution to traditional production limitations in the electronics industry, enabling PCBs to be bent so that they fit inside curved and complex geometrical products. The company has filed a patent in the US for the flexible conductive and insulating inks that are used in this process, as well as for the printing process itself. Management believes that the company is the first in the world to successfully print multi-layered rigid circuits with flexible connections. The potential market for this solution includes aerospace, defence, wearable equipment and the Internet of Things (IoT).

Later in the same month, Nano Dimension announced that it had successfully 3D printed electrical circuits in which it had inserted embedded electrical components during the printing phase. This technique presents several advantages: it improves the PCB reliability by protecting components from the external environment, it eliminates the soldering process for attaching components to the board and improves connectivity to the components, which is a major source of device failure. The company has filed a patent application in the US to cover this development. Importantly, this represents a step towards printing complete electronic devices where the casing itself supports the electrical components and the connectors joining them, and the shape of the device is not constrained by the need to accommodate a rigid rectangular PCB.

In February 2017 Nano Dimension announced that it had received a budget from the Israel Innovation Authority to finance a project to develop 3D printing of advanced ceramic materials. This project is primarily intended to find a better way of manufacturing aerospace and automotive components. In addition, it potentially gives a route for replacing the insulating material in PCBs with ceramic, thus improving the substrate's mechanical and thermal characteristics.

New sectors

In May, Nano Dimension successfully lab-tested a proof-of-concept 3D BioPrinter for stem cells using an adapted 3D printer. The trial was conducted in collaboration with Accellta, which provided the suspensions of stem cells. The combination of Accellta's ability to produce billions of high-quality stem cells per batch and Nano Dimension's high-precision, high-throughput 3D printing expertise opens the possibility of printing complex biomaterials for use in preclinical drug discovery and testing, cosmetics safety testing, toxicology assays, tissue printing and 'organs on chips'. Nano Dimension has stated that it will form a new entity to address this promising application and raise funds separately for it. In June, the company filed a patent in the US covering the conversion of images of organs from MRI and CT scans into a 3D representation of the biological structure of the tissue and organ, which is then converted into very thin 2D slices for 3D printing. During the FY16 results call to analysts, management noted that it is in the process of forming a separate entity with its own independent sources of finance to commercialise this opportunity. This will focus initially on creating materials with similar functionality to kidney tissue.

Financials

Increased investment in R&D

Nano Dimension reported its first revenues during FY16. These totalled US$46k, broadly in line with our US$36k estimate. These revenues were derived from leasing DragonFly printers to customers participating in the beta testing programme. Operating losses increased by 57% year-on-year to US$9.0m. This is higher than our $7.0m estimate, which assumed that the shift to expensing all R&D costs rather than capitalising a material proportion of them would occur at the year end, rather than at the end of Q3. R&D expenses rose from $2.9m to $4.1m as the number of

people engaged in R&D rose from 34 at the end of FY15 to 75 at the end of FY16, as well as an increase in materials expenses reflecting intensifying research and development activities. General and administrative expenses rose from $2.9m to $4.8m, primarily the result of an increase in admin employee numbers from six to 13 and a significant increase in fees for professional services.

Placing to fund commercialisation phase

During H216 Nano Dimension raised US$12.0m (gross) through a placing and a further $1.8m (gross) through an over-allotment option, both at US$6.50/ADS. Cash consumed during the year totalled $10.1m, including $1.1m on tangible assets and $3.0m capitalised R&D (net of amounts recognised in respect of government grants liability), leaving $12.4m net cash at the end of December 2016.

According to management, cash burn is currently around $1m/month. Offsetting this against revenues from printer sales and leasing agreements, and including $1.9m capex, most of which is allocated for the ink production facility, gives an estimated cash outflow during FY17 of $9.8m, leaving $2.6m of cash at the year-end. Our model shows Nano Dimension has sufficient cash to support it through the commercialisation phase of the 3D print system for PCBs, provided it achieves the roll-out rate and pricing assumed in our estimates (see our September note for details). However, it is possible that management may decide to secure additional funding so that it can address the commercial opportunities without being constrained by cash considerations. We note that management intends to establish a separate entity for commercialising 3D print of biological tissues. This will be financed separately from the PCB programme.

Valuation

Our DCF analysis excludes any additional potential contribution from third-party ink sales or early-stage development programmes. The valuation in US$/ADS remains unchanged at US$12.97/ADS. As a result of currency exchange movements, the NIS/ordinary share value has changed from NIS9.87/ordinary share to NIS9.57/ordinary share. Further progress against major milestones, which in the short term are the onset of commercial deliveries and commissioning of the ink production facility, should act as a catalyst to push the share price beyond the current level towards our indicative value.

Exhibit 1: Edison base case DCF sensitivity analysis

US$/ADS		Discount rate			NIS/ordinary share		Discount rate		
		11.0%	13.0%	15.0%			11.0%	13.0%	15.0%
Term growth	0.0%	14.76	11.94	9.92		0.0%	10.88	8.80	7.32
	1.0%	15.55	12.41	10.22		1.0%	11.46	9.15	7.54
	2.0%	16.51	12.97	10.57		2.0%	12.17	9.57	7.79
	3.0%	17.72	13.65	10.98		3.0%	13.06	10.06	8.09
	4.0%	19.27	14.47	11.46		4.0%	14.21	10.67	8.45

Source: Edison Investment Research

Exhibit 2: Financial summary

US$'000	2015	2016	2017e	2018e
Year-end 31 December	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS				
Revenue	0	46	5,160	35,680
Cost of Sales (including amortisation of capitalised IP)	0	(193)	(2,461)	(12,535)
Gross Profit	0	(147)	2,699	23,145
EBITDA	(2,437)	(6,465)	(7,667)	12,159
Operating Profit (before amort. and except.)	(2,473)	(6,829)	(8,797)	11,016
Intangible Amortisation	0	0	0	0
Exceptionals	0	(149)	0	0
Other	(3,262)	(2,025)	(2,025)	(2,025)
Operating Profit	(5,735)	(9,003)	(10,822)	8,991
Net Interest	355	38	0	0
Profit Before Tax (norm)	(2,118)	(6,791)	(8,797)	11,016
Profit Before Tax (FRS 3)	(5,380)	(8,965)	(10,822)	8,991
Tax	0	0	0	0
Profit After Tax (norm)	(2,118)	(6,791)	(8,797)	9,253*
Profit After Tax (FRS 3)	(5,380)	(8,965)	(10,822)	8,991
Average Number of Shares Outstanding (m)	5.4	8.2	9.9	9.9
EPADS - normalised ($)	(0.39)	(0.83)	(0.89)	0.93*
EPADS - normalised fully diluted ($)	(0.39)	(0.83)	(0.89)	0.69*
EPADS - (IFRS) ($)	(1.00)	(1.10)	(1.09)	0.91
DPADS ($)	0.0	0.0	0.0	0.0
Gross Margin (%)	N/A	N/A	52.3	64.9
EBITDA Margin (%)	N/A	N/A	N/A	34.1
Operating Margin (before GW and except.) (%)	N/A	N/A	N/A	30.9
BALANCE SHEET				
Fixed Assets	4,151	8,903	9,667	8,923
Intangible Assets	2,910	6,787	5,817	4,986
Tangible Assets	1,131	2,006	3,739	3,827
Restricted deposits	110	110	110	110
Current Assets	9,057	13,323	4,512	21,852
Stocks	0	0	250	1,250
Debtors	264	814	1,564	7,144
Cash	8,665	12,379	2,568	13,328
Restricted deposits	128	130	130	130
Current Liabilities	(907)	(1,968)	(2,718)	(8,298)
Creditors	(907)	(1,968)	(2,718)	(8,298)
Short-term borrowings	0	0	0	0
Long-Term Liabilities	(254)	(956)	(1,052)	(526)
Long-term borrowings	0	0	0	0
Liability in respect of government grants	(254)	(956)	(1,052)	(526)
Net Assets	12,047	19,302	10,409	21,951
CASH FLOW				
Operating Cash Flow	(3,330)	(5,914)	(7,917)	11,159
Net Interest	0	0	0	0
Tax	0	0	0	0
Investment in intangible & tangible assets	(2,344)	(4,167)	(1,894)	(400)
Acquisitions/disposals	0	0	0	0
Financing	14,362	13,525	0	0
Dividends	0	0	0	0
Net Cash Flow	8,688	3,444	(9,811)	10,759
Opening net debt/(cash)	(207)	(8,665)	(12,379)	(2,568)
HP finance leases initiated	0	0	0	0
Other	(230)	270	0	0
Closing net debt/(cash)	(8,665)	(12,379)	(2,568)	(13,328)

Source: Company accounts, Edison Investment Research. Note: *Normalised for tax.

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