

## Webinar

# Microcables – Optimal Solution for Denser and Faster Fiber Deployment



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# Agenda

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- 1 Network Evolution and Bandwidth Growth**
- 2 Cable Technologies and Benefits of Microcables**
- 3 Use Cases**



# Industry is Witnessing Major Technology & Capex Shifts



**5G**

*has arrived*



**Massive  
Data Centres**

*by cloud  
companies*



**Connected  
Everything**

*Enterprises  
embrace IoT*



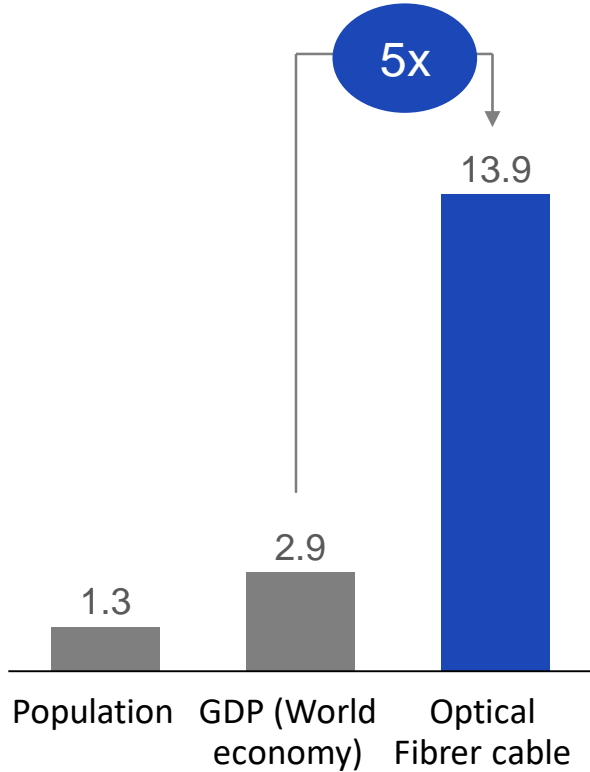
**Virtualization**

*Software  
disrupting networks*

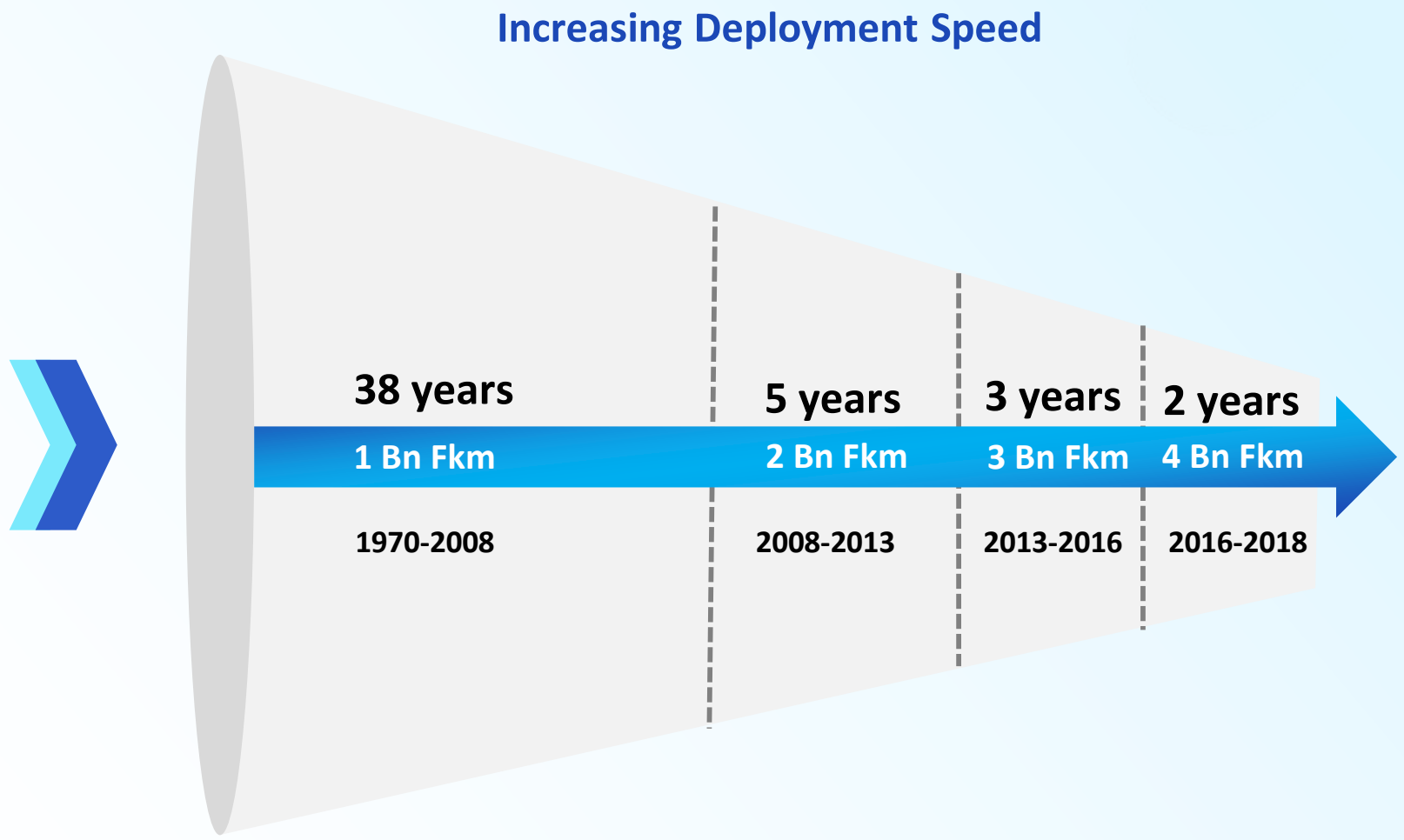


# Unabated Growth in Demand of Optical Fiber

Optical fiber cable deployment has outpaced the growth of world economy by **~5x**



**20 years CAGR: 1997 to 2017**

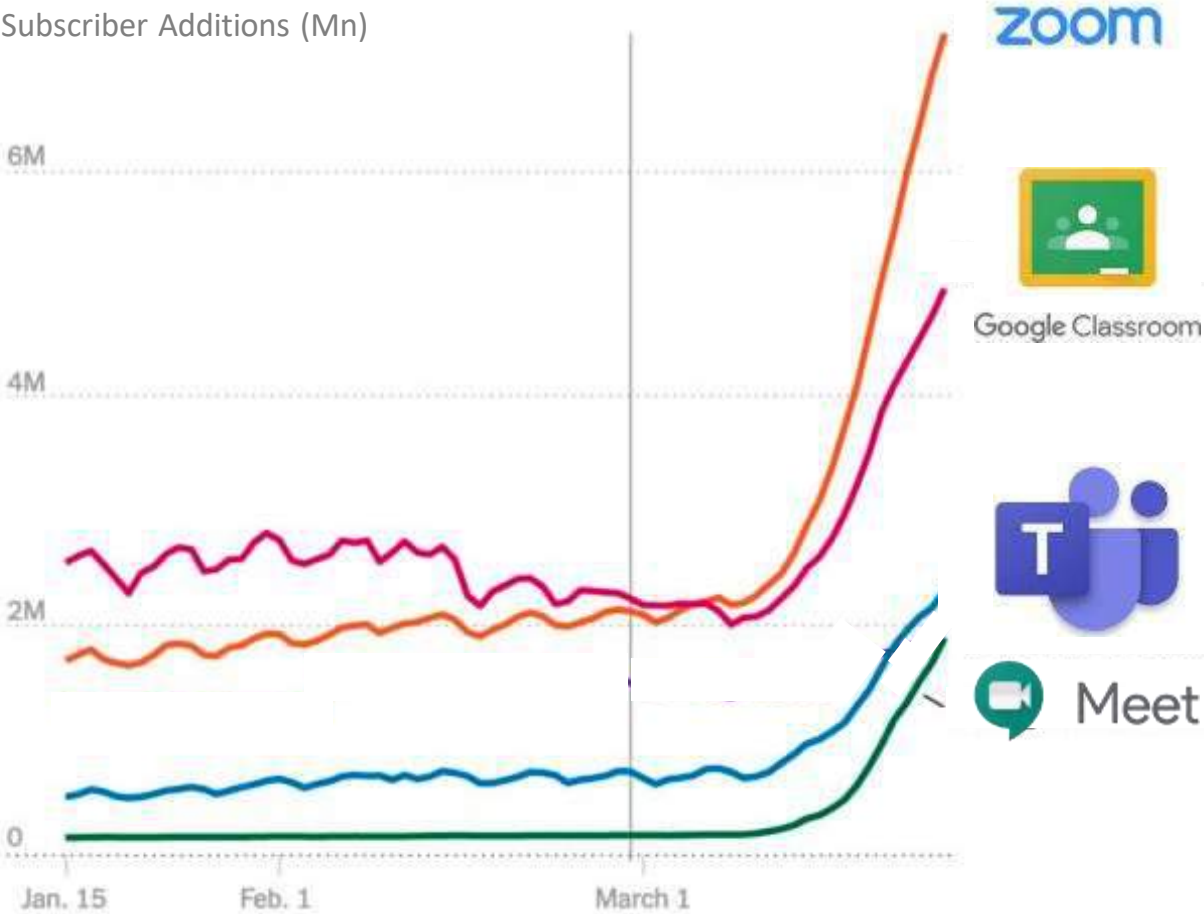


World's rate of deployment of **1Bn fkm cable** has shrunk drastically from **38 years** to **less than 2 years**

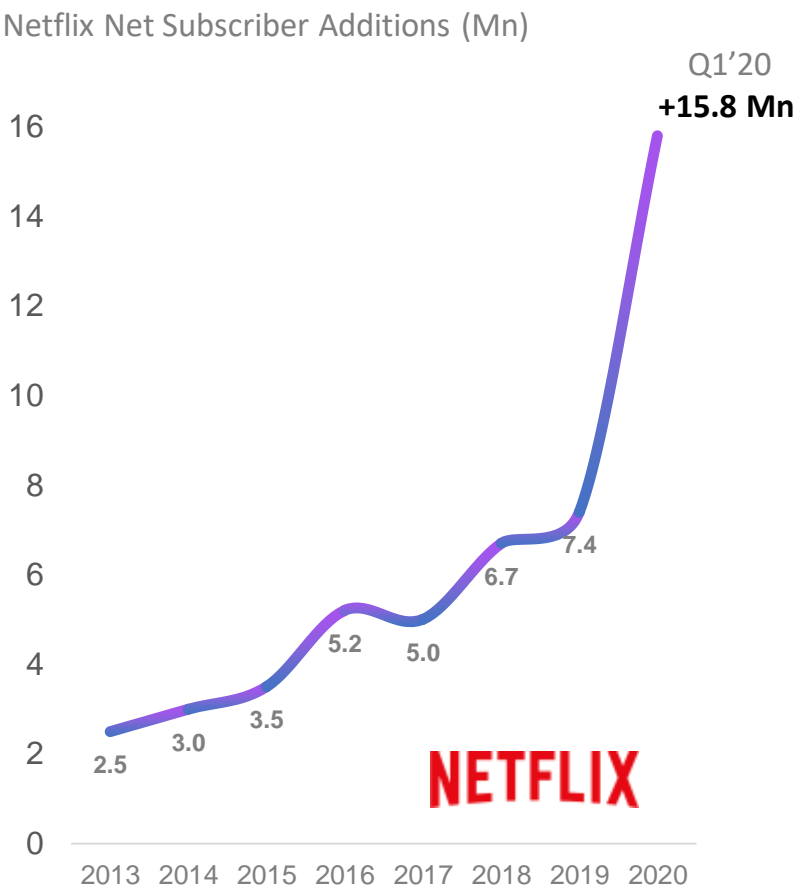


# Pandemic has Accelerated this Journey

## Study and Work from Home have become second nature



## Online viewing has doubled

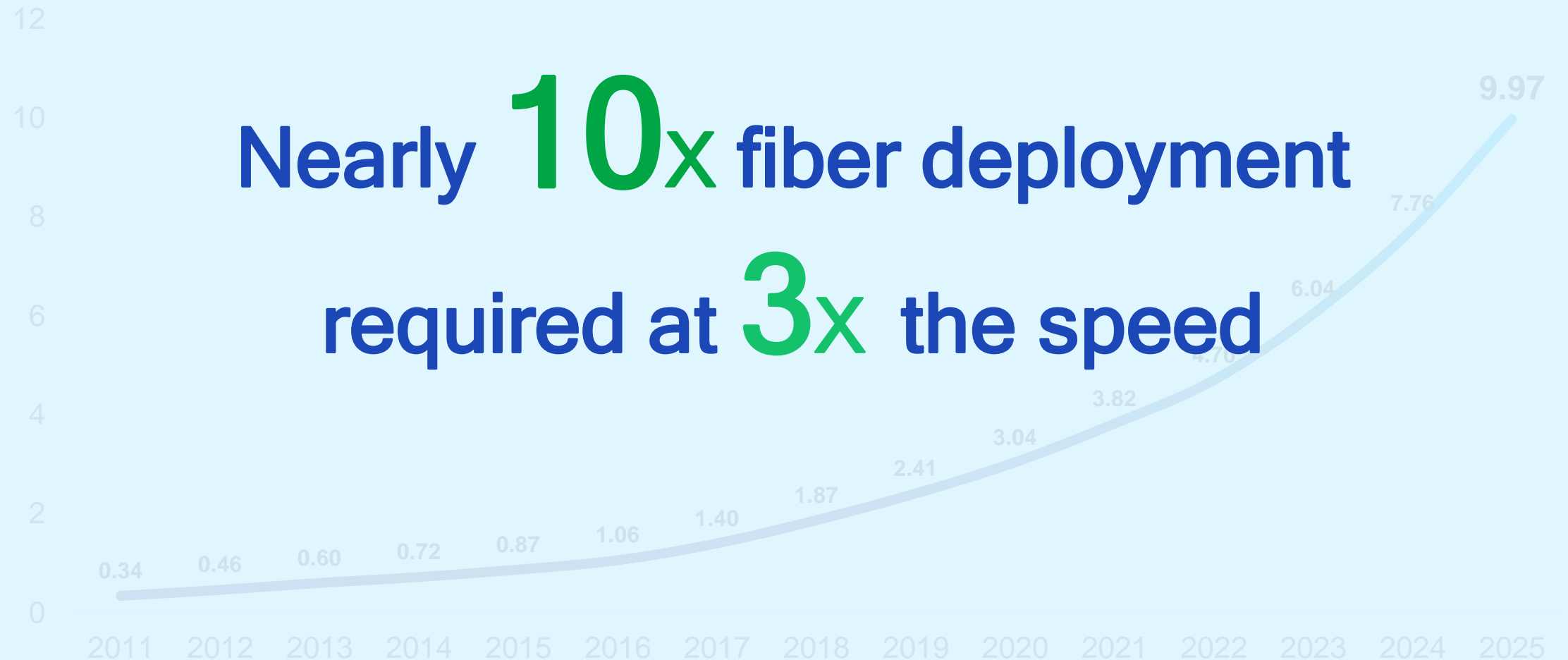




# Exponential Growth In Bandwidth

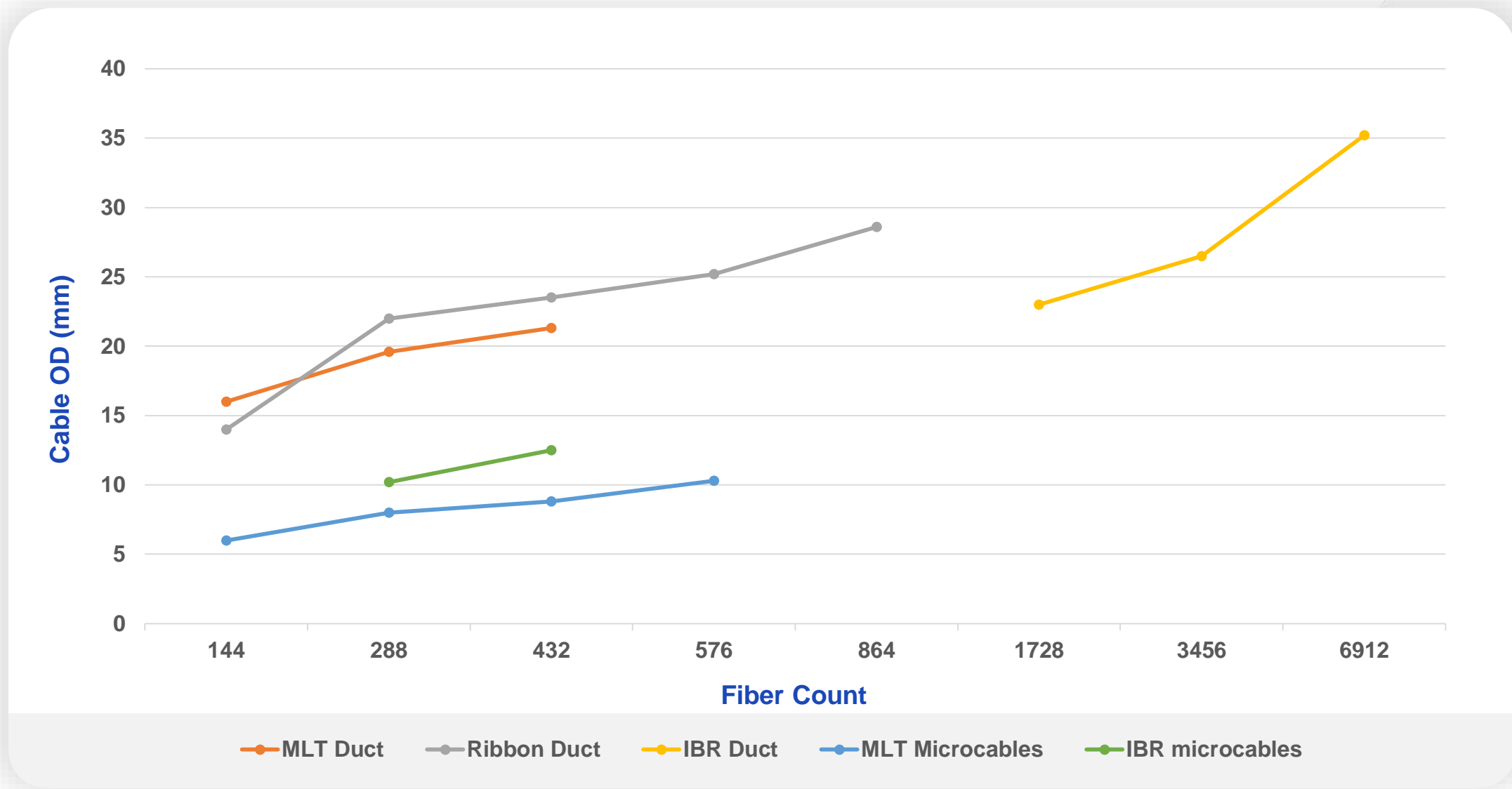
## Exponential Growth

Global IP Traffic Growth in Zettabytes





# Cabling Technology and Fiber Density





# Micro Cabling Technologies

Micro Cable  
96F (12F x 8 LT)



5.8 mm

Micro Cable  
144F (24F x 6 LT)



6 mm

Micro Cable  
288F (12F x 24 LT)



8 mm

Micro Cable  
576F (24F x 24 LT)



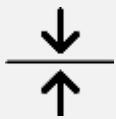
10.3 mm

Micro Ribbon Cable  
432F (12F Ribbon x 36)



12.5 mm

## Features



Thinner Jacket



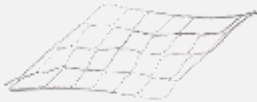
Smaller Tubes



More Fibers per  
Tube



200um Fiber



IBR Ribbon

## Benefits



Blow Optimized



Reduced Cable  
Diameter



Light Weight



Easy Handling



Smaller Drum  
Efficient Logistics



Reduced Risk of  
Cable Damage



# How Can We Build Denser Networks Faster!!

## Denser Urban Deployments

- Micro-trenched green field installs
- Augmentation of existing duct spaces

## Service Segregation

- Multi-way ducts
- Reduced risk to service continuity

## Challenges?

- MLT designs – longer splice time
- Specialized equipment

## Denser



Micro Cable Technology

## Faster



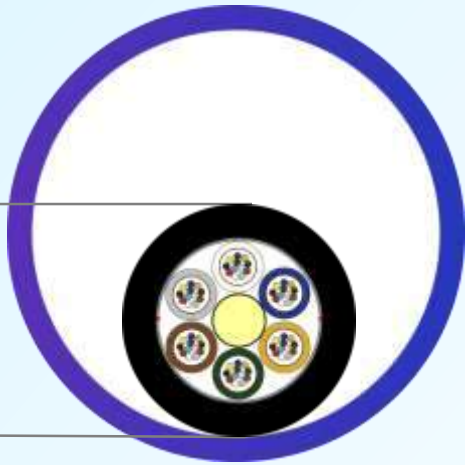
Blow Installation



Traditional duct

**25mm/20mm**

10.6 mm



**72F**

**Conventional  
Duct Cable**



Microduct

**12mm/10mm**

**Maximum Duct Space Optimization**

**4x  
Fiber  
Density**



8 mm

**288F**

**Next Generation  
Micro Cable**



# Why Micro-LITE 200µm NextGen Micro Solution

- › 432 fibers in 8.8 mm diameter cable

## High fiber density

- › Existing 2" duct retrofit option #1 -  $(864f + 2 \times 432f) = 1,728$  fibers
- › Existing 2" duct retrofit option #2 -  $(5 \times 432f) = 2,160$  fibers
- › Greenfield ~ 2" 7-way micro-duct  $(7 \times 432f) = 3,024$  fibers

## Greater duct capacity

- › 1.5 km for greenfield duct (14/18 mm)

## Greater blow distance



- › Ease of future capacity expansion

## Smaller dia

- › Individual fibers are more accessible when adding new customers or services

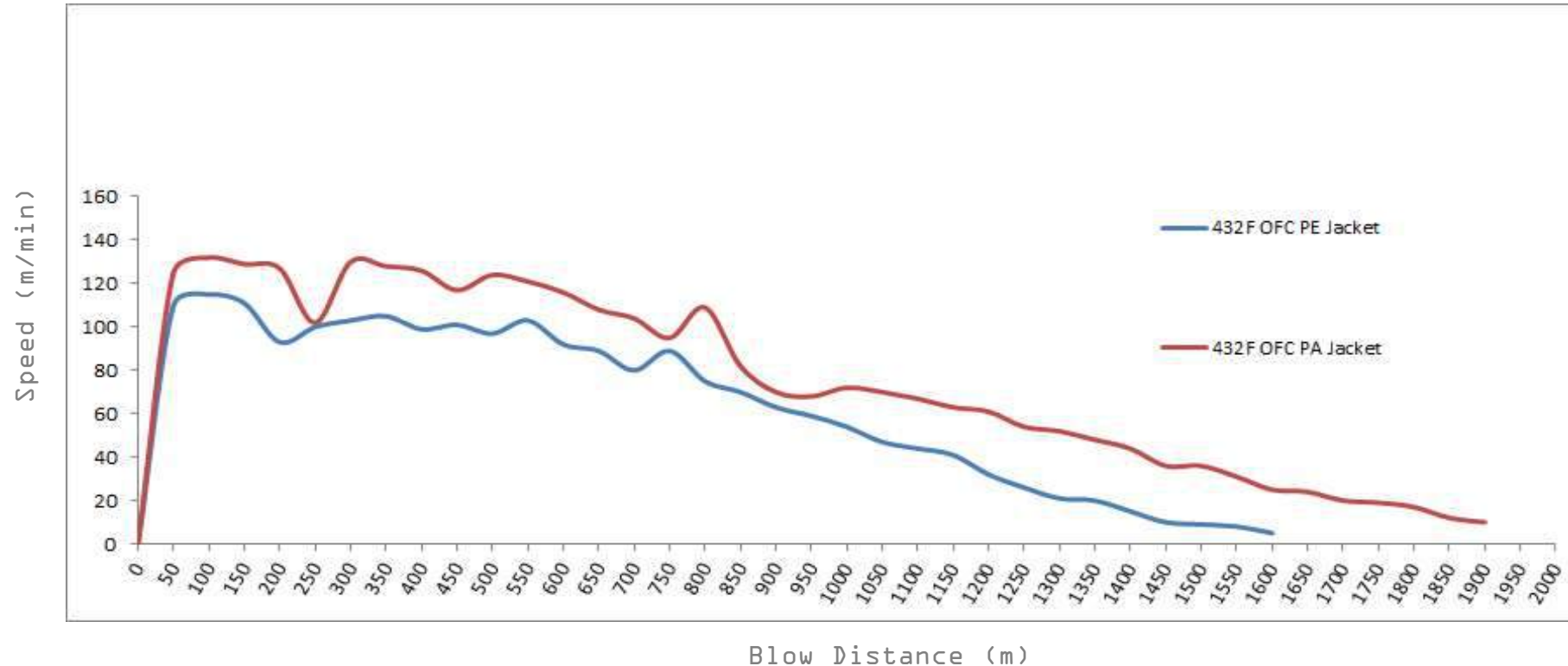
## Sub-unitized design

- › F1 – F2 separation
- › Troubleshooting/Isolation
- › Easier segregation of services

## Easy to repair



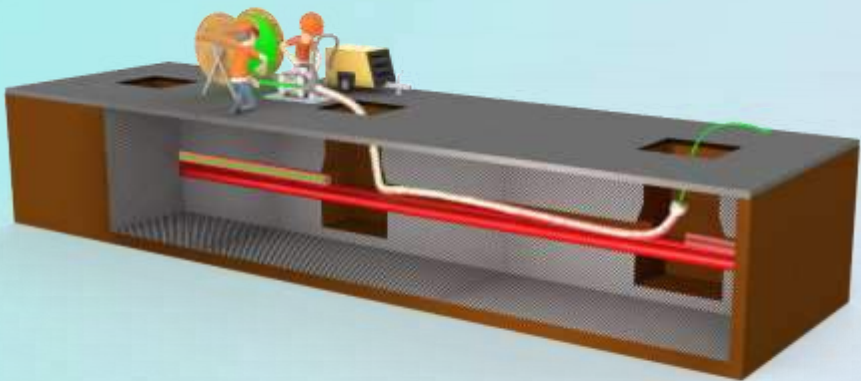
# 432 Micro Cable Blow Test Results



- › 18/14 mm microduct
- › 432 microcable with PE jacket blew 1500+ Meters (0.93 miles)
- › PA Jacket extends blow distance to about **1900 meters (1.2 miles)**
- › Enables single shot installation of significant cable length



# Faster – Blow vs Pull Installation



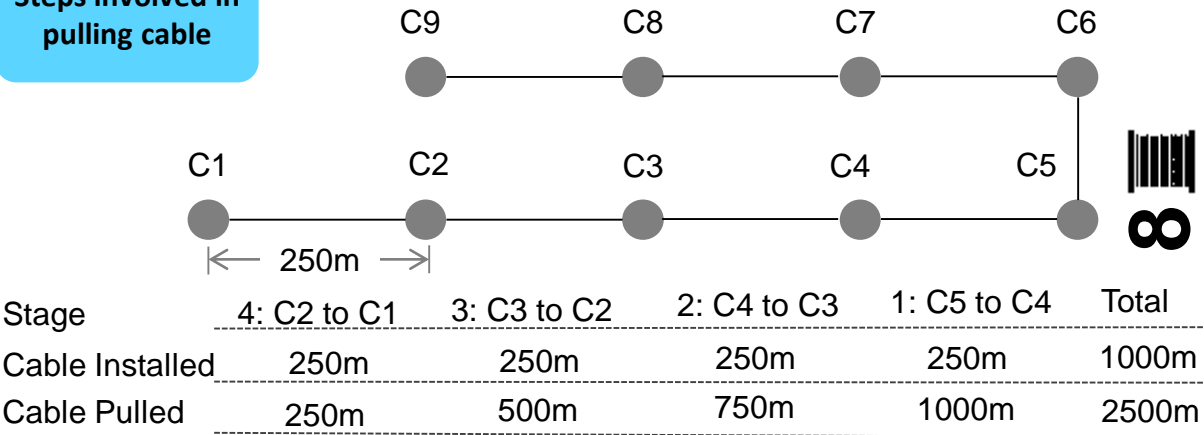
- Pulling manhole every 250m
- For 1 km install cable is pulled for 2.5km
- Blow in single shot

**Pulling requires 2.5x effort and 6x time**

## Faster deployments with Micro Cables blown into UG ducts

Parameters	Cable Pulling	Cable Blowing
Machine Setup time	10 mins	30 mins
Required Manpower	3 to 8	3
Typical Installation Length	upto 250 m	2 kms in a single blow
Cable distance pulled for 1 km installation	2500 m	1000 m
Cable pulling/ blowing length per minute	~20 m/min	60-90 m/min
Time taken to install 1 km cable	~3 hours	~ 30 min

### Steps involved in pulling cable

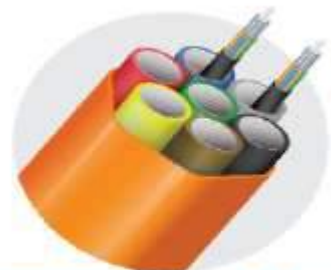




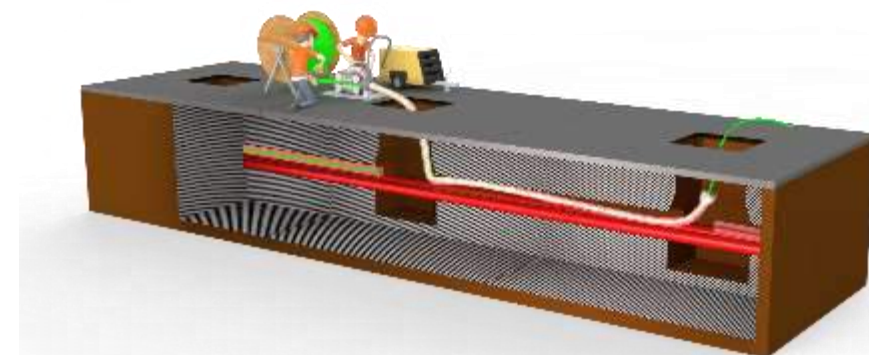
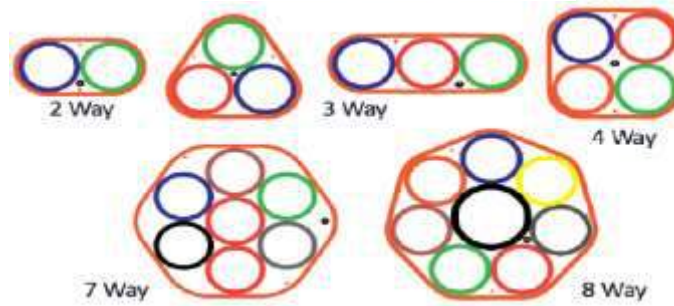
# Denser and Faster

← **>10x** →  
**Micro Cable** + **7 Way Microduct**

← **>6x** →  
+ **Blowing**



MicroDucts with High-Density Fiber Cables





# Our Success Stories

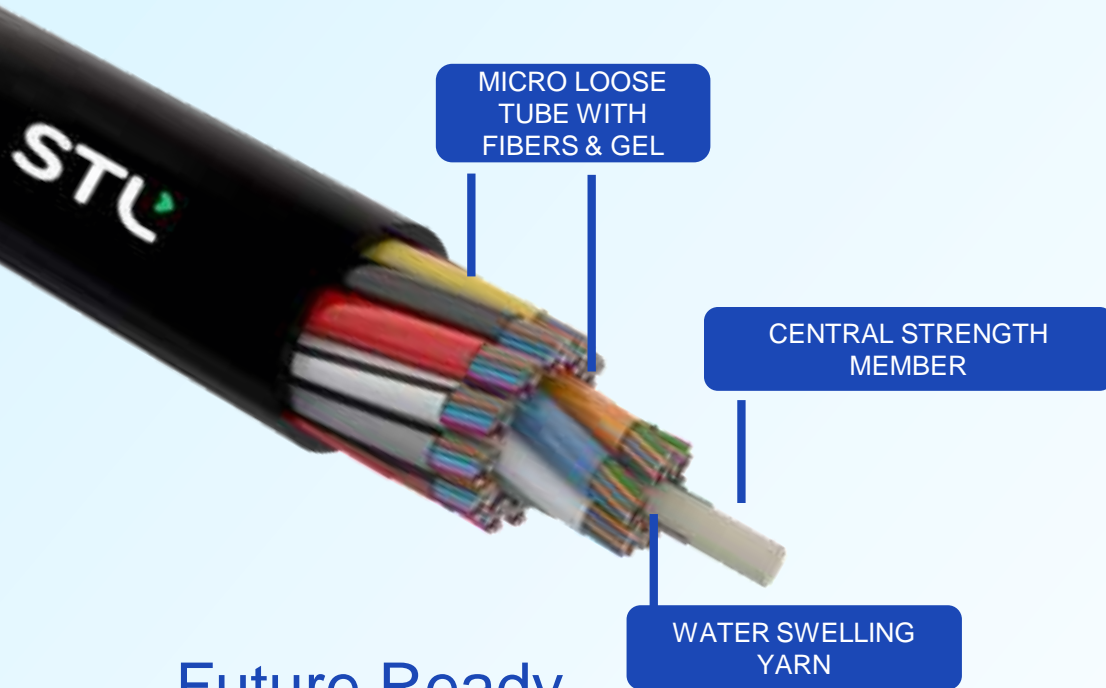
## Results from the Field





# 576F Next-Gen Micro Lite Cable in Philippines

## World's slimmest 576F cable



Future Ready

**2X** more fiber

10.3 mm overall diameter with 200μ fiber

Ideal for future expansion

Faster

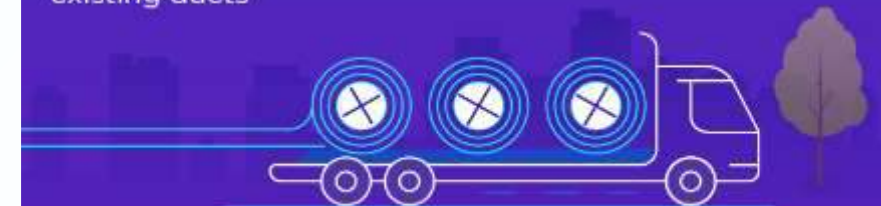
**Quick  
installation**

Provides greater ease of handling in manholes and hand holes

Cost effective

**Efficient logistics &  
asset utilisation**

Lesser spool weight and facility to over-blow in existing ducts





# 10.3 mm Diameter 576F in 18/14 Duct



Even after blowing 1500 m, blowing speed of 85 m/min was achieved.



# Blow Target 3 x 1.5 km, Achieved 5 x 1.5km

Better than expectation

Expectation



1 deployed



2 deployed



3 deployed



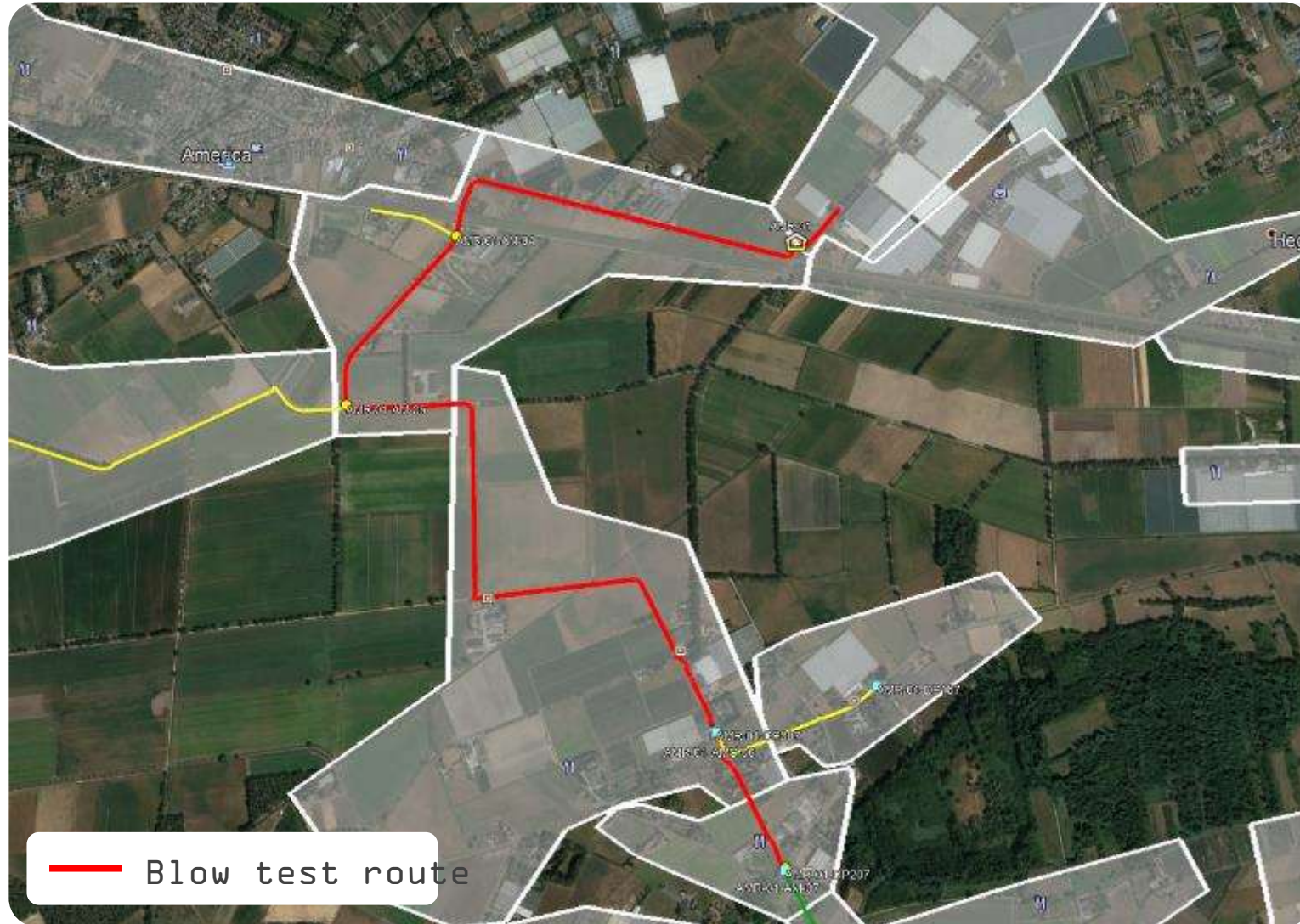
3+1 deployed



3+2 deployed



# Complex Deployment with Multiple Turns in Netherlands



Route length

**4km**

(Mid span blow, 2 km in each direction)

Duct type

**7x14/16 mm**

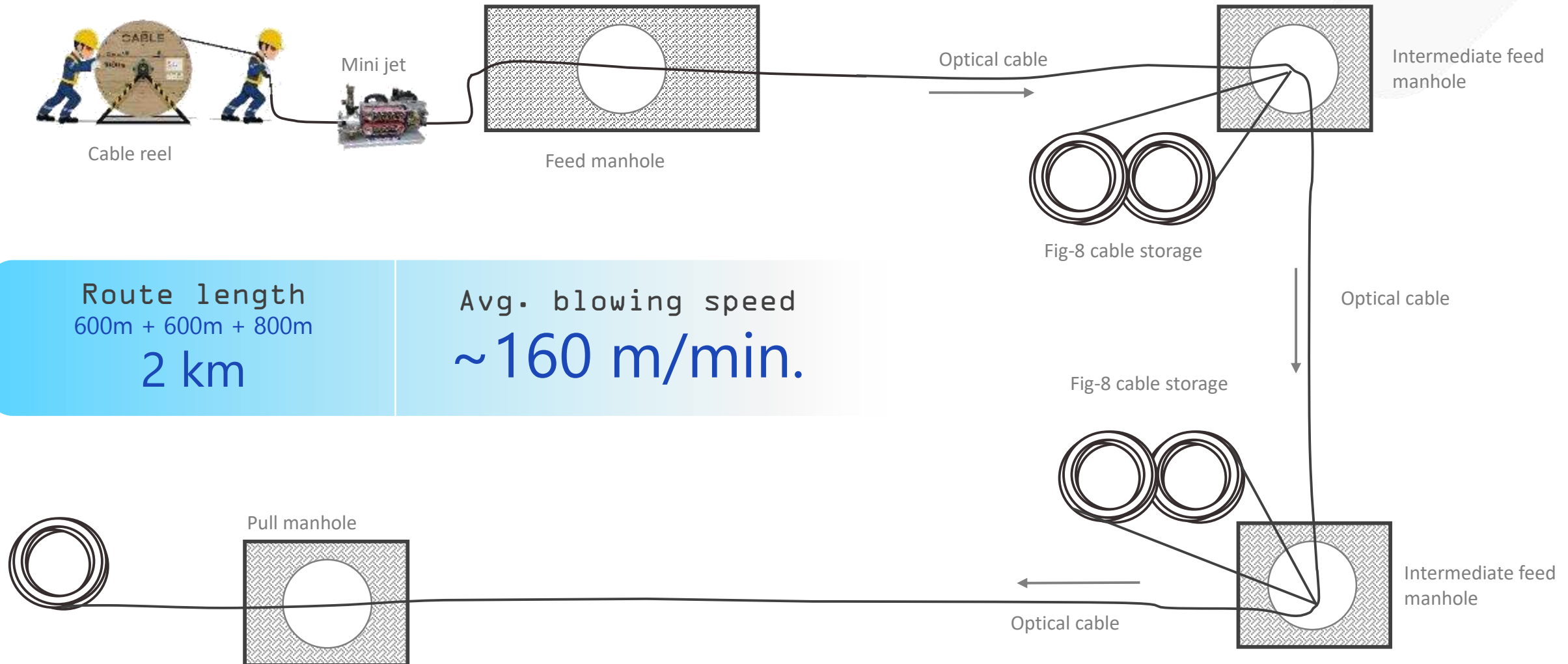
Fibre Count

**192F 7mm**

**Limited time**



# Plus NextGen Blowing Methods Results In 3X Faster Blowing





A large, dense crowd of people is shown from behind, seated in rows. Many of their hands are raised high in the air, indicating an interactive session like a Q&A period. The scene is dimly lit with a strong blue color cast. In the background, a large screen displays a logo, and a person is visible on a stage. The overall atmosphere is one of active participation.

Q&A



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