Aggus & Franklin
Technology Consulting

Consultant Casebook – Central Vancouver Island Health Authority

By Peter Aggus

*Some time ago, **TMC** carried out a study for the newly formed Central Vancouver Island Health Authority into its chaotic mix of incompatible telephone systems. This project with the South Area of the region is the first stage in implementing the proposals made in that report. It shows how, even within a tightly constrained budget, it is possible to design a fully featured modern telephone system.*

Background

In common with most of BC's Health Regions, the Central Vancouver Island unit was formed by bringing together a number of previously unconnected health organisations.

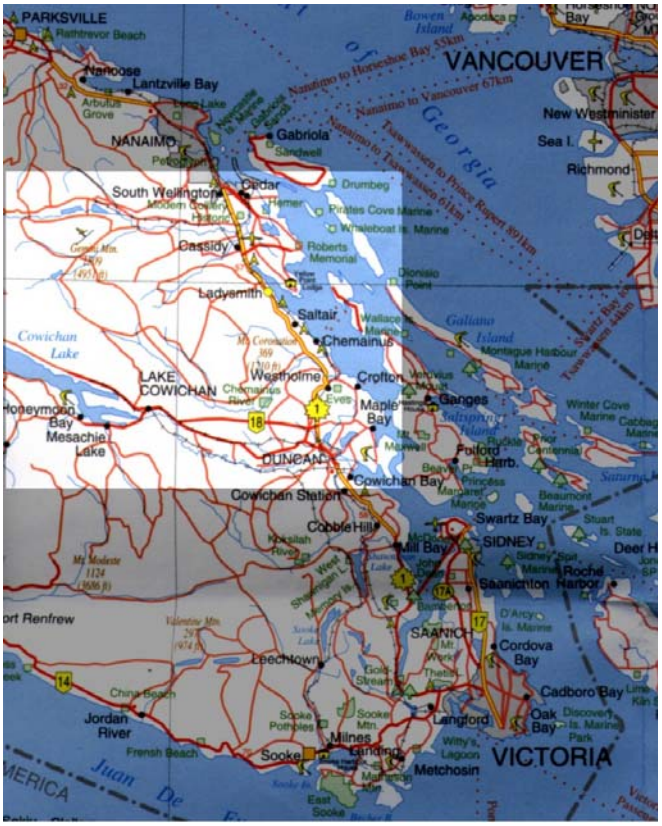
In the region's South Area, these ranged from a major hospital (Cowichan District Hospital in Duncan) to small public health units in more rural areas.

In total, there were 11 separate sites, spread over an area about 30km square. Of these sites, two had recently been fitted out with new phone systems, five were served by the provincial governement "ProvNet" system and the remaining four had a mix of old key systems and congested PBXs.

Key Design Issues

Apart from the usual pleas for improved quality of service and better technical performance, the design team identified a need for a carefully designed and configured voicemail and auto-attendant system which could support the users on a networked basis.

There was also a clear need for a more user-friendly public interface, ideally with a single main number for the Health unit (likely one in each local calling area). It must be possible to route calls made to this prime number to any local on the network, hence allowing the public to call the Health Region and be connected with the department of their choice. Additionally, there was a need for Direct Dial numbers for key departments to further improve the user interface and for DID or auto-attendant access directly to any named individual or local in order to reduce the load on the system attendants.



ProvNet

Network Options

Designing a linked phone system is not a difficult challenge with modern technology. Doing it within a tight budget and meeting rather demanding technical requirements, however, is a rather different story.

The design team considered many options including:

- Stand-alone phone systems linked by ISDN dial-up
- Combinations of PBX systems and Centrex
- E&M tie-trunk linked phone systems
- Larger PBX systems with remote nodes
- T1 linked phone systems
- Microwave radio linked systems
- Negotiating to stay with

ProvNet

Several years ago, the BC government implemented a province-wide centrex-type phone system to link its offices

together and permit desk-to-desk dialling and local access everywhere without toll charges. At the time, the per-local rental fee was good value in comparison to the then high DDD and 800 charges which would otherwise have been faced. Time has passed since the launch of ProvNet and DDD now costs a mere fraction of what it did – making the economics of ProvNet very questionable, particularly for users with limited long distance needs.

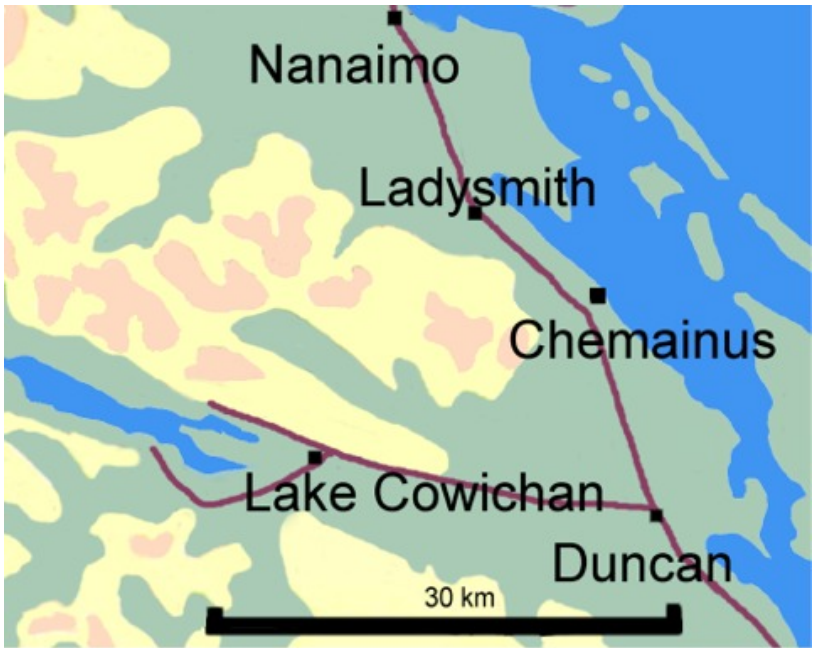
With the launch of the Health Regions, the government's telecommunications unit (ITSD) no longer had a mandate to serve the now independent units. It was possible that the old equipment (typically NorStar key systems) could have been purchased from ITSD. It was even possible that ITSD might be able to negotiate a commercial deal with the new region.

Both were explored and rejected on clear economic grounds.

Centrex

Where a user community is distributed, it is sometimes more economical to contract the telco to provide Centrex service rather than installing many stand-alone PBX or Key systems with an expensive tie-trunk network.

Initially, it appeared that this project might have a good fit for a Centrex implementation. More detailed costings were done but it remained difficult to meet the economic criteria and all the user needs.



Phone Systems

The project went to tender with several major suppliers. There was an expectation that the small units would likely be best served by economical Key systems, whilst the major sites would likely need modest sized PBXs. The largest site was Cowichan District Hospital, with a need for between 250 and 500 locals (depending on decisions regarding Patient Phones); whilst the smallest site had only 12 locals.

The advantage of an open competitive bid process is that manufacturers are free to design an optimal solution without pre-conceptions. The bid was won by Delphi Solutions from Victoria with an innovative proposal using Mitel SX2000 network (a mix of a larger SX2000 Light system and several SX2000 microlight nodes). Although the anticipated cost of such a design was larger than the expected hybrid design, the integrated package actually worked out to be highly competitive.

Network

As with the phone systems, this component of the project was put out to open tender. Each bidder offered several options for how to network the sites.

We had initially expected the T1 option to be the best technical solution but to be out of reach on economic grounds. However, the use of advanced features available on T1-based networks allowed for a reduction on PSTN costs at the smaller sites by concentrating most of the traffic at the major nodes. These nodes could then be justifiably served by more economical ISDN PRI trunks (Megalink).

Several options were considered for providing the T1 links, including an innovative proposal for a private microwave radio network. The capital cost of the radio option made it difficult to justify, without including inter-site data links on the same project. This step was not an option, since the project was restricted to voice only.

The final solution was a highly competitive bid from Shaw Fibrelink, who agreed to provide all the required T1 spans as part of their project to extend their fibre backbone up Vancouver Island.

Patient Phones

The system design allows for the provision of direct-dial phones for patients as an optional extension. Capital budget in the first phase did not permit the addition of this equipment, but patient phones can be phased in over time, as budgets permit, likely starting with the long term care units.

Conclusion

The project showed everyone how a carefully managed competitive bid process can bring results way beyond what anyone initially expected to be possible within the available budget. The client has a telecommunications design which meets all his objectives and which will actually cost no more to run over its lifetime than the old fragmented "network" did.

TMC is pleased to have been able to design this first phase of upgrading the Central Vancouver Island Region's telecommunications service. The design is flexible enough to allow us to take the project forward in a similar manner to serve the rest of the region.

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