

HAUSFELD CONSULTING

GARRY HAUSFELD

SATELLITE COMMUNICATIONS ENGINEER

Full Name: Garry James HAUSFELD

Nationality: Australian

Qualifications: **Bachelor of Engineering (Hons)**, University of Newcastle,
Major: Computer Engineering.

Master of Engineering Science, University of New South Wales,
Dual Major: Systems & Control, Communications

Graduate Certificate of Management, University of Southern
Queensland

Professional Associations:

- Senior Member, Institute of Electrical & Electronics Engineers (IEEE).
- Member, Institute of Engineers Australia (IEAust)

Brief Employment History:

- **1984 to 1992 - OTC (Overseas Telecommunications Corporation), Sydney, Australia**
8 years, Engineer, international data and satellite communications, various positions in Engineering Branch from Grade 1 Engineer up to Senior Engineer. Design of satellite earth stations and networks, including development of engineering software tools to aid with spectrum planning, interference management, power control, and system design.
- **1992 to 2001 - Telstra Corporation, Sydney, Australia**
9 years, Senior Engineer and Engineering Manager, specialist in satellite communications system planning and satellite earth station design, firstly in Network Design & Construction group (NDC) and later in Global Infrastructure Planning group. Managing a team of 5 specialist engineers and project managers, responsible for planning, frequency coordination and implementation of satellite facilities. Australian delegate to the Intelsat Board of Governors, Technical Advisory Committee in Washington DC for eight years, including one year as committee chairman and 2 years as vice-chairman.
- **2001 to 2002 - Reach Ltd, Sydney, Australia**
1 year, Engineering Manager Global Satellite Platforms Planning, leading a team of 7 specialist engineers located in Sydney and Hong Kong. Responsible for planning, design, frequency coordination, implementation and upgrade of Reach's satellite facilities in Australia, Hong Kong and internationally. Responsible for an annual capital expenditure budget of US\$5m.
- **Since 2002 - Hausfeld Consulting, Sydney, Australia**
Independent engineering consultant on satellite communications systems and related technologies. Providing telecommunications consultancy services, and software development work, to various clients. Recent work has included providing satellite earth station design consultancy, radio frequency interference assessments, project management, bid preparation, drafting RFP technical specifications and evaluating responses, contract management, frequency coordination, spectrum licensing, system acceptance testing, and technical audits of existing and proposed satellite facilities. Clients have included Telstra, Reach, Downer Engineering, Newsat, ABC, Shoreline Communications (Tonga), Hibbard Consulting, Telikom PNG, BeMobile PNG, Bank South Pacific, Optus, Step Electronics/Hills Industries, Digicel Pacific, DSIA, SSL, BAE Systems, Nova Systems, Defence Department, Australian Maritime Safety Authority, and Global Internet PNG. Currently a member of the Australian Radiocommunication Study Group on satellite standards (ARSG4) which advises the ACMA regarding international standardisation activities.

A detailed summary of my professional experience and recent activities may be downloaded from the web:
www.gunamoi.com.au/hc

Detailed Summary of Professional Experience 1984 - 2002

OTC Australia, 1984 - 1992

January 1984 - June 1985: 1.5 years

Title: Engineer Grade 1, Data Engineering, OTC

Location: Data Group, Engineering Branch, Sydney.

Data communications engineering, design, installation and testing related to telex, teletex and X.25 packet switching facilities. Specification, evaluation & purchasing of computer equipment and teletex facilities.

Planning of future value added data services, and development of Australian inputs to CCITT (ITU-T) standardisation activities on teletex protocols. (Teletex was envisioned as a replacement for telex, but was overtaken by developments in fax and email.)

System Administrator for Engineering Branch PDP11 computer system. Software development and modifications to existing software systems.

July 1985 - August 1989: 4 years

Title: Engineer Grade 2, Satellite Facilities Engineering, OTC

Location: Satellite Group, Engineering Branch, Sydney.

Staff: One full-time Engineer and various part-time student engineers.

Various activities involved with design, planning, procurement, installation and project management of equipment and facilities for satellite earth stations, both within Australia & internationally.

Seconded to CSIRO Division of Radio-physics for 3 months in 1985 on design of OTC 18m standard-A earth station antennas. Antennas were later installed in Sydney, Perth, Hanoi, HoChiMinh City & Phnom Penh. Continued involvement with design and contract management of 18m Antenna Project for Sydney & Perth, including regular progress reviews with manufacturer.

Seconded to AWA for 4 months in 1987 on system design and software development of a Transmit Power Monitor & Control System for satellite earth stations. Project management of later system installations in Sydney, Melbourne, Ceduna, Perth, Hanoi & HoChiMinh City.

Specification, tendering, contract management and acceptance testing of equipment and systems for Sydney & Perth satellite earth stations and upgrade of Melbourne earth station. Detailed RF design of transmit and receive systems for Perth, Sydney, Melbourne & Ceduna satellite earth stations.

Participated in specification, tender assessments, contract management and commissioning testing aspects of the digital upgrade of satellite carrier services. (first implementation of Intelsat IBS/IDR services).

August 1989 - 1992: 3 years

Title: Senior Engineer, Satellite Technology Engineering, OTC

Location: Satellite Group, Engineering Branch, Sydney.

Staff: Three full-time Engineers.

Specification, tender evaluation, testing and contract management for satellite earth station equipment. Detailed system design and equipment procurement for OTC satellite earth station projects in the Pacific Islands, Antarctic, Vietnam, Cambodia, Laos, Sakhalin, Cocos Island and Kazakhstan.

Technical earth station design, link budgets, and space segment planning for the OTC DAMA service on Intelsat, to provide international telephone and data communications services to the Pacific Islands as part of the Pacific Area Communications Treaty (PACT) network. Similarly for later expansion of the OTC DAMA network to the Indian Ocean and services to former Soviet republics.

Software development of in-house software tools and databases to assist with detailed design of satellite earth stations, frequency coordination, interference management and spectrum planning.

Telstra Corporation, 1992 - 2001

In 1992, OTC Australia merged with Telecom Australia to create Telstra Corporation.

August 1992 - 1994: 2 years

Title: Senior Engineer, Satellite Technology Engineering, Telstra

Location: Satellite Technology Group, International Engineering, Sydney.

Staff: Three full-time Engineers.

Specification, tender assessment, testing, contract and project management of satellite earth station projects. System design and equipment procurement for Telstra satellite earth station projects in Pacific Islands, Antarctic, Vietnam, Cambodia, Laos, Sakhalin, Cocos Island and Kazakhstan.

Technical earth station design, space segment planning, and spectrum management for the satellite communications network for the United Nations peace-keeping forces and Transitional Authority in Cambodia (UNTAC). Using the Palapa satellites. (1992)

Represented Australia and Telstra for 7 years at the INTELSAT Board of Governors Technical Advisory Committee meetings in Washington D.C. (1993-2001). The BG/T committee was responsible for development of Intelsat Earth Station Standards (IESS), approval of Intelsat R&D budget, technical evaluations for Intelsat procurement of new satellites and oversight of all technical aspects of Intelsat's operations.

Business planning and technical design for proposed Telstra VSAT ventures in Asia. In particular Pakistan and India, including 3 visits to India for working party meetings, presentations to customers, and discussions with local suppliers. Presented paper on business uses of VSAT systems at IT Asia 93 conference in New Delhi. (Sept 1993).

Participated in the development of procedures and documentation and internal audits required to obtain ISO9001 Quality System Accreditation for International Engineering group.

September 1994 - December 1998: 4 years

Title: Engineering Manager, Satellite Design, Telstra

Location: Satellite Design Group, Network Design & Construction, Sydney.

Staff: Team of five Engineers.

Managed a team of engineers responsible for design, procurement and installation of all Telstra International satellite earth station facilities.

Various activities relating to satellite earth station design, system engineering and technical consultancy, on projects for Telstra and commercial customers within Australia and overseas. Participated in bid teams developing tender proposals to various international customers for telecommunications networks.

Tender evaluations for new Song Be satellite earth station facilities in Vietnam, in cooperation with Vietnam Telecom International in Hanoi. (July 1994)

Writing technical specifications and then evaluating tender responses for Vietnam Domestic DAMA VSAT system, Hanoi. (October 1994 - July 1995)

Specification and tender evaluations for Telstra Vcomm (India) Domestic VSAT systems, New Delhi. (1994 - 1995)

Feasibility studies and spectrum planning for domestic VSAT system for China, venture with Chinese Academy of Space Technology, Beijing. (March 1995)

Site planning, infrastructure design and frequency coordination for various Satellite Telemetry, Tracking and Command (TT&C) facilities at Telstra Perth International Telecommunications Centre. Including systems for INTELSAT, Inmarsat, Telesat, and the European Space Agency.

Participated in tender assessments of satellite systems for Telstra remote telephone services, Big Pond Satellite Internet, and Iterra digital data VSAT systems. (Jan - June 1998)

Negotiation of product sourcing agreements (PSA contracts) with regular suppliers of satellite earth station equipment.

Development of ISO-9000 Quality standards and procedures for satellite design within NDC group.

Continued representation of Australia at quarterly INTELSAT Board of Governors Technical Advisory Committee (BG/T) meetings in Washington DC. Vice Chairman of INTELSAT Technical Committee (1996-1998). Oversight of all technical aspects of Intelsat's operations, R&D, standards, coordinations, satellite procurements and annual budgets.

December 1998 – February 2001: 2 years

Title: Engineering Manager, Satellite Network Consultancy, Telstra

Location: Global Infrastructure Planning & Deployment, Sydney.

Staff: One Senior Engineer.

Responsible for planning and design of Telstra international satellite earth station facilities, satellite transponder utilisation and spectrum management. Project and contract management of satellite earth station implementation and upgrade projects. Development of business cases, business plans and justifications for annual capital expenditure budgets, to support international satellite traffic requirements. Preparing technical briefs for upper management, and providing technical consultancy for various customers.

Provided technical design, satellite space segment provisioning, spectrum planning and coordination for services to INTERFET defence forces and United Nations Transitional Authority (UNTAET) in East Timor.

Planning, design and project management of upgrades to satellite earth stations in Perth and Sydney to support the Sydney 2000 Olympics International TV broadcast traffic.

Participated in development of the Telstra Wholesale satellite internet service for ISPs, including: design of the satellite links; frequency coordination and spectrum management of receive earth stations; negotiation and contract management of North American uplink sites; and coordination with Intelsat on space segment provisioning.

Strategic planning of future satellite requirements, including broadband satellite internet and multimedia services.

Elected Chairman of INTELSAT Board of Governors Technical Advisory Committee (BG/T) for 1 year from December 1998.

Reach Global Networks, 2001 - 2002

In 2001, the international divisions of Telstra and PCCW Hong Kong Telecom were merged into a new JV company called Reach Ltd. Telstra employees were initially seconded to Reach, and then offered employment contracts directly with Reach Ltd.

February 2001 – May 2002: 1 year

Title: Engineering Manager, Global Satellite Platforms Planning, Reach

Location: Network Planning & Engineering, Sydney.

Staff: Four Engineers based in Sydney and three Engineers based in Hong Kong.

Responsible for planning, design and project management of all Reach satellite earth station facilities globally. Development of business cases, business plans and justifications for annual capital expenditure budgets, to support satellite product requirements. Responsible for an annual capital expenditure budget of US\$5m.

Preparing technical briefs for upper management, and providing technical consultancy support to Product Management, and Sales & Marketing. Development of technical brochures for marketing of Reach satellite services.

Providing valuations of Telstra International satellite earth station assets for the transfer to Reach. Responsible for integration and coordination of Hong Kong and Australian satellite engineering teams, programs and facilities.

Design, coordination and project management for a new satellite earth station on Norfolk Island to allow de-commissioning of the ageing ANZCAN submarine cable system.

Technical liaison between Telstra and Asiasat for new Telstra domestic gateway earth station in Bendigo, and implementation of HNS DirecPC system to support Big Pond 2-way satellite internet access system.

Project management of major satellite earth station refits in Hong Kong, Sydney and Perth. Technical design and project management for expansion of the World Bank VSAT network hubbed from Perth. Expansion of the Reach Multimedia Satellite Service and VSAT IP services hubbed from Hong Kong. Digital upgrades of the International Occasional Use TV facilities in Hong Kong, Sydney and Perth.

Frequency coordination, spectrum management and interference management at Reach's global satellite facilities, including the complex sites at Perth and Hong Kong. (Hong Kong site consisted of over 20 large C-band hub antennas owned by Reach, co-located with tracking and control facilities owned by Asiasat. Perth consisted of over 20 coms and TTC&M antennas, in S, C and Ku-bands, owned by Reach, Telstra, Xantic, ESA, Intelsat, Telesat, and NASDA.)

Continued Australian representation at Intelsat Technical Advisory Committee meetings in Washington up until the privatisation of Intelsat in July 2001.

SUMMARY OF MAJOR PROJECTS: 2002 - Present

The following list of recent activities is not complete, and only includes the larger or more interesting projects with which Hausfeld Consulting has been involved.

Major Projects During 2003 :

- System engineering design for the supply & installation of communications equipment associated with the new HK-24 13m Ku-band antenna at Reach's Stanley Satellite Earth Station in Hong Kong. (Telstra)
- System engineering design and final as-built documentation for the installation of a 7.2m Ku-band transportable antenna, equipment shelter and associated GCE equipment at Stanley Satellite Earth Station in Hong Kong. (Telstra)
- Feasibility study & preliminary facility design for a new Ku-band satellite earth station at Bendigo remotely connected to the existing earth station using RF optical-fibre links. (Telstra)
- Technical inputs to a bid proposal for the Second Generation iPSTAR Broadband Satellite System Gateway Infrastructure RFP. (Telstra)
- Design report on interfacing of proposed first generation iPSTAR equipment from Shin Satellite PLC. (Telstra)

Major Projects During 2004 :

- Preparing documentation for a Carrier Monitoring System at Bendigo. (Telstra)
- Radio frequency interference studies at Perth International Telecommunications Centre. (Telstra)
- Design, costings & preparation of a bid proposal for a VSAT system in response to the satellite network portion of Air Services Australia RFP. (Telstra)
- Design calculations for a bid proposal in response to ADF White Dish RFP. (Telstra)
- Project management of Reach Inmarsat Services outsourcing project, involving cutover of services from Hong Kong LES to Perth LES. (Reach)

Major Projects During 2005 :

- Preparation of design, costing, and installation documents for Downer Connect, to support their contract for Telstra ADSL roll-out. (Downer Connect)
- Design study and cost comparison of two options for a new Ku-band antenna at Bendigo. (Telstra)
- Radio frequency interference studies at Gnangara, Perth. (Telstra)
- Consulting on satellite backhaul and wireless broadband access options. (Rural Bash Pty Ltd, Access & IT Solutions Pty Ltd)
- Development & first commercial release of GEOPoint Antenna Pointing software (version 2.5). (Gunamoi Software)

Major Projects During 2006 :

- Preparation of RFP technical specifications for the procurement of a Domestic VSAT system and for the lease of satellite Space Segment, and the evaluation of subsequent RFP responses. (Telikom PNG, Papua New Guinea)
- Perform an audit of existing satellite usage and make relevant recommendations. (Telikom PNG, Papua New Guinea)
- Project manage the initial implementation of a Ku band VSAT hub earth station in Port Moresby and provide subsequent consultancy support regarding VSAT roll-out planning. (Telikom PNG, Papua New Guinea)
- Link budgets and review of space segment lease contract. (TV operator)
- Upgrade of LabView control software for a radio frequency interference (RFI) measurement system. (Telstra)
- Developed & released version 3.0 of GEOPoint Antenna Pointing software, & version 1.0 of GreatCirc Great Circle Distance Calculator. (Gunamoi Software)

Major Projects During 2007 :

- Audit of 18 domestic satellite earth stations in Papua New Guinea including site visits, and assistance planning satellite backhaul links for the GSM BTS roll-out. (Telikom PNG)
- Audit of 3 domestic satellite earth stations in Tonga including site visits, and provision of basic satellite operations training. (Shoreline Communications, Tonfon, Tonga)
- Satellite consultancy relating to the design of a Ku-band satellite earth station. (Auspace)
- Assist with preparation of a satellite business proposal slide pack. (Newsat, Hibbard Consulting)
- Review of RFP documentation and preliminary work for a possible bid response to a tender for Satellite Broadcast Services in PNG.
- Satellite consultancy, including audit of facilities, requirements analysis, supplier negotiation, capacity planning and implementation support for new and existing satellite facilities in Papua New Guinea. (Digicel Pacific)

Major Projects During 2008 :

- Satellite consultancy, capacity planning, project management and contractor management, for roll-out of new facilities and upgrade of existing facilities in Papua New Guinea, Fiji, Tonga and Vanuatu. (Digicel Pacific)
- Report on near term satellite communication options for Christmas Island. (Hibbard Consulting)
- Expert witness on satellite communications technology for a case in the Federal Court. (Marque Lawyers)

Major Projects During 2009 :

- Review of existing corporate satellite network and recommendations on future facilities and upgrades. (Bank South Pacific, PNG)
- Feasibility study, including detailed link budgets and review of available technologies, for a possible Ku-band "satellite-on-the-move" (SOTM) service. (Step Electronics/Singtel Optus)
- Review of existing satellite network, preparation of RFP specifications, and support bid evaluations for new GSM backhaul VSAT network. (BMobile, PNG)

Major Projects During 2010 :

- VSAT satellite system feasibility study for offshore oil & gas platform. (TCG Pty Ltd / Shell)
- Review of X-band VSAT terminal design and specifications (Step Electronics/Hills Industries)
- Review of proposed satellite communications network for GSM backhaul and international links (Bemobile, Solomon Islands)

Major Projects During 2011 :

- Prepare VSAT RFP technical specifications assist with evaluation of vendor responses. (BeMobile, PNG & Solomon Islands)
- Produce detailed satellite link budget calculations in support of an RFP response. (Step Electronics/Hills Industries)
- Review of satellite network options. (Global Internet, PNG)
- Earth Station Site Audits and Network Review in Solomon Islands. (BeMobile, Solomon Islands)
- Developed released version 3.04 of GEOPoint Antenna Pointing software, version 2.0 of GreatCirc Great Circle Distance Calculator, version 2.0 of TxPlan Carrier Frequency Layout software. (Gunamoi Software)
- RFI Radio Site Survey for proposed new MEOSAR satellite receiving facility. (Australian Maritime Safety Authority)

Major Projects During 2012 :

- Review of on-site RFI measurement results for proposed new MEOSAR satellite receiving facility. (Australian Maritime Safety Authority)
- WGS VSAT terminal certification testing. (Step Electronics/Hills Industries)
- RFI and EMC compatibility assessment of an existing satellite ground station. (Australian Maritime Safety Authority)
- Developed & released version 2.1 of GreatCirc Great Circle Distance Calculator. (Gunamoi Software)

Major Projects During 2013 :

- Review of VSAT proposal, calculation of satellite link budgets, & assistance with dimensioning and pricing of VSAT installation kits. (Global Internet, PNG)
- RFI Consultancy. (Telstra)
- Judging of Australian Satellite Service Provider of the Year Award. (Australian Communications Alliance)
- VSAT system design review & link budget audit for offshore platform project. (NewSat Networks / Chevron)
- Assistance with earth station license applications to the ACMA. (Harris CapRock)
- Independent status review of major earth station project. (BAE Systems)
- Developed & released version 3.06 of GEOPoint Antenna Pointing software, and version 2.2 of GreatCirc Great Circle Distance Calculator. Developed Android smartphone apps and web site tools for clients. (Gunamoi Software)

Major Projects During 2014 :

- QA Engineer during site acceptance testing of NBNC Co TT&C earth stations at Kalgoorlie, Alice Springs & Merimbula. (Delta Systems / Space Systems Loral)
- WGS VSAT terminal technical evaluation and design review. (Step Electronics / Hills Industries)
- Technical support, including link budgets, for various VSAT tender proposals. (Step Electronics / Hills Industries)
- Independent review of satellite system design & test results. (BAE Systems)
- WGS VSAT terminal technical evaluation. (Nova Systems)
- VSAT RFP link budget evaluations. (WNA/Inpex)
- Judging of Australian Satellite Service Provider of the Year Award. (Australian Communications Alliance)
- Assistance with earth station license applications to the ACMA. (Harris CapRock)

Major Projects During 2015 :

- ADF VSAT procurement design review and documentation review activities. (Nova Systems)
- Draft RFP specifications for Flinders Ports Adelaide container terminal broadband WiFi upgrade. (Nova Systems)
- On site technical support at TT&C station during NBN Co IOT and end-to-end testing. (Delta Systems / Space Systems Loral)
- Independent review of satellite earth station RF design documentation. (BAE Systems)

- Technical support, including link budgets, for various VSAT tender proposals. (Step Electronics / Hills Industries)
- Satellite link budgets to support bid proposal. (Global Technologies, PNG)
- Assistance with earth station license applications to the ACMA. (Harris CapRock)
- Developed & released version 2.5 of GreatCirc Great Circle Distance Calculator, and version 2.1 of TxPlan Carrier Frequency Layout Software. (Gunamoi Software)

Major Projects During 2016 :

- Satellite consultancy - assistance with VSAT network quotations. (Global Technologies PNG)
- Satellite consultancy - RFI consultancy in Perth. (Telstra)
- Consultancy Services - NBNco Copper Audit. (DSI Engineering Management Services)
- Website design & custom javascript software. (GPF, DSF, More4Life)
- PC Software development, including public release of the following Apps: GEOPoint v3.07, RadcomSearch v2.2, TxPlan v3.2, TracePlot v2.1, ExtractJPEG v2.1, Image2XPM v1.1, SimpleHyp v2.3, ffmpegWrapper v1.2, SaveJSON2CSV v1.1, Base64Convert v1.1, OfflineBackup v1.1, NixClock v3.0, MapList-Flat v1.2, MapList-Globe v3.1 (Gunamoi Software)

Major Projects During 2017 :

- Satellite consultancy – CSM system verification testing and RF engineering support. (BAE Systems)
- Assistance with earth station license applications to the ACMA. (CapRock Communications/Speedcast)
- Satellite consultancy - RFI consultancy in Perth. (Telstra)
- Website design & custom javascript software. (GPF, DSF, More4Life)
- PC Software development, including public release of the following Apps: GreatCirc v3.0, NixClock v3.1, OfflineBackup v1.3, Offline-Invoice v1.1 (Gunamoi Software)

Major Projects During 2018 :

- Satellite consultancy - assistance with satellite backhaul quotations. (Global Technologies PNG)
- Satellite consultancy – developed and updated systems engineering documentation, including Technical Certification Plan (TCP), and Test & Evaluation Master Plan (TEMP), in support of the ADF Combined Communications Gateway Geraldton project (Systra Scott Lister).
- Website design & custom javascript software. (GPF, DSF, More4Life)
- PC Software development, including public release of the following Apps: GreatCirc v3.1, GEOPoint v4.1, RadcomSearch v2.3, MaplistFlat v1.3,

MaplistGlobe v3.2, OfflineBackup v1.5, Offline-Invoice v1.7 (Gunamoi Software)

Major Projects During 2019 :

- Satellite consultancy – developed and updated systems engineering documentation, in support of the ADF Combined Communications Gateway Geraldton project (Systra Scott Lister).
- Satellite consultancy – review industry RFI responses and prepare a report. Participate in project review meetings to prepare functional performance specifications, in support of the ADF MASTIS Terminal Replacement Project (Nova Systems).
- Website design & custom javascript software. (GPF, DSF, More4Life)
- PC Software development, including public release of the following Apps: GreatCirc v3.2, GEOPoint v4.2, RadcomSearch v2.4, MaplistFlat v1.4, MaplistGlobe v3.3, OfflineBackup v1.7, Offline-Invoice v1.9, TxPlan v3.4 (Gunamoi Software)