Robert C. (Bob) Pachal

PROFESSIONAL EXPERIENCE

1991-present - Independent Telecommunications Consultant

PACOMM CONSULTING INC., WHITBY, ONTARIO – President

UNITEL COMMUNICATIONS INC. (Now MTS Allstream Inc.), TORONTO, ONTARIO

1990-1991 Vice President, Product Development and Technology

1988-1990 Vice President, Network Services

1985-1988 Vice President, Engineering

1982-1985 Director, Engineering Planning.

1971-1982 BELL CANADA, OTTAWA AND TORONTO, ONTARIO

Held a wide variety of line and staff management positions with progressively increased responsibility in the operations and engineering departments.

TELECOMMUNICATIONS STUDIES

- **National Carrier Network Modernization (North African Country) --** Mr. Pachal is the lead consultant on the first phase of a national backbone network modernization program. For this phase of the program he led the development of a network design framework for a "Next-generation" IP transport and switching infrastructure and the transition strategy to migrate from the current infrastructure, maximizing the use of existing infrastructure investments. The network design framework was expanded into an RFI to international vendors and will lead to a supply agreement for implementation.

- **Risk Assessment – Major Canadian Telecom Carrier –** Provided technology and operational management expertise to a risk assessment of the carrier's ability to deliver a new set of MPLS-based services over a Next Generation Network (optical cross-connect). Assessed the OSS/BSS supporting the capacity management process and systems capability to manage the integration of legacy and NGN (converged voice and data) capacity.

- **Major Power Utility –** Developed technical requirements for a telecommunications infrastructure to support the teleprotection, control and operations systems for a provincial power utility. Assessed the technical and economic feasibility of fibre optics versus digital microwave technology for both a third party carrier-provided network and an internal backbone network. Prepared a business plan that modelled the relative costs and revenues of an in-house OC-3 microwave network versus an out-sourced fibre optic network.

- **Major Power Utility –** Developed functional business requirements for a highly-featured

customer contact centre and service management operation at a provincial power utility to form the basis of re-focusing a RFP to business strategy and objectives. Managed the vendor selection process leading to the corporate recommendation for the selected solution. This project involved six integrated call centre operations with sophisticated IVR and CTI integration with SAP R3 CIC/CCS as the front office.

- **Major Canadian Financial Company --** Development of solution alternatives and requirements to implement a nation-wide dial-in TCP/IP network. Developed a comprehensive cost model to analyze vendor solutions. Managed the analysis of proposals and impact analysis on compliance with corporate objectives. Provided counsel to this organization during a major merger on its long distance telecommunications arrangements that resulted in a savings estimated in excess of $2 Million per year.

- **e-Sri Lanka Government Broadband Connectivity Program –** Mr. Pachal is a key member of a team headed by McCarthy Tétrault that is supporting the Regional Telecommunications Network project, one of two major initiatives under the e-Sri Lanka initiative. This initiative will see the placement of multimedia telecentres throughout the low teledensity areas of Sri-Lanka. He is determining the underlying technical, operational and quality standards, the network technology architecture, the basic design for the backbone transport, access and switching infrastructure for an RFP in support of a competitive auction for the networks. He will provide the technical expertise in the assessment of vendor bids.

- **Universal Service/Access Obligations (Jamaica) –** Mr. Pachal is teamed with McCarthy Tétrault supporting the Jamaica telecommunications regulatory authority on the establishment of government policy and regulations concerning Universal Service/Access Obligations (USO) with a focus on providing broadband connectivity to public institutions. He assisted in the preparation of a public consultative process concerning the USO and a Universal Service Fund to support the development of broadband connectivity to public institutions. The project included a high-level assessment of the costs to deliver high-speed Internet connectivity to public institutions throughout the country.

- **British Columbia Digital Divide –** Mr. Pachal was a key member of a team of two consultants engaged to provide the Government of BC with an insightful strategic analysis of the most predictably effective business models to close the rural broadband connectivity gap in BC in a short timeframe. The consultants developed and provided strategic analysis of three broadband access business models. The analysis included a high level cost analysis as well an analysis of how the models balance public policy, cost saving objectives and closing of the digital divide. The total Broader Public Sector (government, crown corporations and qualifying agencies) telecommunications expenditures (the "spend") were estimated. Recommendations were provided to the Government on how the spend could be leveraged through a competitive bidding process to both reduce the total cost to the Government and also make significant progress in connecting unserved communities throughout the Province. Mr. Pachal developed budget level cost estimates to extend transport infrastructure to unserved communities and to deliver a nominal level of broadband connectivity into these communities was provided. An action plan of the sequence of steps needed to move through public policy to implementation of the closing of the digital divide was provided.

- **Exploring an Information Highway for Southern/Rural Ontario –** Mr. Pachal provided the project direction and major technical and management expertise to all phases of this multiphased project encompassing a comprehensive inventory of infrastructure and services, an analysis of existing capabilities and user costs, projections of services and costs

into the future, and actions and strategies for improving capabilities addressing all of Southern Ontario with particular focus on rural communities. He provided advise to the Province of Ontario on public policy matters associated with broadband connectivity to both Southern/Rural and Northern Ontario.

- **Towards an Information Highway for the New Economy in Northern Ontario --** Mr. Pachal provided the project direction and major technical and management expertise to this complex project encompassing a telecommunications assessment, a comprehensive inventory of telecommunication services and facilities, an analysis of the existing telecommunication capabilities, a review of the impediments and obstacles that inhibit the realization of a full Information Highway in Northern Ontario, a strategic plan to achieve the desired end results, encompassing both public sector and private sector elements, with emphasis on the alternatives available to the government.

- **Northern Canada Rural Broadband Connectivity Business Plan (Blue Sky Net – North Bay and Area) –** Mr. Pachal provided the project direction and major technical and management expertise for the Blue Sky Net Business Plan project. He provided the lead role in the preparation of the RFP, including the evaluation criteria and overseeing the entire process through to the selection of the vendor. This process was complicated with the addition of another community region in the course of the process which required careful co-ordination to maintain a fair bidding process. He led the evaluation process and negotiated the framework of a business agreement with the selected vendor.

- **PSA.net – Local Broadband Access Solutions –** Mr. Pachal provided the project direction and major technical and management expertise for the PSA.net local broadband access project. The study involved an assessment of existing broadband infrastructure and services to identify which areas have broadband access services, and which do not, as well as where infrastructure is available to support expansion programs. The demand for and potential revenues from broadband services in the unserved areas were estimated, using a survey approach. A reference network plan to provide infrastructure and services to these areas and based on 802.11 fixed wireless technologies was developed. A business case was prepared for the new network, including the identification of funding from public sector funding agencies needed to meet economic hurdle points. A further assessment of leveraging local broadband access with a cellular expansion program was conducted and a business plan prepared.

- **Arizona Broadband Technology Study –** Mr. Pachal provided the project management and major technical and business planning expertise to the Arizona Broadband Technology Study. This study had four components. First, a comprehensive assessment of existing and forward-looking broadband local access and transport technologies was prepared. Second, a detailed model was constructed that allows individual communities to input their characteristics and receive estimates of the capital and operating costs for user-selected broadband technology infrastructures. Third, a primer on business models and financing options was prepared. Finally, regulatory and policy matters that influence the avenues a community can take in upgrading its broadband capabilities were assessed.

- **Arizona Telecommunications Assessment –** Mr. Pachal provided the project direction and major technical and management expertise to this pilot project encompassing an assessment of broadband capabilities (e.g., existing infrastructure and services) and needs in twelve communities and two native reservations in the State of Arizona. This community broadband assessment included an inventory of telecommunications infrastructure and services, an extensive consultation program with community influencers and the design of a survey instrument to determine the demand and the ability to pay for broadband

telecommunications.

- **807 Northwest Network Business Planning (Rural Community Network) –** Mr. Pachal provided the major technical and management expertise allowing the planning stage development of the 807 Northwest Network consisting of the vast rural and remote areas of Northwest Ontario with Thunder Bay as the urban centre, from the business plan, technology plan to the network design. He played an active role in the infrastructure and service planning through to vendor negotiations and consultations.

- **NetCentral Network Business Planning (Rural Community Network) –** Mr. Pachal provided the major technical expertise behind the development of the Stage II Application to the Northern Ontario Heritage Fund Corporation for the NetCentral regional community network, centred around Sudbury, Ontario and encompassing approximately 43 rural communities. He also led NetCentral's RFP process, negotiated with the vendors of choice, and assisted in designing the network infrastructure and services.

- **Municipal Right-of-Way Use and Compensation and Terms –** Mr. Pachal prepared an assessment of the prices and conditions of right-of-way (ROW) access. The assessment includes a range of alternative suppliers in Toronto. Information is being gathered through a series of consultations with owners and occupants of ROWs.

- **Improving Telecommunications in Timiskaming-Cochrane –** Mr. Pachal provided technical and regulatory advice to support a study investigating the feasibility of upgrading from party line to individual line service. He had contact with the regional service provider, assessed technical alternatives, and assisted in assessing cost and feasibility estimates.

- **India's Telecommunications Regulator –** Developed and delivered a seminar sponsored by the Telecommunications Regulatory Authority of India (TRAI) on Interconnection, Equal Ease of Access and Interconnection Billing Systems in a multi-operator competitive environment.

- **Asset Valuation - Canadian Railway Transportation Industry –** Conducted a valuation of CN's fibre optic cable systems and rights-of-way as a member of a team with a major financial investment firm for the purpose of establishing a purchase value for outside investors. Prepared a business and financial plan for telecommunications business opportunities leveraged on the fibre and rights-of-way assets. Advised CN senior management on business strategy and models that resulted in a joint venture between CN and Fonorola. Prepared valuations for telecommunications initiatives involving major fibre optic-based networks.

- **Rights-of-Way Value Assessment and Negotiation –** Assessment of value of highway rights-of-way to various industry sectors in the Province of Ontario, developed revenue projections and recommendations for a public-private inter-working process. Advised City of Toronto, City of Ottawa, Regional Municipality of Ottawa-Carleton, Federal Government, Durham Region, CN Rail and CP Rail on strategy and pricing of right-of-way and access agreements for telecommunications providers. Supported negotiations for leasing arrangements, joint ownership, sharing and terms and conditions for use of right-of-way and structures on right-of-ways involving railway companies, power companies, Canadian common carriers and transportation agencies.

- **Competitive Local Exchange Carrier (CLEC) Industry –** Developed business and technology strategy and supporting business plans for a company positioning to enter the

emerging competitive local exchange industry. Managed an RFP process and business "partnership" arrangements with existing service providers. Member of the CRTC Steering Committee and participant on CRTC Implementation Steering Committee (CISC) Working Groups on Local Number Portability, Customer Transfer and Billing, Network Planning and Technical Interfaces. Provided counsel on preparation of investment memorandum for raising private investment and inter-worked with Investment Bankers on assessment of the business and due diligence. Worked with large USA CLEC on rationalization of its business plan for the Canadian market.

- **Federal Government, Government Telecommunications and Informatics Services (GTIS) -** This organization oversees and manages the provision of telephone services and the nation-wide WAN backbone for the federal government. It is the largest telecommunications account in Canada. The project entailed a detailed study of the network architecture, the overall management of the network and an assessment of the degree to which this network is optimized to minimize overall cost consistent with meeting performance and management policies and objectives. A second dimension of the project was the development of a prioritized implementation plan aimed at meeting federal government budget targets.

- **Major Canadian Bank Network Performance -** This bank has a large national backbone network with interfaces to an international network that carries its voice and data applications. Considering the large dollar value of the transactions carried over this network, the network must perform to very high standards. The project required an assessment of the standards, network architecture, technology and management to arrive at an assessment of the expected performance and recommendations to reach objectives for performance. Advice was provided to the client on technology issues and organization/management framework. One area addressed was the integration of network management and operations of traditionally separate telecommunications and information systems (IS) functions.

- **Cable Television Laboratories Inc. (CableLabs) -** This U.S.A. company is funded by cable television companies in the U.S.A. and Canada that represent 85% of cable TV subscribers in the U.S.A. and 70% of Canadian subscribers. One project addressed network architecture and technology assessment of using ATM technology as a WAN for cable TV hubs and as a distribution methodology. Another project focused on the development of an organizational management framework for the cable industry as a provider of PCS. In addition, CableLabs retained Robert Pachal to represent the cable TV industry at meetings of the ANSI TIS1 Committee, the standards working group responsible for establishing technical standards for broadband networks.

EDUCATION

Master of Business Administration (Major in Finance and Operations Research), Queen's University, Kingston, Ontario, Canada, 1971
Bachelor of Engineering (Electrical) – Royal Military College of Canada, 1966

MEMBERSHIP OF PROFESSIONAL SOCIETIES

Association of Professional Engineers of Ontario
Member, Institute of Electrical and Electronic Engineers
Canadian Telecommunications Consultants Association (CTCA)