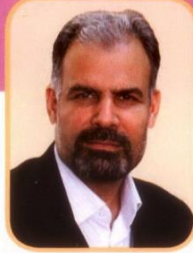


Second Laureate Applied Research



● **Project title:** DWDM system design and implementation having 40 channels (PARS DWDM800/400)

● **Researcher:** Seyed Ali Alaviyan (Ph.D.)

● **Collaboration Organization:** Iran Telecommunication Research Center (Research Institute for ICT)- The Faculty of Applied Science of Communications

● **Collaborators:** Ali poureslami, Ahmad reza Kalantary, hossein Ali Emami, Jebraeil Pezhman, Mohammad Reza Azadmanesh, Mohammad Javad Ghasemi, Seyed Iman Alavian, Zahra Nourozi

Abstract:

A simplified uni-directional “Pars” DWDM scheme in transmission of optical link is depicted in the figure. It is the first full XFP based very high capacity and ultra-Long Haul DWDM system having 40 channels with 100GHz spacing with simplified base upgradable to 80 channels with 50 GHz spacing in C band.

The system covers 150 km transmission distance in one span and 600 km without regeneration. It is transparent for all technologies and bit rates: SDH (STM1-/ STM4-/ STM16-/STM64-), Ethernet (GbE, 10GbE), SONET (OC3- to OC192-) and so on. The system is ultra-compact, so it covers 80 channels in “One Rack”.

Some important aspects of proposed and implemented DWDM system are specified as following:

- 3R multirate Transponder
 - Hot pluggable optical Modules and Cards
 - Network management system based on SNMP
 - 100Mbs Ethernet over Optical Supervisory Channel (OSC)
 - OS independent Network Management System with user friendly GUI
 - Reconfigurable Optical Add-Drop Multiplexing Capability
 - FEC support on 10Gbps according to ITU-T Recommendation G.709 for more power budget
 - Green product and low power consumption
- The most important modules of Pars DWDM system are presented:
- Transponder module: it takes and accommodates client signal in 1550 or 1310 nm and convert it to one of DWDM wavelength as specified by ITU-T G.694.1 recommendation.
 - Control and management module: all units are equipped so we can monitor and control all important parameters of system operations. These parameters collected in control unit and uses by network management system.
 - Amplifier module: it can be set as: pre-amp, post-amp and in-line amplifier. Amplifier unit is controlled by network management system.
 - Some other components are: Optical DWDM Mux/ DeMux, that multiplexes/DE multiplexes wavelengths, dispersion compensator, Optical supervisory channel and power unit.

