GE
Digital Energy

Smallworld FTTH 4.1

fact sheet

Due to the increasing demand for network bandwidth to support ever-richer end user applications, such as on-demand TV, significant numbers of network operators are deploying fibre deeper into their networks. While some operators are initially deploying fibre to the closest cabinet to the end customers and then relying on xDSL technologies for the last mile (Fibre-to-the-Node or FttN) a large number of operators are deploying true Fibre-to-the-Home (FTTH) networks with fibre running directly into the end customers' premises.

To serve the end customers' ultimate demands, many in the industry recognize that FTTH is the only long-term solution. However, implementing FTTH has significant cost implications. Recent government intervention in the UK, Australia, and Singapore indicates that the level of funding required to deploy a complete FTTH network is often too much for a single operator to bear and requires government support. One of the contributing costs of this work is designing the network. Industry analysts Heavy Reading[1] indicate that the cost of network design is likely to be in the order of 5% of the total cost of an FTTH build. This represents ~ $50 per home passed (based on figures from the Yankee Group[2]). Operators can realize substantial savings by optimizing the network design process and so reducing these costs. GE has developed the Smallworld FTTH™ solution to help operators realize these savings.

Value Proposition

The value proposition will vary for each type of operator, but fundamentally the benefits are driven through productivity savings. Experience at an Incumbent Local Exchange Carrier (ILEC) deploying FTTH has shown that productivity savings in the order of 94% can be realized using the Smallworld FTTH product during the detailed network design of an FTTH network. For the initial high-level design of the network, savings of 60% have been

recorded. Therefore, the combined average savings can reach approximately 70%.

As mentioned, approximately 5% of the cost of supplying a property with FTTH is attributed to network planning and documentation. The cost of supplying a home varies from $1,000 per home to $2,800 per home. Working with the conservative figure of $1,000, the cost of planning is, therefore, approximately $50. Applying a productivity gain of 70% yields a potential savings of $35 per home passed. On a roll-out to 100,000 homes, this represents a savings of $3.5M in design costs.

Naturally, these figures will vary from operator to operator, but all operators will have a strategic plan that defines the targets for homes passed within a given period. Combining each operator's cost per home passed for design, potential savings, and number of homes planned to be passed allows a credible return on investment figure to be calculated.

Solution Overview

The Smallworld Physical Network Inventory™ product provides a complete end-to-end view of physical telecommunications networks, supporting multiple communications technologies and equipment from multiple vendors. The network is modelled from the customer's premises, through the distribution network, and into the core transport network. Inside and outside plant data are combined to represent the entire system from ports on rack-mounted equipment to the external cable network.
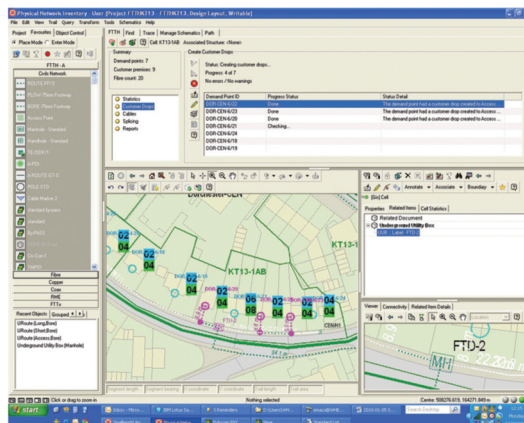
1 - Heavy Reading FTTH Worldwide Technology Update & Market Forecast Vol 6 No. 1 February 2008
2 - $1000 per home is figure quoted by Yankee Group in May 2009 report Open Access Makes Economic Sense

The Smallworld Physical Network Inventory product supports the engineering and management of both long-distance fibre transmission networks and all types of local-access fibre networks (i.e., FTTH, FTTC, FTTN, FTTP). All types of FTTx network architectures can be modelled, from direct point-to-point fibre and Passive Optic Networks to all types of deployment technologies (e.g., air-blown fibre, direct buried, conventional ducted fibre, and aerial). The Smallworld Physical Network Inventory product supports the following:

- Documentation of cables, slack loops, splices and individual fibres
- Association of all elements of the fibre network with both overhead and underground structures such as poles and street cabinets
- Ability to trace signal paths through the fibre network to calculate optical losses and to geographically display OTDR trace results

The Smallworld FTTH solution extends the Smallworld Physical Network Inventory product with a number of additional features specific to FTTH network design:

- Data model extensions to manage the geographic location (Demand Point) and size of the customer demand (Customer Premise) at that location and to display this on the map base
- Area objects (Cell) to manage spatially-related groups of customer demand locations
- Ability to view aggregate statistics such as homes passed, total fibre count required, and total cable length required for a given Cell
- Configurable, workflow-driven user interface to guide the user through the various stages of FTTH network design
- Fully customizable functions to automatically generate network infrastructure to connect customer demand locations to new or existing distribution infrastructure
- Fully customizable functions to automatically insert distribution cables into the newly created infrastructure
- Options to automatically create and connect fibre cables to Optical Network Terminal units
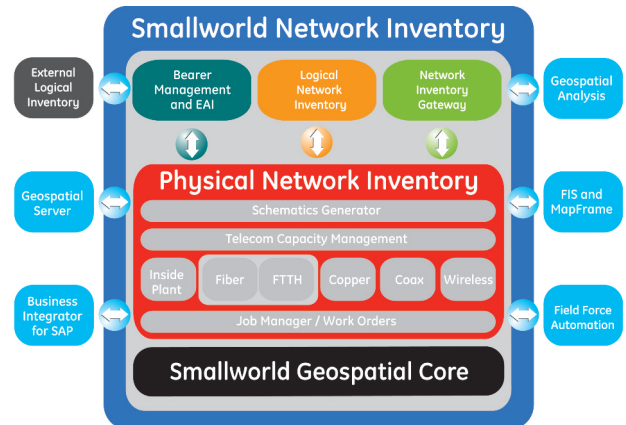
- Ability to configure equipment specifications used in each part of the process
- Ability to manage different types of customer demand locations and to automatically design different network structures according to these types

Benefits

A range of benefits may be realized:

- Network rollout can be accelerated through faster network design time.
- Faster network roll-out results in reduced time to generate revenue from the new FTTH-based services being deployed.
- Network design is more consistent since many tasks are automated. This leads to improved equipment utilization and optimization.

Smallworld FTTH[Agile]

The Smallworld FTTH[AgileTM] product is a special package for small operators focused on FTTH. The package combines the Smallworld FTTH module with a number of pre-configured modules from the underlying Smallworld Physical Network Inventory solution. This solution provides the ability to manage designs, document and manage inside plant, and create network schematics. Additional modules may be added to manage copper or coaxial networks. This package is targeted at operators who only require a small number of seats (i.e., fewer than 20 seats), either small telecommunication operators or utility companies with a need to manage an FTTH network.

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