Statewide Needs Assessment and Plan for the Improvement of Public Safety Radio Communications Systems in Wisconsin

Skills and Leadership Survey Results

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1 Executive Summary

Federal Engineering (***FE***) administered an Internet-based survey instrument to gather information on the technical skills and leadership capabilities of the public safety mobile radio personnel in Wisconsin.

The Survey was posted online at ***FEClientNet*** for easy access by the public safety personnel across the State. The Office of Justice Assistance (OJA) distributed a notice through public safety channels which explained the reason for the survey and included the web-link to use. Over a ten-day period, 173 PSMR users, representing **68%** of the Counties, completed the survey form. This number of responses provided a good demographic profile of the technologists and supervisors delivering public safety mobile radio service in Wisconsin.

Analysis of the survey data was quite revealing. Key findings are as follows:

- Responses to the survey were distributed across public safety disciplines as follows:

  - Law enforcement = 36%
  - Fire Services = 21%
  - Health/EMS = 19%
  - Communications = 13% and
  - Emergency Management = 6%

  This balanced distribution of responses provided an excellent base of information.

- Profiling all the public safety user responses showed that the mean average experience was:

  - 21 years working in public safety
  - 17 years working in PSMR
  - 10 years as a supervisor in PSMR
  - 5 years working in a technical role

- Responders displayed a high level of understanding of basic PSMR technology, and they were most likely to be on a multi-agency radio system.

- The major challenge users faced to performing their job was funding.

- On the question of the need for a statewide or regional oversight board, **76%** felt that one was needed. And **65%** of the responders believed that their agency would participate on an oversight board.

- To join a common statewide radio system, **61%** of the participants stated that **50%** or more of the funding would have to come from sources other than their own.

- More than **50%** of the responders indicated that the P25 standards would present significant operational and financial obstacles.

- Reinforcing the already-recognized regional teamwork that is taking place, **54%** of the responders indicate that they would join a regional PSMR system, if the State takes a "Do-nothing" approach.

In summary, Wisconsin has a broad base of people working in public safety that have good levels of experience in leadership and technical roles. Without surprise, funding presents the major challenge to achieving PSMR interoperability. Agencies support the need for an oversight board, and they are ready to participate on such a board. Moving radio systems to the P25 standards compliance will present significant obstacles. Finally, the majority of agencies will join regional PSMR systems to improve interoperability, if the State doesn't move forward to realize that goal.

2 Survey Approach

The Technical Skills and Leadership Survey was developed to gather first hand information from a broad spectrum of Wisconsin public safety radio users. ***Federal Engineering*** designed a survey instrument in the form of an Internet-based survey using ***FE***'s proprietary ***FEClientNet*** capabilities. Sample screens from the survey are shown below in Figures 1 and 2:

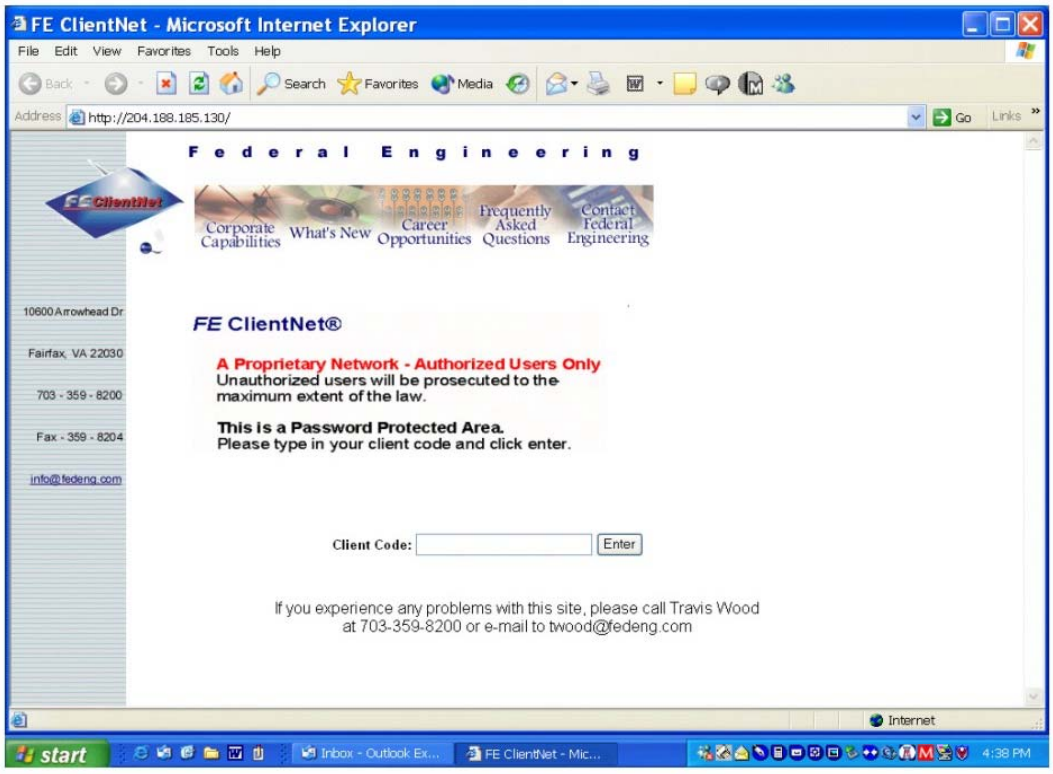
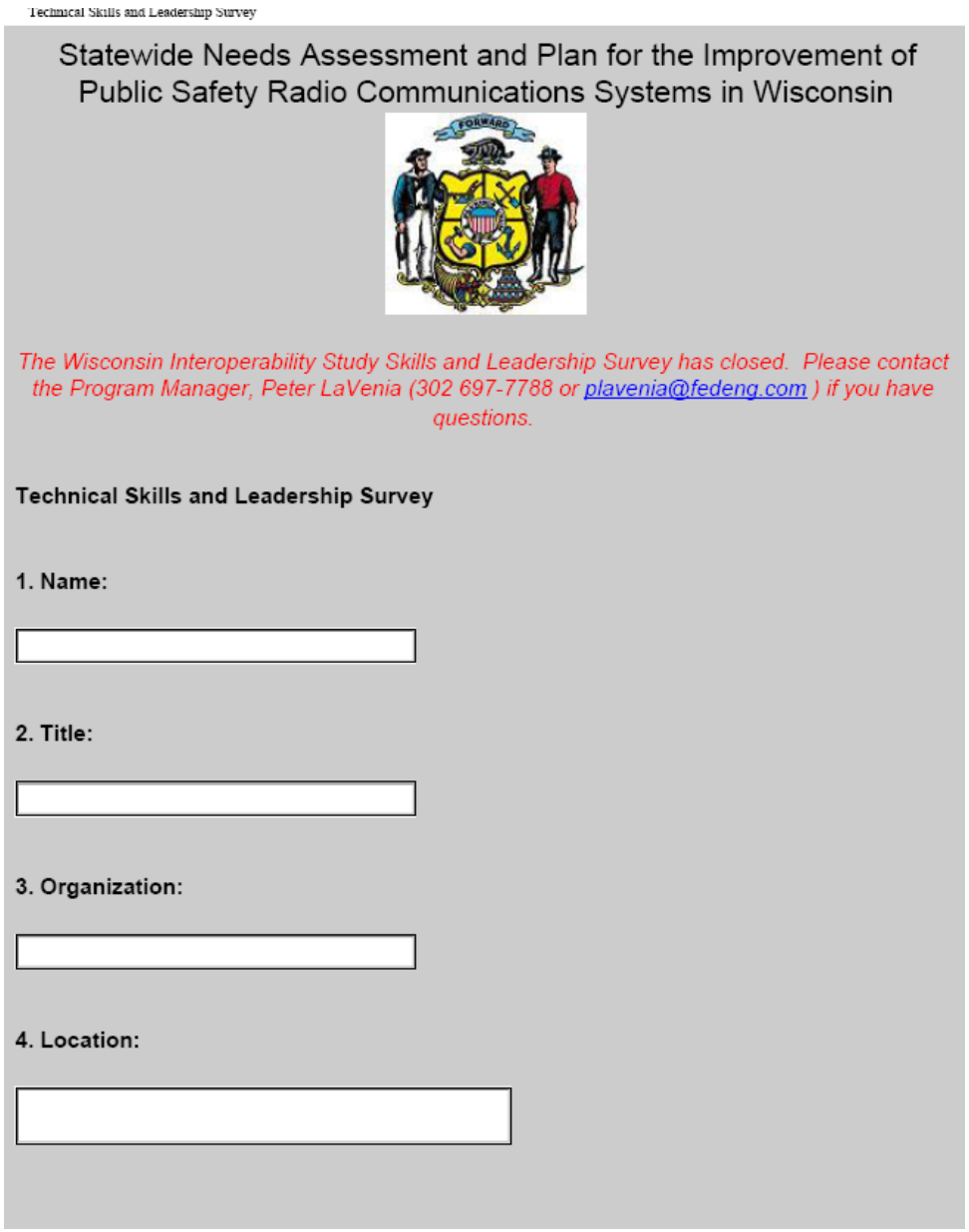


Figure 1 – *FE*ClientNet Login Screen


Technical Skills and Leadership Survey

Statewide Needs Assessment and Plan for the Improvement of Public Safety Radio Communications Systems in Wisconsin

The Wisconsin Interoperability Study Skills and Leadership Survey has closed. Please contact the Program Manager, Peter LaVenia (302 697-7788 or plavenia@fedeng.com) if you have questions.

Technical Skills and Leadership Survey

1. Name:

2. Title:

3. Organization:

4. Location:

Figure 2 – Survey Input Form

The survey was opened on May 6, 2004 and closed on May 16, 2004. Typically, to be successful surveys must attract a reasonable level of responses. ***FE*** and the State felt that 100 or more responses would provide an adequate base for analysis. In fact, the survey generated a total of **173** responses, and represented **49 of 72 (68%)** counties. These were from a representative group of County and local public safety mobile radio (PSMR) users. Upon further review of the State Agency inputs, it was decided to reopen the survey for five days, from June 1, 2004 to June 5, 2004. An additional 9 responses were received during this timeframe. Total responses from State agencies were 12, and due to the small number of responses, these results are not grouped with the others and will be reviewed separately in Section 4.

The survey was developed to provide input on a wide range of subjects, as follows:

- Levels of PSMR experience
- Obstacles to performance
- Level of training needed
- Demographics of survey respondents
- Outlook for implementation of P25 standards
- Funding requirements
- Types of radio systems in use
- Level of support for a governance process
- Interoperability during joint exercises
- What action users would take if the State took a “Do-nothing” approach, and
- Those issues that would affect the achievement of PSMR interoperability

Data from the Survey will be integrated into the Statewide Plan for PSMR Interoperability. ***FE*** considers user input to be critical to achieving good results in planning.

3 Results of Analysis

Data from the survey responses was analyzed to find information that would allow ***FE*** to report on the technical and leadership skill levels of the Wisconsin PSMR user community.

In some of the summaries, the responses do not always add up to 100% for several reasons. First, not all questions were answered by everyone. This is not unusual in these kinds of surveys. Additionally, certain questions allowed for multiple answers.

Results from the data analysis were grouped into seven information categories as follows:

1. Profile of Responses
2. Funding
3. Systems
4. Challenges to Job Performance and Interoperability
5. Training
6. Governance
7. P25 Standards

The following sections will cover each of these areas in depth.

3.1 Profile of Responses

Information in this category represents a profile of characteristics such as: professional discipline, experience, and roles. Analysis focused on response to questions on title and organization.

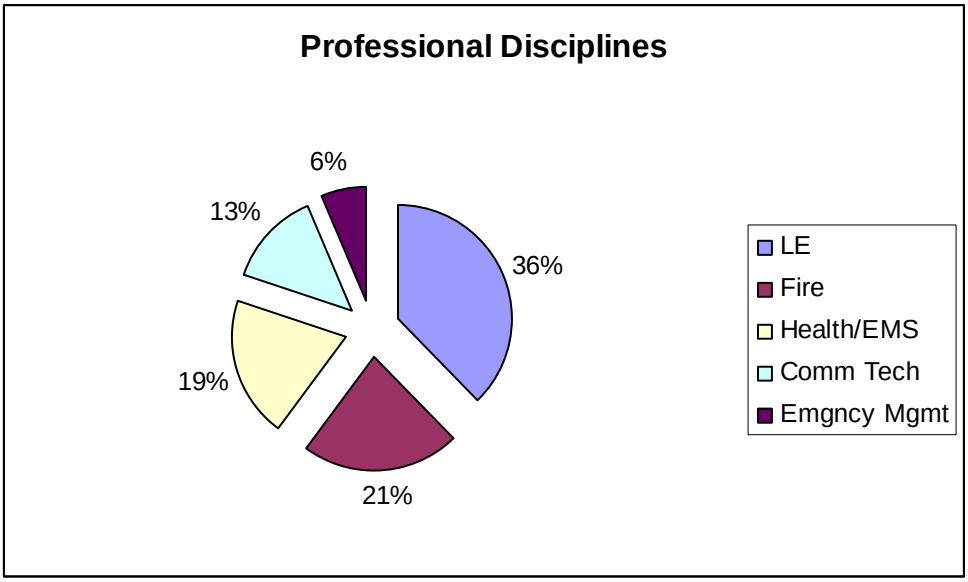
3.1.1 Profile of Respondents

PSMR respondents were grouped into the following disciplines:

- Law enforcement = 36%
- Fire services = 21%
- Health/EMS = 19%
- Communications = 13%
- Emergency Management = 6%

This represents a good cross section of users and shows that the responses are not dominated by any single discipline.

Chart 1 – Survey Respondents by Discipline

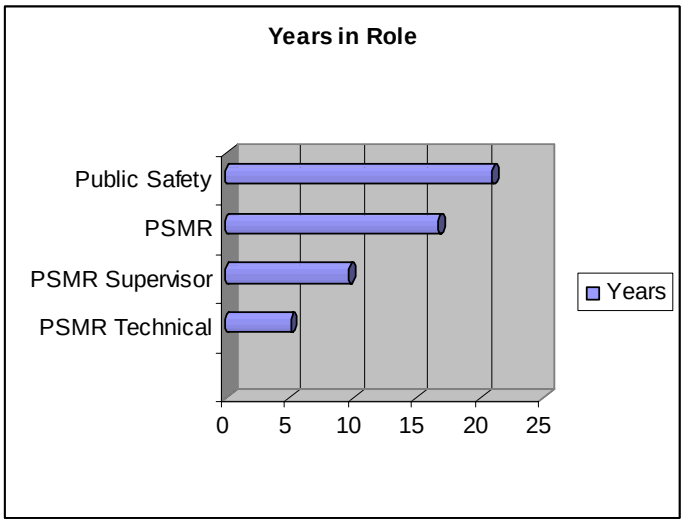


3.1.2 Average Experience

PSMR responders average experience level in various categories was ascertained from answers to four questions as follows:

- Average time in public safety = 21 years
- Average time in PSMR = 16.7 years
- Average time in PSMR supervisory role = 9.7 years
- Average time in PSMR technical role = 5.1 years

Chart 2 – Average Experience Level of Survey Responders

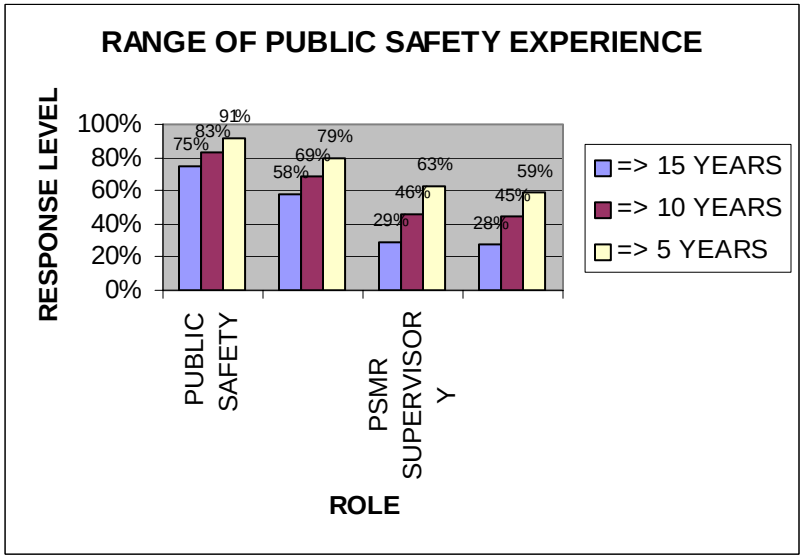


While this level of experience is quite typical for a State organization, the level of PSMR Technical experience may be more of a liability for the State if the current system is not upgraded or replaced, as an average of five years' experience may not provide sufficient depth to continue to maintain an aging infrastructure.

3.1.3 Public Safety Experience

There is a wealth of experience in the Wisconsin Public Safety Community. The levels of experience are shown below in Chart 3:

Chart 3 – Roles in Public Safety by Experience

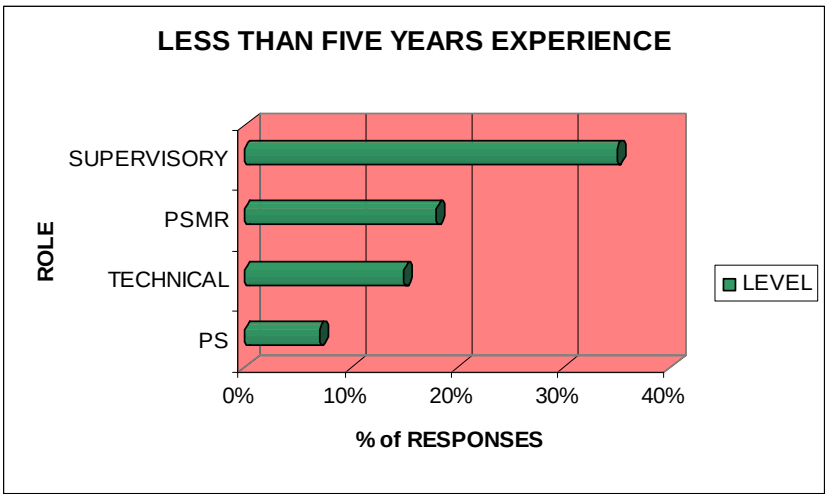


Within the PSMR area in particular, there is also a very deep level of experience but not quite as extensive as the overall Public Safety experience was. As expected, there is less experience in PSMR supervisory roles than in the general PSMR area, but this still indicates good depth considering how quickly the technology is changing. While many respondents answered that they had no technical role in the PSMR area, there appears to be a good base of experience in this area as well.

3.1.4 Extent of Experience

Other than in supervisory roles, the majority of Public Safety respondents have a substantial background in their field, as shown in Chart 4:

Chart 4 – Experience Level in Role



The primary liability here is that a large number of these people will be reaching retirement age at about the same time, leaving the organization at risk of overall expertise. A closer look at the succession issues should be undertaken at some point in the next year or so.

3.2 Funding

Funding levels and sources have a dramatic effect in public safety mobile radio. This is consistent with what ***FE*** has found in other states and jurisdictions. It seems that unless an incident takes place that galvanizes opinion, there isn't the focus that's warranted for public safety mobile radio communications.

As **65%** of Survey participants indicated that they had responsibility for their agencies communications budget, it appears that the people answering the survey are in a position of strong knowledge, adding to the overall credibility of the results. This is also important from the standpoint of having accountability for and influence on PSMR operations.

3.2.1 Allocation of Funds

The Survey provided selected criteria to judge for importance when making decisions on allocating funds. Participants believed that funds should be allocated as follows: (Where 1 = least to 5 = most important)

Table 1 - Basis for Allocating Funds

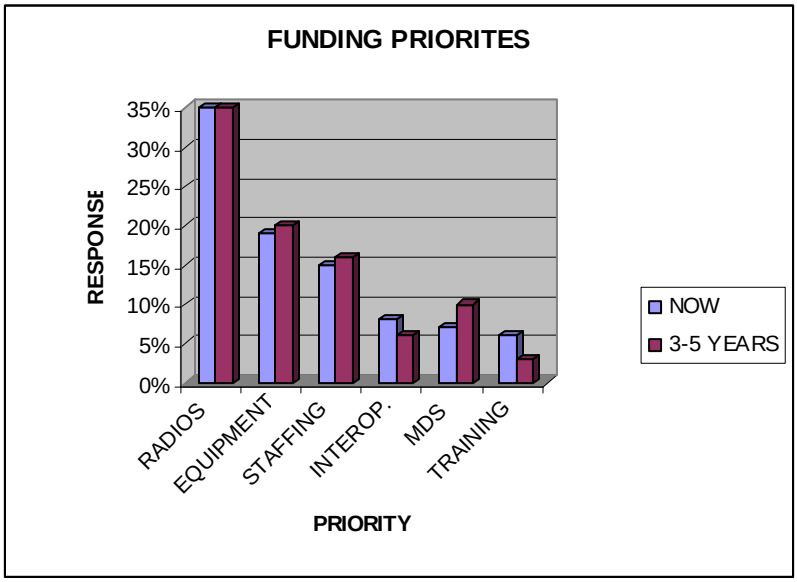
CRITERIA	RATING
System Performance	**4.3**
Improve Interoperability	**4.3**
Age of System	**3.9**
Area Covered	**3.7**
Population Served	**3.1**

3.2.2 Critical Funding Priorities

To judge short and long term needs, users were asked what their critical funding priorities were now and in 3 to 5 years.

Responses from users were consistent with only the fourth priority changing from “interoperability” to “mobile data systems.” It isn’t clear from the data why interoperability has a diminished response in future priorities. Some reasons that “mobile data systems” priority ranking increased may be the belief that in three to five years there will be more emerging applications, and there will be more bandwidth available for transmission. Also, the voice requirements are currently so urgent that they overshadow the needs for data communications. Training was the only other priority that had responses of any significance.

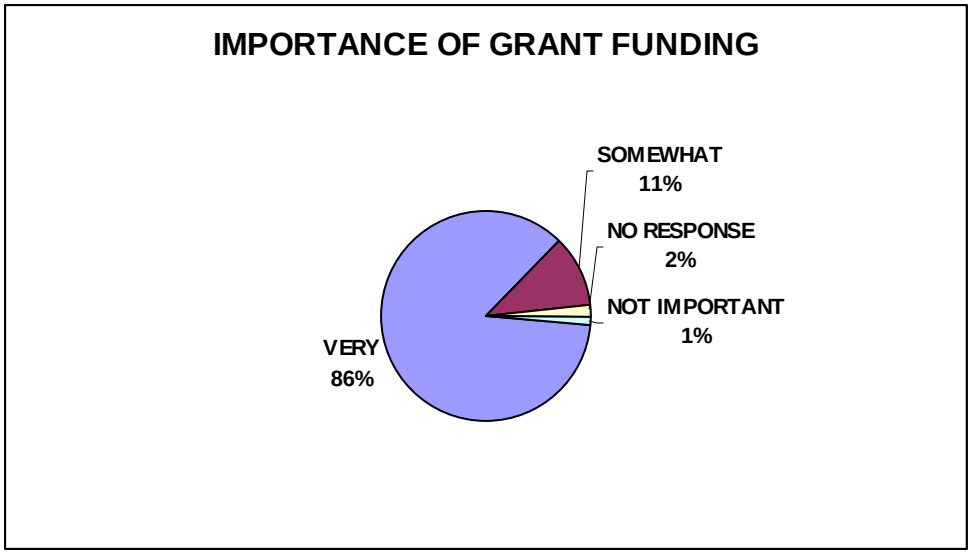
Chart 5 - CRITICAL PRIORITIES – Now and In 3-5 Years



3.2.3 Sources of Funding

As shown in Chart 6, an overwhelming **86%** of respondents cited Federal and State grant funding as "very critical" to improving interoperability. This situation reinforces the point that funding sources are limited, and the loss of grant funds would have a major impact on reaching interoperability goals.

Chart 6 – Need for Grant Funding



3.2.4 Participation

Respondents made clear in their answers that to join a statewide common PSMR system, they would require significant outside funding through grants or State support. Table 2 below shows that **61%** of users indicated that they would need **50%** or more of the cost from sources other than their own.

Table 2 - Funding Contribution Needed to Join Common Statewide PSMR System

FUNDING PERCENTAGE REQUIRED	RESPONSE
100%	23%
90%	7%
80%	10%
75%	9%
50%	12%

FE does not have any way to validate this data, but it is believed to be generally accurate. There is typically an inflation of needs when this kind of a question is asked but the situation in Wisconsin, as with most states, is very difficult at this time due to overall spending cutbacks over the past several years.

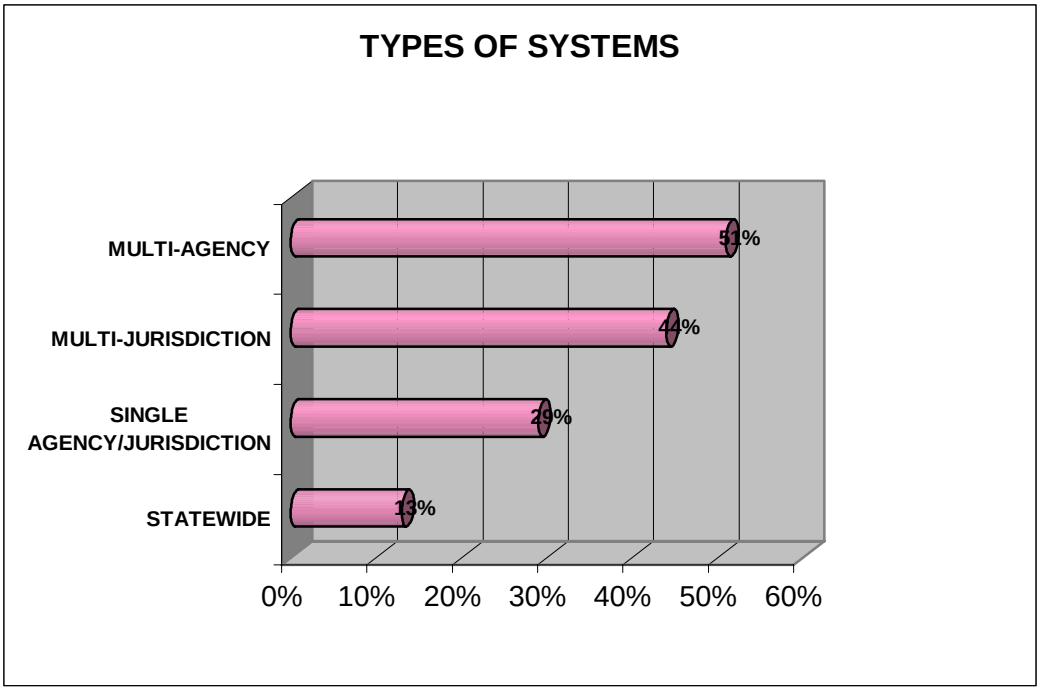
3.3 Systems

A series of questions were asked that were designed to provide information on the nature of the systems that are currently in use by the respondents. A follow-up set of questions was designed to provide information related to skills utilized by technical staff on these different types of systems.

3.3.1 Types of Systems

Respondents were asked what type of radio system they currently use. It is clear from the answers shown in Chart 7 below that a significant number of systems serve multiple agencies and also operate across jurisdictions. The existing base of systems already operates with a fair level of interoperability, which provides knowledge to build upon.

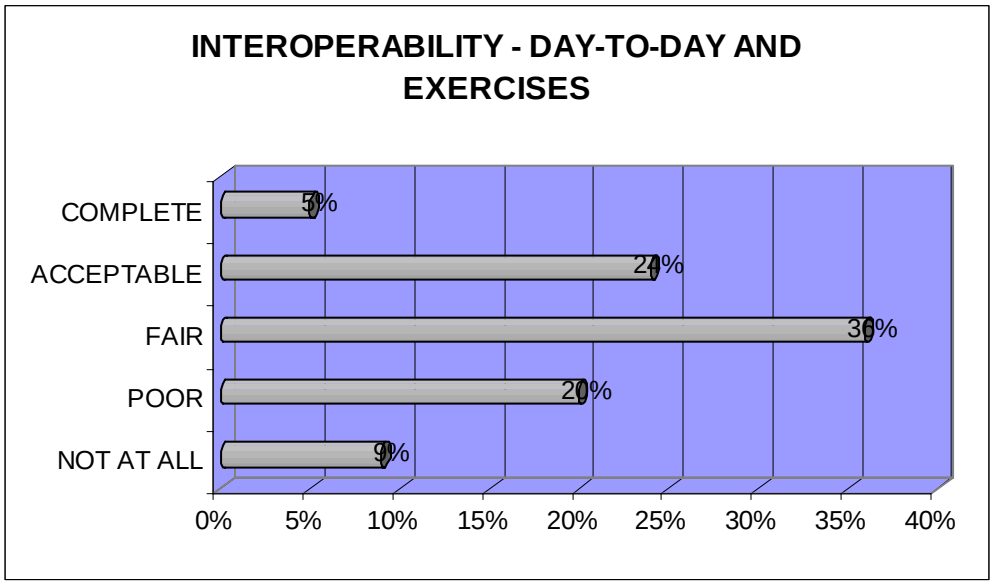
Chart 7 – Types of Systems



3.3.2 Interoperability

The survey attempted to assess the ability of respondents' systems to talk to other jurisdictional agencies during incidents and/or exercises is very important. Participants graded their systems from 1 = not at all to 5 = complete interoperability, as shown in Chart 8:

Chart 8 – Ability to Talk at Exercises & Incidents

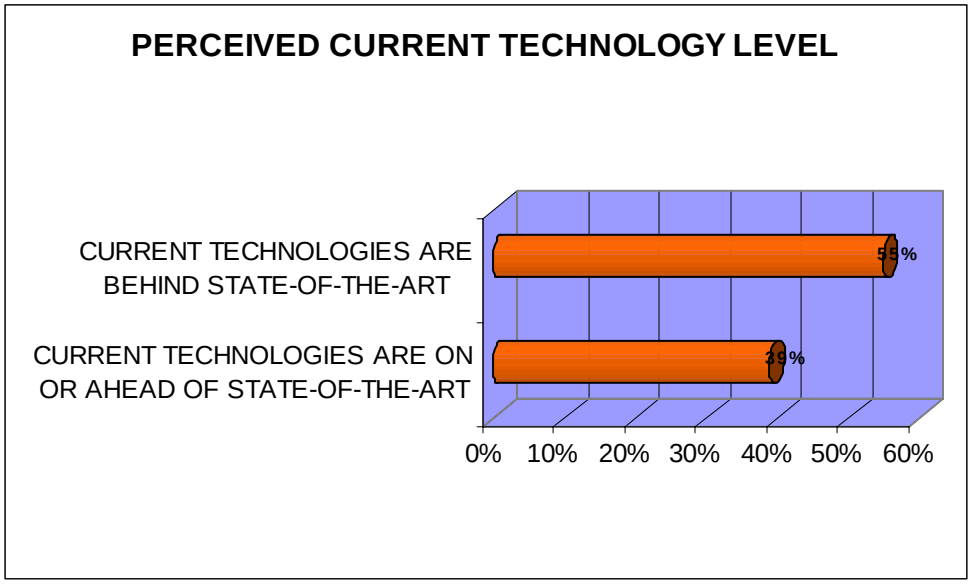


A total of **65%** of respondents believe that their system interoperability is acceptable to complete. This is quite interesting considering that this study and high level of concern have been driven by a perceived major shortfall in interoperability. FE believes that this response indicates that the respondents are getting by with their existing local interoperability arrangements, which can provide a minimal level of acceptable interoperability through the standard means of swapping radios, console patches, and the use of mutual aid frequencies. However, this is limited to the day-to-day issues and does not address the complex scenarios that might be created by major events.

3.3.3 Technology

Users were asked to rate their radio systems in terms of "State of the Art," which is a qualitative judgment of technology, as shown in Chart 9 below. Most importantly, **95%** of the respondents expressed the desire to be on or ahead technologically in the future.

Chart 9 – Rating Systems in Terms of *"State of the Art"*



3.3.4 Performance

Respondents were asked to rate the importance of different types of interoperability and coverage. (Where 1 = Low, 2 = Medium, 3 = High) This question provides a view of critical factors that can be used in system design. These responses, shown in Tables 3 and 4 below, indicate the priorities of the local respondents to be primarily within their own systems and with adjacent municipalities.

Table 3 -Importance of Types of Interoperability

INTEROPERABILITY	SCORE
Improved Interoperability ***with Adjacent Municipalities***	2.7
Improved Interoperability ***within your own municipality***	2.7
Improved Interoperability ***with Local Municipalities for the State***	2.3
Improved Interoperability ***with State Agencies for Local municipalities***	2.2
Improved Interoperability ***with Federal Agencies***	1.8

Again, ***FE*** believes that this shows the strong emphasis on local and regional interoperabilities more than for the September 11th-type of crisis situation.

Table 4 – Importance of Types of Coverage

COVERAGE GOAL	SCORE
Seamless Coverage ***within municipality***	2.8
Seamless coverage ***with adjacent municipalities***	2.7
Seamless coverage ***across the State***	1.8

The respondents clearly indicated that seamless coverage within their municipalities and with adjacent municipalities was much more important than the ability to have seamless coverage across the State. This has significant implications on the potential design options that will be explored in Phase III of this project.

3.4 Challenges to Job Performance and Interoperability

Respondents provided important data on the challenges they face on the job and in achieving PSMR Interoperability in Wisconsin. The questions in this area generated responses that were dominated by the issue of funding. 'Political/Turf issues' was also important in the answers to both questions.

3.4.1 Job Performance

Respondents rated the challenges to performing their job well. (Where 1 = not at all to 5 = major impact)

Table 5 - Challenges to Performing Job Well

CHALLENGE	RATING (1-5)
Funding	4.7
Technology	3.7
Training	3.5
Staffing	3.4
Political/Turf Issues	3.3
Recognition	2.8

Funding continues to be noted by respondents throughout the survey as an area of major concern.

3.4.2 Achieving Interoperability

Survey responders answered very decisively to the question of what would most affect the achievement of PSMR Interoperability in

Wisconsin. Funding, again, has the most impact in this question, as shown in Table 6 below:

Table 6 - What Would Most Affect Achieving Interoperability

AREA	RESPONSE
Funding	40%
Political/Turf Issues	14%
Cooperation	8%

3.5 Training

Well prepared PSMR personnel in Wisconsin will impact the ability to deal with new radio systems, possibly including a statewide common PSMR system. Training levels of these people will be a major consideration.

3.5.1 Self-rating

In rating themselves, **69%** of PSMR respondents believed that they were trained adequately to perform their job satisfactorily. This is based on their working predominantly on older technology, but is not necessarily a predictor of their ability to handle the newer technologies that are being planned for and deployed today.

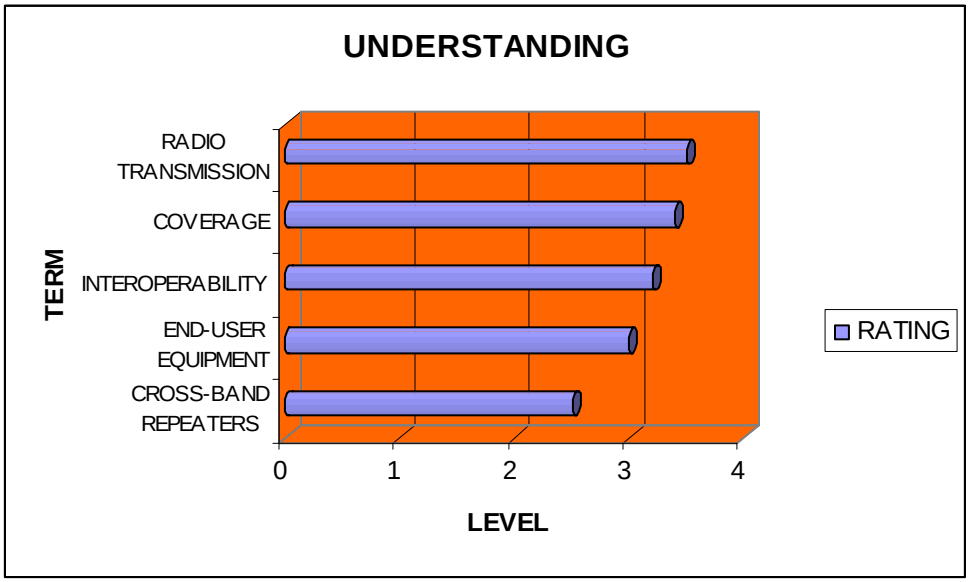
3.5.2 Technical Understanding

PSMR respondents were asked to indicate their level of understanding of selected technical terms, using the scale:

- 1 = not at all
- 3 = well
- 5 = expert

Their responses, shown in Chart 10, indicate a high degree of understanding. While this is a self-assessment, FE's experience in meetings in Wisconsin and other states would support that level of expertise.

Chart 10 – User Knowledge of Technical Terms



PSMR users displayed that they knew common radio terms well. However, when asked about cross-band repeaters, a technology used for interoperability, the same users understood this technology less than well. This may indicate a need for training on newer technologies, which Phase I of this project provided a series of recommended approaches to address.

3.5.3 Methods

When asked what types of training would be most beneficial, survey participants responded with very mixed answers:

Table 7 - Most Beneficial Types of Training

TRAINING TYPE	RESPONSE
Radio Communications	14%
Technology	12%
Hands-on	10%
Exercises/Incident Command System	9%

It was necessary to remove the **38%** "No response" answers to this question in order to get a clearer picture from the actual responses.

3.5.4 Preferred Types of Training Delivery

Participants indicated by their answers that the preferred ways to receive training were primarily through in-house methods, most