

SubOptic  
2007

*Enabling Global Communications*

**MSIP Solution** (Multi-Service Integrated Platform)

& Its Impact on Submarine Cable System

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# Presenter Profile

Mr. Miwa graduated from National University of Shinshu, Japan in 1999 where he majored in Electrical and Electronic Engineering. He started his career at NEC Corporation as a system engineer with a focus on Digital switching systems, IP routers and access servers, and was in charge of system engineering for various solutions for access network applications. He has been responsible for system engineering of submarine cable systems for major carriers around the world since 2002. He has engaged in various submarine cable system projects in North and Latin America as well as in Asia. This includes new cable system construction and capacity upgrade projects of both Repeatered and Un-repeatered applications.

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# Transition of Demands in Submarine Cable System

## Current Topics

- ◆ Smaller Footprint & Power Consumption
- ◆ Lower Board Failure Rates
- ◆ Simpler System Management

## Toward NGN

- ▶ Optimization for IP traffic transmission
- ▶ Systematic management with IP network
- ▶ Effective Use of Bandwidth

CAPEX/OPEX  
Reductions

Migration to  
IP based Network

## Conventional Requirements

- ◆ Longer Distance & Larger Capacity
- ◆ High-speed Recovery
- ◆ High System Availability
- ◆ Various Service Transport
- ◆ 25 year Design Life

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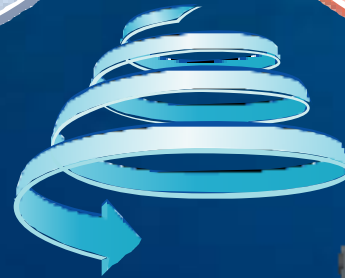
# Multi-Service Integrated Platform (MSIP)

**CAPEX/OPEX Reductions**

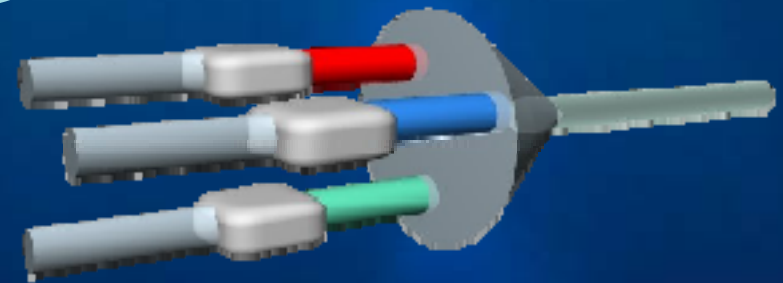
**Migration to IP based Network**

Fundamental Reform in  
Equipment Configuration

Capability of  
Various Ethernet Services



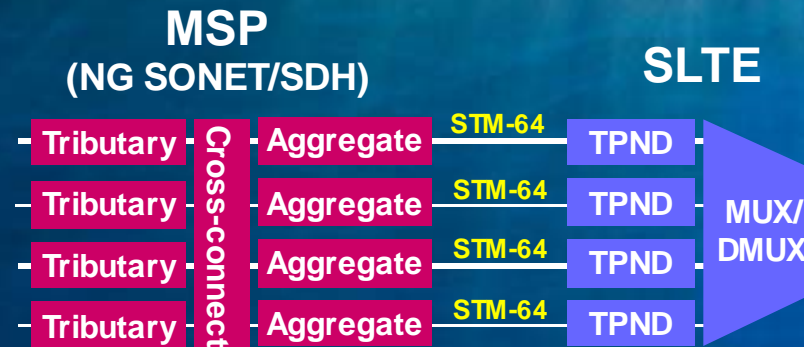
**MSIP**



**= MSP x SLTE (= O-E-O OXC)**  
(NG SONET/SDH)

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# Conventional Equipment Configuration



- **Various Service Transports**

- SONET/SDH, PDH & Ethernet

- **High-speed Recovery & High System Availability**

- Various network protection schemes (MSP, MS-SPRing, SNCP etc.)

- **Longer Distance & Larger Capacity**

- High density WDM
- Ultra Long-haul transmission
- Various modulation format (NRZ & RZ)

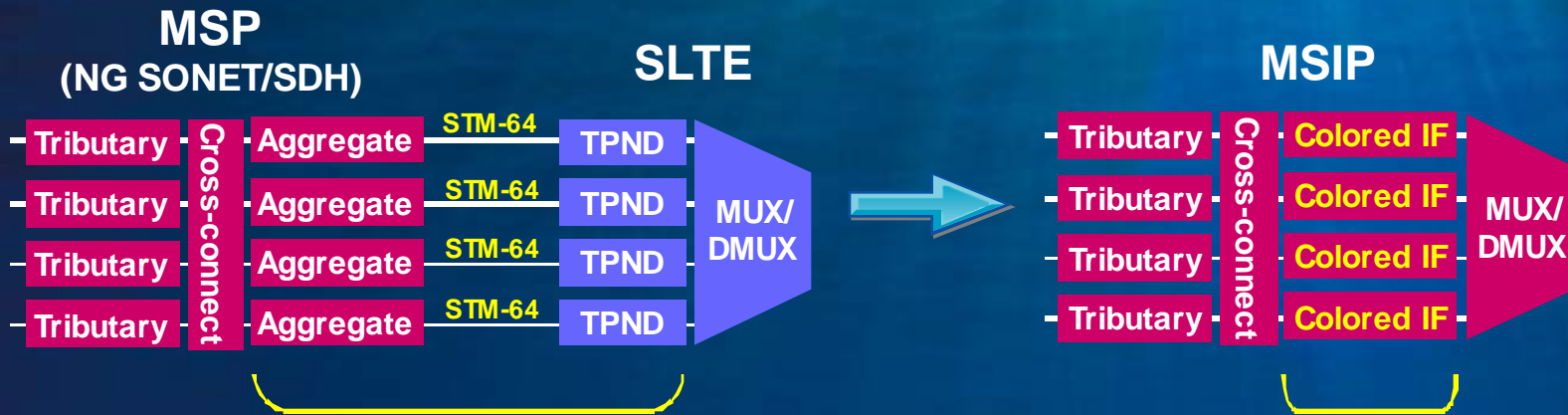
- **IP traffic transmission technologies**

- GFP, LCAS, VCAT & RPR
- OTN

# MSIP Configuration

(Conventional Configuration)

(**MSIP** Configuration)



■ Simplified Equipment Configuration

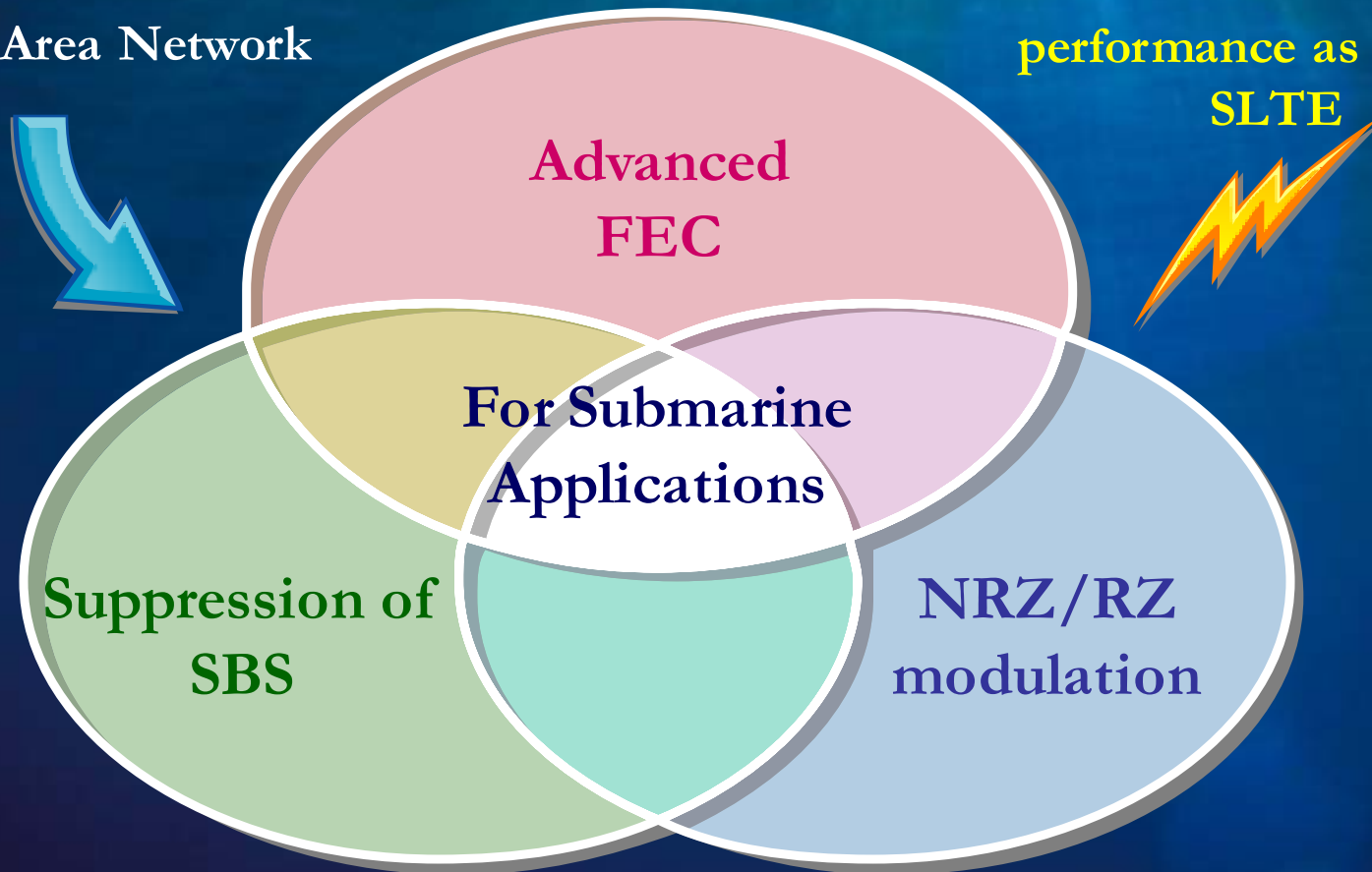


■ Simplified System Management

# Colored Optical Interface for Submarine Applications

Terrestrial Colored IF  
For Metro Area Network

Same transmission  
performance as that for  
SLTE

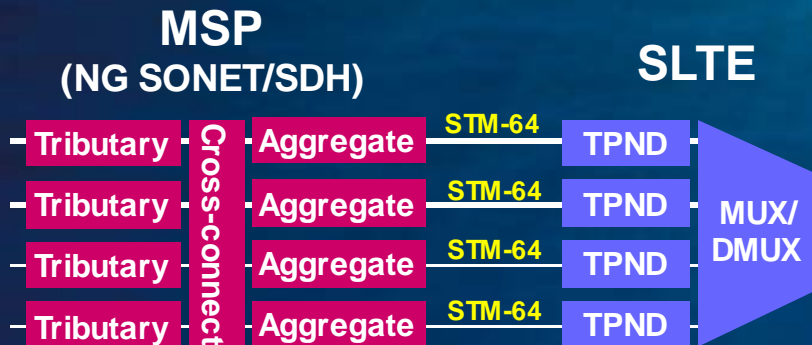


- **> 9,000km** DWDM transmission (Repeated)
- **400km** DWDM transmission (Un-repeated)

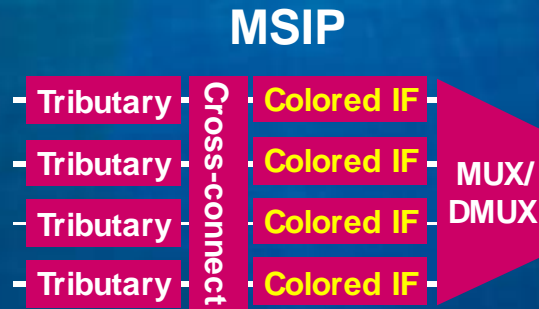
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# Features of MSIP

(Conventional Configuration)



(MSIP Configuration)



- Simplified Equipment Configuration
- Simplified System Management



**CAPEX/OPEX  
Reductions**

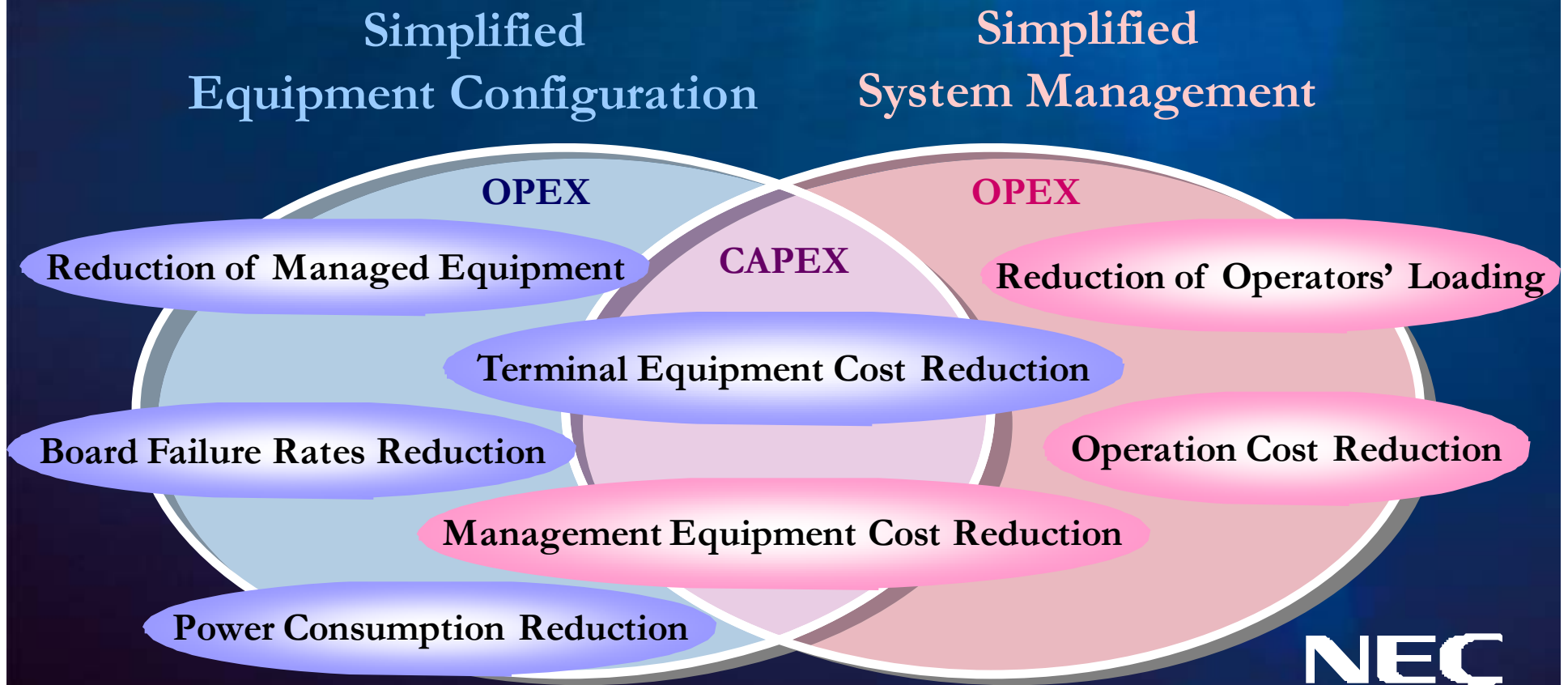
- Maintain Same Transmission Performance as for SLTE.
- Maintain SLTE & MSP functionality as it is.



# Impact on Submarine Cable System

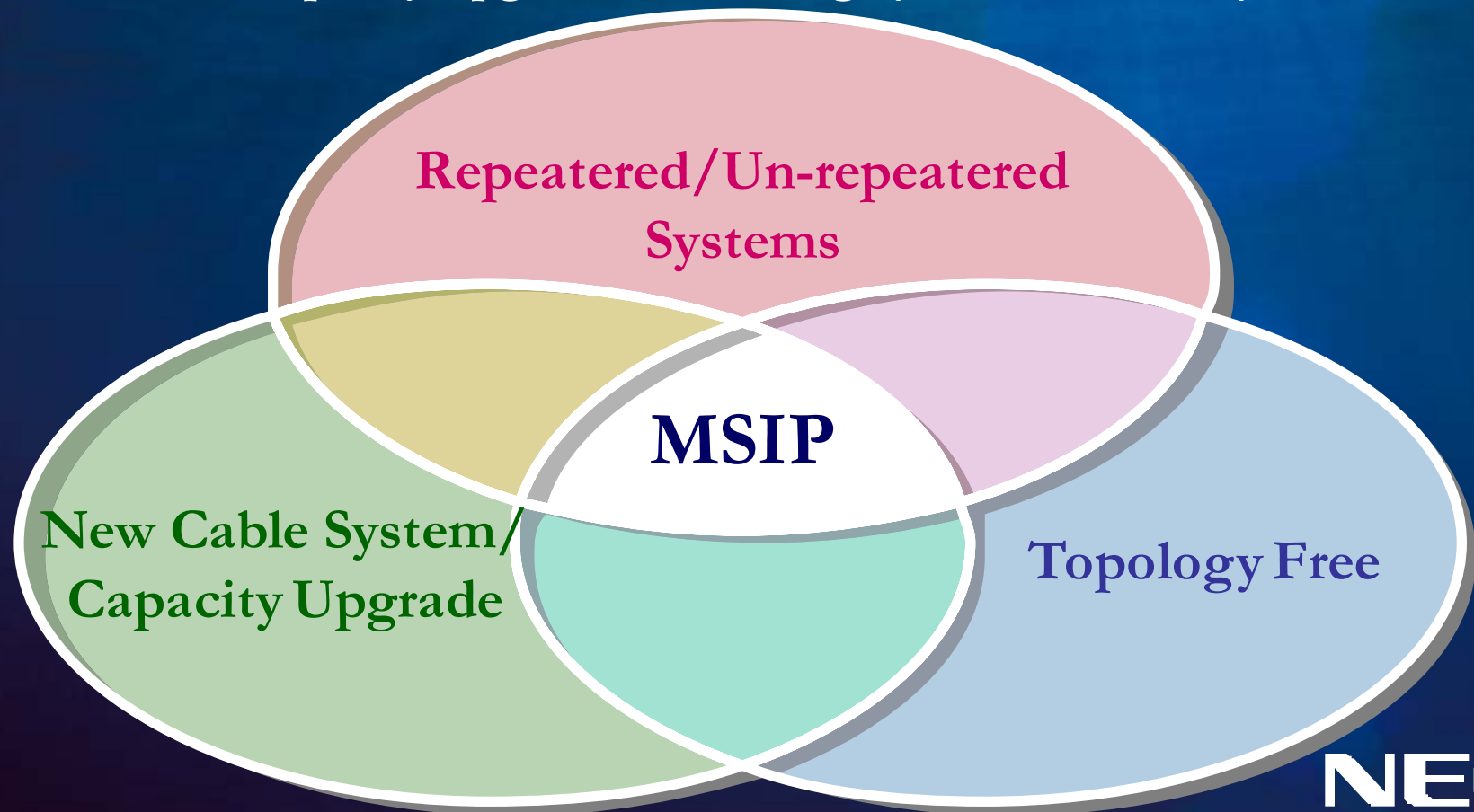
## ■ Significant Impact on Various Factors

10Gb/s TPND & Aggregate interfaces comprise a large percentage of various equipment parameters.



# MSIP Application

- **Performance of MSIP already verified in the actual systems**
  - Applied to Various Applications.
  - Include Capacity Upgrade of Existing System installed by Others.



# Summary of MSIP

**Performance**

**Functionality**

**Application**

**Added Value**

- Same transmission performance
- Same functionality
- No restriction of applications

- Substantial Improvements in CAPEX/OPEX;
  - Reductions in Equipment & Operation Costs
  - Board Failure Rates Reduction
  - Power Consumption Reduction

## Conventional Requirements

- ◆ Longer Distance & Larger Capacity
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- ◆ High System Availability
- ◆ Various Service Transport
- ◆ 25 year Design Life



## Current Topics

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# Further Functional Enhancements



## ▶ Toward NGN

Various IP traffic transmission technologies already supported.

- GFP, LCAS, VCAT & RPR

In addition, MSIP capable of supporting GMPLS.

- Optimize traffic routing
- Improve efficiency of bandwidth usage
- Reduce risk of simultaneous failure of working and protection paths

## ▶ Longer Distance & Larger Capacity

MSIP capable of supporting RZ-DPSK modulation.

- 2.5dB improvement in OSNR tolerance

# Conclusion

**MSIP** will be the optimum solution to satisfy both Today's & Future demands.

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**We are committed to supporting our customers  
as they migrate to NGN.**

**Thank you very much.**

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