



## Well poised for upcoming boom

### Broadband-Narrowband convergence and emerging markets major catalysts for global private network growth over the next seven years.

Analog and digital communications respectively underpinned 55% and 41% of the global private network market in 2016, with analog expected to contract to 32% and digital expand to 61% by 2020, according to IHS. The switch from analog to digital in recent years has boosted revenues for private network system and terminal providers, while the next seven years will see broadband-narrowband convergence and emerging markets pick up the baton to drive the next wave of growth, with global broadband private network market size anticipated to advance at a CAGR of over 23% to USD2.6bn by 2020, and emerging markets in regions like South America, countries along the Belt and Road and Africa estimated to be worth an aggregate RMB150bn for years to come.

**Hytera, one of few companies in the world that can provide a full suite of cutting-edge Professional Digital Trunking (PDT), digital mobile radio (DMR) and Terrestrial Trunked Radio (TETRA) products and solutions, is poised for solid growth over the next two years** on the back of: (1) its predominant position in the public safety field; (2) rising market shares in the metro transportation and commercial sectors thanks to its leading DMR/TETRA technologies; (3) continuously high input into R&D to shorten the gap with broadband system vendors; and (4) an extensive global sales network of nearly 1,000 dealers around the world. We thereby project Hytera to reach a revenue of RMB5.4bn/7.7bn in 2017/2018, up 58%/41% YoY. Recommend a Buy rating.

**Risk factors:** (1) rivals like Huawei and TD Tech will keep chipping away at Hytera, in our view; (2) expansion in the European private network market may be held back by fierce competition; (3) Sepura may continue to lose money if its integration misses expectations; and (4) Motorola Solutions's ongoing patent actions against Hytera in the US, Germany and Australia expose Hytera to substantial claims risks.

## Hytera Communications (002583)

Rating

Buy

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### Share prices performance



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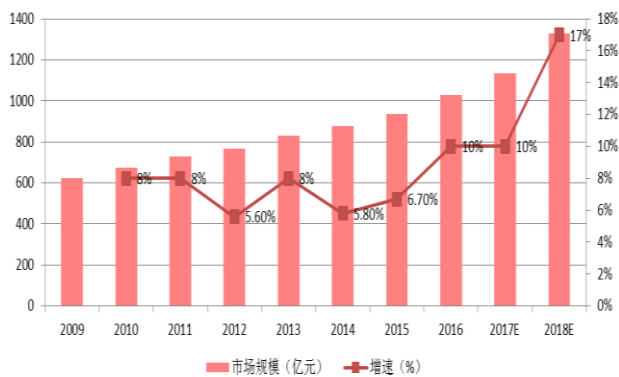
# 1. Private network ushering in the broadband-narrowband convergence era

## 1.1 Analog-to-Digital conversion boosts revenues for private network terminal/system providers

Private networks mainly serve the purpose of transmitting data or voice for certain organizations or groups that attach high importance to information security, with public safety, transportation and commercial sectors respectively accounting for around 45%, 25% and 5% of its adoption. Global/Chinese private network market size was RMB87.8bn/9.82bn in 2014, and is estimated to soar to RMB113.6bn/16.97bn by 2017, with stock investors in this field growing at a CAGR of 7.7% from 2012 to 2017.

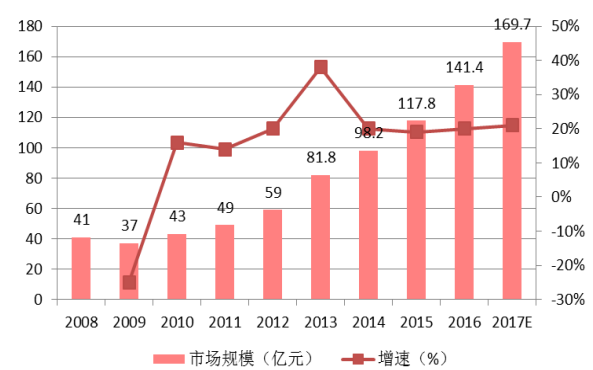
According to IHS, analog and digital communications respectively underpinned 55% and 41% of the global private network market in 2016, with analog expected to contract to 32% and digital expand to 61% by 2020, a CAGR of -17% and 11%, respectively. A switch from analog to digital in the last seven years has boosted revenues for private network system and terminal providers.

**Figure 1: Global private network market size (hundred million yuan)**



Source: ibaogao.com; IHS; Research Dept, CSCI

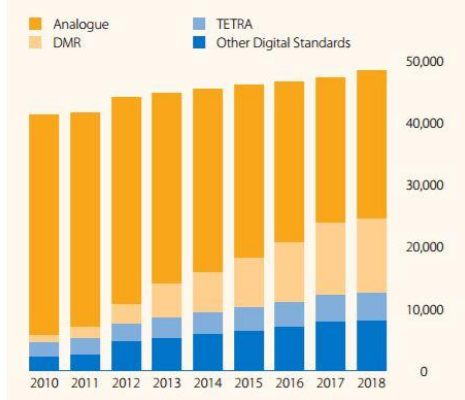
**Figure 2: China private network market size (hundred million yuan)**



Source: qianzhan.com; Research Dept, CSCI

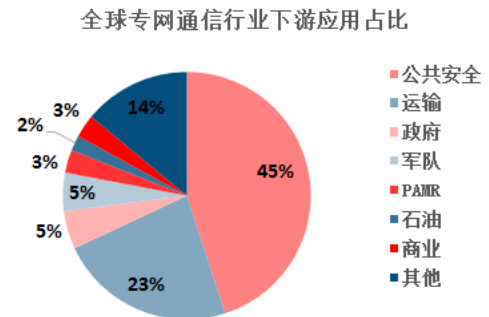
Currently, major digital communications standards applied in private networks include TETRA, P25, DMR and PDT, with TETRA and DMR terminals respectively claiming a market share of 22% and 40%. In 2015, Motorola Solutions led the global DMR terminal/system industry with a 47%/46.5% market share, followed by Hytera, which secured a market share of 65% in the DMR Tier III segment and is projected to maintain a growth rate of more than 30% over the next two years.

Figure 3: IHS projects a CAGR of -17% for analog terminals



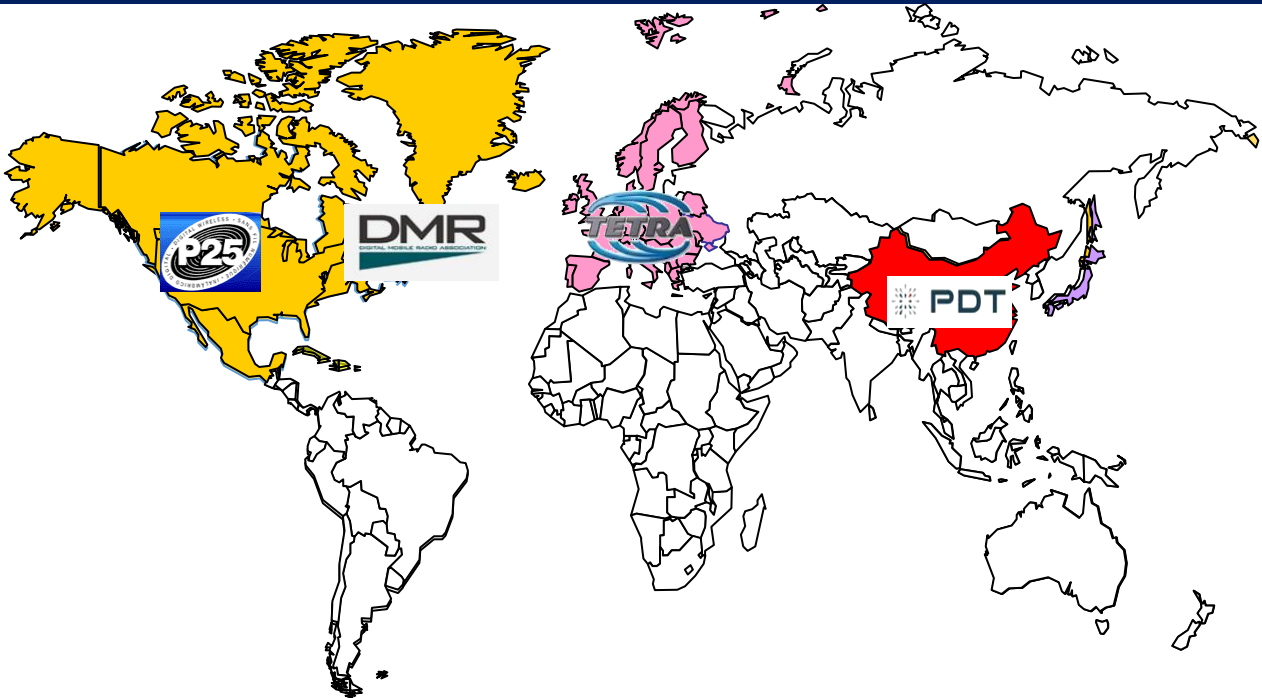
Source: IHS; Sepura's annual report; Research Dept, CSCI

Figure 4: Percentage of industries that adopt private networks



Source: IHS; Research Dept, CSCI

Figure 5: Geographical distribution of widely used private network communications standards

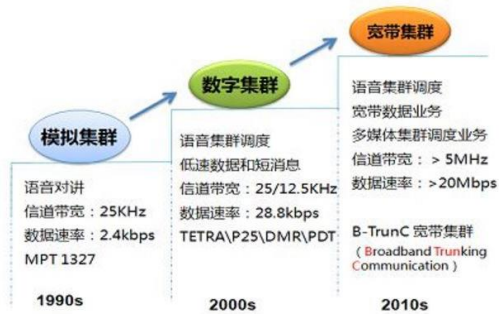


Source: Hytera; Research Dept, CSCI

## 1.2 Emerging markets and broadband-narrowband convergence new growth drivers

While narrowband communications has such advantages as wide coverage, low costs and low latency, it can't accommodate to emerging services such as video analysis, image recognition and big data, which is why broadband-narrowband convergence is gaining in popularity nowadays around the world, such as TETRA + LTE in Europe, P25 + LTE in the US, and PDT + LTE in China.

**Figure 6: Private network communications technology evolution**



Source: CAICT; Research Dept, CSCI

**Figure 7: Broadband/Narrowband private networks play important roles in respective areas**



Source: Hytera; Research Dept, CSCI

**Figure 8: Broadband-Narrowband convergence catering to evolving demands in private networks**



Source: Hytera; Research Dept, CSCI

**Table 1: A comparison of broadband/narrowband private networks**

网络类别	技术制式	优势	劣势
数字窄带专网	TETRA, PDT, P25, IDEN, DMR/dPMR	语音集群技术成熟 通信质量保证 频谱资源占用较低 单基站覆盖范围大，建网及维护成本低 网络抗毁性强	极低的数据传输能力 网络容量有限 不支持多媒体功能，无法传输高清图片和视频
宽带专网	LTE	高速数据业务下载 支持全业务：可同时支持大数据作业、语音集群调度、视频调度、信息传送功能、视频监控业务 支持多种网络系统融合，未来真正实现智慧城市统一多媒体调度	无法支持专业集群语音 干扰大 建网及维护成本高，单基站覆盖范围小 未确定明确的商业运营模式

Source: the Internet; Research Dept, CSCI

Listed company in-depth

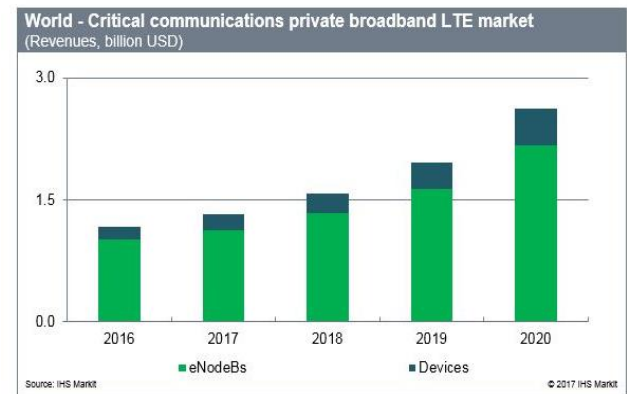
According to IHS, global broadband private network market size was USD1.1bn in 2016, and is estimated to grow at a CAGR of over 23% to USD2.6bn by 2020, benefiting from the broadband private network construction drive in the US, Western Europe, the Middle East, China and Australia.

**Figure 9: Broadband-Narrowband convergence solutions in major global economies**



Source: Ztegota; Research Dept, CSCI

**Figure 10: Global broadband base station/terminal market will grow at a CAGR of more than 23% in the next four years, according to IHS**



Source: IHS; Research Dept, CSCI

In the US, AT&T has been selected by the First Responder Network Authority (FirstNet) to build and manage the first broadband network dedicated to America’s police, firefighters and emergency medical services, covering all 50 states, five US territories and the District of Columbia. Motorola Solutions as a major network terminal and system supplier of this project is expected to make over USD50mn of revenue accordingly in 2018.

Motorola Solutions has also been chosen as an equipment and system integration provider of the Emergency Services Network (ESN) currently under construction and to be rolled out in 2020, benefiting over 200,000 users across police, fire and emergency medical services in the UK.

**Table 2: Some broadband-narrowband convergence policies issued in China in 2017**

发布部门	时间	政策	政策内容
公安部	2017年4月	《公安科技创新“十三五”专项规划》	研发宽窄带融合的警用无线集群通信装备，研制基于自主可控软硬件平台的移动警务安全智能终端
公安部、科技部	2017年6月	《公共安全风险防控与应急技术装备》重点专项实施方案	将宽窄带融合列为2018年国家重点研发计划重点专项，要求研发宽窄融合这一关键技术
国务院	2017年7月	《国家突发事件应急体系建设“十三五”规划》	要求研发基于4G/5G的应急通信手段，加快城市基于1.4G频段的宽带数字集群专网系统建设

Source: the Internet; Research Dept, CSCI

In China, government authorities are stepping up broadband private network construction, with the MPS already designating a “PDT + TD-LTE” model for all future domestic public safety networks. Statistics show that in the first eight months of 2017, at least nine local Chinese PSBs invited tenders for broadband private network projects, with more such demands also coming from airports and ports.

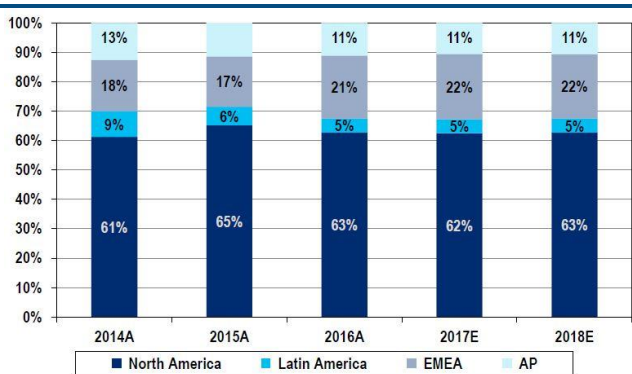


**Table 3: LTE private network projects in China's public safety sector, Jan-Aug 2017**

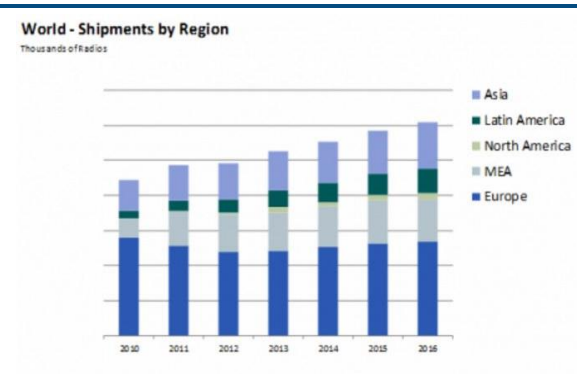
2017 年全国公共安全 LTE 专网招标	中标地点	招标/中标时间	中标金额 (万元)
福建省公安边防总队无线宽带专网 (LTE) 项目	福建	2017.08.28	92.6
昆山市公安局关于无线政务宽带专网一期项目	昆山	2017.08.22	496.125
苏州市公安局 5281 万余元的无线宽带政务专网建设项目	苏州	(招标) 2017.08.18	5218.2897
湖北省无委办今年下半年重点完成 1.8G 用频规划	湖北	2017.07.17	
黄浦分局 4G 基站扩建项目采购项目	上海	2017.07.10	224.5
佛山供电局 TD-LTE 设备加装 (增容) 施工招标	佛山	2017.05.22	
肇庆市公安局肇庆市公安局应急无线视频传输系统	肇庆	2017.04.14	43.3
兰州市公安局交通警察支队网络服务等项目	兰州	2017.04.11	54
呼和浩特市公安局科技处公安宽窄带融合数字集群系统建设	内蒙古	2017.03.06	9615

Source: the Internet; Research Dept, CSCI

North America, Europe and Asia Pacific respectively command 33%, 28% and 25% of the global private network market, with North America contributing to over 60% of Motorola Solutions's total revenue. Emerging markets like South America, countries along the Belt and Road and Africa represent an estimated market potential of RMB150bn, with the Middle East and Africa seeing a Y/Y growth of 100% in TETRA sales in 2016, according to IHS. YTD, Hytera has been awarded orders by the Philippine National Police and Uzbekistan's national security project, and is set to land more such deals in the emerging markets, accelerating its overseas revenue growth.

**Figure 11: North America contributes to over 60% of Motorola Solutions's total revenue, followed by Europe, Asia Pacific and Latin America**


Source: Citi Research; Research Dept, CSCI

**Figure 12: Europe, North America and Asia responsible for 85% of global TETRA sales**


Source: IMS Research; Research Dept, CSCI

**Table 4: Hytera has won some big orders in the emerging markets in recent years**

时间	项目	金额 (人民币)
2012 年 3 月	秘鲁第二代 Tetra 集群通信系统、视频监视系统和 105 警务系统的系统设备部分	6919 万元
2014 年 2 月	智利圣地亚哥地铁 6 号线及 3 号线项目通信系统供应及维护	7800 万元
2014 年 7 月	委内瑞拉内务部、司法部 TETRA 扩容项目	4289 万元
2015 年 7 月	亚的斯亚贝巴警察局应急指挥调度系统项目	4481 万元
2016 年 9 月	多米尼加共和国首都及其周边城市 Tetra 网络建设及扩容项目	4471.02 万元
2017 年 4 月	乌兹别克斯坦某特定政府部门《合作协议》，合作将分三阶段实施	1.97 亿元
2017 年 6 月	菲律宾国家警察专业无线通信设备采购项目	8382.63 万元
2017 年 7 月	安哥拉公共安全一体化平台项目集群系统采购合同	2.09 亿元

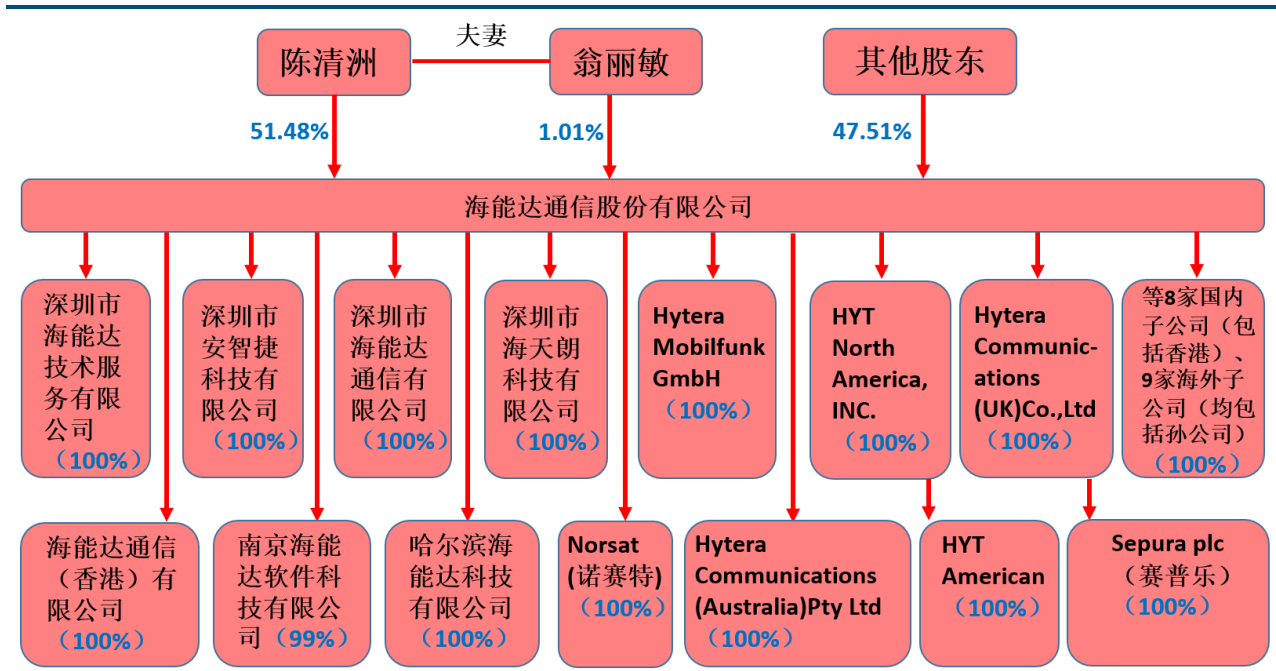
Source: company announcements; Research Dept, CSCI

## 2. Hytera: Solid growth foreseeable over the next two years

### 2.1 A leading provider of PDT, DMR and TETRA

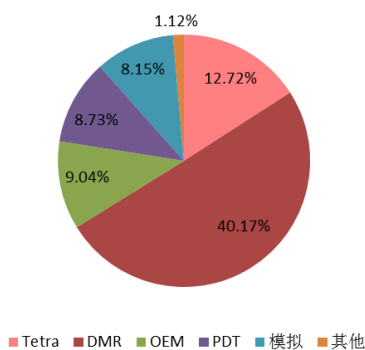
Founded in 1993 and headquartered in Shenzhen, Hytera Communications Corporation Limited (“Hytera”) boasts to be one of just a few companies in the world able to provide a full suite of cutting-edge PDT, DMR and TETRA products and solutions and the world’s No.1 DMR Tier III Trunking provider. Following the acquisition of Sepura, a global leader in TETRA digital radio products, Hytera has around 8,000 employees serving customers in 120 countries and regions in fields such as government organizations, public safety institutions, utilities, transportation and oil & gas. Around 40% of Hytera's staff are engaged in R&D.

Figure 13: Hytera’s shareholding structure



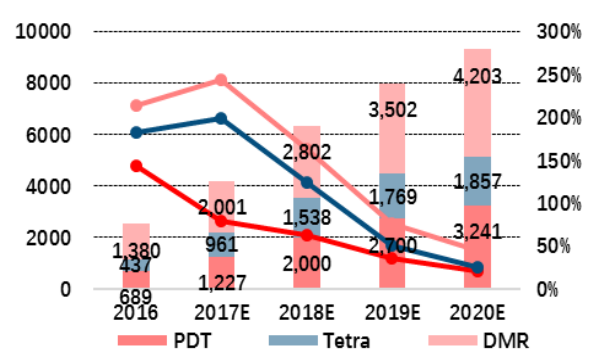
Source: company announcement; Research Dept, CSCI

Figure 14: Product line revenue as a percentage of Hytera’s 2016 revenue



Source: Wind; Research Dept, CSCI

Figure 15: Revenue forecast for Hytera’s major product lines

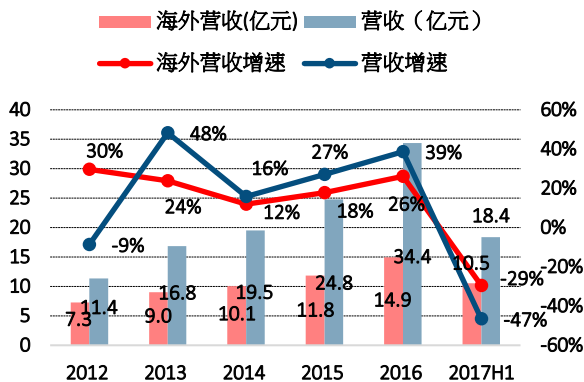


Source: Research Dept, CSCI



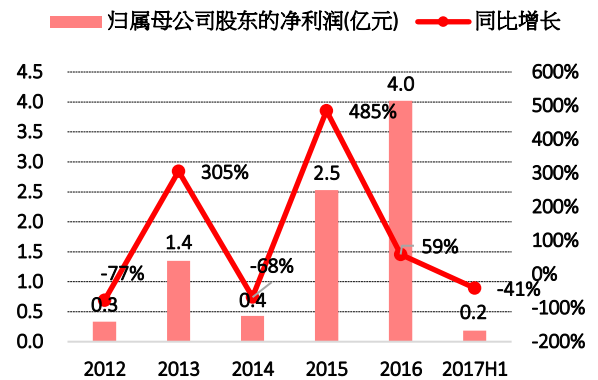
In 1H17, digital private network products brought in a sales revenue of RMB1.346bn for Hytera, up 41.06% YoY, in line with expectations; overseas revenue was RMB1.054bn, up 84.97% YoY, mainly driven by a string of big orders from abroad. The Sepura acquisition has incurred an M&A consulting fee of more than RMB50mn for the first three quarters of 2017 and a loss of RMB30mn for 3Q17. Deducting the Sepura impact, Hytera's 3Q17 profit is estimated to fall within the range of RMB130mn-180mn. Sepura is expected to reach break-even by the end of this year, and turn a profit next year.

**Figure 16: Hytera's total operating revenue and overseas revenue, 2012-1H17**



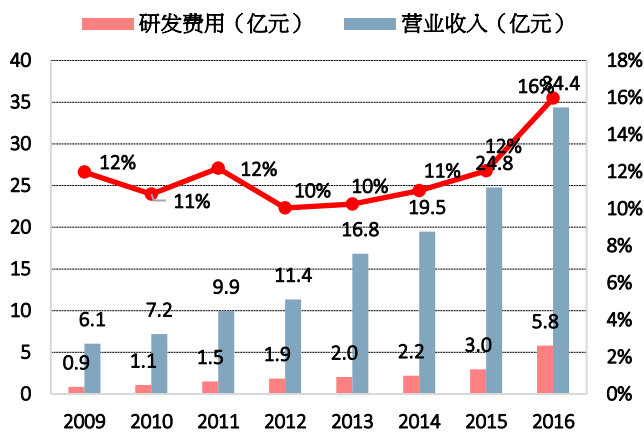
Source: Wind; Research Dept, CSCI

**Figure 17: Hytera's net profit attributable to the parent company, 2012-1H17**



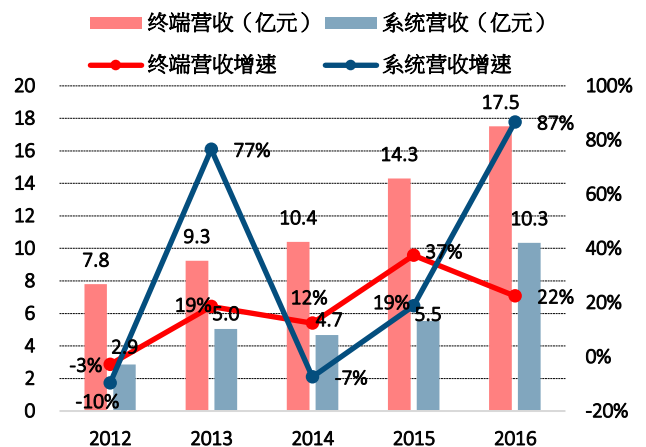
Source: Wind; Research Dept, CSCI

**Figure 18: Hytera injects over 10% of its revenue into R&D**



Source: Wind; Research Dept, CSCI

**Figure 19: Hytera's system/terminal sales revenue 2012-2016**



Source: Wind; Research Dept, CSCI

## 2.2 Abundant orders in hand

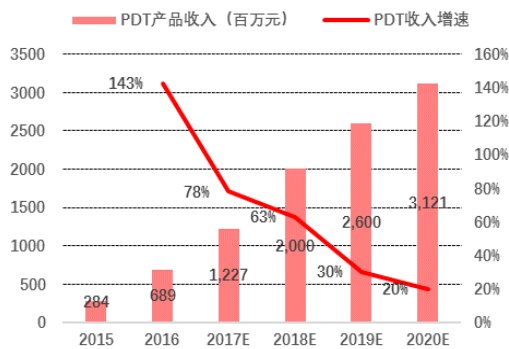
Hytera currently dominates the domestic PDT market with a market share topping 80%, which continues to expand as local PSBs speed up the process of replacing analog private networks with PDT ones. In 2016, Hytera completed building 14 provincial PDT communications platforms, logging a sales revenue of RMB690mn, up 142% YoY. Swelling PDT demands in segments such as judiciary and prisons on top of public safety have seen Hytera's successful PDT bids in the off-peak first eight months of 2017 more than double in both volume and value, with the momentum expected to carry forward throughout 2017, reaching a revenue of more than RMB1.2bn.

**Table 5: Hytera's successful PDT bids in the first eight months of 2017**

海能达中标 PDT 项目	招标地点	中标时间	中标金额 (万元)
深圳市公安局 PDT	深圳	2017.01.18	10186.00
厦门市公安局无线通信保障系统建设项目	福建	2017.02.15	6500.00
宁德市公安局福建省应急通信工程 350 兆数字集群系统 (PDT) 宁德区域补点建设	福建宁德	2017.06.06	2800.00
三亚市公安局 PDT 建设项目	海南三亚	2017.05.25	1390.00
三亚市公安局 PDT 数字集群对讲系统项目	海南三亚	2017.06.15	1389.59
福建省公安厅厦门会晤安保硬件装备类项目	福建	2017.06.27	716.28
常熟市公安局关于 350 兆数字基站及终端项目	江苏常熟	2017.06.28	702.53
中国人民武装警察部队吉林省边防总队数字集群系统	吉林	2017.01.20	665.95
中国人民武装警察部队吉林省边防总队数字集群系统三期采购项目	吉林	2017.08.23	655.50
固原市公安局警用设备政府采购项目	宁夏固原	2017.01.09	618.60
鄂尔多斯市公安局警用数字集群改造项目中标	鄂尔多斯	2017.07.28	568.00
湖南省公安厅 350 兆无线数字通信系统建设项目	湖南	2017.06.13	529.90
四平市公安局 350 兆集群通信系统升级改造项	吉林四平	2017.05.16	440.00
盐城市公安局 350 兆 PDT 数字集群系统建设项目	江苏盐城	2017.04.11	395.35
安全警用数字集群 (PDT) 系统建设	广西	2017.03.17	386.10
津市嘉山实业有限公司津市市应急指挥通信系统-单一来源采购	湖南	2017.05.16	375.00
延边州公安局 350 兆通信集群系统扩容采购项目	吉林延边	2017.08.11	373.00
南昌市公安局交通管理局 PDT 数字集群单警手持电台采购项目	江西南昌	2017.04.21	354.30
平顶山市公安局无线通信指挥网设备升级项目	河南平顶山	2017.07.20	350.00
宁波市公安局宁波市公安局 350 兆无线数字集群系统 (PDT) 对讲机采购	浙江宁波	2017.01.16	327.60
延边州公安局 350 兆通信集群系统扩容采购项目	吉林延边	2017.07.12	293.37
惠州市公安局 350 兆数字集群无线通信 (PDT) 系统建设 (数字基站) 采购项目	广东惠州	2017.02.09	235.30
惠州市公安局 350 兆数字集群无线通信 (PDT) 系统建设 (数字基站) 采购项目	惠州	2017.02.09	235.00
托里县公安局 2016 年信息化建设项	新疆	2017.02.22	230.00
延安市公安局现场应急通信指挥处置系统及设备采购	陕西延安	2017.06.13	229.45
福清市公安局 350 兆数字集群基站、视频会议室等设备采购项目	福建福清	2017.08.17	225.00
中国人民武装警察部队吉林省边防总队数字集群系统二期建设项目	吉林	2017.08.11	209.00
鄂尔多斯市公安局采购警用数字对讲机终端项目	鄂尔多斯	2017.08.15	199.00
长沙县公安局警用 PDT 数字基站采购项目	湖南	2017.03.16	185.83
湖南省长沙市公安消防支队购置基层通信装备项目	湖南长沙	2017.03.02	183.15
数字对讲机购置	广东	2017.01.16	163.51
350 兆警用数字集群系统采购	广西	2017.06.22	160.00
高安市公安局 350 兆无线数字集群 (PDT) 系统建设项目	江西高安	2017.04.28	158.66
拟采用单一来源采购方式采购 350 兆 PDT 数字基站采购项目	四川雅安	2017.03.27	155.80
渭南市公安局临渭分局 PDT 基站采购项目	陕西渭南	2017.08.03	147.00
宁波市公安局 350 兆 (PDT) 无线数字集群终端设备采购续	浙江宁波	2017.01.16	146.80
闽清县公安局移动警务终端和 350M 数字集群系统采购项目	福建	2017.06.19	144.81
公安消防支队消防设备采购 (第四包) (二次)	安徽安庆	2017.02.14	129.66
海关 2016 年指挥调度无线通讯设备数字集群手持台采购合同	广东深圳	2017.02.11	120.00
350 兆警用数字集群系统设备采购	广西壮族自治区	2017.08.15	110.00
兴化市公安局 350M 数字集群系统项目	江苏兴化	2017.07.26	101.67

Source: the Internet; Research Dept, CSCI

**Figure 20: Hytera's PDT sales revenue growth forecast**



Source: Research Dept, CSCJ

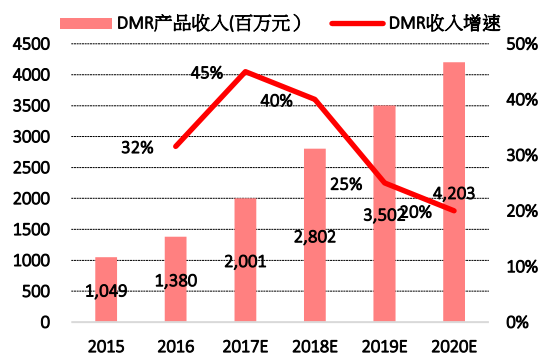
**Figure 21: Hytera's split-screen scheduling system**



Source: Hytera's website; Research Dept, CSCJ

In March, Motorola Solutions filed a lawsuit alleging that Hytera's DMR terminals and systems are made leveraging Motorola Solutions's patents and trade secrets that were taken by three engineers who left the company to join Hytera. This reflects the intensifying competition between the two global DMR giants. In 2015, Motorola Solutions led the global DMR terminal/system industry with a 47%/46.5% market share, followed by Hytera, which secured a market share of 65% in the DMR Tier III segment and is projected to maintain a growth rate of more than 30% over the next two years partly on the back of turning dealers of the likes of Motorola Solutions and Airbus into its own. 2016 saw Hytera's DMR sales revenue climb 32% YoY to RMB1.38bn, which is expected to reach RMB2bn in 2017, up 45% YoY, with 1H17 DMR sales revenue touching RMB770mn, up 60% YoY, mainly thanks to a string of big orders from emerging markets.

**Figure 22: Hytera's DMR sales revenue growth forecast**



Source: Research Dept, CSCJ

**Figure 23: Hytera's five major DMR products**



Source: Hytera's website; Research Dept, CSCJ

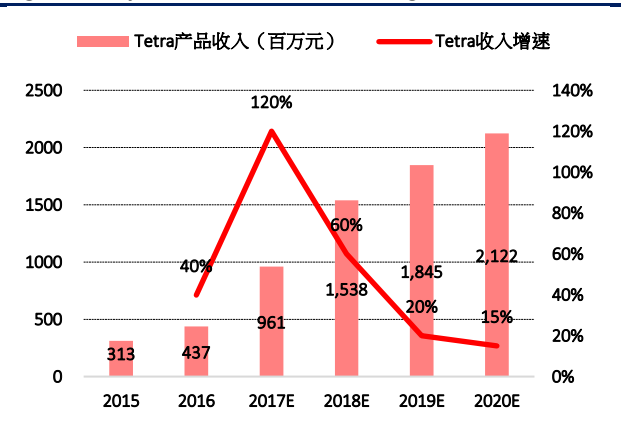
Hytera has made strong inroads into the global TETRA arena through its 2012 takeover of Rohde & Schwarz Professional Mobile Radio GmbH, a subsidiary of Rohde & Schwarz specializing in PMR systems and 2017 acquisition of Sepura. It has landed a series of blockbuster international orders in recent years, including a EUR130mn public safety network project in the Netherlands in 2015, and an 800M trunking communications platform for Taiwan Taoyuan International Airport, a TETRA network project for FIFA, TETRA equipment supply for the Peruvian National Police, a public safety platform procurement project in Angola and a city safety project of the Cajamarca Emergency Command Center in Peru in 2016. TETRA brought in a revenue of RMB437mn in 2016, up 40% YoY, and is expected to generate RMB900mn in 2017 and over RMB1.5bn in 2018 following the final acceptance of the Netherlands public safety project in Jan. 2018.

**Table 6: Some TETRA projects won by Hytera from 2015 to 2017**

海能达 Tetra 中标信息	中标地点	中标时间	中标金额 (万元)
秘鲁卡哈马卡应急指挥中心助力城市安全建设	秘鲁	2017.08.02	
赛普乐子公司 Teltronic 中标马尼拉轻轨 7 号线 TETRA 通信解决方案	马尼拉	2017.07.25	
安哥拉公共安全一体化平台项目采购合同	安哥拉	2017.07.11	21000
赛普乐子公司 Teltronic 中标西班牙马德里地铁项目	西班牙马德里	2017.06.30	
为沙特阿拉伯王国海水淡化公司提供 TETRA 解决方案	沙特阿拉伯	2017.06.14	
秘鲁警察最新智能巡逻车辆装备海能达 TETRA 终端建设项目	秘鲁	2017.03.29	
2017 年 FIFA 联合会杯及 2018 年 FIFA 世界杯 Tetra 网络项目	俄罗斯	2017.02.23	4590
台北桃园国际机场 800M 集群通信平台并与其它相关通信系统建设	台北	2017.01.18	
多米尼加首都及其他城市进行 TETRA 网络建设及扩容	多米尼加	2016.09.12	4471
巴西首都公共安全 TETRA 数字系统项目	巴西	2016.01.20	
荷兰安全与司法部的全国专网应急项目	荷兰	2015.03.08	超过 61600

Source: the Internet; Research Dept, CSCI

**Figure 24: Hytera's TETRA sales revenue growth forecast**



Source: Research Dept, CSCI

**Figure 25: Hytera's new-gen TETRA products**



Source: Hytera's website; Research Dept, CSCI

### 3. Hytera expands its global foothold through M&A

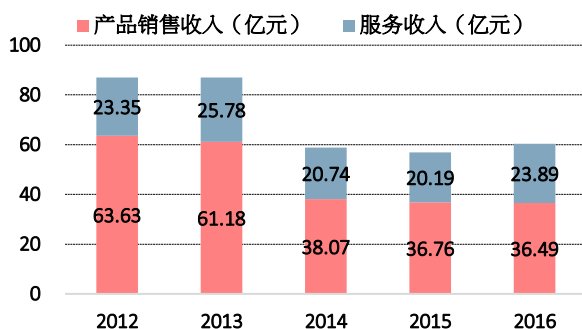
A M&A spree in recent years has seen Motorola Solutions beef up its range of PTT and two-way radio hardware/software products with WAVE PTT apps and related management server software provided by Twisted Pair, build up its communications and collaboration software suite by acquiring PTT specialist Kodiak Networks, and snap up Airwave, the largest private operator of a public safety network in the world, delivering mission-critical voice and data communications to more than 300 emergency and public service agencies in the UK.

Table 7: Motorola Solutions's M&A spree 2015-2017

并购标的	标的主营业务	公告时间	收购目的
Airbus DS Communications	下一代 911 指挥调度 VESTA 平台	2017.07.28	加强摩托罗拉 911 安全产品解决方案，特别是随着行业向全 IP 下一代 911 平台转型。
Kodiak Networks	向移动运营商提供基于云的解决方案 PTT 和管理平台，用于减少 LTE 网络时延、增强安全性	2017.05.01	为摩托罗拉解决方案现有的宽带通信 WAVE PTT 产品组合增加了一种互补的 PTT 移动解决方案。WAVE 连接不同的网络，通过无线或有线宽带实现智能手机、窄带终端和计算机之间的通信。同时反映了摩托罗拉解决方案构建其通信和协作软件组合的战略。
Gridstone	公共安全机构，政府和企业相关移动解决方案	2016.11.09	收购加强了摩托罗拉解决方案在亚太地区提供通信和 workflow 解决方案和服务的经验，增加了为该地区开发高度定制的移动应用的专业知识。
Spillman Technologies	综合执法和公共安全软件解决方案，用于计算机辅助调度 (CAD) 和记录管理系统 (RMS)；综合的软件解决方案和下一代监狱管理系统，消防，移动数据，数据共享，现场报告，地图和地理信息系统的工具	2016.09.26	继续扩大摩托罗拉解决方案的智能公共安全产品组合，并为各种规模的机构提供全套解决方案。通过完全集成的指挥中心提供关键任务情报，将公共安全客户与以前的实时数据和见解相结合。
Airwave	全球最大的 Tetra 专网运营商	2015.12.03	目前英国国家公共安全专网全部运营在 Airwave Tetra 网络上，并购提升了摩托罗拉在英国公共安全专网市占率，并扩大了其管理和支持服务业务，积极抢占英国市场
Public Engines	私有云解决方案；为政府，执法机构和其他组织提供犯罪分析，预防性警务和公民参与能力分析	2015.04.01	收购将助于摩托罗拉解决方案为客户提供情报导向的策略，以制止犯罪并改善现状。智能公共安全解决方案可帮助客户利用这些数据智能获取关键信息，将帮助执法机构做出预测和判断
Emergency CallWorks	服务于公共安全的下一代 9-1-1 (NG9-1-1) 呼叫软件	2015.02.12	收购帮助摩托罗拉的客户在指挥中心演进技术上的新选择，和下一代 NG9-1-1 软件服务能力
Twisted Pair Solutions	基于宽带的一键式解决方案：可在任何位置的任何网络上的任何设备上上进行安全，实时的协作	2015.01.02	收购使得摩托罗拉能更好的为客户和合作伙伴提供领先一流的一键式解决方案，并加速多种即插即用技术的扩展。

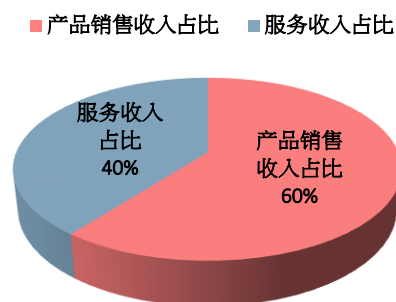
Source: the Internet; Research Dept, CSCJ

Figure 26: Motorola Solutions's product/service revenue in recent years



Source: Wind; Research Dept, CSCJ

Figure 27: Services responsible for 40% of Motorola Solutions's 2016 revenue



Source: Motorola Solutions's annual report; Research Dept, CSCJ

Hytera, of course, won't sit by and let its competitor take over. It completed the acquisition of Sepura for RMB649mn on May 25 and gobbled up Norsat for RMB427mn on Jul. 21, following its 2012 buyout of Rohde & Schwarz Professional Mobile Radio GmbH, and its purchase of Hebi Tianhai Electronic Information System Co. Ltd. in 2013 to move into the military digital trunking market.



**Table 8: Hytera's M&A activities since listing**

收购标的	标的公司涉足领域	收购时间	收购金额	收购目的
德国 Rohde & Schwarz Professional Mobile Radio GmbH 公司	TETRA 专网通信	2012.02.30	200 万欧元	打开欧洲安防及公用事业通信市场，获取 TETRA 系统技术，提升 TETRA 竞争力。
德国 Fjord-e-design GmbH 公司	TETRA 专网通信	2012.11.20	200 万欧元	继续打开欧洲安防及公用事业通信市场，增强 TETRA 在欧洲的影响力及全球竞争力。
鹤壁天海电子信息系统有限公司	军工、通信车改装	2013.05.08	1 元	切入军用通信车改装业务，开拓公共安全领域通信车市场；获取完整的军工企业生产经营资质，拓展军工专网市场。
南京宙达通信技术有限公司	军工、数字集群通信	2014.04.03	1000 万元	加快新元电子军用数字集群系统的开发进度，开拓军用数字集群市场，丰富新元电子的业务领域，进而增强新元电子的市场竞争力和盈利能力。
深圳市运联通通信服务有限公司	数字专网通信	2014.12.03	1079 万元	切入城市政务应急网市场，切入未来市场前景广阔的智慧城市和平安城市业务；进一步开拓海能达数字专业通信设备的应用，扩大公司业务规模。
Sepura (赛普乐) 公司	TETRA 专网通信、公共安全	2017.05.24	7429 万英镑 (约 64929 万元)	快速获得赛普乐的在欧美发达国家、拉美的客户资源和销售渠道,加速公司在欧洲高端公共安全市场的拓展，获得 Tetra 标准的相关核心技术和专利,强化 TATRA 终端实力。
加拿大 Norsat (诺赛特)公司	无线通信、卫星通信	2017.07.20	6200 万美元 (约 42718 万元)	行业内产业链上下游的整合，有效降低公司的生产和采购成本，使公司快速切入卫星通信领域，将卫星通信技术与现有专网产品相结合。
出售标的		出售时间	出售金额	
鹤壁市新元电子有限公司		2017.03.27	1065 万元	

Source: the Internet; Research Dept, CSCI

**Figure 28: Sepura's revenue by customer region**

Revenue by customer location

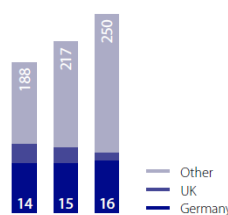
- 34% Northern Europe
- 32% SEMEA
- 18% Latin America
- 7% APAC
- 6% UK&I
- 3% North America



Source: Sepura's annual report; Research Dept, CSCI

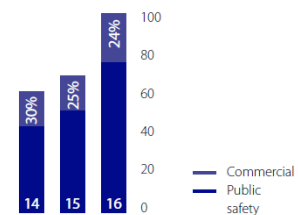
**Figure 29: Sepura's annual shipments**

Annual shipments (000's of radios)



Annual shipments increased by 15%, including 68,000 radios to Germany and 63,000 radios for a new national network in the Middle East.

Commercial vs public safety revenues



Although revenues from commercial users increased by 40%, they represented 24% of total revenues due to continued strong demand from public safety users.

Source: Sepura's annual report; Research Dept, CSCI

Sepura is a leading TETRA terminal provider with a global market share of 43% and claims the largest TETRA market share in both Germany and the UK, with 72% of its 2016 revenue coming from Europe and the Middle East and selling 1.6mn terminal units to 100 countries as of 2016. To avoid competition with Hytera, Sepura announced in 2016 its exit from the DMR market, focusing on TETRA, the transportation sector and the North America market. Sepura swung to a loss in 2016 due to its raising of £65mn to pay down debts incurred by the acquisition of Teltronic.



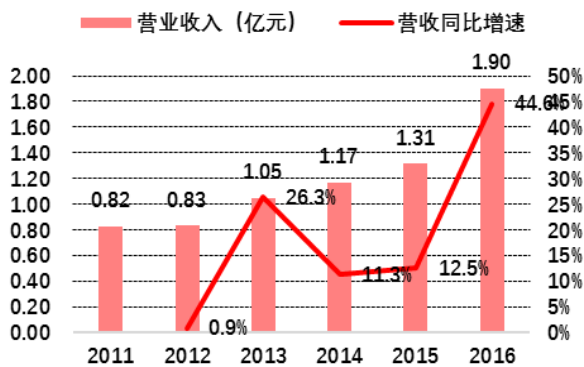
Figure 30: Sepura's subsidiaries and their offerings



Source: Sepura's website; Research Dept, CSCI

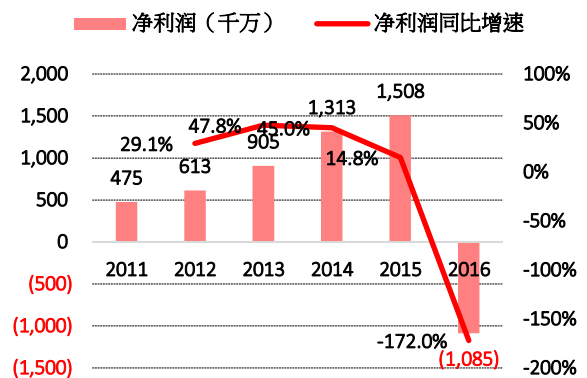
Hytera's acquisition of Sepura adds approximately 700 professionals and staff to Hytera, along with research facilities and offices in Cambridge, Zaragoza, and Helsinki. Sepura has itself grown rapidly, both organically and through the acquisition of Zaragoza, Spain-based PMR communications solutions provider Teltronic S.A.U. in 2015. Sepura also owns Helsinki, Finland-based applications developer Portalify. Sepura and its subsidiaries can provide Hytera greater market shares in the UK, Europe, North America and Latin America (revenues in these two regions respectively soaring 227% and 604% after the acquisition of Teltronic in 2016), as well as strong channel partnerships through a worldwide dealer network. With its growing momentum in the PMR space and some very high-profile opportunities, Hytera is executing a clear strategy as it expands globally.

Figure 31: Sepura's operating revenue 2011-2016 (euros)



Source: Wind; Research Dept, CSCI

Figure 32: Sepura's net profit prior to being acquired by Hytera (euros)



Source: Wind; Research Dept, CSCI

Founded in 1977, Norsat is a leading provider of innovative communications solutions that enable the transmission of data, audio and video for remote and challenging applications. Norsat's products and services include customizable microwave components, portable satellite terminals, and maritime solutions. Through its Sinclair Division, Norsat is a leading provider of antenna and RF conditioning products, systems and coverage solutions for public safety, defense and private wireless networks.

Norsat's products and services are used extensively by telecom services providers, emergency services and homeland security agencies, military organizations, health care providers, news organizations and Fortune 1000 companies. Its customers include NATO, the United States Department of Defense, Marine Corps, Army, Navy and Air Force; FOX News, CBS News; Boeing, Reuters, Motorola, TESSCO, General Dynamics, among others.

In FY16, Norsat posted USD38.04mn in operating revenue and USD3.28mn in net profit.

Figure 33: Norsat's major customers

国防	广播	公司
美国国防部	美联社	enterprise-rent-a-car
美国海军陆战队	ITN	波音公司
美国军队	有线宽频 (香港)	加利福尼亚大学
爱尔兰国防部代表	CBS新闻	路透社
斯堪的纳维亚防御部队	福克斯新闻	泛美卫星
	英国天空广播公司 (英国)	

Source: Norsat's website; Research Dept, CSCI

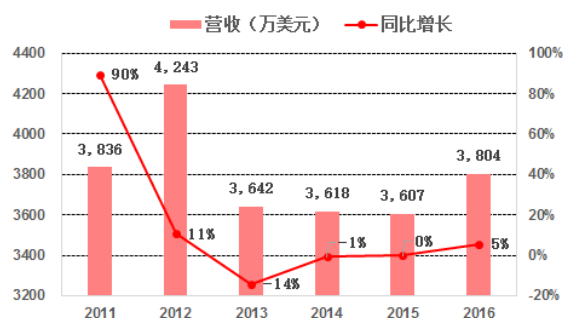
Figure 34: Norsat's major offerings

<p><b>Satellite Solutions</b></p>  <ul style="list-style-type: none"> <li>• 自动获取</li> <li>• 辅助学习</li> <li>• 海事</li> <li>• 车载</li> </ul>	<p><b>Microwave Products</b></p>  <ul style="list-style-type: none"> <li>• 软件控制方式</li> <li>• 配饰</li> <li>• 卫星定位器的应用程序</li> </ul>	<p><b>SATCOM Baseband Kits</b></p>  <ul style="list-style-type: none"> <li>• 高频头</li> <li>• BUC</li> <li>• 低噪声放大器</li> <li>• BDC</li> <li>• 微波元件</li> </ul>	<p><b>SATCOM Baseband Kits</b></p>  <ul style="list-style-type: none"> <li>• 紧凑的飞包</li> <li>• 红/黑网关</li> <li>• 急救通讯工具箱</li> </ul>
<p><b>Maritime Solutions</b></p>  <ul style="list-style-type: none"> <li>• COM系列</li> <li>• 全球VSAT</li> </ul>	<p><b>Remote Network Solutions</b></p>  <ul style="list-style-type: none"> <li>• 电视系列</li> <li>• 内容生产</li> <li>• 应急服务</li> <li>• 石油和天然气</li> </ul>	<p><b>RF Antenna Products</b></p>  <ul style="list-style-type: none"> <li>• 防守</li> <li>• 自然资源</li> <li>• 企业</li> </ul>	<p><b>RF Antenna Products</b></p>  <ul style="list-style-type: none"> <li>• 辛克莱技术</li> </ul>

Source: Norsat's website; Research Dept, CSCI

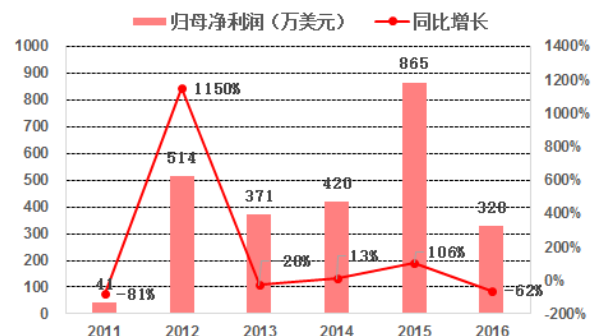
The acquisition of Norsat serves to catapult Hytera into the satellite communications field, helping Hytera provide more comprehensive solutions to customers and significantly expand its global sales channels particularly in North America.

Figure 35: Norsat's operating revenue prior to being acquired by Hytera



Source: Wind; Research Dept, CSCI

Figure 36: Norsat's net profit attributable to the parent company prior to being acquired by Hytera



Source: Wind; Research Dept, CSCI

Figure 37: A combination of wireless and private network communications



Source: Norsat's website; Research Dept, CSCI

## 4. Riding the broadband-narrowband convergence trend

### 4.1 Hytera's new launches

Hytera took advantage of this year's Critical Communications World (CCW) to announce a series of new products aimed at the reality of continued narrowband voice services for the foreseeable future and pending rollouts of mission-critical broadband networks around the world.

The Hytera PDC760/PTC760 Multi-mode Advanced Radio is a revolutionary terminal in the private radio network industry, the first of its kind to offer a truly convergent platform for critical voice and broadband data services. This innovative development is a significant milestone, supporting multimode communications in different scenarios, be it daily business operations or emergency response, broadband or narrowband, public or private network. It has been included in the public safety platform procurement project in Angola with a contract value of about RMB210mn.

Figure 38: Major characteristics of Hytera's broadband private network products

<p><b>宽窄融合 高效智能</b></p> <p>通过多种信息数据与智能应用的融合，以快速处置、可视调度、数据采集、智慧警务等多样化的技术手段，构筑了一张“专用网络”，从而使各行各业的工作更加高效智能，帮助客户实现一切可能。</p>	<p><b>掌控全局 智慧抉择</b></p> <p>多媒体指挥调度平台通过接入的视频、语音等多种数据信息，在平台上可以全面了解现场状况与信息数据。从单一语音通信向视频、数据、多媒体多业务融合，实现多种通信模式的协同工作。</p>	<p><b>融合同一 平滑演进</b></p> <p>海能达PLTE宽带系统，实现关键语音与宽带数据完美融合；实现语音+数据+图像的融合，为用户提供统一的业务体验。大带宽和吞吐量可承载各行业的大量数据应用，现实多样的视频应用。</p>
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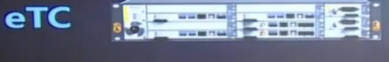




Source: Hytera's product launch; Research Dept, CSCI

Figure 39: The Hytera PDC760/PTC760 is able to connect broadband/narrowband/public network/private network systems, supporting 2G/3G/LTE/TETRA/DMR WiFi/bluetooth/NFC

Source: Hytera's website; Research Dept, CSCI

The P-LTE system incorporates eNodeB, eTC, iBS, Rapid System and iMesh, enabling seamless LMR-to-LTE migration.

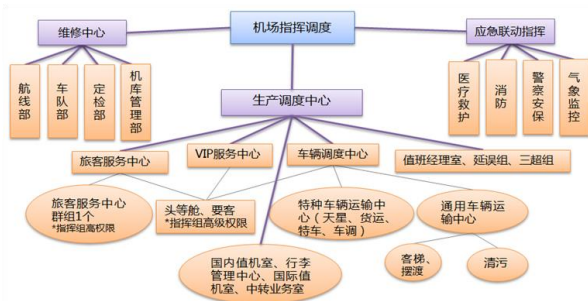
**Figure 40: Hytera's P-LTE series**

 <p>eTC</p>	<p>Sharing the Same Cabinet High Integrated, Board Redundancy Compatible to 3GPP &amp; B-TrunC std. NB/P-LTE/Internet Access</p>
 <p>eNodeB</p>	<p>Common Platform, Mutil-Mode Support NB&amp;BB Smooth Evolution Board level backup, High Reliability 2T4R 2*40w, IP65</p>
 <p>iBS</p>	<p>High Power, High Integrated Single BS, All in One System IP65, High Reliability Flexible Networking</p>
 <p>iBS Rapid System</p>	<p>High Power, Very Compact Single BS, All in One System IP65, High Protection Easy Deployment, 5min Quick Start</p>
 <p>iMesh</p>	<p>Wireless Backhaul, Coverage Extension Mesh Network, No Center Node IP65, High Protection Easy Deployment, 5min Quick Start</p>

Source: Hytera's product launch; Research Dept, CSCI

Hytera also unveiled in May a new-gen multi-media command and dispatch system to realize converged access, concentrated management and unified dispatch of various wired/wireless voice/video systems and terminals.

**Figure 41: The broadband & narrowband multi-media dispatch solution for airports**



Source: ZTE; Research Dept, CSCI

**Figure 42: The broadband & narrowband multi-media dispatch solution for public safety**



Source: the Internet; Research Dept, CSCI

Figure 43: The three-layer architecture of Hytera’s multi-media command and dispatch system



Source: Hytera's product launch; Research Dept, CSCI

## 4.2 Carrying forward growth momentum

In our view, Hytera is poised for solid growth over the next two years on the back of: (1) its predominant position in the public safety field; (2) rising market shares in the metro transportation and commercial sectors thanks to its leading DMR/TETRA technologies; (3) continuously high input into R&D to shorten the gap with broadband system vendors; and (4) an extensive global sales channel network of nearly 1,000 dealers around the world.

## Risk factors

- (1) Rivals like Huawei and TD Tech will keep chipping away at Hytera, in our view;
- (2) Expansion in the European private network market may be held back by fierce competition;
- (3) Sepura may continue to lose money if its integration misses expectations; and
- (4) Motorola Solutions's ongoing patent actions against Hytera in the US, Germany and Australia expose Hytera to substantial claims risks.



## Research

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## Company Rating Definition

The Benchmark: Hong Kong Hang Seng Index; Time Horizon: 12 months

<b>Buy</b>	12-month absolute total return: $\geq 10\%$
<b>Hold</b>	12-month absolute total return: $> -10\%$ but $< 10\%$
<b>Sell</b>	12-month absolute total return: $\leq -10\%$

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