

# ***3M Volition VF-45 Partnership Update***

**March 2003**

# VF-45 Partnership Update

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# 3M Telecom Enterprise Milestones

- **1967-1998**-Pioneered multiple telecom interconnect and test technologies and developed market position
- **1998**- Launched Volition FTTD...
- **1999**- Expanded into a complete solution –Exceeded 3 million installed VF-45 ports ...
- **2000**- Acquired European copper business...
- **2001**- Combined Volition, FIP and Copper into Telecom Enterprise Department...
- **2002**-Launching Copper globally, expanding roadmaps ,developing **Global Strategic Partnerships and focusing on vertical markets**

# VF-45™ Products

## Network Hubs and Switches:

- Accton Technology
- Allied Telesyn
- BATM
- Garrett Communications
- Gemflex Networks
- EtherWAN
- IMC Networks
- Lantech
- MICROSENS
- Mitel
- Volktek Corporation
- 3M Volition

## Camera/Video

- Atop
- Dynacolor
- Pixord

## Systems Integration

- UniSVR
- Radiantech

## Horizontal and Backbone Cable

## Media Converters Transceivers

## VF-45 Socket Patchcords

- Lexel
- ITT
- 3M Volition

## Media Converters

- Allied Telesyn
- Garrett Communications
- Gemflex Networks
- IMC Networks
- Omnitron Systems Technology
- Mitel
- Volktek Corporation
- 3M Volition

### Transceivers:

- Radiantech
- E2O
- Infomax

### Network Interface Cards:

- Accton Technology
- Racore
- Allied Telesyne
- Gemflex Networks
- EtherWAN
- MICROSENS
- RubyTech
- Volktek Corporation
- 3M Volition

# Volition Network Solutions – Copper/Fiber

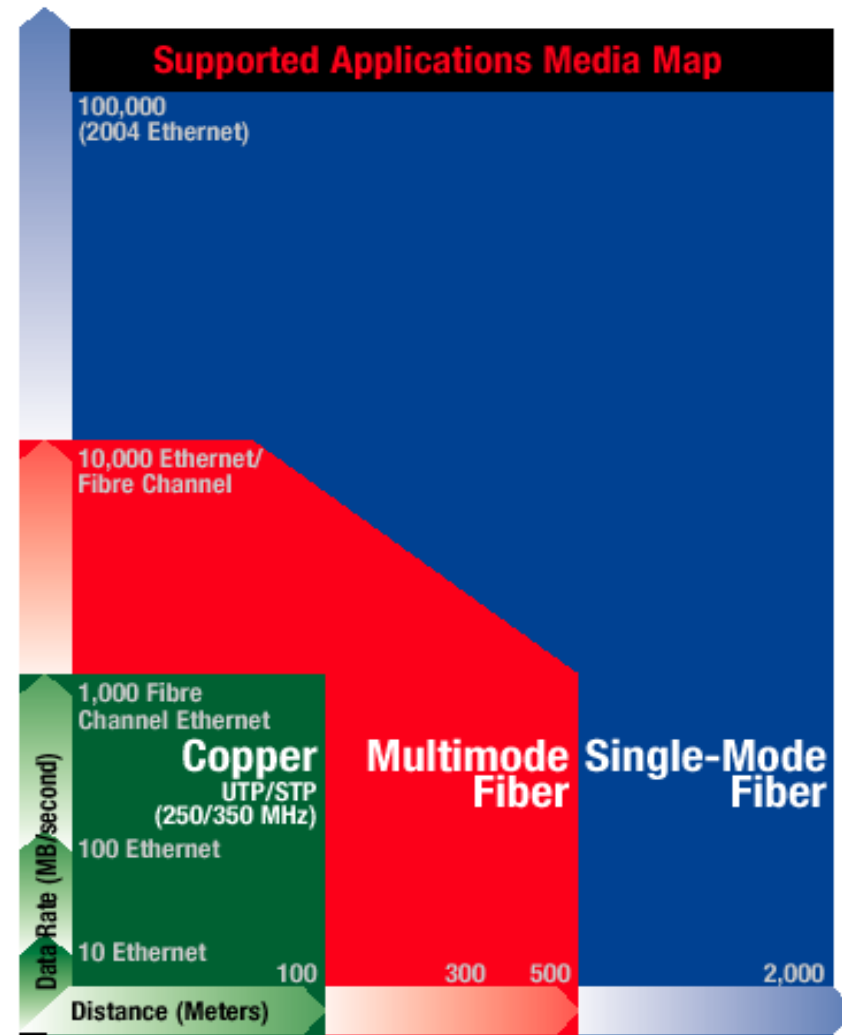
Market position: Global market player in fiber optic and copper structured cabling solutions.

Customers: government, education, military, industrial, corporate, residential

Applications: Hybrid fiber and copper cabling systems for distributed, zoned and centralized premises to campus networks.

## Cabling Systems:

- 350MHz Cat 5E
- Cat.6 Link & Component
- 62.5um & 50um MM fiber
- SM fiber
- 10Mb to 10Gbps
- LAN to Campus
- PC to Switch
- Certified Installation & Warranty



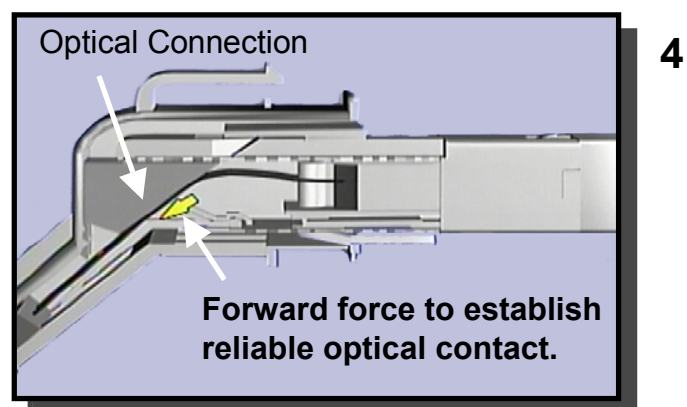
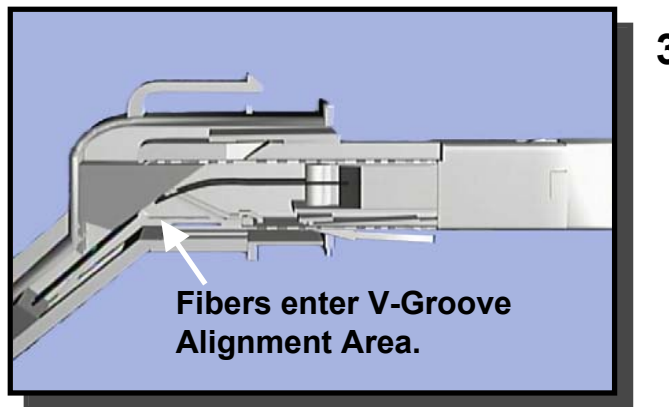
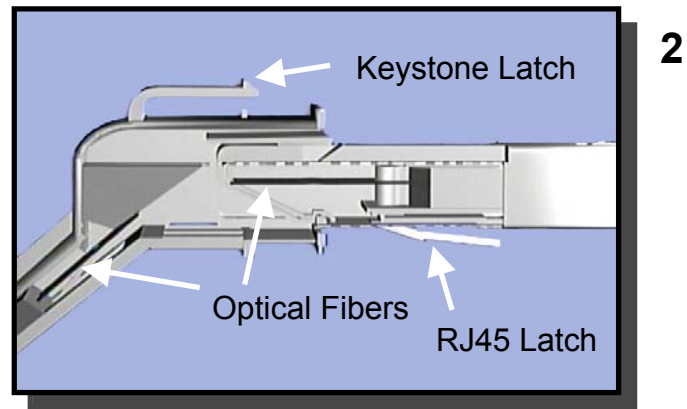
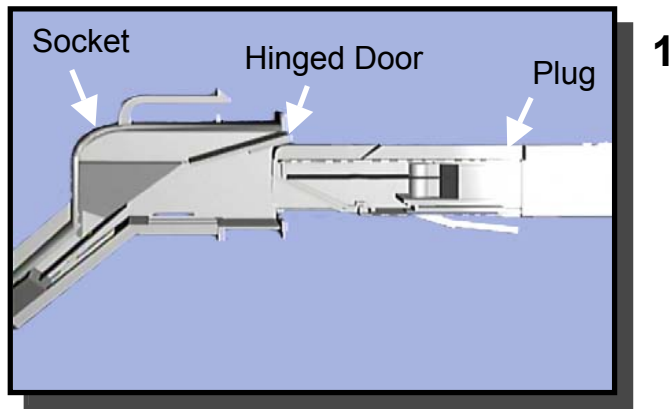


# Features and Benefits



- Low applied cost
- Ease of and very fast installation / restoration
- High performance
- Standardized - networking, cabling, components
- Keying, color coding for multi-level security level
- Low reflection for analogue transmission
- Supporting transceivers 10, 100, 1000 MB/s

# Volition VF-45 design concept



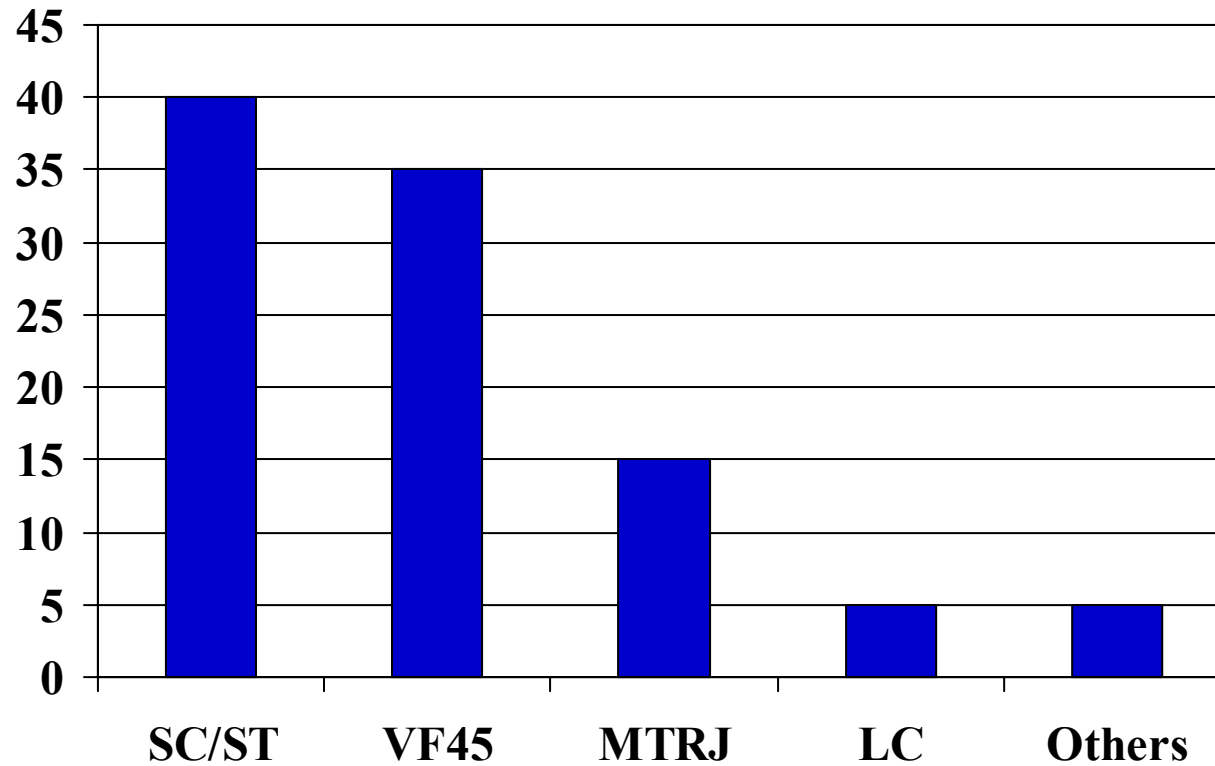
# Volition VF-45 Achievements

- High density , angle polish , low applied cost design
- Have familiarity of an RJ-45 connector Field mountable in less than 2 minutes with 95% yield
- Standardized (TIA/EIA, ISO/IEC , Fiber Channel - type SG)
- Compatible with standard glass optical fiber
- Ensure end-to-end connectivity and copper migration
- Designed for applications beyond traditional backbone solutions
- 7 VF-45 licensees(2 global + 5 regional), 3 pending (global)
- 5 transceiver licensees (2 global + 3 regional)
- Over 4 million installed worldwide - leading FTTX interconnect
- 100% annual growth rate over 1999-2001 period



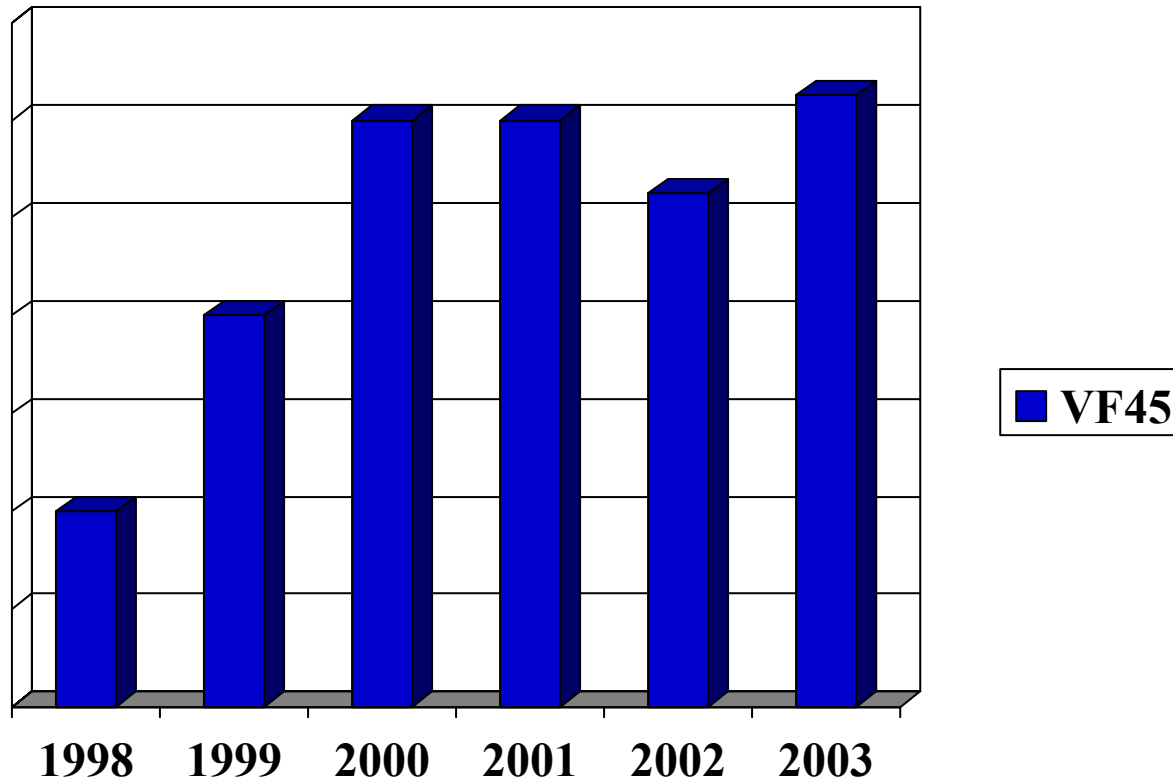
# *Global M/M Horizontal Connector % market shares*

## *2003 estimate*



# *VF 45 Unit Growth 1998 to 2002*

*2003 Estimated*



# Volition Installations: Education

- **George Washington University**
- **MIT**
- **KU**
- **SF State**
- **NYC Public Schools**
- **Gonzaga College High School**
- **Nashville City Schools**
- **Tulahoma School Dist.**
- **Universty of Wisconsin**
- **Hong Kong International School**
- **VIC Public Schools - Australia**

“Collapsed” HUB Site (GWU) 1200 plus ports



## The Volition Advantage

- **Less labor, maintenance & space**
- **Centralized Architecture – Fiber distance (GW 180 closet to 11 Hub sites)**
- **Ease of installation and upgrades (K-12, Volunteering parents installed most networks)**
- **Total Cost of ownership**

# Volition™ Installations - Corporate

- Qwest
- Allianz Insurance - Germany
- Microsoft
- Bally's Casino - Las Vegas
- Hilton Hawaiian Village
- Lego Toys - Denmark
- Louvre Museum- France
- Master Foods - Austria
- TV Norge - Norway
- Merrill Lynch – UK
- 3M ( over 25 sites worldwide)
- Price Waterhouse - UK
- Chiba Aoba Hospital – Japan
- Hannstar – Taiwan
- GM – China
- Dell – China



## The Volition Advantage

- Distributed/Centralized architecture
- Ease of use
- Vendor reliability
- Total Cost of ownership

# Volition Installations : Industrial

- Brad Foote Gear Works
- Ash Grove Cement
- GPS Trucking
- Pirelli Tyres
- Barry Blower Mfg
- Coca Cola
- Peugeot
- Ferrari
- Varta Batteries
- Thyssen
- 3M
- Akzo Nobel
- Kindred Ink

## The Volition Advantage

- Fiber Distance
- Immunity to EMI/RFI interference
- Rugged construction
- Ease of installation and maintenance



# **Volition™ Installations: Military/Govt.**

- **Camp Smith-PCC**
- **Wright Patterson AFB**
- **Davis-Morthan AFB**
- **Minot, Mc Cord & Offer AFB**
- **Royal Danish Navy**
- **Spanish Navy**
- **Dutch Marine**
- **French Navy**
- **Royal Navy Denmark**
- **NATO HQ**
- **Belgium Army**
- **Norwegian Army**
- **Italian Army**
- **Israel MOD**
- **Canadian DOD**



**NATO Building - Brussels**

## **The Volition Advantage**

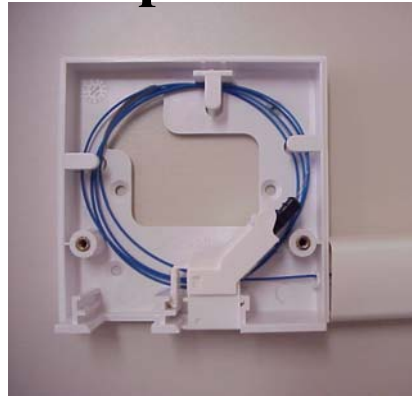
- **Ease of installation and maintenance**
- **Immunity to EMI/RFI interference**
- **High Security**
- **Keyed Access Control – Classified Networks**



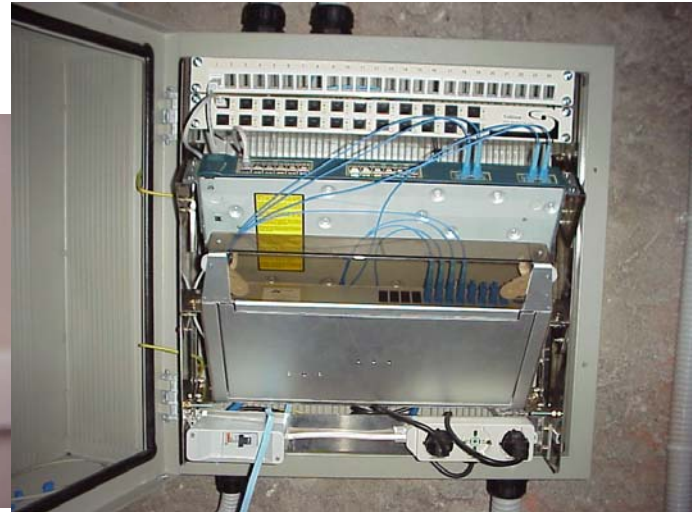
# Volition Installations: FTTH

- Milan, Italy
- Torino, Italy
- Rome, Italy
- Gavle, Sweden
- Stockholm, Sweden
- Cyber Appt, Korea
- Samsung FTTD, Korea

Apartment



Closet



## The Volition Advantage

- Fiber cable diameter and flexibility
- Centralized Architecture – collapsed row houses and multi-tenant apartments
- No bandwidth constraints for future applications (VVD)
- 10Mb fiber connection to every apartment/home
- Ease of installation and maintenance
- Total cost of ownership

# Volition VF-45 Licensing Status

- **Openly licensed under ANSI standards**
- **Supply of non-branded VF-45 available**
- **Rights to manufacture with minimal royalty**
- **Current VF-45 Interconnect licensees:**
  - Europe: Siemens, Rutenbeck, ITT
  - Asia: U-Conn, Baycom, Vidar-SMS
- **Current VF-45 transceiver licensees:**
  - Radiantech: 10Mb, 100Mb and 1 Gb
  - E20: 100 Mb and 1Gb designs
  - Infomax-CTS: **Component & module supply of 100 and 1000 Mb**

Currently VF-45 Transceiver license is open from 3M with no fees



# Volition VF-45 Partnership Focus

- Strategic partnership development as a key element of 3M Enterprise Strategic plan
- Dedicated OEM market development resources added in the US and Europe
- Lab resources for product modification being allocated
- Development of joint action plans to increase market penetration and establish de-facto standard.

# Volition VF-45 Partnership

## Value Proposition

### ➤ **Business Elements**

- Global support
- Vendor reliability
- Supply agreement and licensing options
- OEM partnership development strategy
- Access to 3M products and technologies

### ➤ **Product Elements**

- Easy to use
- High yield installation – low applied cost
- High strength GGP Fiber
- 50um, 62.5 and singlemode fiber
- Approved by Fiber Channel, ISO/IEC, TIA/EIA, EN – open standard
- Copper/Fiber system and roadmap
- 4 million installed ports – leading FTTX interconnect