

## Roger M. Hay

Roger Hay is President of Roger Hay & Associates Ltd., where he and his associates help clients around the world build and implement business plans based on expert appreciation of trends and capabilities in telecommunications technology. He brings extensive experience in public telecommunications and cable television, in the areas of business planning, network planning and engineering. He is a founding partner of the Pacomm Consulting Group.

He ***develops business plans*** for telecommunications operators. This includes local and long-distance fixed-wire, cellular, PCS, cable and local broadband operators, both incumbents and new entrants, in North and South America, Europe and Australasia. His emphasis is on getting the right match between business goals and technologies, including IP-based applications and solutions. His experience includes:

- *Telecommunications carriers* – Prospective Canadian fixed wireless operator; Indian state-wide fixed service operator; Brazilian competitive local service provider; Brazilian competitive long-distance operator; Portuguese competitive local and long-distance operator; prospective local exchange carrier in the eastern U.S.; Paraguayan local operator; prospective Mexican fixed-wireless local service provider; Mexican competitive long-distance operator; Philippines fixed wireless deployment; pan-European data services provider; telephone service provider in the Czech Republic; Australian outback network costing
- *Wireless carriers* – Prospective U.S. PCS operators; Italian wireless network operator; U.S. paging operator
- *Carrier's carriers* – Prospective western European carriers' carrier; wholesale city carriers in Memphis, Tennessee and Burlington, Vermont
- *Cable operators* – Spanish full-service cable television operator
- *Telecommunications carrier equipment manufacturers* – U.S. cable telephone equipment manufacturer
- *Other* – Rural broadband platform choices in Arizona, U.K. air traffic communications network cost structure; U.S. electric power utility last-mile communications needs and alternatives

He ***performs due diligence reviews*** of business plans and technology for several major financial institutions in North America, Europe and Asia. He addresses strategy, demand, revenues, platform characteristics, technology evolution and risks, system dimensioning, implementation plans, quality, reliability and operations plans, and post-investment implementation reviews. His experience covers:

- *Telecommunications operators* – Mexican long-distance operator, Malaysian competitive local, long-distance and wireless operator; local service operator in Indonesia; local, long-distance and wireless operator in the Dominican Republic; privatization of Telebras; proposed dark fibre provider in the U.S.; fibre optic submarine cables between Guam and Manila and between Alaska and the state of Washington; fibre optic cable across Alaska; regional provider of high-speed Internet and related services in the U.K.; prospective power line telecommunications operator in the U.K.
- *Wireless operators* – Mexican PCS operator; Brazilian cellular operator; U.S. enhanced specialized mobile radio operator
- *Fixed wireless* – Fixed wireless operators in the Czech Republic and the U.K.

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- *Manufacturers* – Several U.S. and U.K. test equipment manufacturers; European manufacturer of fixed wireless equipment; U.S. manufacturer of data-collection and -distribution systems for space programs; U.K. developer of local broadband fixed wireless equipment
- *Other* – Manufacturer of power line telecommunications technology; prospective provider of carrier hotels (telehouses) in North America and western Europe; Spanish satellite television distributor; cable operators in the Netherlands

He specifies, evaluates and develops *platforms and products* for service providers, manufacturers and users, including the following experience:

- RFI for IP-based network expansion for a developing-country's PTT
- Technology strategy for a third-generation equipment manufacturer
- Use of low-earth-orbit satellites for electric power load-shedding
- Financial benefit of improving third-generation mobile data efficiency
- Editorship of the DOCSIS-1.0 cable modem r.f. interface specifications
- Broadcast and IT network reconciliation for a Canadian broadcaster
- Product planning for a European microwave equipment manufacturer
- Product positioning for a U.S. cable telephone equipment manufacturer and a U.S. provider of operations support systems
- Non-broadcast program distribution alternatives for a European broadcaster
- Leading-edge technology watch for a European broadcaster
- Platform requirements for Canadian local number portability
- Spectrum management and telephone number strategy for Colombia
- Planning and provisioning processes for a South American telephone company
- Test bed development for subjective voice transmission quality assessment

He prepares comparative *radio license* submissions for existing and new operators and helps prepare for spectrum auctions. His experience includes existing and prospective PCS operators in Canada, several bidders for 700-MHz and PCS spectrum in the U.S., a UMTS vendor in New Zealand, a bidder for PCS spectrum in Taiwan. In addition he participated in a government review of cellular license bids in Colombia.

Prior to entering the consulting field, he gained the following experience:

- Management of an R&D program at Cable Television Laboratories in the U.S. on integrating PCS technology into cable television infrastructure.
- Business planning, capital budgeting and network planning at a major competitive long-distance telecommunications carrier.
- Redesigning the technical planning organization of a long-distance carrier.
- System engineering, planning and implementation of voice, data and message switching, operations support systems and transmission systems.

Mr. Hay held previous positions at Arthur D. Little, Unitel Communications Inc., Bell Canada, Canadian Pacific Telecommunications and Canadian Motorola Electronics.

Mr. Hay holds the Bachelor of Engineering degree from McGill University, Montreal, and the Master of Business Administration degree from the University of Ottawa. He is a Senior Member of the IEEE, a Professional Engineer, and a signatory of the ethics declaration of the Canadian Telecommunications Consultants Association.