中國銀河國際
CHINA GALAXY INTERNATIONAL

2018年11月30日

昂纳科技集团 [0877.HK]

在全球供应链中表现突出的公司；首次覆盖并予「买入」

昂纳科技集团是在国际光通信和数据通信市场具有领先地位的光网络产品供应商。公司在无源组件领域排名第三，市场份额达13%。公司在硅谷和中国拥有研发实验室，这再加上一系列收购，公司现在能提供各种光学组件产品包括EDFA和VOA，这些产品主要用于电信光网络中，包括长途、环状网路和接入环（有线电视、移动网络、WiFi和光纤到家）。其客户群已经发展到包括NSN（该公司2015年与阿尔卡特朗讯合并）、华为、Ciena、中兴、富士通和烽火通信。为了进一步加强在全球技术行业的领导地位，昂纳科技集团与3SP和ITF一起取得了先进激光芯片和光学组件的供应，以扩大公司的产品范围，并通过垂直整合改进技术。这些新业务不需要高昂的研发和资本支出，但我们认为随着时间推移，它们将进一步推动公司的增长。由于公司向多家在全球领先的电信和网络设备制造商供货，公司亦将受惠于国际企业对5G的投资。尽管近期股价表现不佳，但我们认为目前估值（12.5倍2018年市盈率和10.5倍2019年市盈率）是一个很好的进场时机。我们还预计公司将就2018年业绩宣派股息。首次覆盖并予买入评级，目标价4.40港元（基于15倍2018年市盈率，接近同业平均）。

- **光通信产品稳健增长；新业务贡献持续增加。**凭借公司的核心光网络技术平台，公司已从核心业务多元化到某些新业务，包括工业应用和消费电子产品，并已将其战略重点重新定位，从单纯的电信无源组件供货商逐步演化为一家为云数据中心、自动化、传感和工业激光器以及ADAS提供先进产品和解决方案的高科技行业龙头，并目标成为领先的高科技公司。
- **尽管存在宏观不确定因素，但盈利增长仍坚挺。**我们预计公司每股盈利可在2018/2019/2020实现5.6%/ 19.0%/ 27.3%的良好增长，主要受惠：a）市场份额增加；b）新产品推出；c）客户群不断扩大。我们预计公司将继续获得市场份额，特别是在行业整合下，例如贰陆（Ii-Vi Inc）收购了Finisar以及Lumentum收购了Oclaro。
- **5G发展的受益者之一。**据MI&S表示，到2025年，5G相关的IT硬件基础设施支出将增长至约3,260亿美元，当中包括数据中心、边缘计算和网络转型活动（但不包括手机）。我们相信，一旦5G推出，全球光学组件市场中有较强实力的企业将明显受益。昂纳科技集团拥有强大的客户群，预计将受益于全球5G投资。
- **催化剂：**主要客户加快对新产品的认证；互联网巨头增加数据中心支出；政府增加对行业的政策支持；投资者关系活动增加；有更多关于LiDAR和VCSEL发展的报道。
- **风险：**（1）竞争加剧；（2）新产品开发速度低于预期；（3）5G发展慢于预期。

主要财务指标（百万港元）	2016	2017	2018E	2019E	2020E
收入	1,598.3	2,035.1	2,354.6	2,938.7	3,651.5
变动（同比%）	40.8	27.3	15.7	24.8	24.3
毛利润	569.7	726.5	779.1	974.7	1,224.0
毛利润率（%）	35.6	35.7	33.1	33.2	33.5
净利润	130.6	208.9	234.9	280.2	356.7
净利润率（%）	8.2	10.3	10.0	9.5	9.8
每股收益（基本）	0.18	0.28	0.29	0.35	0.44
变动（同比%）	52.8	51.3	5.6	19.0	27.3
每股股息	$0.000	$0.000	$0.029	$0.070	$0.089
净资产收益率（%）	9.5	12.1	11.0	11.9	14.3
股息收益率（%）	-	-	0.80	1.90	2.42
市盈率（倍）	20.0	13.2	12.5	10.5	8.3
市净率（倍）	1.9	1.4	1.3	1.2	1.1
自由现金流收益率（%）	-5.99%	-9.55%	4.71%	0.42%	1.92%
资本开支（百万元）	(101.9)	(246.5)	(160.0)	(150.0)	(150.0)
每股自由现金流	(0.2)	(0.4)	0.2	0.0	0.1
净负债比率（%）	12.6	12.1	8.1	11.7	14.0

来源：公司, 中国银河国际证券研究部估计

TMT行业

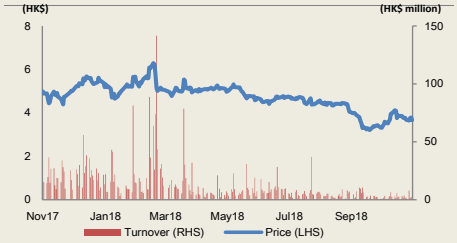
硬件

买入 （首次覆盖）

收盘价：3.67港元（2018年11月29日）

目标价：4.40港元（+20.0%)

股价表现



来源：彭博，中国银河国际证券研究部

市值	3.76亿美元
已发行股数	8.019亿股
核数师	PwC
自由流通量	44.5%
52周交易区间	3.21-6.29港元
三个月日均成交量	50万美元
主要股东	O-Net Holdings (35.3%) 深圳长城开发科技股份有限公司（21.4%）

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中國銀河國際
CHINA GALAXY INTERNATIONAL

November 30, 2018

O-Net Technologies (Group) Limited [0877.HK]

An Impressive Name in the Global Supply Chain. Initiate with BUY.

O-Net Technologies (Group) Limited [0877.HK]. *(O-Net) is a leading supplier of optical networking products for the global optical telecommunications and data-communications markets. O-Net is ranked No.3 in the passive component segment, with a 13% market share. Leveraging its R&D labs in Silicon Valley and China, as well as acquisitions, O-Net now offers a wide variety of optical component products, including EDFA and VOA, which are deployed mainly in telecom optical networks, including long-haul, metro ring and access ring (CATV, mobile networks, WiFi and fibre to home). Its customer base has grown to include NSN (which merged with Alcatel Lucent in 2015), Huawei, Ciena, ZTE, Fujitsu and FiberHome. To further strengthen the Company's leadership in the global technology industry, O-Net, along with 3SP and ITF, secured the supply of advanced laser chips and optical components to widen the Company's product range and improve its technologies through vertical integration. While these new businesses don't require high R&D and capital expenditure, they will increasingly add to the company's growth over time in our view. As a supplier to leading global telecommunications and networking equipment makers, O-Net is one of the beneficiaries of global 5G investment. Despite its recent share price underperformance, we believe the current valuation of 12.5x 2018E PER and 10.5x 2019E PER offers a good entry point. We also expect O-Net to declare a dividend for its 2018 results. Initiate with BUY for a target price of HK$4.40 (based on 15x 2018E PER, in line with that of its peers).*

- **Solid growth from optical communications products with an increasing contribution from new businesses.** On the back of the Company's core optical networking technology platform, it has diversified from its core business to certain new businesses, including industrial applications and consumer electronics, and has re-positioned its strategic focus from solely a telecoms passive component supplier to a high technology leader with advanced products and solutions for cloud data centres, automation, sensing and industrial lasers, as well as ADAS, with the aim of becoming a leading high-tech company.
- **Resilient earnings growth despite macro uncertainties.** O-Net should deliver solid EPS growth of 5.6%/19.0%/27.3% in 2018E/2019E/2020E, driven by: a) market share gains, b) new product launches, and c) an expanding customer base. We expect O-Net to continue to gain market share, especially under industry consolidation, given Ii-Vi Inc's acquisition of Finisar and Lumentum's acquisition of Oclaro.
- **One of the 5G beneficiaries.** According to MI&S, IT hardware infrastructure spending attributable to 5G will grow to approximately US$326bn by 2025, including data centres, edge computing, and network transformation activities, but not including handsets. We believe strong players in the global optical component market will benefit greatly once the 5G roll-out starts. O-Net has a strong customer base, which is expected to benefit from global 5G investment.
- **Catalysts.** Accelerated qualification of new products from major customers; increased spending by Internet giants for data centres; increasing policy support for the industry; increasing IR activity; and news flow on LiDAR and VCSEL development.
- **Risks.** (1) Increasing competition, (2) slower-than-expected development of new products, and (3) lower-than-expected 5G development.

Key Financials (in HKDm)	2016	2017	2018E	2019E	2020E
Revenue	1,598.3	2,035.1	2,354.6	2,938.7	3,651.5
Change (YoY %)	40.8	27.3	15.7	24.8	24.3
Gross Profit	569.7	726.5	779.1	974.7	1,224.0
Gross Margin %	35.6	35.7	33.1	33.2	33.5
Net Profit	130.6	208.9	234.9	280.2	356.7
Net Margin %	8.2	10.3	10.0	9.5	9.8
EPS (Basic)	0.18	0.28	0.29	0.35	0.44
Change (YoY %)	52.8	51.3	5.6	19.0	27.3
DPS	$0.000	$0.000	$0.029	$0.070	$0.089
ROE (%)	9.5	12.1	11.0	11.9	14.3
Dividend Yield (%)	-	-	0.80	1.90	2.42
PER (x)	20.0	13.2	12.5	10.5	8.3
PBR (x)	1.9	1.4	1.3	1.2	1.1
FCF Yield (%)	-5.99%	-9.55%	4.71%	0.42%	1.92%
Capex (m)	(101.9)	(246.5)	(160.0)	(150.0)	(150.0)
Free cash flow per share	(0.2)	(0.4)	0.2	0.0	0.1
Net Gearing (%)	12.6	12.1	8.1	11.7	14.0

Sources: Company, CGIS Research estimates

TMT Sector

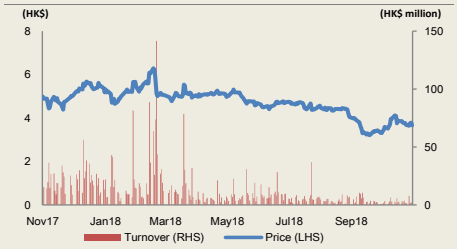
Hardware

BUY (Initiation)

Close: HK$3.67 (Nov 29, 2018)

Target Price: HK$4.40 (+20.0%)

Share Price Performance



Source: Bloomberg, CGIS Research

Market Cap	US$376m
Shares Outstanding	801.9m
Auditor	PwC
Free Float	44.5%
52W range	HK$3.21-6.29
3M average daily T/O	US$0.5m
Major Shareholding	O-Net Holdings (35.3%) Shenzhen Kaifa Technoloyg (21.4%)

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Investment positives

(1) One of the leading optical communications component suppliers

O-Net is a HK-listed optical component play with a strong global presence.

O-Net is a HK-listed optical component player with a strong global presence. Its current valuation is somewhat unjustified considering its strong growth in operating performance and strong R&D capability. Its non-optical networking products are growing fast, and this growth momentum should continue. In our view, the potential of the Company's existing business (especially the data-communications segment) and new business (industrial lasers, LiDAR, sensing and VCSEL) has not been fully appreciated by the market. After a post-results earnings upward revision, O-Net is one of the few HK-listed companies benefitting from increasing demand for equipment and components from 5G development and high-speed communications development. Despite the recent rally, O-Net's current valuation is still lower than its historical mean. Increasing attention to O-Net may boost its share price performance.

O-Net is among the top five global suppliers of passive optical components. It provides over 8,000 customized passive component products in over 40 categories to over 200 customers. O-Net is a key supplier to many leading global telecom equipment vendors and contract manufacturers, including Alcatel-Lucent, Huawei, Fiberhome and Ciena. Riding on the booming global optical network market, O-Net offers promising five-year growth potential.

Since 2013, O-net has started to develop active OC products aiming at tapping into the datacom market, with target customers like Google, Alibaba and Tencent. O-Net entered into datacom market in 2016, with its 10x10 TOSA & ROSA and 100G mini ICR for its telecom equipment customers. We expect this to help O-Net continue to gain market share with existing telecom customers, like NSN and Huawei, and new customers like Cisco.

O-Net is engaged in the design, manufacturing and sales of standardized and customized products through co-development with its customers.

The Company developed a proprietary technology platform and factory information system that are scalable and thus flexible in catering to changing customer needs, enabling the quick establishment of new product lines. The company manufactures all of its products in its own manufacturing facilities. It maintains complete in-house manufacturing capability, including component and module design, integration, production and testing. The Company relies on its own sales force for domestic sales, and third-party distributors for sales in North America, Europe, Japan, South Korea, India and Israel.

Datacom and telecom are the two major applications for optical network products. The increasing adoption of cloud computing globally has resulted in strong demand for optical network products for datacom applications that outperform the telecom applications market. Data centres for cloud computing require higher network connection speeds than traditional data centres, thus creating significant demand for high data-rate equipment and components. However, we noted softness in demand for datacom products in Q4 2018, given the slowdown in investment by major internet giants, such as Amazon and Microsoft. There are concerns about the growth outlook for optical communication products in China, given CAPEX cuts by China's three telecommunications services providers, as the 4G investment cycle has come to an end. We expect high CAPEX to be allocated to optical networks, given: a) the 5G roll-out, and b) continuing network upgrading due to increasing data traffic. The pick-up in global 5G investment will offset the impact of softness in datacom products.

Investment positives

(2) A 5G beneficiary

O-Net is a leading player in the optical communications segment, and 5G investment is an important growth driver. To enter the 5G era, TSP networks require upgrades, including storage, networking, the RAN, and backhaul. Cloud and enterprise data centres also need to evolve to meet the higher demands of 5G devices and networks.

O-Net is one of the few HK-listed companies benefitting from increasing demand for equipment and components from 5G development and high-speed communications development.

The upcoming 5G rollout presents a tremendous opportunity for the Company. Infostone Communications Consultant estimates that there will be 1.5 to 3 times more Chinese base stations in the 5G era than in the 4G era, and 2 to 3 times more optical modules in each base station. Therefore, demand for optical components, like FSI, WDM, tunable filters, CWDM/WD devices and ROADM systems, is expected to increase sharply in the 5G era, which will create strong growth potential for O-Net.

The Company is monitoring 5G development closely, which is an obvious trend for the whole industry, and will continue to invest in key transceiver products, focusing on the backhaul, middle-haul and front-haul segments. Most of the Company's major clients are actively engaged in 5G development, providing a strong engine for the Company's growth over next several years.

Domestically, since 5G is an area supported by the Chinese government, it will create growth potential for optical component manufacturers such as O-Net. We believe infrastructure-related segments such as 5G will be the main investment themes in 2019, and news flow on 5G development in China is a major share price catalyst for O-Net.

(3) Strong M&A and investment capability

O-Net's management has strong M&A and investment capability connected with a clear development direction, which should create further benefits in the future.

O-Net made a series of overseas acquisitions in the past several years to enhance the Company's R&D capability and supply chain for both its passive and active optical communications business. The related cases are as follows:

(a) VIS Systems, based in Berlin, Germany, is engaged principally in the development of high-speed optical interconnects.

(b) ArtLC Photonics, based in Canada, is engaged principally in the custom design and fabless development of proprietary photonic integration circuit chips.

(c) Avesys and 3S Photonics. 3S Photonics, based in Noazy, France, is engaged principally in the development and manufacturing of InP and GaAa chips used in optical communications products. Avensys has a manufacturing base in Canada, which is engaged principally in the development and manufacturing of fibre bragg gratings used in optical communications products.

O-Net is poised to become one of the few vertically integrated active component suppliers, with capabilities in both chipsets (thanks to the acquisition of 3SP, ArtIC and VIS) and manufacturing. O-Net concentrates on the expansion of core technologies, from component to chip level and module to sub-system. The company established an R&D centre in Silicon Valley in 2010, mainly for active product development. It also acquired the following: 1) the design of EML (externally modulated lasers), DFB (distributed feedback lasers) and VCSEL (vertical-cavity surface-emitting lasers) core network optical chips through its investment in 3SP, ArtIC and VIS; and 2) high-power passive optical component and sensing products through its investment in ITF.

Investment positives

(4) New business development

O-Net has been exploring new business through its core technology platforms. In the past several years, the Company has built up several business divisions, including: a) e-cigarettes, b) machine vision, c) LiDAR, and d) VCSEL.

O-Net started its automation for e-cigarettes in 2013. Using its in-house developed automation machine, O-Net produces heating coils for major e-cigarette manufacturers in China. O -Net also supplies in-house developed automated e-liquid filling and assembly machines to several e-cigarette manufactures in China.

Human inspectors working on assembly lines visually inspect parts to judge the quality of workmanship. In contrast, machine vision systems use cameras and image processing software to perform similar inspections. Machine vision inspection plays an important role in achieving 100% quality control in manufacturing, reducing costs and ensuring a high level of customer satisfaction. Machine vision systems consist of tasks such as counting objects on a conveyor, reading serial numbers, and searching for surface defects. Manufacturers often prefer machine vision systems to visual inspections that require high speed, high magnification, around-the-clock operation, and/or repeated measurements. For example, semiconductor fabrication depends on vision inspection technology, without which yields for computer chips would be significantly reduced. Machine vision systems inspect silicon wafers, processor chips, and sub-components, such as resistors and capacitors, at high speed with precision and accuracy.

O-Net is actively diversifying its business portfolio with potential high-level growth.

LiDAR (light detection and ranging), is a remote-sensing method that uses light in the form of a pulsed laser to measure ranges. LiDAR is one of the key solutions for making high-resolution images or maps in ADAS (advanced driving assistance systems). With the help of LiDAR, autonomous vehicles travel smoothly and avoid collisions by detecting obstructions ahead. This increases safety for commuters and makes autonomous cars less prone to accidents because the risk of human negligence and rash driving is absent. Autonomous vehicles are expected to experience the highest growth in 10 years' time.

A VCSEL is a semiconductor-based laser diode that emits a high-power optical laser beam vertically from its top surface. A VCSEL device operates within a wave length of 850nm to 1310nm and at a transmission rate of 2.125 to 150Gbps. Currently, VCSELs are experiencing rapid growth, as: a) more and more terminals, such as consumer electronic devices, are using VCSELs in their 3D-sensing equipment; and b) VCSELs have many advantages over other laser solutions, such as LEDs, Fabry Perot lasers (FP lasers), and distributed feedback lasers (DFB lasers). As a result, we believe the industry has large potential to grow, as it offers a wide range of applications, especially image processing, and better performance than other laser solutions. Also, the VCSEL industry in China is still in the early stages and some key areas ,especially gallium arsenide, are underdeveloped in China. We believe that the VCSEL industry in China will attract more attention and that gallium arsenide will be the focus of VCSEL market.

Business

O-Net is a high-technology leader, which can provide advanced innovative products and solutions in various markets. Its products can be categorized into three major segments: (1) optical networking, (2) smart manufacturing applications, and (3) consumer electronics.

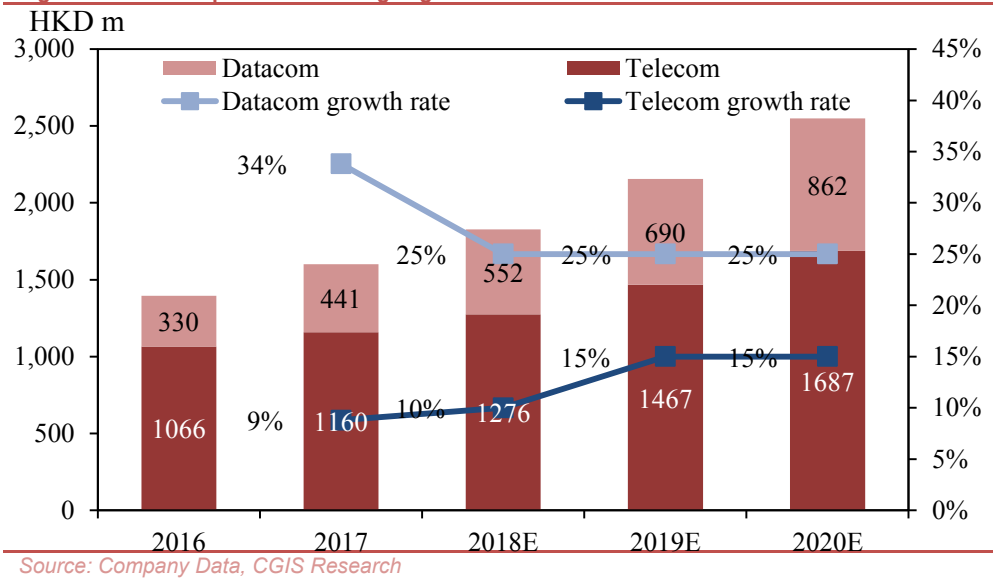
(1) Optical Networking segment

Over the past 18 years, O-Net has been focusing on the optoelectronic businesses, in which it possesses clear competitive advantages, established in (i) high-power optronic products, such as EDFA, Raman amplifiers and line cards; (ii) passive component design and packaging, including WDM, VOA and TF, and free space isolators; (iii) micro-optic Etalon-based optical networking products, such as interleavers and wavelockers; and (iv) active component products, including AOCs, QSFP form factor products, and related TOSA and ROSA products, such as EML and VCSEL.

This segment generated approximately 79% of the Company's FY2017 revenue. It specializes in the provision of passive and active optical networking products with broad features, including optical bandwidth expansion, optical signal amplification, and wavelength performance monitoring and protection. According to the Ovum Report (Apr 2017), O-Net is ranked No.3 in the passive component segment, with a 13% market share. According to the Ovum Report (Aug 2015), O-Net was the No.1 global supplier of free space optical isolators, No.3 global supplier of WDM, and No.4 global supplier of EDFA.

The optical networking segment can be further categorized into two subsegments: (a) telecommunications (aka "telecom"), and (b) data-communications (aka "datacom").

Figure 1: O-Net's Optical Networking segment revenue breakdown



Source: Company Data, CGIS Research

(a) Telecommunications subsegment

The telecommunications subsegment is O-Net's traditional core business, which refers primarily to sales of optic modules to the telecom market.

In 2016-2017, the Company launched products including ICR, mini ICR for 100GbE coherent, Raman amplifiers, linecards, 100GbE tunable filers, VOA, integrated coherent receivers, and tunable filters for 100GbE and 200GbE telecommunications applications.

Optics sales to the telecom market grew in 1H18, driven principally by key products, such as EDFA (erbium doped fiber amplifier), FSI (fiber-optic sensor interrogation), linecards, and WDM (wavelength division multiplexing). Sales of new 100GbE products, such as 100GbE mini ICR (intradyne coherent receivers), Raman amplifiers, linecards, TF (tunable filter) and VOA (variable optical attenuators), are on the rise, as the installation of 100GbE products is expanding rapidly throughout metropolitan networks in the telecommunications market.

(b) Data-communications subsegment

The data-communications subsegment targets the data centre market, in which the Company's current focus is mainly on the development of high-speed transceivers and associated components.

In 2015, the Company launched its first active optical networking products and tapped into the data-communications market. In 2016-2017, the Company launched products including 100GbE AOC,10X10 TOSA & ROSA products, 100GbE QSFP28 AOC, and 100GbE QSFP28 CWDM4 for 100GbE data centre applications.

The growth of datacom has been spurred by the upgrade of data centres by global-scale web operators from 40GbE to 100GbE due to demand for higher-speed cloud services. In addition, global data centre operators continue to announce new data centre builds, which has driven the Company's sales in the datacom market in 1H18. The Company's advancement of active component offerings continues with the launch of a high-speed 400GbE QSFP56-DD5 (based on 8x50GbE PAM4 VCSEL, which meets the specifications for the QSFP56-DD multi-source protocol), which can reduce data centre operating costs and enhance high-speed data transmission efficiency to better suit the requirements of mega-scale cloud data centres.

To capture opportunities in the datacom market, the Company has adopted a strategy of establishing a world-class technology and product R&D team in Silicon Valley, focusing on high-end transceiver development and selective offerings of transceivers based on vertical integration and unique technologies. Its objective is to become a market leader of passive components for transceiver markets, including glass blocks and isolators, and developing active components, such as 25G+ VCSEL (vertical-cavity surface-emitting lasers), EML (electro-absorption modulated lasers) based 10X10, and future 100G solutions and VCSEL-based 100G AOC (active optical cables) with outstanding transmission distance.

Figure 2: Examples of O-Net's telecom products

Passive Products

Free space optical isolators can be used in fiber optic lasers, as well as optical transmitters and transceivers, which require isolation to prevent feedback into the laser.

Free space optical isolators

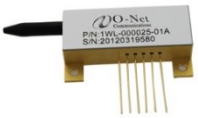
Differential phase-shift keying (DPSK) refers to a digital modulation scheme that conveys data by changing, or modulating, the phase of a reference signal (the carrier wave).

DPSK Demodulator

Differential quaternary phase shift keying (DQPSK) refers to a digital modulation scheme that conveys data by using four different values of the phase of a reference signal (the carrier wave).

DQPSK Demodulator

Wavelength locker refers to a passive optical component used to ensure that signals do not interfere with those traveling on an adjacent wavelength so that ensure the optical signal wavelength accuracy and stability for DWDM.



Wavelength Locker

Interleaver refers to a three-port passive optical components that double the number of channels per fiber by combine two sets of dense wavelength -division multiplexing (DWDM) channels (odd and even channels) into a composite signal stream in an interleaving way.

Optical Interleaver

Variable optical attenuator (VOA) refers to a device designed to attenuate the intensity or power level of an input optical beam in a controlled manner to produce an output optical beam with different attenuated intensities.

SFP VOA

Erbium doped fiber amplifier (EDFA) refers to an optical device that is used to boost the intensity of optical signals being carried through a fiber optic communications system.

MSA Fixed Gain EDFA Module

Wavelength division multiplexing (WDM), namely, thin-filter WDM, refers to a method of increasing the capacity of a network by transmitting signals at different wavelengths. It simultaneously transmits signals on multiple wavelengths over a single fiber, rather than just one wavelength

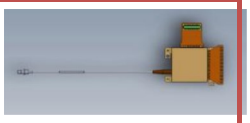
Active Products

Integrated Coherent Receiver (ICR) is a key optoelectronic device in a digital coherent transponder. The receiver has various functional parts including a polarization beam splitter (PBS), a polarization rotator, dual-channel optical 90-degree hybrids, high-speed photodiode (PD) arrays and trans-impedance amplifiers (TIAs). It is one of the key components in coherent transmission systems, and can be used in 100Gbit/s DP-QPSK optical communication systems data rate optimization and submarine long haul transmission.

100GbE ICR

100GbE mini ICR

Transmission Optical Sub Assembly (TOSA) and **Receiver Optical Sub Assembly (ROSA)** are used to transmit and receive optical signal in fiber optic network system. A TOSA contains a semiconductor laser diode (LD), optical interface, monitor photodiode, metal and/or plastic housing, and electrical interface. A ROSA contains a photodiode (PD), optical lens, preamplifier, and passive electrical parts.



10x10 TOSA & ROSA
(for Metro and Datacom)

10GSFP ROSA
(for Metro and Access)

Raman Amplifier refers to an optical amplifier based on Raman gain, which results from the effect of stimulated Raman scattering. It can be used in 40G/100G transmission as well as long haul and ultra-long haul link.

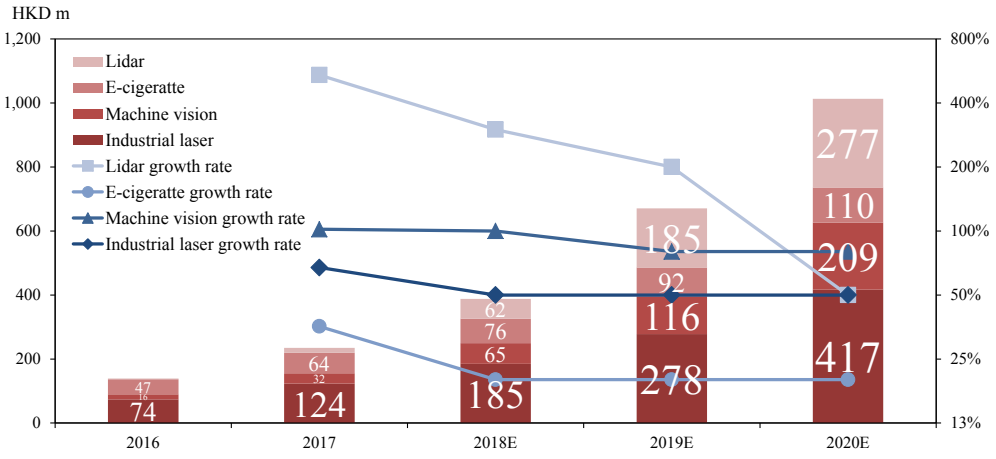
Raman Amplifier Module

Source: Company Data, CGIS Research

(2) Smart Manufacturing Applications segment

O-Net has over 10 years of experience in designing and manufacturing automated production lines. In the Smart Manufacturing Applications segment, the Company is now actively expanding to supply automation solutions for the e-cigarette industry, and has invested resources on machine vision systems and sensing products, as well as ultra-reliable fibre-optic components and multi-kilowatt optical components for the fibre laser market, and components and modules for LiDAR (light detection and ranging), used in the emerging ADAS (advanced driver assistance systems) applications.

Figure 3: O-Net's Smart Manufacturing Applications segment revenue breakdown



Source: Company Data, CGIS Research

(a) Industrial Laser Business subsegment

Since 2015, O-Net entered the industrial laser industry through the acquisition of ITF, a leading Canadian supplier of ultra-reliable fibre-optic components, such as Fiber Bragg Grating (FBG) and high-power fused components and modules for fibre laser systems, which has provided several applications for industrial fibre lasers across the different power and wavelength spectrums, including macro/micro material processing, marking and engraving, and welding applications since 2006. In 2016, ITF Technologies expanded its offerings to multi-kilowatt fibre lasers.

In 2017, the Company expanded its offerings in multi-kilowatt applications by offering unique single-mode kilowatt fibre laser products with better beam quality, such as a class-leading 2 kilowatt laser engine and 6 kilowatt laser combiners, as well as discrete optical components capable of handling 3 kilowatts of power each, to capture opportunities in the growing demand for multi-kilowatt high-power fibre lasers, particularly in the China market.

To address the laser processing industry, the Company's industrial laser business will continue to be uniquely positioned by offering a broad range of fibre-based components and systems necessary for both high-power fibre laser and lower-power applications. Coupled with the ongoing development and introduction of additional components and modules for multi-kilowatt high-power fibre lasers, the industrial laser business is positioning itself as a key enabler in the transition of materials processing markets for fibre lasers, offering additional outlets for its broad base of discrete optical components, as well as mid- to high-power fibre laser systems.

(b) Machine Vision Business subsegment

O-Net started to develop machine vision solutions in 2013. In 2015, the Company rolled out its first machine vision system and fibre sensor, and has continued to invest and expand its product portfolio to cater for strong demand.

The Company aims to be a leading domestic machine vision solutions provider by providing more automation solutions, such as offering advanced machine vision systems and sensing products. Its machine vision business in 1H18 saw significant growth of 145.0% YoY.

The Company's objective is to become a leading domestic machine vision solutions provider, and to build on its success by providing automation solutions, such as machine vision systems and sensing products. The development of these products began in 2013, with products launched in 2015. It is continuing to expand through a new series of products to tap opportunities in the rapidly growing domestic machine vision market.

(c) Automation Solutions Business for the e-cigarettes subsegment

O-Net is a leading supplier of the e-cigarette industry, supplying heating coils and automated E-liquid filling and assembly machines, and has continued to provide a variety of automation solutions for the e-cigarette manufacturing industry.

In 2013, O-Net Automation developed automation equipment for producing heating coils and began to supply the heating coils produced by this equipment to e-cigarette makers in China. As a result, the Company has established a stable relationship with a number of e-cigarette makers and has become a leading supplier of heating coils in the e-cigarette industry. In 2015, the Company started to supply a new component – Cartomier – to the e-cigarette industry.

(d) Other Smart Manufacturing Applications subsegment

This subsegment refers mainly to LiDAR business now.

In 2015, the Company was engaged by leading overseas internet content providers to develope LiDAR products for driverless car applications. In 2016, O-Net established a production line for the assembly of laser source modules. Its optical components for the laser source modules of LiDAR have been qualified by a global technology giant. It is pursuing cooperative ties with other LiDAR players and securing additional customers. In 2017, the Company launched a first-generation cost-effective laser source module for LiDAR, called PANDA. PANDA is a new kind of pulsed laser product platform for LiDAR, which is based on 1550nm fibre laser architecture for improved resolution, range, eye safety, and low power consumption in a cost-effective package, which are key requirements of the sensing systems in Level 5 autonomous vehicles. The PANDA module measures only 9cm x 9cm X 3cm thick, weighs less than 400 grams, and is designed to exceed the demands of the most challenging real-world autonomous navigation, remote sensing and 3D mapping.

We think O-Net's existing technology platform is compatible with LiDAR, because the company has 1) modules for LiDAR light sources, including pulse lasers (acquired from 3SP Technologies), optical amplifiers and next-generation high-power, low-cost source development, 2) a seed source for lasers, including 1550nm DFB lasers (also acquired from 3SP), and 3) passive components, including multimode signal-pump combiners, fibre brag greetings (FBG) and optical isolators. O-Net has already engaged with leading global autonomous driving companies as a LiDAR OEM supplier (Google).

(3) Consumer Electronics segment

In its Consumer Electronics segment, O-Net provides coating services, mainly to OEM smartphone manufacturers and touch devices cover glass manufacturers in China.

The Company is seizing opportunities in the emerging cell-phone market in China to develop its consumer electronics business. This business division provides anti-reflective, anti-fingerprint and colour lamination coating services. This business division has enjoyed significant revenue growth due to strong demand from the Chinese smartphone market.

In 2014, the Company designed and launched a coating machine (AR & AF coating machine) with a new coating process providing anti-reflective (AR) and anti-fingerprint (AF) coating simultaneously, a breakthrough in professional coating applications. An AR coating is an optical coating applied to the cover glass or camera cover lens of smartphones and tablets to reduce reflection, eliminating glare and enabling the devices to be used efficiently under bright lights and direct sunlight. An AF coating is a type of optical coating applied to reduce fingerprint marks. In 2016, the Company established O-Net Coating and Materials Technology Limited, a focus subsidiary, to secure more customers and seize greater business opportunities.

Building on the strong demand for quality, high-end coating technologies for ceramic fingerprint sensors, ceramic casings for fingerprint resistance, and colour lamination for glass casings for smartphone manufacturers, the Company is striving to secure more new customers in various industries, including the consumer electronics industry, by leveraging the Company's expertise in coatings.

In addition to its coating business, in 2015, the Company invested in collaborative ventures in prospective new businesses, one of whose new products is a 3D-sensing module, which the Company plans to launch in 2018.

Revenue generated from the Consumer Electronics segment was HK$63.4m in 2016 and HK$199.3m in 2017. We expect turnover in the consumer electronics segment to drop sequentially, given weakness in global smartphone shipments.

Growth Strategies

In 2012, O-Net rolled out its "Diversify for Growth" strategy, which led to (i) the launch of machine vision systems and sensors; (ii) the introduction of advanced industrial laser products; and (iii) the introduction of automation solutions for the e-cigarette industry. All of these products and solutions, as the building blocks of its smart manufacturing applications, have performed exceptionally well over the past few years, laying the groundwork for further penetration into a wider swath of Industry 4.0 applications. The Company has also tapped advanced driver assistance systems (ADAS), thus driving long-term growth riding on the immense potential of this market.

New products to drive growth

In addition to its traditional business of optical networking for telecommunications applications, the Company continues to focus on other markets, including: (i) the cloud data centre infrastructure and DCI markets; (ii) numerous automation-related businesses to capture Industry 4.0 opportunities; (iii) the multi-kilowatt fibre laser industry; and (iv) LiDAR for emerging ADAS applications.

In respect of the optical networking business, the Company will continue to introduce the next generation of innovative products to seize opportunities in the rapidly evolving optical components market, driven by growth engines such as demand from the cloud data centre and DCI markets, and the upcoming deployment of 5G wireless communications.

As for smart manufacturing applications, the Company expects its various sectors to grow impressively to become significant businesses, driven by its core technologies. The Company is more optimistic about developments on the machine vision systems and fibre laser systems fronts, most notably the launch of its leading machine vision systems and its unique single-mode, multi-kilowatt fibre laser products with better beam quality, as these businesses will serve as catalysts for its progress and growth.

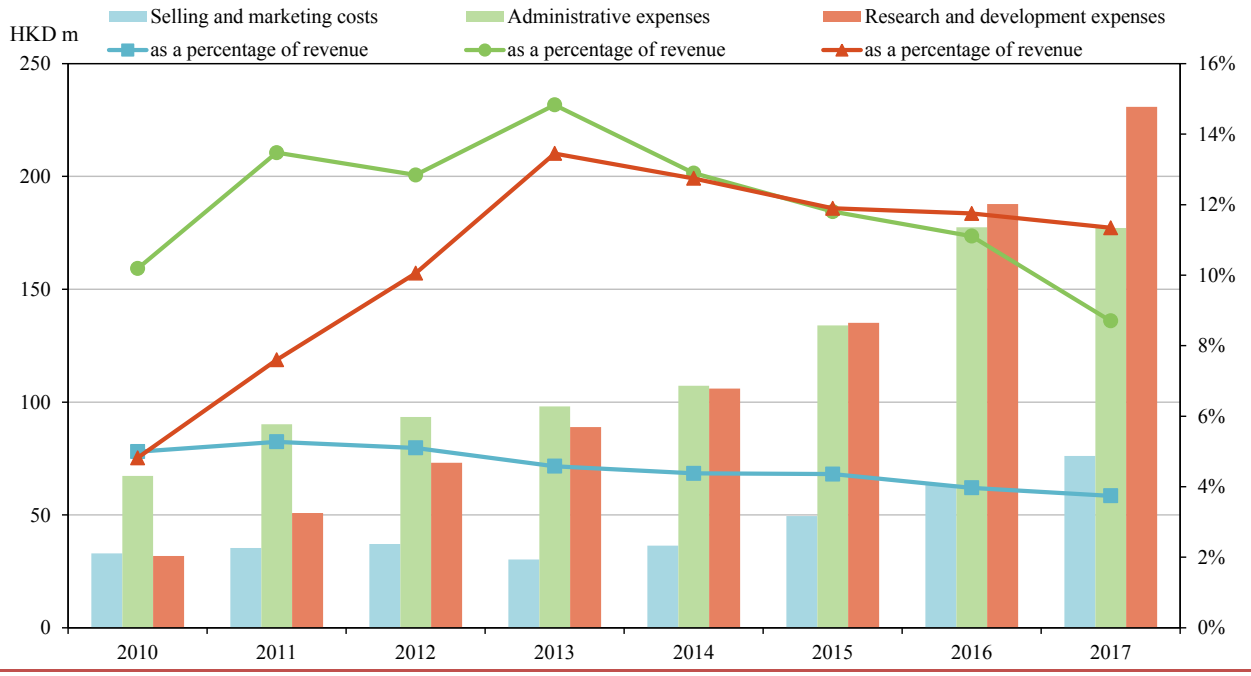
Growth through vertical acquisitions

In addition to launching high-speed optical transceivers to address the needs of both intra- and inter-data centre connections, the Company has made significant strides in other emerging fast-growth sectors, such as the design and manufacturing of laser chips for pump lasers, high-speed optical transceivers and light detection and ranging (LiDAR) solutions through the acquisition of 3SP Technologies S.A.S. (3SP), a specialist in indium phosphide (InP) and gallium arsenide (GaAs) based laser chips. The Company has also advanced in the design and manufacture of high-reliability optical components and modules for the telecommunications market and high-power products for the industrial laser and LiDAR market through the acquisition of ITF.

As shown in Figure 4, O-Net's R&D expenses remained above 11% as a percentage of revenue in 2013-2016, which is higher than that of its peers and makes investors confident in its future development. The Company's R&D expenses as percentage of turnover will remain at a relative high level of about 9% in 2017-2020.

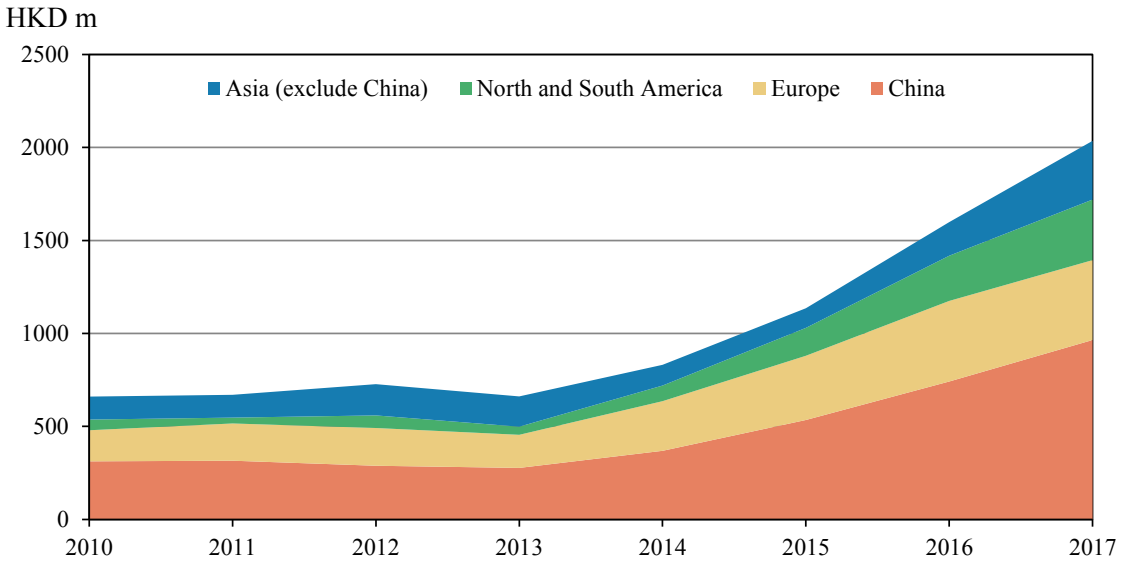
O-Net will continue to seek acquisition opportunities to realize synergies with its optical networking and smart manufacturing applications business to accelerate business growth and expand the scale of its business.

Figure 4: O-Net's cost structure



Source: Company Data, CGIS Research

Figure 5: O-Net's revenue breakdown by geographic area



Source: Company Data, CGIS Research

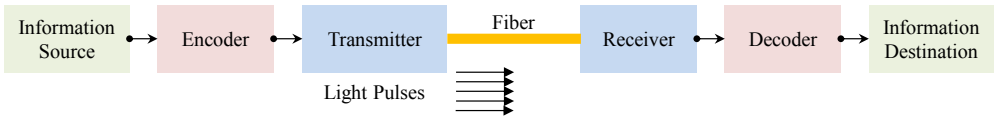
Industry Overview

(1) Optical Networking

Optical components are usually classified by function into two categories: passive and active. Passive optical components send an optical signal without altering the signal's basic characteristics or transmission format. Typical passive optical components are WDMs (wave-length division multiplexing), isolators, attenuators, amplifiers, couplers, connectors and optical switches. In contrast, active optical components process an optical signal and change its basic characteristics or transmission format. Examples of active optical components are lasers, tunable lasers, transmitters, receivers, transceivers, media converters and transponders. Many active optical components contain passive optical components.

An optical communication system (aka “optical network (ON) system”) uses (1) a transmitter (LD (laser diode) or LED (light-emitting diode)), which encodes a message into an optical signal, (2) a channel (i.e. optical fibre), which carries the signal to its destination, and (3)

Figure 6: Illustration of Fibre-Optic Communication System



Source: Optical Network Design and Implementation, CGIS Research

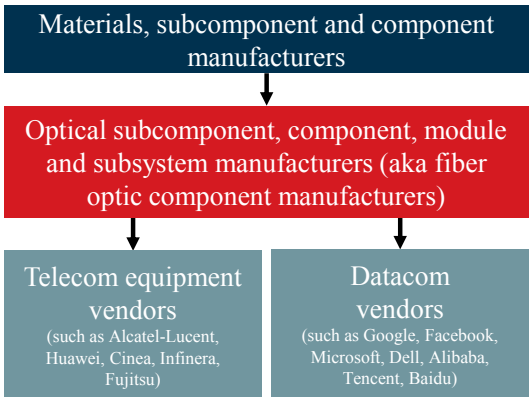
a receiver (photodiode), which decodes the message from the received optical signal.

There are two types of ON: passive (PON) and active (AON).

The key technical difference between PON and AON is that a passive splitter is used for PON. The splitter is basically a multi-mirror, which distributes the optical signal for the subscriber line to fibre optic routes without any electrical current. An AON offers fibre-optic transmission, combined with electrically powered switches or routers, to distribute signals.

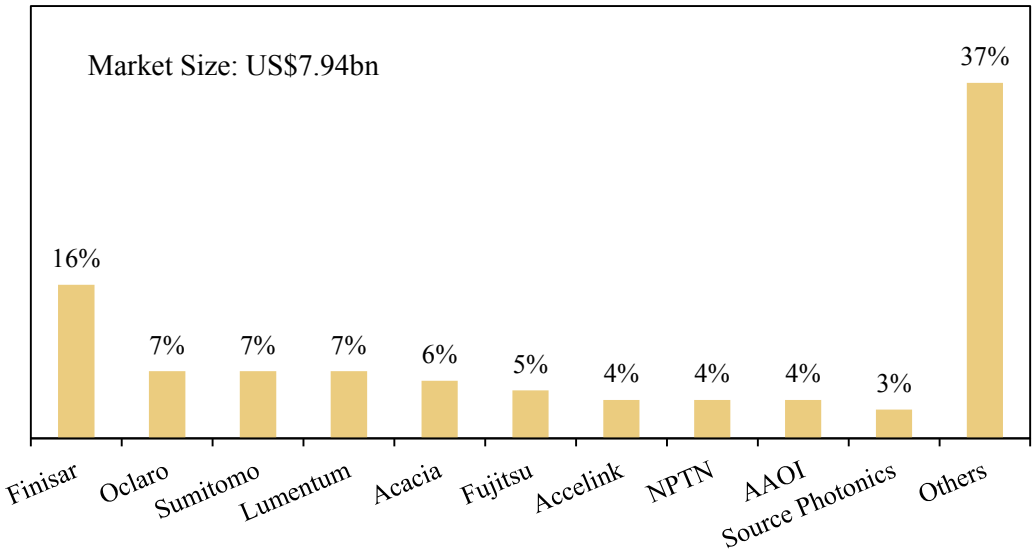
A PON is a fibre-optical network that uses fibre and passive components, like splitters and combiners, rather than active components, like amplifiers, repeaters and shaping circuits. Structured as a point to multi-point (P2MP) network, a PON consists of an optical line terminal (OLT) at the service provider’s central office and a number of optical network terminals (ONT), which are near the end users. Popular variants are EPON and GPON.

Figure 7: Optical Networking Industry Value Chain



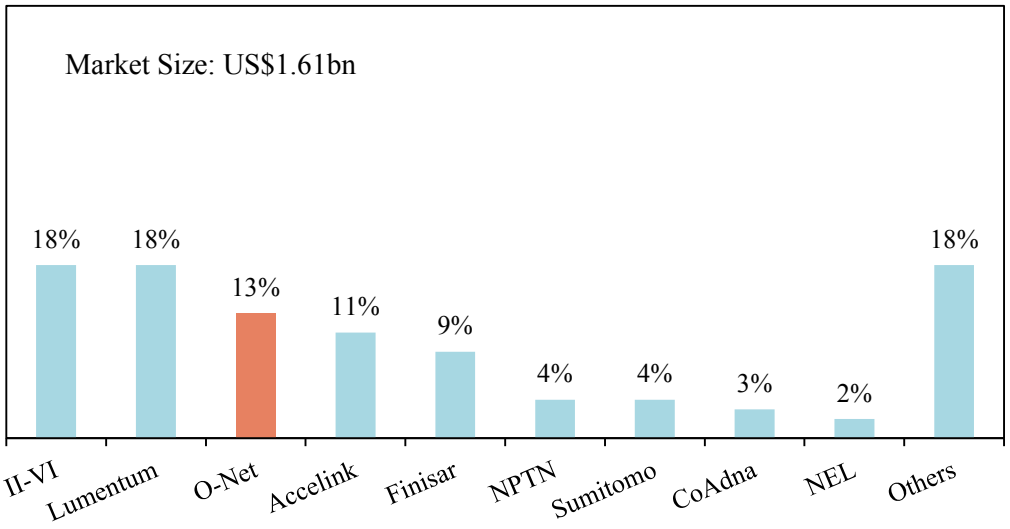
Source: Company Data, CGIS Research

Figure 8: Top 10 Active Optical Component Players (2Q16 - 1Q17)



Source: Ovum Report, CGIS Research

Figure 9: Top 10 Passive Optical Component Players (2Q16 - 1Q17)



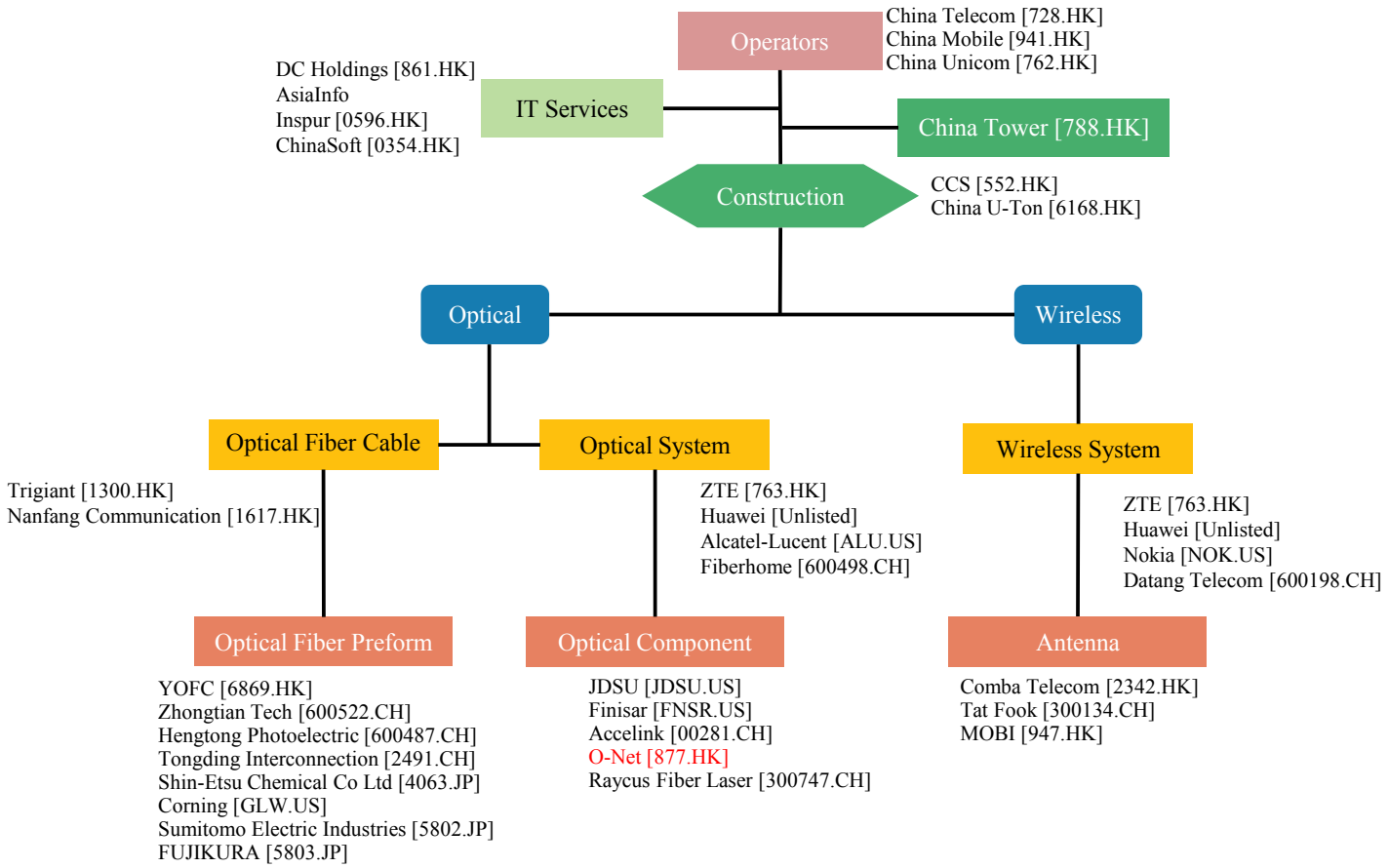
Source: Ovum Report, CGIS Research

Figure 10: Rankings of Top 10 competitive enterprises in the optical components and auxiliary equipment field in the global market

Ranking \ Years / Company	2011	2012	2013	2014	2015	2016	2017	2018
1	Finisar	Finisar	Finisar	Finisar	Finisar	Finisar	Finisar	Finisar
2	JDSU	JDSU	Avago	JDSU	Avago	Avago	Broadcom	Broadcom
3	Oclaro	Avago	JDSU	Avago	JDSU	Viavi	Sumitomo Electric	Lumentum
4	Sumitomo Electric	Sumitomo Electric	Sumitomo Electric	Sumitomo Electric	Sumitomo Electric	Accelink	Accelink	Accelink
5	Avago	Oclaro	Fujikura	Fujitsu	Accelink	Sumitomo Electric	Lumentum	Sumitomo Electric
6	Furukawa Electric	Furukawa Electric	Fujitsu	Fujikura	Fujikura	Fujikura	Fujikura	Fujikura
7	NEOPhotonics	Fujitsu	Accelink	Accelink	Furukawa Electric	Furukawa Electric	Furukawa Electric	Furukawa Electric
8	Accelink	Oplink	Furukawa Electric	Furukawa Electric	Oclaro	NEOPhotonics	NEOPhotonics	Hisense
9	Opnext	Accelink	Oclaro	Oclaro	Fujitsu	Oclaro	Fujitsu	InnoLight
10	Oplink	NEOPhotonics	NEOPhotonics	NEOPhotonics	NEOPhotonics	Fujitsu	Oclaro	O-Net

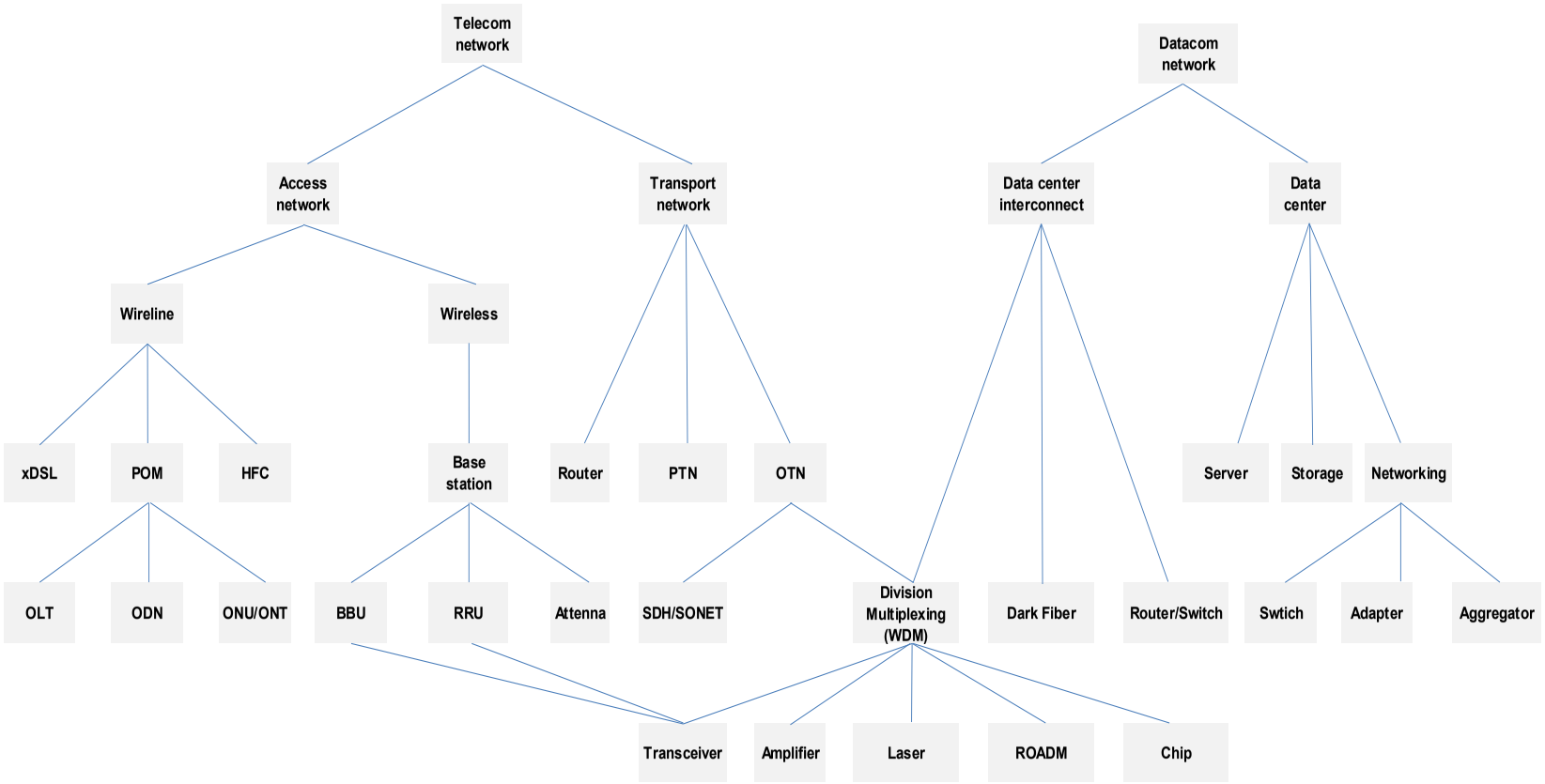
Source: ODC, CGIS Research

Figure 11: Domestic Telecom Business Supply Chain



Source: CGIS Research

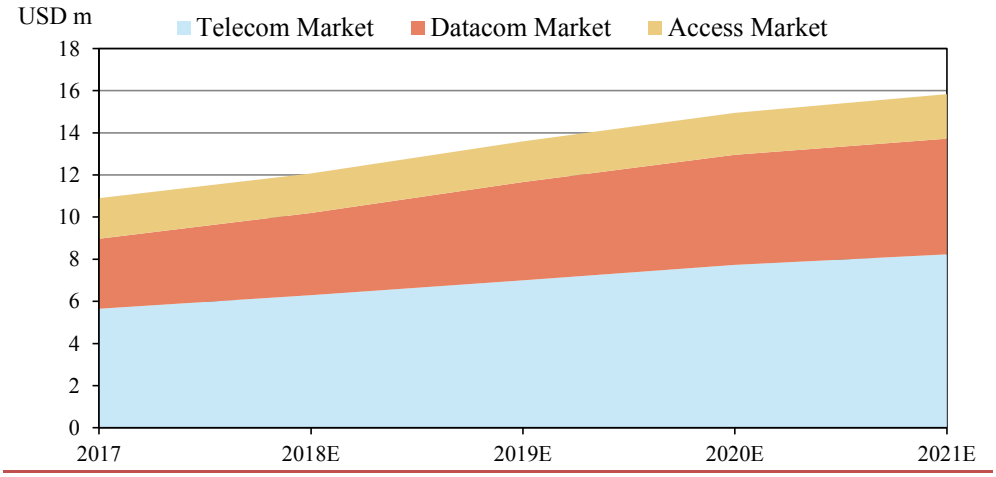
Figure 12: Classification of Telecom and Datacom products



Source: CGIS Research

According to Orbis, the expected global fibre optical component market CAGR is expected to be 10.37% from 2017 to 2021. According to the Ovum Report (Nov 2017), the expected global optical component market revenue CAGR is 9.79% from 2017 to 2021, and revenue is expected to reach US$15.84bn by 2021, while the telecom and datacom markets are expected to have a CAGR of 9.86% and 13.39%, respectively.

Figure 13: Global Optical Component Market



Source: Ovum Report, CGIS Research

a) Telecom

The global optical components market for telecommunications applications has contracted since 2017. Nevertheless, sales of optics to telecoms segments in North America and Europe have remained steady.

Global network operators, including Chinese operators, are accelerating their deployment plans by implementing more field trials of 5G networks, with commercial deployment targets in late 2019 to 2020. The upcoming 5G network rollout will drive the Company's optical networking business in two dimensions: geographic extension and bandwidth throughput. According to Infostone Communications Consultant, it is estimated that there will be 1.5 to 3 times more Chinese base stations in the 5G era than in the 4G era, while the number of optical modules in each base station in the 5G era vs. the 4G era is likely to be 2-3 times larger. According to ODC, it is estimated that there will be 1.6 to 4.2 more optical modules needed in the 5G era than in the 4G era.

Demand for optical components, like FSI, WDM, TF, CWDM/WDM devices and ROADM (Reconfigurable Optical Add/Drop Multiplexers) systems, is very likely to sharply increase in the 5G era.

(b) Datacom

According to LightCounting, sales of 400GbE optics will expand the cloud market segment (including the cloud in China) from about US$2bn in 2017 at a CAGR of 20% to more than US$6bn in 2023. According to Ovum (May 2017), 100GbE transceivers are the fastest-growing products, with an expected 38% CAGR from 2016 to 2022, reaching US$6.6bn by 2022.

DCI (data center interconnect) refers to a technology used to connect and enable networking between two or more different data centres, enabling different data centres to share resources, pass workloads, and work together. The migration toward cloud-based services has increased demand for data centres, which is expected to boost the growth of the DCI market.

Starting in 2013, major data centre operators transformed to a leaf-spine structure, causing a rapid increase in demand for AOC (used to connect to servers and cabinet switches) and PSM4/CWDM4 (used to connect to a leaf-spine structured system).

According to ACG research, the DCI revenue segment is projected to grow at a 20.6% CAGR from 2016 to 2021, mainly because of the cloud. DCI continues to be a major driver for the growth of the optical network and components market, which is attributable to (i) the adoption of more cloud-based services applications; (ii) ongoing data centre construction, with new technology upgrade cycles coming; and (iii) demand for interconnecting as a result of the growing number of geographically dispersed data centres.

According to Ovum, the DCI market was valued at US$3.2bn in 2017, shared by market leaders Ciena, Huawei, Nokia, Infinera, Cisco etc. North America is by far the largest market geographically.

(2) Smart Manufacturing Applications

(a) Industrial Laser Business

Laser technology has been used in industrial applications since the invention of the first lasers back in the 1960's. Fibre lasers are compact and energy efficient laser systems that offer the best beam quality for applications where precision is important. As the technology is based on an optical fibre, the absence of free-space optics and mechanical components provides excellent system stability and long product life. Directing the laser radiation to the point of application via an optical fibre ensures safe operation for humans and simplicity of integration into robotics. Hence, in a diverse range of industries, replacing conventional laser or non-laser technologies with fibre lasers can maximize process speed and precision, while minimizing operation costs. Fibre laser has several advantages: (i) power efficiency; (ii) cost competitiveness; (iii) ease of maintenance; and (iv) relative durability.

As fibre lasers offer flexible operation on several wavelengths and allow access to multiple markets, including materials processing, laser marking, sensor applications, laser spectroscopy, medical applications, 3D printing and digital projections, the fibre laser market is currently experiencing the fastest growth rate among all laser technology segments.

According to ResearchAndMarkets.com, in 2017, the global industrial laser market recorded growth of 26% to US$4.3bn, with industrial fibre lasers leading the way, expanding 34% to US$2.0bn. According to Allied Market Research, the global fibre laser market is expected to reach US$3.1bn by 2022. According to IDTechEx, the global market for fibre lasers will reach US$8.9bn by 2028.

Fibre lasers have become the first choice for the laser processing industry. In welding systems, 60% of laser welding equipment have incorporated fibre lasers.

Commercial applications of fibre lasers in sensing are typically limited to high-precision LiDAR for terrestrial mapping (which is another important O-Net business, see part (d)), range finding and wind sensing.

(b) Machine Vision Business

A machine vision system simulates human vision with computers, collecting, processing and analyzing information from images. As industrial production becomes increasingly complex, more and more micromachining processes have emerged. To ensure precision in production, machine vision has been widely applied in the inspection, measurement and insertion of parts and automation between different processes.

According to ResearchAndMarkets.com, against the backdrop of Industry 4.0, the machine vision industry in China has grown by leaps and bounds over the past few years, resulting in China becoming the world's third-largest machine vision market, after the United States and Japan. In 2017, the Chinese machine vision industry was worth RMB3.2bn, representing a YoY surge of 23.1%. As a large number of local Chinese manufacturers continue to operate older facilities, the window of opportunity is immense. The size of the Chinese market is expected to maintain a CAGR of 20.0% from 2018 to 2022.

(c) Automation Solutions Business for e-cigarettes

According to Prescient & Strategic Intelligence, the global e-cigarette market size was estimated to be around US$15bn in 2017, with an expected CAGR of 27.3% in 2018-2023. The search for alternatives to tobacco cigarettes due to rising health awareness among consumers is fuelling the growth of the market.

Global tobacco companies are shifting their focus from traditional tobacco products to next-generation vaping devices because they are being adopted by consumers as an alternative to tobacco cigarettes. With the focus on replacing traditional tobacco cigarettes with safe vaping technology, the e-cigarette market is expected to witness significant growth in the near future. The Company's e-cigarette business is expected to maintain its growth momentum and enjoy a multi-year-high growth cycle.

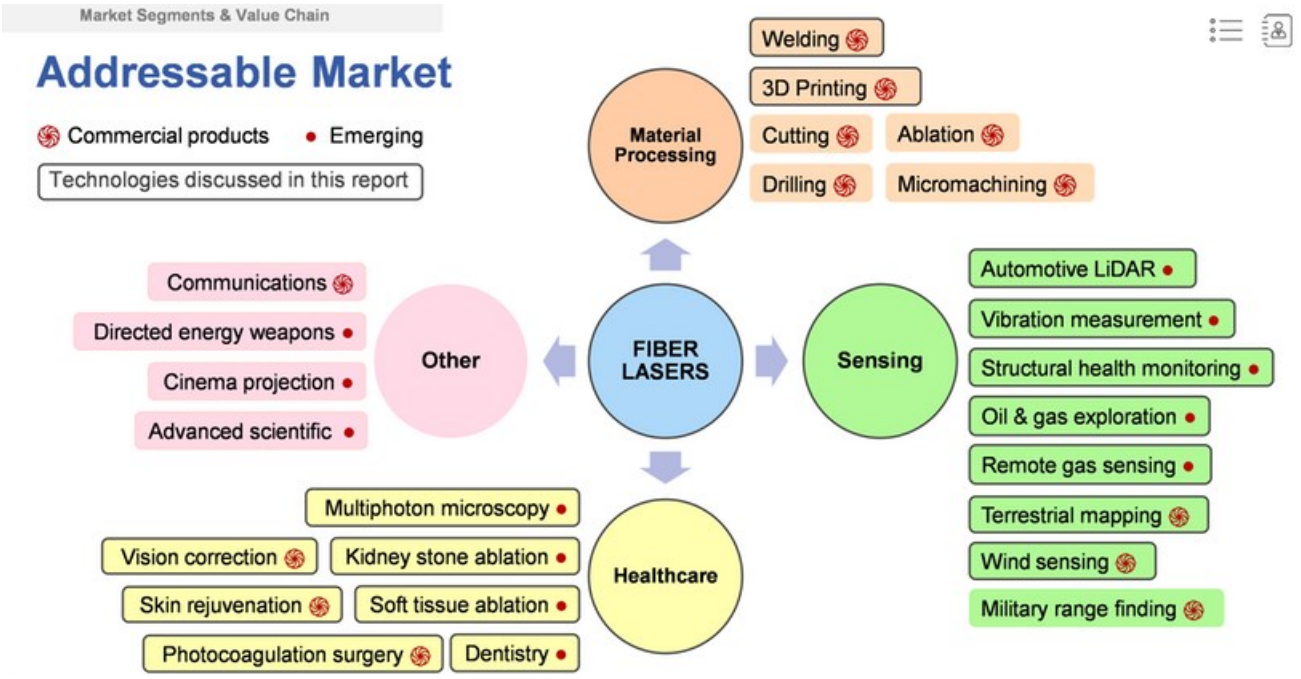
(d) LiDAR

LiDAR (light detection and ranging) is a surveying technology that measures distance by scanning a target with a laser light beam, and creating a three-dimension high-resolution image. After processing the signals to generate information about the target object, such as its distance, position, height, speed, posture and shape, it can explore, track and identify the target.

LiDAR is among the key solutions for making high-resolution images or maps used by ADAS (advanced driving assistance systems). ADAS is believed to be one of the most significant technologies to affect the evolution of the automobile. The market is expected to enjoy significant growth in the long-term future, driven by the rise in automated and highly automated vehicles on the road expected in 10 years' time. In autonomous driving, LiDAR is important for (1) identification of surroundings (e.g. signs, driveways) to locate the vehicle on a map with high precision, and (2) identification of roadway objects and obstacles. Compared to other sensors, such as cameras and radar, LiDAR adoption is very low (only in testing autonomous vehicles), mainly because of expensive seed lasers. Google's self-driving car prototype used Velodyne's 64-channel. Previously, a LiDAR solution cost about US$75,000. However, we are seeing more LiDAR solution providers (such as Velodyne, Quanergy, Innoviz, iboe, Magna, and TriLumina), whose target is to bring the cost down to below US$1,000. Quanergy unveiled the first compact, low-cost, automotive-grade solid state LiDAR sensor, and Velodyne announced it would work on a US$500 solid-state LiDAR.

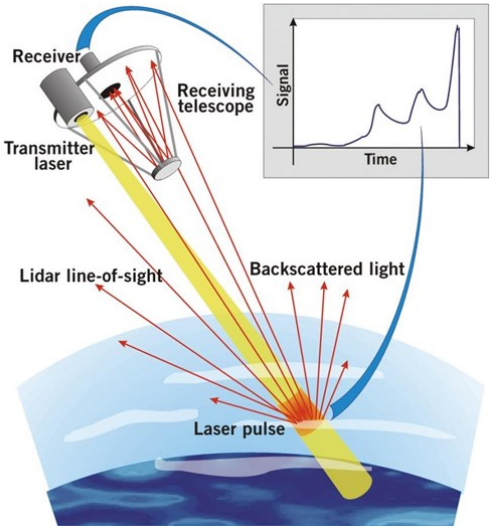
The structure of LiDAR includes four main parts: (1) a laser pulse: pulse and continuous wave lasers; (2) a transmitter laser: beam splitter, phase prism, galvanometer and transmission; (3) a receiver: determines distance + conducts exploration; and (4) a signal processor: for calculation and assessment.

Figure 14: The addressable market for fibre lasers



Source: IDTechEx, CGIS Research

Figure 15: Illustration of LiDAR



Source: Company Data, CGIS Research

Earnings forecast

Steady turnover growth projected in 2018E & 2019E

- **O-Net is projected to deliver net profit growth of 12.4%/19.3%/27.3% in 2018E/2019E/2020E, driven by: a) market share gains, b) new product launches, and c) an expanding customer base. We expect O-Net to continue to gain market share, especially under industry consolidation, given li-Vi's acquisition of Finisar and Lumentum's acquisition of Oracle.**

- **We expect revenue from the optical communications products segment to grow at a CAGR of 16.8% from 2017 to 2020E. Within the optical communications products segment, we believe that both the telecommunications and datacom segments will report good growth in 2017-2020E, given: a) the global 5G roll-out, b) market share gains, and c) new product launches.**

- **We expect turnover in the consumer electronics segment to drop sequentially in 2017-2020E, given weakness in global smartphone shipments. We also expect new business, such as industrial lasers, machine vision and LiDAR, to report** strong growth, given positive long-term trends. Industrial lasers, machine vision and LiDAR are expected to be fast-growth areas in the TMT hardware segment, and O-Net has key advantages, given its strong R&D and integrated model.

- We expect O-Net to control SG&A expenses to make sure that profitability will not be dragged down. O-Net is expected to remain committed to new product development and R&D, as the percentage of total turnover was as high as 11.75% to 13.45% in 2013-2016. We expect O-Net to invest about 9% of its annual turnover in R&D in 2018E-2020E.

- O-Net's core business is optical networking, automation and touch panels. Its optical networking business supplies mainly passive optical networking subcomponents, components, modules and subsystems used in telecom and data communication networks. The Company was established in 2000 in Shenzhen, and completed its IPO on the Hong Kong Stock Exchange in 2010. We saw a dip in O-Net's revenue in 2013, as the Company missed the earlier-than-expected 100G upgrade cycle. O-Net subsequently moved its headquarters and manufacturing facilities from Nanshan to Pingshan. Thanks to strong R&D capability, O-Net regained revenue growth momentum in 2014-15 with new passive products.

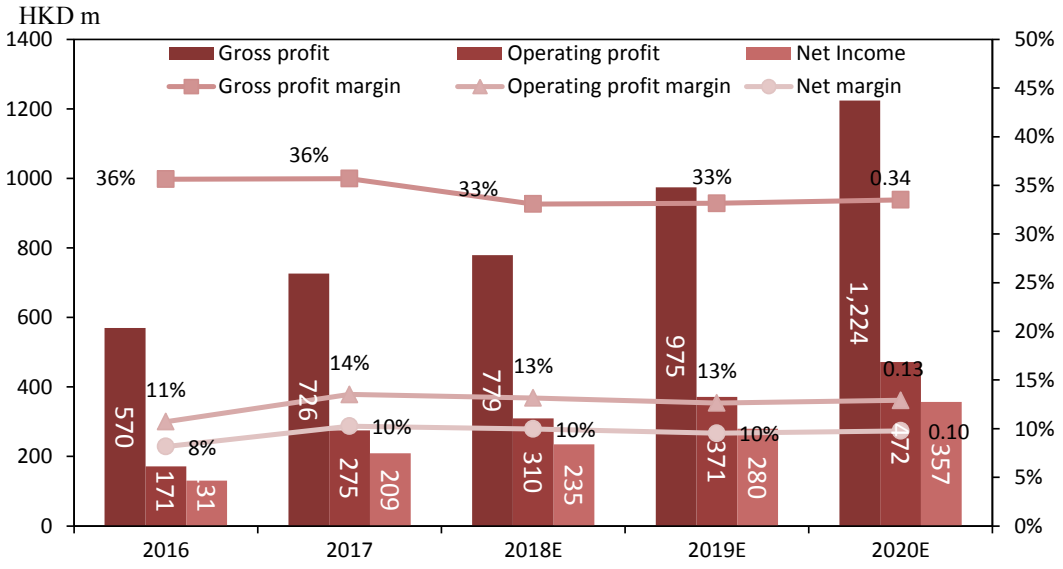
- One concern about O-Net may be that its expansion in various areas in recent years may have been too far and too fast, causing it to lose focus, and whether it can maintain its competitiveness in various segments. We believe the Company's expansion strategy has been logical and consistent. The expansion to the broader active optical components market and datacom market has leveraged its solid experience in passive optical components, and its expansion deeper into the opto-electronic business (including industrial lasers, LiDAR, machine vision and VCSEL) has enhanced its vertical integration. The expansion in the e-cigarette and coating segments was a more diversified strategy, but the results have turned out to be quite successful, though the coating business will be under pressure. On the margin side, we note that O-Net's gross margin has stabilized since 2013, thanks to diverse product offerings. We expect to see an increase in 2016-18E, thanks to the rising contribution from the better-margin active component and coating business.

Figure 16: Key Assumptions for O-Net

	2013	2014	2015	2016	2017	2018F	2019F	2020F
Turnover (HKDm)								
Optical Networking Business	654.0	781.4	974.7	1,395.7	1,601.0	1,827.3	2,156.6	2,549.0
Automation and Sensing Business	0	34.7	108.0	63.0	95.9	140.9	207.9	319.2
Others	7.5	15.2	52.8	139.6	338.2	386.4	574.3	783.3
Total	661.5	831.3	1,135.5	1,598.3	2,035.1	2,354.6	2,938.7	3,651.5
YoY Change (%)								
Optical Networking Business		19.5	24.7	43.2	14.7	14.1	18.0	18.2
Automation and Sensing Business		n.a.	n.a.	(41.7)	52.2	47.0	47.5	53.6
Others					142.2	14.2	48.6	36.4
Total		25.7	36.6	40.8	27.3	15.7	24.8	24.3
Gross margin (%)								
Optical Networking Business	31.9	31.9	44.3	32.5	36.1	36.6	34.6	35.1
Automation and Sensing Business	6.5	35.0	35.0	30.0	32.9	32.9	32.9	32.9
Others	9.0	28.0	28.0	25.0	32.0	32.0	26.0	26.0
Net margin (%)	2.0	5.2	7.3	8.2	10.3	10.0	9.5	9.8
Cost (HKDm)								
S,G&A	(128.5)	(143.6)	(183.5)	(240.9)	(307.0)	(339.4)	(419.7)	(517.3)
Financial Expenses	(7.7)	(0.2)	(0.8)	0	0	(5.7)	(15.6)	(26.0)
YoY Change (%)								
S,G&A		11.7	27.8	31.3	27.4	10.6	23.7	23.3
Financial Expenses		(97.7)	369.3	n.a.	n.a.	n.a.	174.1	66.9
CAPEX (HKDm)	149.7	116.7	135.9	101.9	246.5	160.0	150.0	150.0
Net Gearing (%)				12.6	12.1	8.1	11.7	14.0

Source: Company Data, CGIS Research

Figure 17: O-Net's profits and margins



Source: Company data, CGIS Research

Figure 18: Earnings projection

Income Statement (HKDm)	FY2016	FY2017	FY2018F	FY2019F	FY2020F
Revenue	**1,598**	**2,035**	**2,355**	**2,939**	**3,652**
Growth yoy%	*40.8%*	*27.3%*	*15.7%*	*24.8%*	*24.3%*
Gross Profit	**570**	**726**	**779**	**975**	**1,224**
Growth yoy%	*57.1%*	*27.5%*	*7.2%*	*25.1%*	*25.6%*
Selling General & Admin Exp.	(429)	(484)	(545)	(677)	(837)
Others Operating Expenses/Items	14	24	67	64	83
Operating Income	**155**	**266**	**301**	**362**	**470**
Growth yoy%	*n.a.*	*72.1%*	*12.8%*	*20.5%*	*29.6%*
Interest Expense	(15.6)	(26.0)	(30.0)	(37.5)	(46.6)
Interest and Invest. Income	16.6	8.5	9.4	9.2	2.1
Income/(Loss) from Affiliates	(1.5)	(0.0)	(0.0)	(0.0)	(0.0)
Other Non-Operating Inc. (Exp.)	0	0	0	0	0
Impairment of Goodwill	-	-	-	-	-
Gain (Loss) On Sale Of Invest.	-	-	-	-	-
Gain (Loss) On Sale Of Assets	-	-	-	-	-
Income Tax Expense	(26)	(43)	(48)	(58)	(74)
Minority Int. in Earnings	2	3	3	4	5
Net Income	**131**	**209**	**235**	**280**	**357**
Growth yoy%	*58.2%*	*59.9%*	*12.4%*	*19.3%*	*27.3%*

Cash Flow Statement (HKDm)	FY2016	FY2017	FY2018F	FY2019F	FY2020F
Net Income	**162**	**273**	**276**	**331**	**422**
Depreciation & Amort.	56	69	80	90	100
Change in Working Capital	(273)	(359)	(57)	(259)	(316)
Cash from Ops.	**(54)**	**(17)**	**298**	**162**	**206**
Capital Expenditure	(102)	(247)	(160)	(150)	(150)
Sale of Property, Plant, and Equipment	-	-	-	-	-
Change in Investing Acitivities	(455)	499	(77)	(96)	(92)
Cash from Investing	**(557)**	**252**	**(237)**	**(246)**	**(242)**
Net increase in bank borrowings	639	(60)	103	188	229
Issuance of Common Stock	18	0	0	0	0
Common Dividends Paid	0	0	0	(23)	(56)
Special Dividend Paid	-	-	-	-	-
Other Financing Activities	(12)	(33)	(6)	(10)	(13)
Cash from Financing	**645**	**(93)**	**97**	**155**	**160**
Net Change in Cash	**33**	**143**	**158**	**71**	**124**

Balance Sheet (HKDm)	FY2016	FY2017	FY2018F	FY2019F	FY2020F
ASSETS					
Cash And Equivalents	534	408	575	655	788
Receivables	647	975	1,031	1,286	1,598
Inventory	270	377	437	545	677
Other Current Assets	36	20	23	29	35
Total Current Assets	**1,487**	**1,781**	**2,065**	**2,515**	**3,099**
Net Property, Plant & Equipment	702	916	996	1,056	1,107
Long-term Investments	-	-	-	-	-
Other Intangibles	-	-	-	-	-
Deferred Tax Assets, LT	-	-	-	-	-
Other Long-Term Assets	298	407	415	424	433
Goodwill	-	-	-	-	-
Accounts Receivable Long-Term	-	-	-	-	-
Total Long Term Assets	**999**	**1,323**	**1,412**	**1,480**	**1,540**
Total Assets	**2,487**	**3,104**	**3,477**	**3,995**	**4,638**
LIABILITIES & EQUITY					
Accounts Payable	290	367	424	530	658
Accrued Exp.	-	-	-	-	-
Short-term Borrowings	684	654	756	944	1,173
Curr. Port. of LT Debt	-	-	-	-	-
Curr. Income Taxes Payable	-	-	-	-	-
Unearned Revenue, Current	-	-	-	-	-
Other Current Liabilities	21	33	36	40	44
Total Current Liabilities	**995**	**1,053**	**1,217**	**1,513**	**1,875**
Long-Term Debt	29	0	0	0	0
Def. Tax Liability, Non-Curr.	3	2	3	3	3
Other Non-Current Liabilities	30	15	16	18	19
Total Liabilities	**1,058**	**1,071**	**1,236**	**1,534**	**1,897**
Common Stock	7	8	8	8	8
Additional Paid In Capital	-	-	-	-	-
Retained Earnings	1,414	2,024	2,235	2,459	2,744
Treasury Stock	-	-	-	-	-
Comprehensive Inc. and Other	-	-	-	-	-
Minority Interest	7.7	1.6	(1.8)	(5.9)	(11.1)
Total Equity	**1,429**	**2,033**	**2,241**	**2,461**	**2,741**
Total Liabilities And Equity	**2,487**	**3,104**	**3,477**	**3,995**	**4,638**

Ratios	FY2016	FY2017	FY2018F	FY2019F	FY2020F
Profitability					
Return on Assets %	6.1%	7.5%	7.1%	7.5%	8.8%
Return on Capital %	8.3%	9.7%	9.3%	9.9%	11.6%
Return on Equity %	9.5%	12.1%	11.0%	11.9%	14.3%
Margin Analysis					
Gross Margin %	35.6%	35.7%	33.1%	33.2%	33.5%
SG&A Margin %	15.1%	15.1%	14.4%	14.3%	14.2%
EBIT Margin %	10.7%	13.5%	13.2%	12.6%	12.9%
EBITDA Margin %	14.3%	17.0%	16.6%	15.8%	15.7%
Net Income Margin %	8.2%	10.3%	10.0%	9.5%	9.8%
Asset Turnover					
Total Asset Turnover	0.6x	0.7x	0.7x	0.7x	0.8x
Fixed Asset Turnover	1.6x	1.5x	1.7x	2.0x	2.4x
Accounts Receivable Turnover	2.8x	2.5x	2.3x	2.5x	2.5x
Inventory Turnover	5.9x	5.4x	5.4x	5.4x	5.4x
Liquidity					
Current Ratio	1.5x	1.7x	1.7x	1.7x	1.7x
Quick Ratio	1.2x	1.3x	1.3x	1.3x	1.3x
Avg. Days Sales Out.	147.8	174.9	159.8	159.8	159.8
Avg. Days Inventory Out.	61.6	67.7	67.7	67.7	67.7
Avg. Days Payable Out.	112.0	91.6	91.6	88.6	89.3
Avg. Cash Conversion Cycle	177.3	214.4	195.2	195.3	195.8
Net Debt to Equity	n.a.	12%	8%	12%	14%
Growth Over Prior Year					
Total Revenue	40.8%	27.3%	15.7%	24.8%	24.3%
Net Income	58.2%	59.9%	12.4%	19.3%	27.3%
Payout Ratio %	0.0%	0.0%	10.0%	20.0%	20.0%

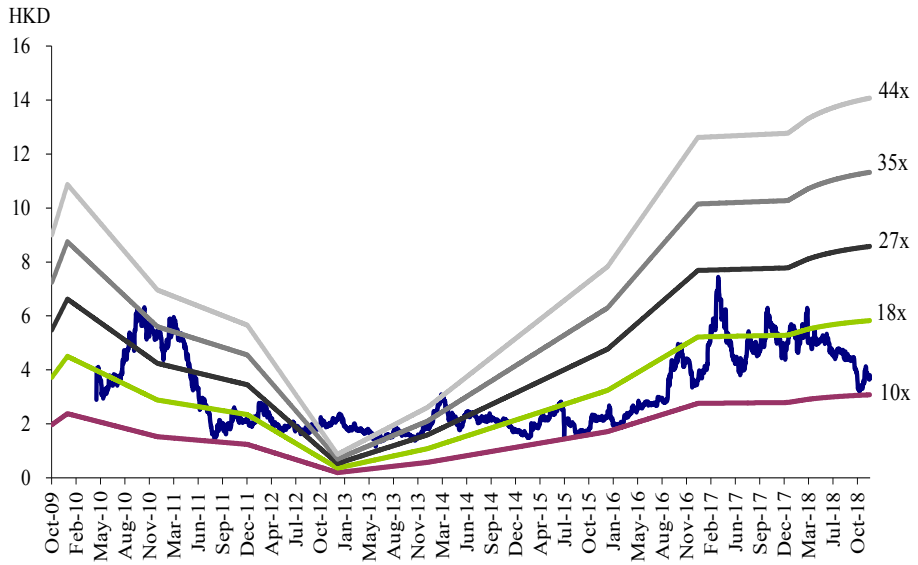
Source: Company Data, CGIS Research

Valuation

Trading at a discount to its listed global peers

We believe the current valuation of 12.5x 2018E PER and 10.5x 2019E PER offers a good entry point. We also expect O-Net to declare a dividend for its 2018 results. We initiate our coverage of O-Net with a BUY recommendation and a target price of HK$4.40, based on a target 2018E PER of 15x. Our target PER is lower than the Company's historical average of 27x since listing and the 15.5x of average of HK-listed telecommunications-related names. The A-share-listed (excluding Datang Telecom) and overseas-listed telecommunications equipment names are trading at an average PER of 20.4x and 22.4x, respectively, so our target PE ratio is not excessive. This is supported by its estimated earnings CAGR of 17.0% in 2017-2020E.

Figure 19: O-Net's P/E Band



Source: Company data, CGIS Research

Figure 20: Peer Comparison

Ticker	Company			PE			EV/EBITDA			P/B		ROE		ROA		Div yield		Share Price Performance			
		Price	Market Cap	2018F	2019F	2020F	2018F	2019F	2020F	2017	2018F	2017	2018F	2017	2018F	2017	2018F	1M	3M	6M	YTD
		Lcy	US$m	x	x	x	x	x	x	x	x	%	%	%	%	%	%	%	%	%	%
763 HK	ZTE Corp	15.36	11,129	n.a.	13.9	10.2	46.4	10.5	8.5	2.6	1.8	15.7	-18.7	-3.8	-4.6	2.42	0.00	30.4	0.7	-40.0	-47.7
2342 HK	Comba Telecom Systems Holdin	1.23	380	35.1	23.2	15.6	13.4	12.9	10.6	0.8	0.8	0.8	3.1	-0.5	1.4	0.00	0.65	9.8	-4.7	-5.4	-18.0
552 HK	China Communications Servi-H	7.45	6,596	15.2	13.4	11.3	7.7	6.9	6.4	1.5	1.5	9.9	10.2	3.9	4.2	1.78	2.33	16.0	24.2	50.6	42.9
6869 HK	Yangtze Optical Fibre And-H	20.95	3,123	8.1	7.3	6.3	9.5	8.2	6.9	2.1	1.9	27.0	25.5	n.a.	18.0	n.a.	3.93	13.1	-25.0	-37.2	-41.6
1617 HK	Nanfang Communication Holdin	4.47	640	16.5	12.8	11.0	15.7	13.3	12.2	5.7	n.a.	17.9	31.5	10.1	n.a.	1.89	3.02	-13.0	-0.7	4.2	-19.2
6168 HK	China U-Ton Holdings Ltd	0.87	232	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.4	n.a.	-46.5	n.a.	-13.5	n.a.	0.00	n.a.	-7.4	-25.6	-28.7	-18.7
3777 HK	China Fiber Optic Network Sy	0.70	192	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.4	n.a.	n.a.	n.a.	3.8	n.a.	0.00	n.a.	0.0	0.0	0.0	0.0
877 HK	**O-Net Technologies Group Ltd**	**3.67**	**376**	**12.5**	**10.5**	**8.3**	**7.3**	**6.4**	**5.3**	**1.4**	**1.3**	**12.1**	**11.0**	**7.5**	**7.1**	**0.00**	**0.80**	**10.5**	**-19.2**	**-28.0**	**-26.6**
1300 HK	Trigiant Group Ltd	0.90	206	4.0	3.8	n.a.	n.a.	n.a.	n.a.	0.5	n.a.	9.9	n.a.	6.6	n.a.	5.38	5.38	-1.1	-25.0	-26.8	-15.1
941 HK	China Mobile Ltd	76.50	200,237	12.1	12.0	11.5	3.3	3.3	3.1	1.3	1.3	11.6	11.4	7.5	7.3	4.21	4.04	6.5	2.0	7.9	-3.5
762 HK	China Unicom Hong Kong Ltd	9.00	35,204	28.5	18.2	13.3	2.9	2.7	2.6	0.8	0.7	0.7	2.7	0.9	1.4	0.65	1.49	4.8	-3.3	-17.3	-14.8
728 HK	China Telecom Corp Ltd-H	4.19	43,350	14.9	13.8	12.6	3.5	3.3	3.2	0.9	0.9	5.8	6.1	3.0	3.2	2.47	2.77	9.1	10.6	12.3	12.6
1883 HK	Citic Telecom International	2.67	1,219	10.2	9.6	9.0	7.2	7.0	6.7	1.1	1.1	10.8	10.9	5.0	5.5	6.37	6.37	6.4	12.7	19.2	29.0
Average				**15.5**	**12.4**	**10.8**	**12.2**	**7.6**	**6.7**	**1.8**	**1.2**	**6.3**	**9.6**	**2.6**	**5.0**	**2.1**	**2.8**	**6.5**	**-4.1**	**-6.9**	**-9.3**
000063 CH	Zte Corp-A	19.49	11,129	n.a.	19.7	13.4	41.7	12.9	9.7	3.6	2.4	15.7	-17.7	-4.6	-4.8	n.a.	0.19	11.7	0.2	-37.8	-46.4
600804 CH	Dr Peng Telcom & Media Gr-A	8.07	1,664	24.3	26.6	26.4	5.3	5.5	5.4	1.6	1.6	11.4	6.4	2.2	2.1	n.a.	1.20	13.8	-29.8	-50.3	-52.6
300134 CH	Shenzhen Tat Fook Technolo-A	8.92	986	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.3	n.a.	-9.2	n.a.	-3.1	n.a.	n.a.	n.a.	1.6	-25.7	-32.4	-45.8
600198 CH	Datang Telecom Tech Co-A	6.59	837	659.0	54.9	18.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-19.2	n.a.	0.00	n.a.	15.8	3.6	2.0	-41.5
600498 CH	Fiberhome Telecom Tech Co-A	27.98	4,708	32.8	26.5	21.5	20.4	17.1	14.6	3.1	3.1	9.8	9.4	3.0	3.1	n.a.	1.52	-1.2	-8.8	2.6	-2.9
002396 CH	Fujian Star-Net Communicat-A	17.55	1,474	16.6	13.3	10.9	10.0	8.2	6.6	2.9	2.8	15.5	18.0	9.9	10.5	n.a.	1.34	7.9	-14.6	-23.0	-18.7
002281 CH	Accelink Technologies Co -A	26.06	2,430	44.9	34.4	26.8	32.4	23.3	18.2	5.0	4.9	11.3	11.0	6.3	6.6	n.a.	0.75	-1.6	-0.5	4.3	-11.4
600487 CH	Hengtong Optic-Electric Co-A	17.55	4,810	10.6	8.7	7.8	9.8	7.8	6.4	2.8	2.6	26.0	24.7	8.0	11.3	n.a.	2.58	-0.7	-30.6	-29.3	-39.2
002491 CH	Tongding Interconnection I-A	7.89	1,433	12.6	10.6	9.6	11.0	9.6	8.4	2.0	1.8	15.8	14.2	6.8	8.7	n.a.	n.a.	13.5	-21.7	-41.4	-37.4
600522 CH	Jiangsu Zhongtian Technolo-A	7.69	3,395	10.5	8.2	6.9	7.3	5.7	4.6	1.3	1.2	12.1	11.4	6.9	11.8	n.a.	1.69	7.3	-17.0	-27.1	-44.8
000070 CH	Shenzhen Sdg Info Co Ltd-A	7.16	646	14.3	11.4	9.1	10.4	8.7	7.3	2.1	2.0	14.3	13.7	4.0	n.a.	n.a.	n.a.	13.8	-9.4	-18.6	-23.3
300299 CH	Fuchun Communications Co L-A	4.81	504	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.9	n.a.	-12.9	n.a.	-9.1	n.a.	n.a.	n.a.	38.2	-3.8	-9.9	-28.5
000988 CH	Huagong Tech Co Ltd-A	12.00	1,737	21.2	15.8	22.6	n.a.	n.a.	n.a.	2.2	n.a.	7.7	n.a.	4.3	n.a.	n.a.	0.3	6.6	-16.0	-27.4	-27.6
601869 CH	Yangtze Optical Fibre And-A	37.29	3,123	16.6	13.9	11.8	n.a.	n.a.	n.a.	4.9	4.3	27.0	25.0	14.6	n.a.	0.0	1.1	2.6	-30.2	n.a.	n.a.
Average				**84.7**	**20.9**	**15.8**	**16.5**	**11.0**	**9.0**	**2.6**	**2.5**	**9.8**	**10.1**	**1.2**	**6.2**	**0.0**	**1.2**	**9.7**	**-13.4**	**-22.2**	**-32.3**
PRY IM	Prysmian Spa	16.23	4,947	11.1	8.6	7.4	9.1	7.4	6.8	1.9	1.8	15.5	18.2	2.6	4.1	n.a.	2.78	-4.0	-26.3	-28.6	-38.3
JNPR US	Juniper Networks Inc	29.44	10,161	15.8	14.4	13.3	8.6	8.3	7.9	2.2	2.4	6.4	13.8	2.4	7.4	2.17	2.44	5.0	2.1	8.6	3.3
4063 JP	Shin-Etsu Chemical Co Ltd	9947.00	37,544	14.0	13.3	12.4	6.0	5.5	5.2	1.7	1.6	8.5	12.4	11.0	11.5	n.a.	1.99	8.9	-6.8	-10.0	-13.1
5803 JP	Fujikura Ltd	488.00	1,274	8.8	6.7	6.3	6.1	5.6	5.2	0.6	0.6	6.4	6.8	0.9	5.4	n.a.	2.89	5.9	-27.6	-36.0	-50.9
MSI US	Motorola Solutions Inc	132.07	21,597	18.8	17.4	15.9	13.3	11.8	11.0	n.a.	n.a.	n.a.	-82.7	-0.4	10.7	1.57	1.60	12.8	2.6	20.4	46.2
CSCO US	Cisco Systems Inc	47.29	212,614	15.5	14.3	13.5	10.8	10.2	10.0	4.9	5.8	14.8	33.4	1.1	13.7	2.71	2.93	7.9	-0.4	10.1	23.5
ERICB SS	Ericsson Lm-B Shs	76.68	28,276	39.2	20.5	15.8	14.3	9.6	8.6	2.7	2.6	-29.4	3.0	-7.1	0.9	n.a.	1.44	-3.0	-2.6	18.3	42.4
LITE US	Lumentum Holdings Inc	44.21	2,803	9.9	8.9	9.0	6.5	5.4	5.6	2.8	2.6	-18.5	28.5	19.9	16.3	0.00	n.a.	-16.6	-35.7	-29.8	-9.6
FNSR US	Finisar Corporation	23.03	2,703	26.0	15.1	13.5	10.4	8.0	7.4	1.7	1.5	18.3	6.4	-3.3	n.a.	0.00	n.a.	43.9	13.4	37.8	13.2
COHR US	Coherent Inc	133.59	3,257	12.5	10.7	7.8	8.0	7.4	5.6	2.5	1.8	20.0	16.3	10.8	n.a.	0.00	n.a.	11.2	-29.7	-27.9	-52.7
EMKR US	Emcore Corp	4.41	121	n.a.	n.a.	n.a.	n.a.	33.0	n.a.	1.1	n.a.	7.2	n.a.	-6.8	n.a.	0.00	n.a.	-10.0	-9.5	-12.7	-31.6
AAOI US	Applied Optoelectronics Inc	20.66	409	20.6	17.3	8.5	8.9	6.3	n.a.	1.2	1.1	26.4	n.a.	2.6	n.a.	0.00	n.a.	1.7	-51.3	-42.2	-45.4
ACIA US	Acacia Communications Inc	44.70	1,808	55.3	31.9	22.5	31.1	19.2	15.0	3.6	3.5	8.2	6.5	-4.1	0.6	0.00	n.a.	33.6	12.2	33.6	23.4
CIEN US	Ciena Corp	32.73	4,667	24.2	18.1	15.6	11.5	9.4	8.3	2.6	2.8	87.0	12.0	23.6	24.5	0.00	0.00	10.1	19.8	33.5	56.4
INFN US	Infinera Corp	4.39	768	n.a.	n.a.	19.5	31.3	8.4	3.2	1.0	1.0	-27.2	-11.7	-12.7	-6.1	0.00	0.00	-17.8	-51.2	-51.3	-30.6
IPGP US	Ipg Photonics Corp	143.64	7,670	19.3	19.8	17.1	10.7	10.6	9.7	3.5	3.4	19.4	18.8	15.9	n.a.	0.00	n.a.	9.4	-16.1	-42.2	-32.9
NPTN US	Neophotonics Corp	7.98	367	n.a.	n.a.	30.5	40.1	10.0	6.5	2.3	2.2	-25.4	n.a.	-14.0	n.a.	0.00	n.a.	3.0	-11.9	20.5	21.3
VIAV US	Viavi Solutions Inc	9.91	2,264	16.6	14.5	13.7	10.9	9.4	9.6	3.2	3.0	22.6	12.3	-2.9	3.5	0.00	n.a.	-11.0	-13.7	1.8	13.4
OCLR US	Oclaro Inc	8.07	1,385	21.5	17.1	15.5	9.4	7.1	6.7	2.3	2.4	37.6	10.2	6.5	n.a.	0.00	n.a.	2.3	-15.9	-10.7	19.7
ACIA US	Acacia Communications Inc	44.70	1,808	55.3	31.9	22.5	31.1	19.2	15.0	3.6	3.5	8.2	6.5	-4.1	0.6	0.00	n.a.	33.6	12.2	33.6	23.4
IIVI US	Ii-Vi Inc	37.23	2,367	15.3	11.9	9.8	9.8	8.7	8.4	2.3	2.1	11.3	13.4	5.4	6.9	0.00	n.a.	2.9	-25.5	-16.6	-20.7
3450 TT	Elite Advanced Laser Corp	63.80	302	14.4	11.5	11.3	5.4	5.2	4.3	2.4	1.8	19.6	11.8	9.1	9.3	n.a.	4.67	24.4	-13.1	-33.8	-45.8
3234 TT	Truelight Corp	24.00	59	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.5	n.a.	-39.0	n.a.	-7.8	n.a.	n.a.	n.a.	17.4	-18.4	-10.9	-41.2
4979 TT	Luxnet Corp	19.25	64	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.3	n.a.	-42.4	n.a.	-18.9	n.a.	n.a.	n.a.	25.4	-14.6	-28.3	-45.3
3081 TT	Land Mark Optoelectronics	263.50	775	33.9	24.6	18.3	18.4	13.9	10.6	6.3	5.8	17.6	18.5	17.7	17.4	n.a.	2.10	27.0	3.1	-15.0	-31.4
Average				**22.4**	**16.4**	**14.5**	**14.2**	**10.4**	**8.1**	**2.5**	**2.5**	**7.2**	**7.7**	**1.9**	**7.9**	**0.38**	**2.08**	**9.0**	**-12.2**	**-7.1**	**-8.1**
HSI Index	Hang Seng Index																	6.6	-6.9	-13.2	-11.6
HSCEI Index	Hang Seng China Ent Indx																	5.7	-4.5	-11.5	-9.6
SHCOMP Index	Shanghai Se Composite																	1.0	-7.3	-17.7	-22.4
MXCN Index	Msci China																	10.2	-9.2	-18.1	-15.3

Source: Bloomberg, Company Data, CGIS Research estimates for covered stocks

Major risk factors

(i) Slower-than-expected 5G development. There is no fixed timetable for 5G roll-out globally. Any delay in 5G roll-out may constrain the growth potential of optical communications equipment and component suppliers. However, we believe that the 5G roll-out will be delayed only up to the end of 2019, as some countries, such as the US, have kicked off spectrum allocation. Further news flow on 5G roll-out in China will attract market attention to optical communications equipment names, including O-Net.

(ii) Slower-than-expected development of new products. New business and new products are the growth drivers for O-Net. Any delay in the launch of new products will drag down the overall growth of O-Net. However, O-Net is committed to R&D for new products, and several new products, such as machine vision, LiDAR and industrial lasers, are expected to report good growth in the coming years.

(iii) Foreign exchange risk. The Company operates internationally, so it is exposed to foreign exchange risk arising from future commercial transactions, and recognized assets and liabilities. The majority of the Company's foreign currency transactions and balances are denominated in USD and RMB. The major foreign exchange risk relates to the fluctuation of the USD against the RMB. As at 31 December 2017, if the USD had weakened/strengthened by 5% against RMB with all other variables held constant, profit before tax for the year would have been HK$21,554,000 (2016: HK$14,637,000) lower/higher, mainly as a result of foreign exchange losses/gains on translation of USD-denominated cash in banks and trade and other receivables.

(iv) Increasing competition from new technology. This might have a negative impact on existing suppliers. However, we don't see any new technology on the horizon to replace optical communications.

Company History

Figure 21: O-Net's Milestones (excluding M&A activity and external investments)

2000	O-Net was set up by Mandarin IT Fund I and Kaifa in July.
	O-Net set up two wholly-owned subsidiaries, O-Net Shenzhen and O-Net Hong Kong, in October.
2001	Set up passive optical components R&D team in March.
	Develop of Optical Coating technology and Optical Precision Processing technology.
	Launch of WDM.
2004	Qualified as a supplier of Alcatel-Lucent.
	Set up optical module and sub-systems R&D team.
	Set up automation division for developing automation equipment for in-house production.
	Develop of Mirco Optics technology.
2007	Qualified as a supplier of Huawei.
	Develop of Radio Frequency technology.
2008	Launch of VOA.
2010	O-Net listed on the Stock Exchange of Hong Kong Limited on 29 April 2010, with a net proceed of approximately HK$512.8m.
	Launch of tunable dispersion compensators ("TDC") for 40Gbps Networks
2012	Establishment of R&D center in Silicon Valley in August for developing products for data centers
2013	Set up O-Net Automation Technology (Shenzhen) Limite, to explore the automation equipment market (machine vision and sensing business).
	Set up an R&D center in U.S.A for the development of next-generation active products.
	Launch of its first Quad Small Form-factor Pluggable plus bidirection ("QSFP+ BiDi") solution in December.
	Launch of three patented coating machines in November.
	Successfully designed an automated E-liquid Filling & Assembly Machine in July.
2014	Set up a new division for optical coating business
	Launch of EDFA for 100Gbps Networks
2015	Launch of machine vision product in July.
	Launch of 40G AOC & 100G ICR with AOC qualified by internet content player and data center solutions player.
2016	On 2016 Jan 7, the Company adopted its new name as *O-Net Technologies (Group) Limited*.
	New VP of R&D joined O-Net.
	New Chief Scientist joined O-Net USA.
	Set up a subsidiary, O-Net Coating for optical coating business.
	Start to supply of LiDARs' components & set up production line for assembly of LiDARs.
	Launch of 10X10 TOSA & ROSA, 100G mini ICR and AOC.
2017	New VP of Operation joined O-Net.
	On 2017 Sep 7, Launch of cost-effective Laser Light Source Module for LiDAR (PANDA) along with ITF to tap into the industrial lasers industry.

Source: Company data, CGIS Research

Figure 22: O-Net's M&A activity and external investments

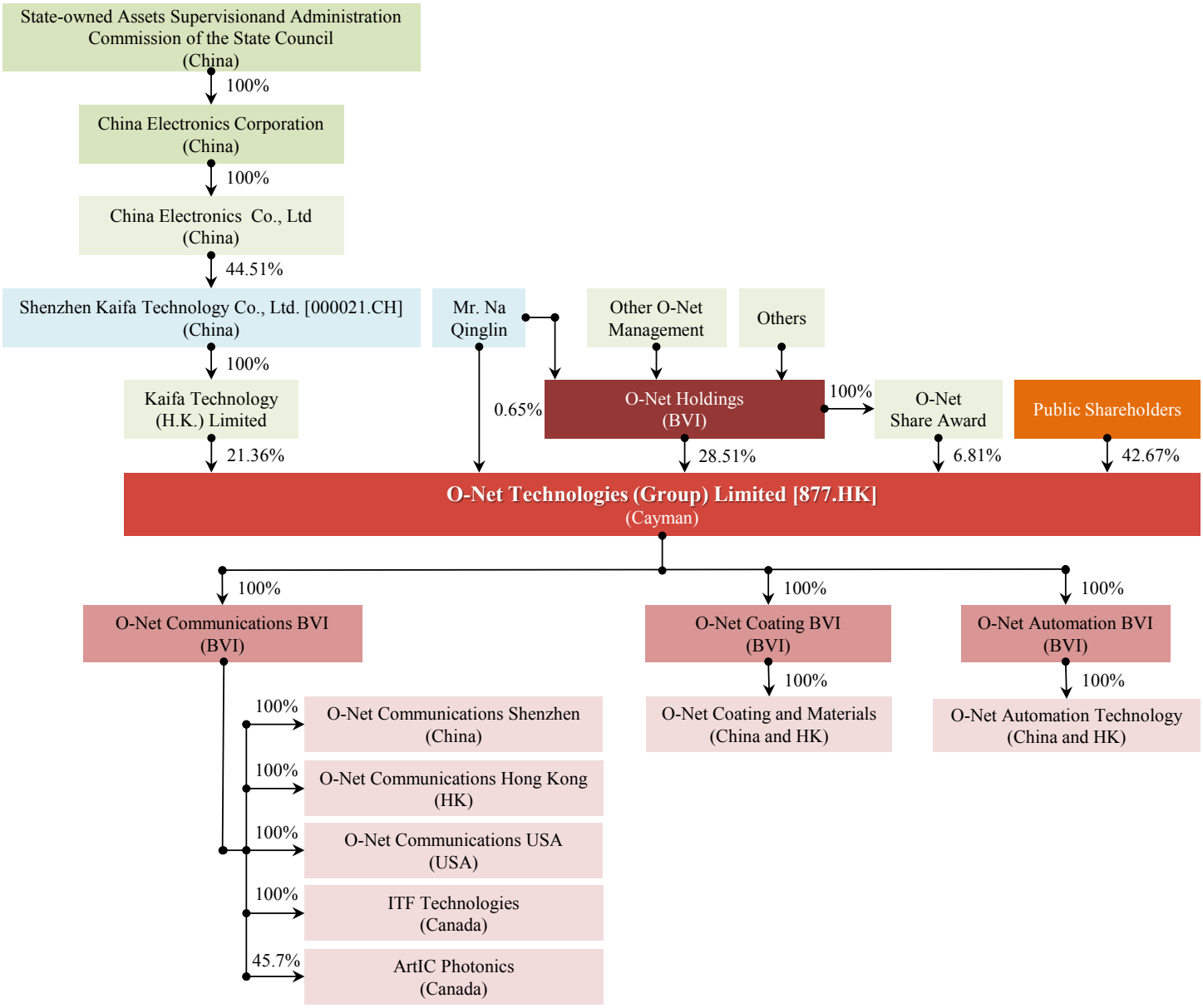
2013	**Invested in a German company, VI Systems GmbH, to develop proprietary high speed optical interconnects and proprietary VCSEL (Vertical Cavity Surface Emitting Laser).**
	Signed a subscription agreement with a Canadian company, ArtIC Photonics, Inc. to collaborate in the development of proprietary PIC (Photonic Integrated Circuit) chips for the next generation optical products. Headquartered in Ottawa, Canada, ArtIC is principally engaged in the custom design and fabless development of PIC chips for use in optical component products for telecom and datacom markets. The cooperation presents potential for O-Net to capture the positive momentum in the optical networking industry. It enables the Group to secure supply of core material for its advanced optical components and offer competitive next generation products for the fast-emerging telecom and datacom markets.
	Set up a joint venture, O-Net WaveTouch Limited, with a Danish company, OPDI Technologies A/S, to develop "WaveTouch" technology for touchscreen products. Compared with the competing touch technologies in the market, the optical WaveTouch technology provides for greater cost advantages in terms of mass production, particularly when deployed in large touch screens. This technology can be applied to a wide range of electronics products including mobile devices, PDAs, game consoles, multimedia players, cameras, GPS systems, auto control indicators, e-Books, pocket computers just to mention a few electronic consumer products with a user interface. Headquartered in Denmark, OPDI is an international company specialising in the R&D and production of photonic sensors, while O-Net Communications is a leader in optical communication technologies and applications. Thus, both parties can complement each other's professional strengths to optimise their competitive advantages and create greater synergies.
2014	On 2014 Jan 27, the Company subscribed 6,304,116 preferred shares of ArtIC Photonics Inc., representing around 38% of the issued share capital of ArtIC.
	Signed a management contract of a French company, 3SP Technologies S.A.S. 3SP is principally engaged in research, development, manufacturing and supplying of innovative chips and laser products for telecom and datacom market as well as innovative high-end markets such as LiDAR for ADAS market. 3SP is the only manufacturer in the world which possesses the capability to mass produce InP (Indium Phosphide) and GaAs (Gallium Arsenide) laser chips under the same roof. While O-Net is one of the world's top three largest companies of EDFA and Raman amplifiers, the acquisition of 3SP, which is also the main supplier of 980nm pump laser worldwide, can seamlessly support O-Net's EDFA business and solidify the Group's leading position in amplifier market. Moreover, the vertical integration also allows 3SP to proffer their expertise in chip technologies to the Group's another growth driver – transceiver, which will be widely used in datacom and telecom markets. In addition, the diversified laser chip R&D capability of 3SP can help bolster O-Net's fiber laser and LiDAR products development, which are essential for the Group to tap the emerging market of ADAS.
2015	**On 2015 Jan 30, the Company entered into the Sale and Purchase Agreement to purchase Avensys Inc.** Avensys Inc., and its wholly-owned subsidiary, ITF Laboratories Inc. designs, manufactures, distributes, and markets high reliability optical components and modules as well as FBGs (Fiber Bragg Gratings) for the telecom market and high power devices and sub-assemblies for the industrial market. They are pioneers in the development of packaged fiber-based sensors and instrumentation and possesses leading edge intellectual property.
	On 2015 Mar 12, ArtIC re-purchased and cancelled 2,888,900 common shares held by one of its shareholders. After the cancellation, the Group held 45.7% of ownership interest in ArtIC. However, given the Group had over 50% of voting right in ArtIC after the shares cancellation, and it had control over ArtIC according to the revised shareholders agreement, **ArtIC became a subsidiary of the Company from on 2015 Mar 12.**
2017	On 2017 Apr 21, the Company entered into the Sale and Purchase Agreement to purchase 3SP to support O-Net's EDFA and transceiver as well as LiDAR businesses.
2018	**On 2018 Oct 15, invested in and formed a strategic partnership with InLC Technology Inc., a Korea-based technology company** founded in 2009 focused on Liquid Crystal (LC) and Liquid-Crystal-on-Silicon (LCoS) WSS (Wavelength Selective Switches) and DGE (Dynamic Gain Equalizers), and other products in wired telecom equipment manufacturing, in order to capture numerous opportunities and huge potential in the optical networking sector for both the telecommunications and data-communications markets.
	The acquisition of 3SP has not yet been completed as at 2018 Jun 30, yet with expectation to be completed in 2018.

Source: Company data, CGIS Research

According to Canadian news flow, when O-Net tried to acquire ITF at the very start in 2015, it went through Canadian national security agencies' scrutiny and was asked to divest of its interest in ITF Technologies because of its deep relations with the Chinese state. The situation eased only when new Prime Minister Justin Trudeau's government came to power.

According to an announcement by Shenzhen Kaifa Technology Co., Ltd. [000021.CH] on April 12, 2018 [click here], it will sell part of its shares of O-Net at an opportune time. On the one hand, losing its state-owned background and becoming a purely foreign-owned enterprise may bring O-Net business amid China difficulties, and if Kaifa decides to sell the shares in the open market, it will put pressure on O-Net's share price. On the other hand, ending its stated-owned background association may help O-Net's overseas business, expansion, and M&A activity.

Figure 23: O-Net's Corporate Structure



Source: Company Data, CGIS Research

Selected Members of the Management Team

Figure 24: Selected Members of O-Net's Management Team

Executive Director	Mr. Na Qinglin, Chairman of the Board, Chief Executive Officer and executive Director. Mr. Na joined O-Net as chief executive officer in January 2002 and was appointed as co-chairman in the same year. He is responsible for the Company's overall corporate strategy, management team development and daily operations. He worked at Salomon Smith Barney's Hong Kong and New York office from 1995 to 2000. In 2000, he co-founded became the co-managing partner of Mandarin Venture Partners in HK.
Senior Management	Dr. Yu Qinrong, Vice President of Research and Development. Dr. Yu joined O-Net in 2016 and responsible for leading O-Net USA to design and develop next-generation optical networking components and modules for telecommunication and data-communication markets. Prior to joining O-Net, Dr. Yu held various senior technical positions at Intel Corporation, JDS Uniphase Corporation, and other photonics companies. He holds a master's degree in Electrical Engineering from Washington University, and a PhD. degree in Physics (Fiber Optics) from the University of Ottawa.
	Dr. Liu Yi-Cheng, Vice President of Global Operations. Dr. Liu joined O-Net in March 2017 and is responsible overall manufacturing operations, including production, engineering, supply chain management and asset control. He has over 21 years hand-on technical and management experience in optical communications industry. Prior to joining O-Net, he held various senior management roles - the Vice President of Hong Kong Applied Science and Technology Institute, the CEO of Hisense Broadband Multimedia Technologies Limited., the President of PCL Technologies (Suzhou) Co. and the Director of SAE Magnetics (HK) Ltd.
	Dr. Yu Aihua, Chief Scientist. Dr. Yu joined O-Net in 2004 and is responsible for overseeing the development of optical networking modules and subsystem products, including Optical Amplifier. He has more than 35 years' experience in the optical communications industry and optoelectronics areas since graduating from Nanjing Institute of Technology (now Southeast University) in 1982, specializing in electrical engineering. He held the position of Chief Research Officer of Essex University between 1992 and 1997. He has published more than 20 technical papers in the area of optoelectronics in international technical journals.
	Ms. Xie Hong, Vice President of Research and Development. Ms Xie joined O-Net in 2001 and responsible for overseeing the development of passive optical components and devices and leading the R&D team in Hangzhou, China. She has extensive experience in optical communication industry. She graduated with a Bachelor's degree and completed her Master's degree at Zhejiang University. She was a faculty member at Zhejiang University, teaching optical engineering courses.
	Dr. Kan Jiaxi, Chief Scientist. Dr. Kan joined O-Net in 2016 and responsible to develop next-generation high-speed transmission products for telecom and datacom markets. Prior to joining O-Net, Dr. Kan held various senior technical roles at JDS Uniphase Corporation, Emcore Group, Intel Corporation, and other world-leading optical networking and technology companies. He holds a bachelor's degree in Electronic Physics from Shanghai University of Science and Technology, a master's degree in Optical Fiber Telecommunication System from Shanghai Jiao Tong University, and a PhD degree in Optical Fiber Telecommunications from Technical University of Denmark.
	Dr. Gong Zhigang, Vice President of Global Marketing. Dr. Gong joined O-Net in 2013 and he is responsible for advancing the product marketing and product management operations of the communication business. Prior to joining the Company, he held various senior positions with JDSU, and was entrusted with product line management and sales engineering management. He has extensive experience in product development, product management, product marketing and sales engineering management in respect of the optical communication industry.
	Dr. Hua Yimin, Vice President of Global Marketing. Dr. Hua joined O-Net in October 2011 and heads and oversees the R&D department in China. He has more than 24 years of solid experience in telecommunication research and product management. Prior to joining O-Net, he worked in various overseas companies as senior positions for heading the development of optical networking products and applications. He conducted two years of research in north America after he obtained a PhD of Physics from Shanghai JiaoTong University in 1992.
	Mr. Tan Boon Thong, Vice President of Sales. Mr. Tan joined O-Net and has been leading the Company's international sales since 2002 and global sales and marketing since 2004. Prior to joining O-Net, he worked as a project engineering in Shenzhen Kaifa since 1998. Prior to that he worked as technical staff at Thomson Electric (Malaysia) Sdn. Bhd. and Seagate Technologies (Malaysia) Sdn. Bhd after he graduated with a Bachelor's degree in physics from the National University of Malaysia in 1994.
	Mr. Kung Sze Wai, Vice President of Finance, Company Secretary of the Company. Mr. Kung joined O-Net in 2010 and he is an Associate member of the Association of International Accountants and the Hong Kong Institute of Certified Public Accountants. Prior to joining O-Net, He had held various positions including CFO, company secretary, and authorised representative in the Company listed in HKEX. He has over 20 years of experience in finance, accounting, auditing, taxation and company secretarial services.
	Dr. Shen Fei, Vice President of Automation Division. Dr. Shen joined O-Net in 2012 and has been responsible for overseeing new product development, manufacturing and business development of Automation Division. Prior to joining O-Net, he headed the business and product development of vision inspection and intelligent machine learning solutions at the advanced engineering center of Singapore Technologies Engineering Ltd. He has over 15 years of extensive experience in research and development as well as product marketing in automation industry, with his expertise in vision inspection and intelligent machine learning.
	Mr. Fotis Konstantinidis, Chief Executive Officer of ITF. Mr. Konstantinidis joined the Company in 2014 and is responsible for overall management team and daily operations of ITF Technologies. He has over 28 years of solid experience in engineering, marketing, and management with some of the industry's leading technology companies, including tenures at Norden Systems (Northrop Grumman), Intel, TranSwitch, Vitesse, Infineon and Crimson Microsystems. He also held several positions in sales and marketing team for 3SP GROUP between 2007 and 2014. Prior to joining 3SP GROUP, he held a position of senior director of marketing for JDSU from 2005 to 2007. He obtained a master's degree in electrical engineering from University of Bridgeport in 1988.
	Mr. Nigel Holehouse, Vice President of Product Engineering of ITF. Mr. Holehouse joined ITF Technologies in 2004. He has over 28 years of solid experience in the telecommunication, sensing and fiber lasers markets. Prior to joining ITF, he held several positions of co-founder, director of operations and vice-president packaging engineering for Alfalight. He obtained a higher national diploma of applied physics from Sheffield City Polytechnic in 1982.

Source: Company Data, CGIS Research

Appendix: Glossary

EPON (Ethernet passive optical network). Developed by IEEE, an EPON is based on Ethernet standard 802.3 and assumes that data starts and ends in the form of an Ethernet. EPON provides symmetrical data rates in both downstream and upstream directions at 1.25 gigabits per second (Gbps).

GPON (gigabit passive optical network). Ratified by ITU as a master communications standard, a GPON is the most current fibre-optic network allowing a scalable bit rate; the industry has converged on the standard at a downstream rate of 2.5Gbps and upstream rate of 1.25Gbps.

FTTx (fibre to the x). FTTx is a generic term that represents a form of broadband network architecture using optical access to provide any or all parts of the local loop for last-mile telecommunications. Commonly known variants include fibre-to-the-home (FTTH), fibre-to-the-office (FTTO), fibre-to-the-building (FTTB), fibre-to-the-node (FTTN), etc.

MSA (multi-source agreement). The evolution of today's optical transceivers and transponders is driven by MSAs, which have established standards for optical and electrical characteristics, module form factors, and the pin functions of optical transmitters and receivers. In recent years, emerging MSAs have stipulated that optical system designers incorporate various diagnostic functions into transceivers, as well as the traditional monitoring and control functions. These requirements are in addition to the overall drive to continue to minimize the size and cost of optical transceiver design.

SAN (storage area network). A SAN is a high-performance network that enables connectivity between servers and storage devices by removing the storage that was originally connected to each server to form a shared pool of storage devices and allow multiple servers to access data.

MAN (metropolitan area network). A MAN is a network that interconnects users with computer resources in a geographic area. The set-up is similar to a local area network (LAN) but spans an entire city and even surrounding areas. MANs are formed by connecting multiple LANs; the connection of multiple MANs creates a WAN.

WAN (wide area network). A WAN is a type of computer network that covers a relatively large geographical area to transmit data between different LANs, MANs and other localized computer network architecture.

SONET (synchronous optical networking). SONET is a standardized digital communication protocol that is used to transmit a large volume of data over relatively long distances via an optical intermediary. SONET is a product developed by the American National Standards Institute (ANSI); the international equivalent is synchronous digital hierarchy (SDH).

Backbone connectivity. Backbone connectivity for a data centre consists of one transceiver module and one data transmission cable. While the transceiver receives and transmits signals (i.e., data), the cable carries signals. The signals can be electrical or in the form of light, while the cable can be made of copper wire or optical fibre. The connectivity offers a backbone solution for data transmission by physically connecting machines (e.g. server-to-switch, switch-to-switch, switch-to-router, and even server-to-server machines). Depending on the transmission distance, the connectivity can be in-rack, rack-to-rack, row-to-row within a data centre, and for data centre-to-data centre.

Appendix: Glossary

Transmission cables. There are two types of cables commonly used for data transmission in the wireline communication industry: copper wire and FO. The key difference is the transmission rate (or bandwidth) that each offers, and the other difference is stability. Copper-wire cables deliver a bandwidth ranging from 100 megabits per second (Mbps) to up to 1 gigabit per second (Gbps). At the high end, copper-wire cables can offer bandwidth of up to 10Gbps. FO cables, on the other hand, deliver bandwidth ranging from 1Gbps to 100Gbps, and can reach as high as 400Gbps.

TOSA (transmitter optical sub-assembly). A TOSA comprises a laser diode, optical interface, monitor photodiode, metal and/or plastic housing, and electrical interface. Other components may be included, such as filter elements and isolators, depending on the required functionality and application.

ROSA (receiver optical sub-assembly). A ROSA consists of a photodiode (pin diode), optical interface, metal and/or plastic housing, and electrical interface. Depending on the required functionality and application, other components may be included, such as amplifiers.

BOSA (bidirectional optical sub-assembly). A BOSA consists of a TOSA, a ROSA and a wavelength division multiplexing (WDM) filter.

Compound-semiconductors. Compound-semiconductors (compound-semis) refer to a semiconductor consisting of two or more chemical elements on top of a silicon substrate. The compound-semi can form binary (two elements, such as gallium arsenide [GaAs]), ternary (three elements, such as indium gallium arsenide [InGaAs]), and quaternary (four elements, such as aluminium gallium indium phosphide [AlInGaP]) chemical elements. In terms of technological applications, the compound-semi is commonly used in LEDs, microwave communications, optical communications and solar panels.

LED (light emitting diode). An LED is a two-lead, positive-negative (p-n) junction diode semiconductor light source that releases energy in the form of photons, when a suitable voltage is applied to it. The colour of the light emitted is determined by the energy band gap of the semiconductor. LEDs are often small in area/size (less than $1mm^2$) and are used in a wide range of applications, such as light sensors, general lighting and aviation lighting, or are packaged to form images on a jumbo television screen, traffic signals or automotive headlamps.

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