



# Top 10 challenges with national broadband network projects

Many countries are currently either planning or implementing National Broadband Networks (NBN). The benefits from these developments are well articulated and governments often provide support for these projects through direct funding, subsidizing the rollout and by making sure the right regulatory and legal framework is in place for successful deployment. We expect that the trend of deploying fixed line NBNs based on fiber will continue for the next several years.

In our work we have often seen operators repeat the same mistakes as in previous deployments. This appears to be because NBN planners often do not devote enough time to learning the challenges faced by other NBN projects.

In this whitepaper we identify what we believe are the top 10 strategy, planning and implementation challenges related to new NBN projects. This is derived from our experience providing consulting to broadband operators.

### Challenge 1

Unrealistic planning of deployment timeframes, budget and reliance on poor data: we have observed many examples of network deployment planning which has been based on little more than intuition. When good proactive planning has not been done, the rollout is jeopardized because decisions are made based upon poor data. The resulting plans do not properly consider the network architecture requirements or customer requirements, the serious challenge of land acquisition has been overlooked and skilled workers have not been available during the rollout.

### Challenge 2

Deciding on a shared national passive or active fiber network: too little consideration is given to the best physical network architecture. NBN operating companies can provide a passive access service or an active bitstream service. This is an interesting challenge. Providing wholesale services using a shared active network has far lower upfront fixed costs and may therefore be more attractive to service providers. However, in the face of uncertain demand for service, unless providers place high value on the strategic benefits of infrastructure ownership, any GPON architecture to support multiple operators means deploying overlay networks through same ducts.

### Challenge 3

Defining and negotiating the role of the incumbent and its communication infrastructure: NBN deployments often do not manage the incumbent well.

Unless an effective role is found for the incumbent, the NBN company may find itself in conflict with the incumbent. The economics of FTTx network deployment is characterized by high fixed costs of which the dominant component is the civil works: digging the roads and laying duct. NBN deployment costs and timelines can be significantly reduced if an effective role is found for the incumbent and its existing duct network.

### Challenge 4

Decision to reuse the last mile or replace all copper with fiber: this is a challenge because the decisions are often based upon an ideal of deploying fiber everywhere, rather than a plan for a realistic network evolution. For most internet users, the services and speeds provided by a mixed-technology solution are generally acceptable. A properly structured business case will often favor minimizing the overall investment by reusing the last mile copper with a VDSL-based solution being sufficient to serve the demand needs of the immediate future.

### Challenge 5

Deciding the technology choice between GPON and active ethernet: our general view is that the cost-effective deployment and relatively low operational costs of the GPON architecture makes it a favorite architecture for most of the NBN FTTH deployments. The case becomes even stronger where low household density is observed and longer reach is required. However, there are specific cases where an active ethernet solution might be better suited, typically in high-rise urban residential environments.

### Challenge 6

Building an effective new NBN company: our view is that a NBN should be a process-driven organization with clear authorities and accountabilities. A new NBN should be a young and dynamic technology start-up that captures the enthusiasm and dedication of its employees. However, in too many cases a NBN is formed out of a government department and is heavily burdened with government processes and the checks-and-balances system that tend to disempower.



### Challenge 7

Coping with a shortage of skilled workers during network rollout: one of the most significant causes of delay in new NBNs is a shortage of skilled fiber technicians. This mistake is more often repeated than perhaps any other. Adequate advanced planning and timely contracting/recruitment of engineers is crucial. Fiber training and accreditation must be done in advance of the rollout as the prime contractor is often not able to import labor, due to immigration controls, and there is insufficient skilled resource in the country accessible to the contractor. These types of skills shortages have resulted in a number of national fiber programs running behind their original schedules.

### Challenge 8

Managing in-building cabling installations: connecting fiber into every apartment in a high density housing unit can be problematic and has introduced both delays and cost increases in NBN deployments. Planners often underestimate the difficulty of getting approval from owners, renters and stakeholders to access buildings. Furthermore, the issue of how to physically connect in a way that is cost-effective and aesthetically acceptable has also introduced delays.

### Challenge 9

Underestimating the task of land acquisition and rights of way: land

acquisition and gaining rights of way are typically the greatest disruptions to the deployment of telecommunications networks, and often the most overlooked. This is because the problem of land acquisition only fully emerges after deployment has started. Most government-sponsored NBN companies start with the assumption that the government will give them land. This almost always proves to be a false assumption.

### Challenge 10

Miscalculating and overestimating the degree of existing infrastructure reuse: a common mistake made by NBN programs is to underestimate the amount of effort required for the actual implementation of the national FTTH infrastructure, resulting in an implementation plan that is not realistic. The common implementation plan miscalculations are due to: a) underestimating the ramp-up stage of the rollout; b) ignoring the time needed to gain access to land and rights of way; c) overestimating the ability to reuse existing infrastructure; d) delayed regulatory frameworks and guidelines; e) vendors not having the resources to ramp-up to meet the implementations plan because they misunderstood local circumstances in their statement of work. ■

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