# FTTx Integration Solution

**YOFC**
**Smart Link Better Life.**

**Yangtze Optical Fibre and Cable Joint Stock Limited Company**

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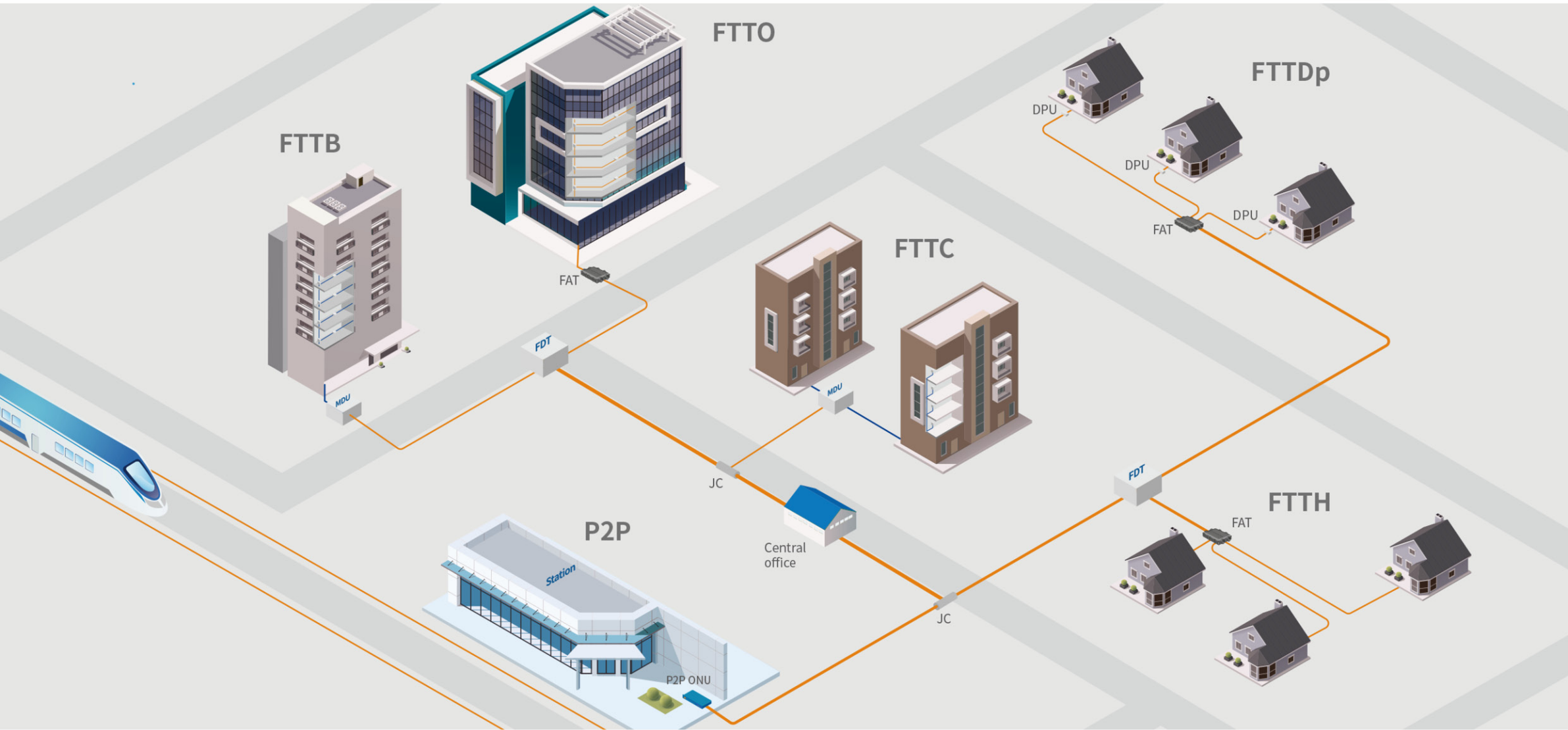**LinkedIn:** Yangtze Optical Fibre and Cable Joint Stock Limited Company

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**YOFC**
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# Contents

# FTTx and xPON
# Network Introduction



FTTB

FTTO

FTTDp

DPU

DPU

FAT

DPU

FTTC

FAT

MDU

FDT

MDU

JC

FTTH

FDT

FAT

P2P

Central
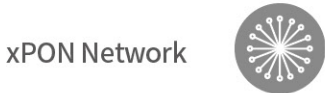office

JC

Station

P2P ONU

## Components of xPON Network

### Active Part

**1. OLT**
· Optical Line Terminal
· Usually placed in the central room（CO）

**2. ONU**
· Optical Network Unit
· Usually placed on the user side

### Passive Part

**3. ODN**
· Optical Distribution Network
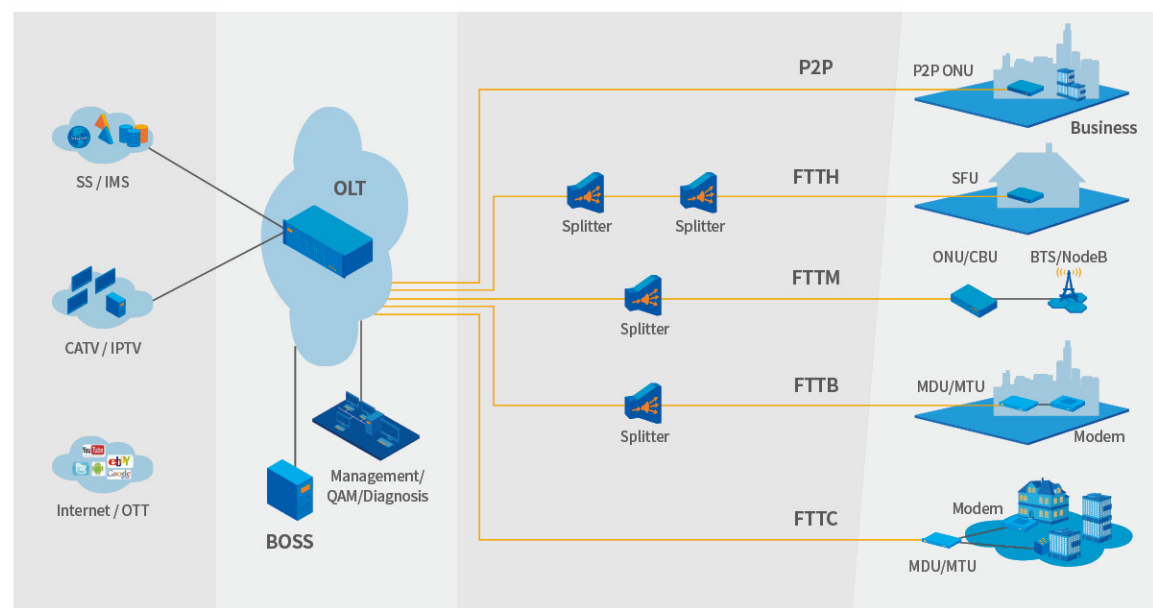· Passive network connecting OLT and ONU

xPON Network

**YOFC FTTx
Introduction**

YOFC FTTx solution builds broadband optical access platforms for the operator worldwide. It offers multi-service and multi-scenario access, high bandwidth, excellent performance, carrier-class reliability and easy operation & maintenance. Enable the network to meet customers' requirements, fully protect the investment and enhance the value of the FTTx network.
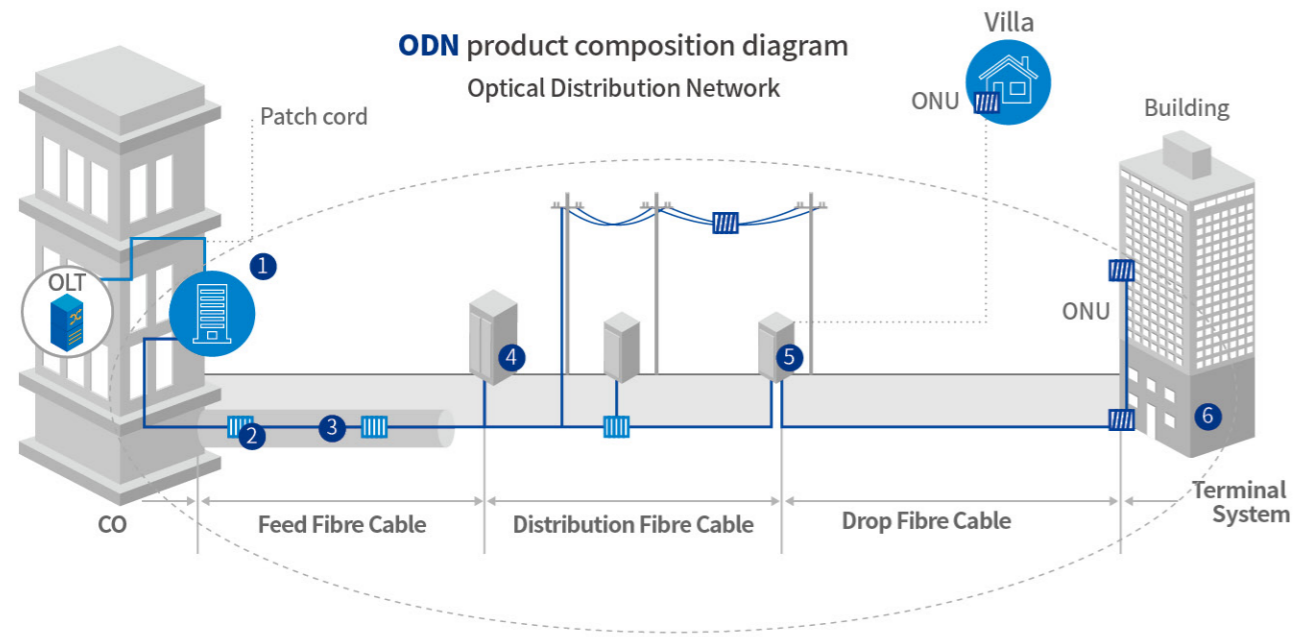
## FTTx Various Application



## Comprehensive Comparison

| Contrast Index | Traditional Access Network | FTTx |
|---|---|---|
| Cable construction difficulty | High number of cables, high difficulty, high construction costs | Less number of cables, low difficulty, low construction cost |
| Cable distance | The longest transmission distance of copper is 1 km | The longest transmission distance of fibre is 20 km |
| Network equipment | Need more DSLAM | Need less PON equipment |
| Riser | Need | No need |
| Cable manager | Need a lot of cable manager | CO requires a small amount of ODF |
| Cable maintenance | The cable on the cable manager is exposed for a long time | No nudity, stability |
| Confidentiality and anti-interference | Susceptible to electromagnetic interference | without any interference |
| Upgrade and transition | Cable does not support 10 Gigabit | Smooth transition to 10 Gigabit Network |
| Energy consumption | Need a lot of energy | Requires only a small amount of energy |
| Service life | 3 to 4 years | 10 to 15 years |
| Comprehensive cost | High | Low |
| Cost performance | Low | High |

# Product Introduction

## Passive Product

### ODN product composition diagram
#### Optical Distribution Network



| ① | ② | ③ | ④ | ⑤ | ⑥ |
|---|---|---|---|---|---|
| ODF | Joint Closure | Fibre Cable | Fibre Cable Cross Connecting Cabinet | Fibre Access Box | Optical Fibre Socket/ Home Information Box |

YOFC can provide a complete products of FTTx passive network, including: aerial optical cable, buried optical cable, ODF(Optical Distribution Frame), JC (Joint Closure), FDT(Fibre Distribution Terminal), FAT(Fibre Access Terminal), Splitter etc..

### • Cable

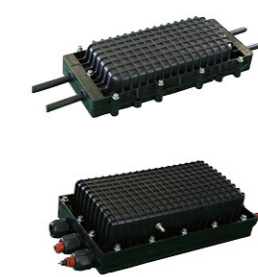| Outdoor fig 8 cable | Outdoor round cable | Bow-Type cable | Indoor round cable |
|---|---|---|---|

### • ODF & FDT

| ODF | FDT |
|---|---|

### • Fibre Closure

| In-line type | Dome type |
|---|---|

### • Splitter

| Rack Mounted | Cassette Type | Micro Type |
|---|---|---|

### • FAT & ATB

| FAT | ATB |
|---|---|

### • Accessories

| Pigtail & Patch cord | Adapter | FAC (Filed Assembly Connector) |
|---|---|---|

# Active Product

## OLT Product Features

- **Super Convergence**

  3.2T backplane capacity, 1920G exchange capacity, maximum 512K MAC address capacity

- **Unified Platform**

  Support xPON/EPON/10G xPON/10G EPON unified platform, business board compatible

- **High Reliable Link**

  Type A/B/C/D link protection to ensure the safe operation of the business

- **High Security Equipment**

  Main control board 1+1 backup, power board 1+1 backup, improved system security

- **High Density**

  16 PON ports / board, high density, low power consumption, to meet the development trend of large capacity, less bureau

## ONU Product Features

- **Family Specific**

  Product is the home side of FTTH solution, xPON technology to achieve ultra broadband access to home /SOHO users

- **Multiple Interfaces**

  POTS to provide voice interface and FE/GE to provide Ethernet interface, high performance by transmitting capability of the effective protection of voice, data and high-definition video service experience

- **Plug and Play**

  Through the network management automatically send configuration, no need for on-site measurement

- **Remote Diagnosis**

  Support POTS port external test, call simulation, easy to achieve remote fault location, support remote batch upgrade

# Professional Planning& Design and Implementation

Besides FTTx Products，YOFC can provide Professional Planning&Design and Implementation. YOFC has a professional service team which the members have 8 years FTTx experience at least.

## Customized Planning of FTTx

• **Marketing Investigations**

Analysis market trend, find out valued area with customer

• **Planning and Solutions**

Work out fundamental plan, propose solutions for customer

• **Survey and Design**

On site survey, output HLD, finalize solution

## General Process for FTTx

• Finalize the area to deploy FTTx network
• Find out the nearest access site and check existing network
• Survey on site (demographic, economical, population density, type of dwellings and buildings, existing facilities…)
• HLD (solution, splitting, equipment& materials, topology, GoogleEarth, Googlemap…)
• LLD (AutoCAD, ArcGIS, GE smallword…)
• Roll-out (Implementation, Acceptance, As-built documents, Input OSS)

## Professional Design

• **Professional teams, professional tools, work out professional design**

YOFC has 10+ professional teams, and the members are growing, all the design based on GIS (Arcgis, GE Smallword, GoogleEarth…) and also the traditional tool —AutoCAD, which is more accurate to guide implementation.

## Fast, Intelligent, Economical Design

**How to design fast, output intelligently and economically by YOFC?**

❶ Calculate the CO location
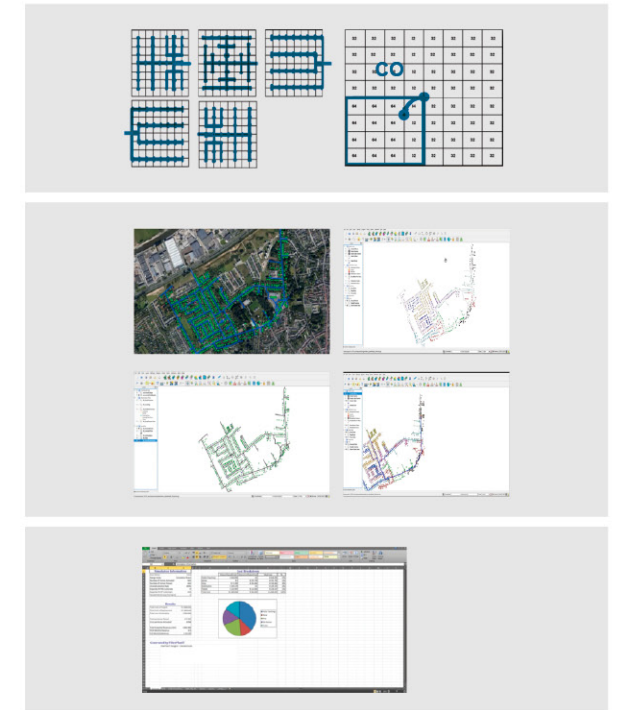
**Automatic** Calculate the CO location

❷ Define the area for FTTx deployment
❸ Automatically design by ArcGIS，GE Smallworld….

**90%** reduction in design time

❹ Automatic statistics and output BOM&BOQ

**7%** reduction in project cost

## OSP Fibre Cable Implementation



1. Aerial
2. Duct
3. Buried
4. Air-blown

## ODN OSP Implementation

1. FDT Installation
2. FAT Installation
3. Closure Installation
4. Splitter Installation
5. Splicing
6. OTDR Testing





Exposed corner snap

Linear snap

Right-angled turning snap

## Invisible Cable for ISP

### Appearance

- Extra fine optical cable, integrating with the home furnishing
- Transparent cable, perfecting the invisibility

### Installation

- Artistic without destroying the original home furnishing style
- Simple construction and efficient installation

### Performance

- Adopting ultra strong anti-bending optical fibre with ultra-low loss, greatly enhancing the one-time patency rate
- The materials are environment-friendly and comply with the requirements of environmental protection of the industry

- It can be removed undamaged after installation without affecting the original decoration
- Compatible with the next generation of network upgrades without overlapping investment
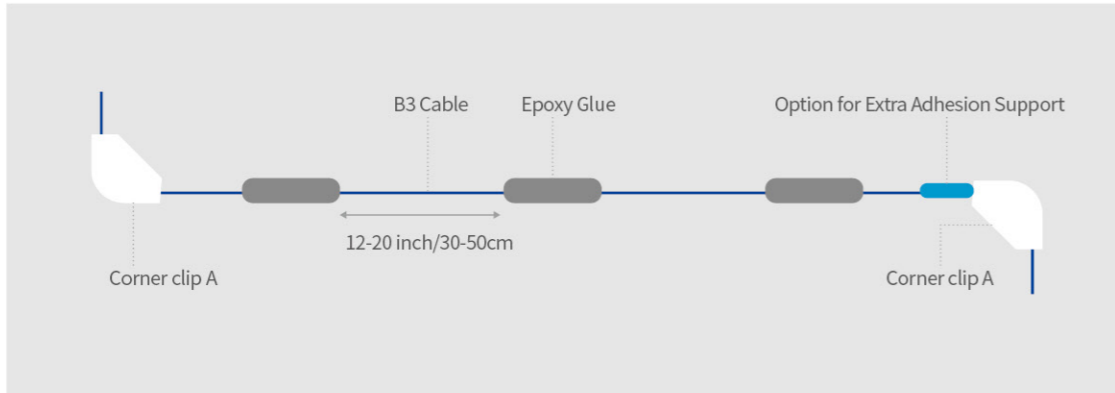
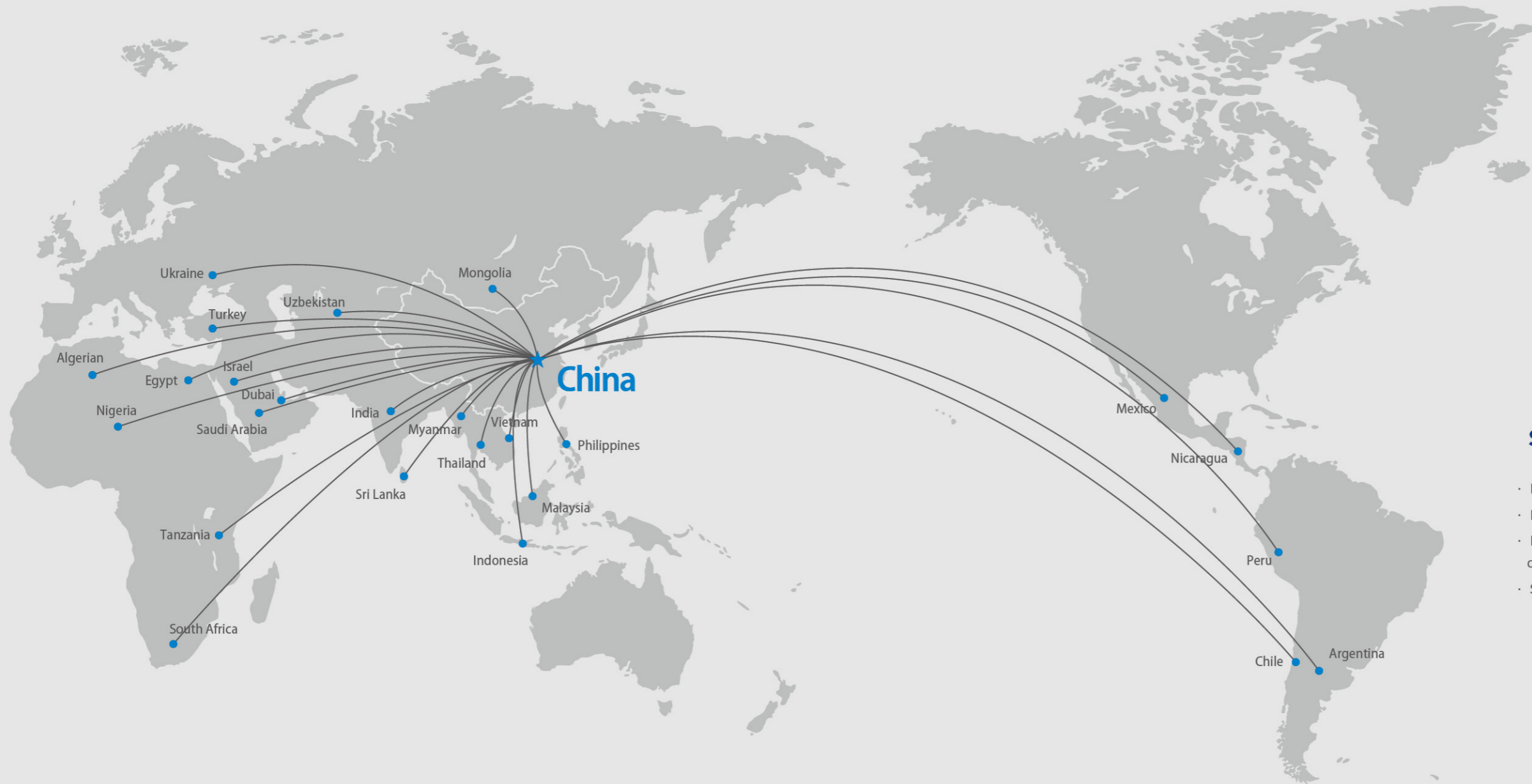# ISP: Inside Planting

**Product Drawing**



**Step Diagram**



**Schematic Diagram**



Corner clip A

B3 Cable

Epoxy Glue

Option for Extra Adhesion Support

12-20 inch/30-50cm

Corner clip A

# What We Have Done

Many successful cases worldwide.

China

### Successful Cases

· FTTx network Construction **20+** successful cases
· Enterprise Industrial Park **50+** successful cases
· Backbond OSP network construction **10+** successful cases
· Smart communities / Park **20+** successful Cases

Map labels: Ukraine, Mongolia, Uzbekistan, Turkey, Algerian, Israel, Egypt, Dubai, Nigeria, India, Saudi Arabia, Myanmar, Vietnam, Philippines, Thailand, Sri Lanka, Malaysia, Tanzania, Indonesia, South Africa, Mexico, Nicaragua, Peru, Chile, Argentina

## Indonesia

National Broadband Network with Backbone and FTTx Deployment



### Customer Requirements

• Jakarta-Bali Cable system, turnkey project, Total about 4200km OSP backbone, 70% are underground and 30% are aerial installation

### YOFC Solutions

• Train local subcontractor, bring new technology to faster project delivery
• Set up joint office with customer, work in the same office, solve problems in time
• 85% team members are local staff, it's easy for management of local negotiation
• 1 project site engineer manages 1-2 subcontractor, to ensure the quality of project
• Different region uses different subcontractor, faster project delivery, reduce the ROW issues

## Philippines

Higher Quality, More Value YOFC help Converge to deploy FTTH



### Customer Profile

• CONVERGE is the biggest operator providing CATV and broadband services to Customers, it has nationwide backbone network and international gateway. It has about 100,000 broadband users

### YOFC Solutions

• Mainly covering Luzon and the southern region of the Philippines
• The project scale is about 510K line of FTTH
• YOFC provide turnkey FTTH solution to Converge, including network design, engineering and maintenance