TowerCo Business Model
Diversification
Can TowerCos take advantage of the growing opportunities?

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Context
Carrier neutral TowerCos have grown due to operators’ need to achieve operational efficiency and/or optimize their balance sheets. Capital has flowed into towers on the assumption that there is a minimum secured return due to long term lease contracts. This type of capital prefers the asset-lease centric business and therefore most public TowerCos have focused on an asset business that avoids the complexity of service delivery.

Operators have found that their initial lease agreements shared disproportionate value with TowerCos. So, they have been looking to reduce their dependency on TowerCos and have asked them to deliver additional value through services. This places greater pressure on TowerCos’ margins. More recently, operators with stronger balance sheets have created their own infrastructure companies to secure control and capture the greatest value from shared infrastructure.
However, mobile market stagnation, new technology trends and operators’ desire to optimize their cost have widened the opportunity for TowerCos to grow their asset business and diversify into services. While operators need to deploy new technology on existing sites and densify their networks with small cells.

This paper provides an overview of the new technology trends that impact the TowerCo business; explores the diversification paths for a TowerCo; and dives deep into the challenges of growing a small cell business.

**Trends Impacting TowerCo Business**

Technology evolution forces operators to transform their infrastructure and technology while placing significant pressure on financials (see exhibit 1). To compensate for market stagnation, operators must explore new areas of growth, such as fixed wireless access, deployment of 5G private networks and IoT. Some areas may seem risky at this stage, but competitive dynamics will likely encourage some operators to jump the gun – the 5G battles in the US and across the Gulf Cooperation Council are examples of the pressure to introduce technology faster. These new use cases require a significant transformation. Important areas that impact infrastructure are the convergence and densification of access network and edge computing. However, the key challenge will be securing shareholder returns.

By observing operators’ strategies, we have identified three key trends that impact TowerCo businesses:

- Technology and passive infrastructure optimization
- Network and infrastructure sharing
- Creation of own infrastructure companies

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**Exhibit 1 – Technology Evolutions Poses Operational and Economical Challenges for Operators**

<table>
<thead>
<tr>
<th>USE CASE DISRUPTION</th>
<th>TECHNOLOGY DISRUPTION</th>
<th>ECONOMICAL CHALLENGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED</td>
<td>API exposure</td>
<td>Global mobile market</td>
</tr>
<tr>
<td>MOBILE</td>
<td>(on-demand services, agility/simplicity)</td>
<td>(USD billions)</td>
</tr>
<tr>
<td></td>
<td>Network-IT-cloud fusion</td>
<td>Global annual revenue</td>
</tr>
<tr>
<td></td>
<td>(IaaS/NFVi, microservices/containers, edge computing)</td>
<td>Global infra investments in new technology</td>
</tr>
<tr>
<td></td>
<td>Fixed-mobile network fusion</td>
<td>+4%</td>
</tr>
<tr>
<td></td>
<td>(HetNet and one core)</td>
<td>1051</td>
</tr>
<tr>
<td></td>
<td>Network sharing</td>
<td>1094</td>
</tr>
<tr>
<td></td>
<td>(Network and infrastructure sharing)</td>
<td>&gt;30%</td>
</tr>
<tr>
<td></td>
<td>Regulatory &amp; risk</td>
<td>150 - 190</td>
</tr>
<tr>
<td></td>
<td>(GDPR, Cyber security, NBP)</td>
<td>2017 (4G era)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>180-270</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2025 (5G era)</td>
</tr>
</tbody>
</table>

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Technology and Passive Infrastructure Optimization

The migration to high performing broadband-centric networks based on fiber, 4G/5G and new architecture has forced operators to rethink their infrastructure. Key aspects are:

- The trade-off between increasing site capacity through additional spectrum or densifying the network, which will necessitate the massive deployment of small cells. Verizon has tended to focus on densifying its network while T Mobile US has orientated towards a low-band spectrum strategy (in combination to a move to acquire Sprint and its medium band spectrum);
- Technology evolution to boost effective capacity per site, such as Carrier Aggregation, Massive MIMO and deployment of SON;
- Deployment of new NR radio technology on sites, increasing space occupancy in towers;
- Planning for edge computing, which initially requires data-center capabilities at the edge of network and, in future, may also expand to the site, opening the medium-term opportunity for edge carrier neutral data-centers.

New NR radio technology, small cells and edge computing all require additional capex and operational costs for operators at a time when industry expectations for growth are pessimistic. As such, operators are trying to improve investment and cost, which include optimization of footprint at site level, TowerCo contract renegotiation and infrastructure or network sharing.

TowerCo contract renegotiation aims to achieve a better financial agreement to deploy new technology, capture the benefits of power saving and, in some cases, develop a competitive ecosystem of suppliers for small cell deployment.

It is not uncommon to see tenants uniting with other MNOs to negotiate rents downwards with independent TowerCos – sometimes threatening to co-build a new site should the TowerCo decline.
Infrastructure and Network Sharing

Experience shows that major RAN sharing agreements have occurred during the introduction of new technology. The first wave of RAN sharing started with the introduction of 3G (North European markets are a key reference) with a second wave for 4G. National broadband plans, that are becoming a norm in multiple markets in some cases, also promote rural passive and active sharing. TowerCos have mainly proliferated in markets with limited RAN sharing. Our expectation is 5G will kick-start a third wave of RAN sharing deals across all relevant markets.

TowerCos have defended lease agreements against RAN sharing but operators are becoming smarter and may even secure regulators’ help to try to force optimal RAN sharing economics.

Creation of Own Infrastructure Business

Operators with strong financials want to capture as much carrier neutral infrastructure value as possible while keeping a level of control to de-risk future needs and operations. This is why they are creating infrastructure companies which include towers, fiber and data centers.

There is also a trend for operators that have already sold their towers to create alternative TowerCo/small cell players to secure competition to TowerCo. For example, in the US, Softbank (via Sprint) has invested in Lendlease and other carriers are exploring ways to cooperate to develop alternatives.

Exhibit 4 shows where some TowerCo have evolved into InfraCo. Some fiber-centric players (e.g. Uniti, Zayo) are exploring Towers and small cells. This evolution of infrastructure players may increase the level of competition for infrastructure M&A and

TowerCo Diversification Path

Technology evolution poses new requirements for infrastructure such as small cells, fiber-to-the-site, edge data center. It also opens new opportunities for passive and active infrastructure sharing. TowerCos may explore new business models such as small-cell-as-a-service or even the creation of rural/national NetCos – a similar model to Mexico’s carrier neutral Altan network.

Exhibit 3 – Examples of Operator Infrastructure Carveout
agreements to deploy new infrastructure, including Towers, fiber and small cells.

TowerCos have mainly explored ways to evolve their businesses by diversifying asset class (e.g. fiber and small cells) and migrating into services. The most common asset class diversification has been fiber rollout, while diversification into services has centered on DAS, power optimization and passive infrastructure optimization.

**Asset Class Diversification**

Asset class diversification focuses on fiber, small cells and, to a lesser extent, data centers.

Fiber may increase the value of towers by either improving co-location economics, enabling decommissioning of micro-waves or increasing co-location opportunities. Fiber will be key to allow TowerCos to achieve a solid return on small cells. There are also operational efficiencies that may be captured in O&M and asset management.

Small cells come in multiple forms and locations. TowerCos prefer to own masts that allow for the traditional tenancy business. For instance, AMT is looking to co-locate up to three small cells in street lamps as part of a recent agreement with Philips in US.

In many other instances though, the street furniture cannot support deployment of multi-operator solutions. This significantly reduces the potential return. Evolving into small cells is seen as an operational challenge as it significantly increases operational complexity at lower margin, but it also opens the door to future opportunities. When IoT growth accelerates, the TowerCo can be key in hosting and managing smart-city IoT devices.

Operators have approached other TowerCos to buy the fixed central offices and exchange buildings. These assets became less relevant for operators with technology upgrades, so TowerCos declined the opportunity. However, the introduction of 5G and edge computing may change everything – edge computing requires a distributed infrastructure and these buildings are the perfect choice for co-location of mini-data centers to provide these capabilities. Those buildings usually have fiber, a reliable power supply and are in areas with high traffic demand.
Exhibit 6 shows a non-exhaustive picture of current stage of diversification of key TowerCos. DAS is a focus area in markets such as US, Europe and Indonesia. DAS has also been typically the first inroad of TowerCos into asset class diversification. Developing these capabilities organically, like Wireless Infrastructure Group’s strategic push to become leading British DAS operator, or inorganically, such as Cellnex’s acquisition of Commscon to expand DAS business and gain capabilities.

Fiber-to-the-small-cell is in high demand for operators outsourcing small cell deployment. Typically, it can represent the largest cost component of the solution and one which may command longest lead time to deliver if not ready.

For example, for the past three years Crown Castle in the US has acquired many fibercos – including Lightower, FibreNet, and NextG – to provide a network of inter-city fiber and small cell sites in urban and sub-urban cities. When demand surged last year, Crown Castle sold many co-locations in bulk and continues to win additional contracts. Other infracos and contractors failed to meet Telco provisioning SLAs.

In China, no independent TowerCos have undertaken significant small cell deployment, so operators have led efforts with vendors - China Unicom has announced a partnership with Nokia to offer Nokia Flexi Zone small cells and an AirScale low power radio head for deployment in 31 provinces.

Migration Into Services

TowerCos also possess the capability to develop a strong service business. Although it’s time consuming for TowerCos to transition from a traditional real estate business into a service-based one, TowerCos already have several relevant capabilities:

- Knowledge to establish carrier neutral win-win agreements with operators;
- Ability to manage all process to secure sites and obtain permits;
- Ability to negotiate win-win landlord agreements for ground-based towers and roof-tops, which may involve land acquisition or pre-payments;
• High level of operation automation and passive NOC; and
• Ability to provision efficient field services in the passive space

An increasing number of TowerCos are leveraging the above to provide services such as rental optimization (for operator-owned sites), managed connectivity for macro backhaul and, more importantly, small cell deployment and management. Crown Castle is one that has moved quickly into small cell deployment and into provisioning fiber backhaul for these solutions.

**Capturing the Small Cell Opportunity**

Small cells are being explored across many TowerCo-centric markets. As data traffic grows and operators face challenges to densify their networks with macro sites, the demand for small cells has increased. Also, operators are considering how to build capabilities and partnerships to deploy small cells ahead of 5G’s full introduction by 2021.

**Why is There Small Cell Hype?**

The US helps clarify the hype. There are around 120,000 towers and estimates for small cell reach 1 million. We forecast that by 2021 the US small cell market should account for around 400,000 sites, which is three times greater than the tower market (see exhibit 7). However, Crown Castle expects to generate as much revenue from small cells as it generates from towers.

**Business Models to Address the Small Cell Opportunity**

There are four business models of small cells and TowerCos can explore three of them: Infrastructure landlord; neutral Host-Passive; and neutral host active.

The infrastructure landlord model requires building or managing a portfolio of sites and availing them to operators. This is like the traditional TowerCo...
Exhibit 7 – US small cell market

US OUTDOOR SMALL CELLS NODES (ESTIMATION)

Sprint +15k
TMUS 28k
AT&T 40-60k
VZ 40-60k
Other 10K

5G focused rollout
Market sizing dependent on economics speed of deployment and FWBA plans

2017 EoY  2018-19  20-21  2021 EoY

120-140  200-240  380-420

US SMALL CELL MARKET SIZING

CC estimates market potential to reach same size as towers

$9-10bn
ANNUAL REVENUE

4-5 million
SMALL CELL NODES

200k

Current estimated size
# small cells nodes
(including indoor)

Current ‘public’ orders backlog include:

Crown Castle
25k

AMT
Likely building order book
after agreement with Philips Light

Cable companies
>15k
(as per Sprint CEO, leveraging RoW)

Zayo and Uniti
>3k

Current ‘public’ orders backlog include:

Value drivers

Outdoor

Masts
• Shared mast, fiber
• Shared O&M

Urban furniture
• Shared operations
• Shared fiber

High traffic large commercial
• Shared RAN infrastructure
• Shared “Rent”

Low traffic middle & large commercial
• Shared RAN infrastructure
• Revenue from building owner

Residential / Small Office
• Offload / convergence
• Easy-to-install hardware
• High QoS

Business models

Outdoor

A Infrastructure landlord
B Neutral Host - Passive
C Neutral Host - Active

D MNO SC offloading

Players

SC InfraCos
Verizon, AT&T, Comcast

FibreCos (e.g. Uniti)

TowerCos (CC, AMT, Verizon TowerCo)
SC specialized vendors

Municipalities

Retail, food chains

Exhibit 8 – Small Cell Business Models
business model of charging for space. The TowerCo may find some challenges in achieving significant multi-tenancy rates in these sites.

In a neutral host passive model, the company proactively builds a portfolio of small cell sites and markets them to multinational operators (MNOs). The company is responsible for upfront investment in site acquisition and conditioning, including building or leasing inter-city fiber or high capacity microwave links. Neutral hosts will also typically provide O&M managed services. InfraCos will usually charge recurrent fees to MNOs for using the company’s infrastructure.

In the neutral host active model, the InfraCo invests and deploys both the passive and active elements of the small cell solution and provides connectivity-as-a-service to MNOs. The spectrum used for the solution can be leased from the MNO renting the site, owned spectrum from the InfraCo or unlicensed spectrum. Typically, an active small cell-as-a-service provider will command higher recurring service fees than the other models.

The three different models could allow companies to secure EBITDA margins greater than 30% with recurring revenue.

### Key Success Factors for Small Cell Deployment

Despite significant deployment plans, the reality is that operators in developed markets are struggling to deploy small cells at their desired pace. This is primarily because of the: strict municipality and RF licensing and permitting requirements; high site acquisition and backhaul; and lack of internal capacity to coordinate the rollout of several sites quickly.

Operators deploying small cells require a different skillset versus traditional macro deployments. Operators will take time to build these capabilities organically. This means more business for InfraCos that are willing to take it. Experience shows that to be successful in small cells, TowerCos need to develop a value proposition to the operators that offers time to market and adequate network economics.

Achieving both fast time to market and competitive cost is difficult as, operationally, the TowerCo will face many challenges. This may include finding a site that matches needs of several operators, allows for adequate total cost of ownership for the operator, as well as securing permits and landlord approval for the small cell deployment.
Summary

In summary, technological evolution poses several challenges for operators, TowerCos and InfraCos. InfraCos and TowerCos are well positioned to be the net beneficiaries. Some operators have been financially challenged with the sale and lease back of assets, but industry financials are forcing operators to share network and infrastructure.

To fully capture the opportunity, TowerCos must: diversify their business by exploring opportunities in fiber and small cells; establish long term sustainable win-win agreements with operators, which may imply adjusting existing agreements; develop operational capabilities to offer best in classes SLAs at a very competitive cost against self-provisioning by operators (under stand-alone models or sharing agreements).

### Exhibit 10 – Key Success Factors for Small Cell Deployment

<table>
<thead>
<tr>
<th>SPEED OF DEPLOYMENT</th>
<th>NETWORK ECONOMICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Match local demand with supply of locations</td>
<td>Location</td>
</tr>
<tr>
<td>Long time to obtain permits</td>
<td>Permits</td>
</tr>
<tr>
<td>Fiber &amp; power availability</td>
<td>Backhaul and Power</td>
</tr>
<tr>
<td>Time and difficulty to agree on small cell design / aesthetics</td>
<td>Equipment</td>
</tr>
</tbody>
</table>

**How to accelerate the deployment of Small cells?**

**How to secure optimal economics to deploy small cells?**
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Founded in 2012, TowerXchange is an independent community for operators, towercos, investors and suppliers interested in the telecom tower industry worldwide. We’re a community of practitioners formed to promote and accelerate infrastructure sharing.

TowerXchange produces a bi-weekly newsletter and quarterly journal, both available to subscribers, which cover industry news and provide deep insights into telecoms infrastructure worldwide. We also host annual meetups on each of the six continents to bring together the leading tower industry stakeholders.

TowerXchange was founded by Kieron Osmotherly, a TMT community host and events organiser with 22 years’ experience, and is governed with the support and advice of the TowerXchange “Inner Circle” – an informal network of advisors. TowerXchange was acquired by Euromoney Institutional Investor PLC on December 1, 2017.