

**2004 INNOVATIONS AWARDS PROGRAM
Application Form**

1. Program Name

South Dakota Digital Trunked Radio System.

2. Administering Agency

South Dakota Bureau of Information & Telecommunications.

3. Contact Person (Name and Title)

Jeffrey Pierce -- Director of Engineering

4. Address

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<http://www.state.sd.us/bit/tele/index.asp>

9. Please provide a two-sentence description of the program.

The Digital Trunked Radio System in South Dakota was the first wide-area trunked system to utilize digital (VHF-150 mhz) technology. The system includes a networked infrastructure of 40 towers for the 75,000 square miles of the state, and 9,000 local, state and federal public safety radio users.

10. How long has this program been operational (month and year)? **Note: the program must be between 9 months and 5 years old on May 1, 2004 to be considered.**

The radio system was officially offered to public safety users in the state on October 23, 2002.

11. Why was the program created? (What problem[s] or issue[s] was it designed to address?)

The problem of lack of radio communications interoperability had increasingly become an issue in the past two decades in South Dakota. Local agencies began utilizing multiple frequency bands and systems that created "islands" of communications where state, local, and federal radio users could not communicate. In such a sparsely populated state as South Dakota, interagency communications is extremely important for the safety of its citizens and first responders.

12. Describe the specific activities and operations of the program in chronological order.

1999-- HB 1028 is signed creating a mandate to begin the process of initiating a common radio system for eight listed state agencies.

Engineering studies begin to identify potential systems for the state.

2000-- Live evaluation of 800 mhz and 150mhz test sites begin.

Funding is identified to increase system capacity to accommodate all public safety users in the state.

2001-- Contract is signed with Motorola to supply a 35 site 150 mhz "trunked" radio network to the state of South Dakota.

Construction on the project begins in September of 2001.

Coordination of local radio programming begins in October of 2001.

Network control site and first five sites are completed in December of 2001.

2002-- Construction continues, 3,300 state radios are programmed and installed, 5,700 radios are programmed and shipped to local agencies.

October 23, 2002. System is offered statewide to all public safety users.

2003-- Statistics in February of 2003 show that 1,022,031 calls passed through the network that month.

Four additional sites added to provide portable coverage to larger towns.

13. Why is the program a new and creative approach or method?

The program was innovative from three different aspects:

- The use of the VHF (150 mhz) digital trunking in wide-area had not been attempted on this scale before in the nation.
- The ability to obtain funding to supply radios to all state and local public safety agencies in the state.
- The radio network is provided free of charge to all local, state, and federal public safety agencies in the state.

14. What were the program's start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.)

The radio system was designed around the current state tower infrastructure, saving hundreds of thousands of dollars in construction costs, and at least two years of construction time. Maintenance on the system is still being performed by the staff of 1 engineer and 8 technicians existing at the outset of the program.

To date \$31,356,711 has been spent on the radio project in the following areas:

- Infrastructure & transport costs: \$11,413,366 or 36% of the project cost.
- State subscriber radio costs: \$6,461,945 or 20% of the project cost.
- Local subscriber radio costs: \$12,055,110 or 38% of the project cost.
- Local & state extender packages: \$1,426,290 or 6% of the project cost.

15. What are the program's annual operational costs?

The annual budget for the operation of the radio system is \$1,369,985 broken down as follows:

- Salaries and benefits 38%.
- Travel 10%.
- Contractual services 43%.
- Parts and materials 7%.
- Capitol assets 2%.

16. How is the program funded?

The initial funding was a combination of grants, appropriations, and agency funds. The ongoing expense of the system is a generally funded appropriation approved by the legislature annually.

17. Did this program require the passage of legislation, executive order or regulations? If YES, please indicate the citation number.

Yes. House Bill 1028 of the 1999 legislative session required the Bureau of Information & Telecommunication to construct a radio system that would bring the eight listed state agencies under a common system, and appropriated \$4,000,000 for the project.

18. What equipment, technology and software are used to operate and administer this program?

This system is based upon the Motorola Smartzone 4.1 operating platform. This Unix-based network allows a statewide public safety network to operate much in the same manner as a

cellular phone network. Radios can roam anywhere on the system and talk from anywhere in the state back to anywhere in the state.

A central controller is located in Pierre, housed in a secure location. The site is equipped with backup power, redundant telecommunications facilities in and out, and backup environmental control equipment. Each of the 40 sites in the field is linked back to the central controller on 1.544mbs telecommunications links.

Each of the field sites are equipped with at minimum 4 repeaters, telecommunications termination equipment, backup power, and monitoring equipment that allows real-time monitoring of all facets of the site.

Three dispatch centers are equipped with multiple consoles, digital recording equipment, and backup power.

19. To the best of your knowledge, did this program originate in your state? If YES, please indicate the innovator's name, present address, telephone number and e-mail address.

This initiative was formulated and championed by the Governor's office and Otto Doll, the Commissioner of the Bureau of Information and Telecommunication's.

Otto Doll
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20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ?

There has been a pilot program in Wisconsin, a partial build out of a similar system in Alaska, and several states are currently making plans to implement similar systems, but South Dakota is the first to offer statewide service on a digital VHF trunked system to all local, state and federal public safety organizations.

21. Has the program been fully implemented? If NO, what actions remain to be taken?

Per the original design of the system (mobile radio coverage), the network is fully implemented. As funding allows, we will continue to improve coverage for portable radios within the state.

22. Briefly evaluate (pro and con) the program's effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples.

Pro:

The system is currently being utilized at the following rates:

- Local/federal agency use (private agency talkgroups) 41%.
- State agency use (state agency talkgroups) 41%.

- Console (dispatch) traffic to local/state agencies 18%.

These percentages show that the system is being used by all levels of government in the state. When the state is faced with the next major disaster, the response will be much more coordinated with capabilities not before available.

Con;

The radio network was built to mobile radio standards, and many agencies in the state had become dependent upon portable radio operation. The system in some cases has to be expanded to provide the level of portable coverage desired. But the system still has met the goal of allowing a common platform for interagency communications throughout the state.

23. How has the program grown and/or changed since its inception?

The system has grown by 6 sites (17%), from the October 2002 startup date. These sites have been added to provide additional portable coverage within the state.

24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program?

This system is ideally suited for sparsely populated states such as South Dakota. The biggest challenge South Dakota faced, and other states considering such a system will face, is the shortage of spectrum to build a network of this type.

Add space as appropriate to this form. When complete, return to:

CSG Innovations Awards 2004

The Council of State Governments

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DEADLINE: All original applications must be received by April 20, 2004, to be considered for an Innovations Award for 2004.

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