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PROPOSAL

Rome Lab should establish a Multi-band Multi-mode Radio (MBMMR) Forum to set guidelines for a radio with an open system architecture, and it should encourage participation of interested industrial organizations. The government might also fund some associated development efforts, but the contractors would also be expected to contribute to that activity. The objective should be an agreed upon architecture, and internal hardware and software interface specifications, for an industry standard multi-mode, multi-band programmable radio. Production models of such a radio should then be available from several manufacturers and, in the future, modules should be available from third-party vendors. Although this is a goal of the Speakeasy Program, this proposal provides an additional, parallel mechanism to ensure a higher degree of success.

BACKGROUND

One common method for exploring new command and control technology for the Air Force is for Rome Lab to issue a series of contracts to one or more industrial organizations. Normally, the goals of the contracts become more specific and more highly defined as the program progresses, and the contracts are characterized by sequentially more detailed statements of work. Optimally, this sequence culminates in a device or software package meant for acquisition and subsequent deployment in mass quantities; the other military services function in a similar manner and, sometimes, multi-service cooperation in a development and acquisition program results in common, or at least interoperable, items.

The Speakeasy program is on this path. The program is focused on developing a modular, programmable multi-band, multi-mode radio with an open, modular architecture. The intent of the program being to reduce the cost of developing new radios, to facilitate enhancements as technology improves, and to ease the evolution to new waveforms in the future; the Advanced Research Projects Agency (ARPA), which provides a significant amount of the funds supporting Speakeasy, has a parallel goal of using Speakeasy results in commercial devices. The initial phases are nearing completion and at least three teams of highly qualified industrial contractors have been identified for follow-on activities; the statements of work are being prepared for the next phase.

In several other communications fields, separate from the Speakeasy effort, alliances have been formed by groups of industrial organizations interested in standardizing particular technologies for the purpose of guaranteeing compatibility or interoperability between products. For instance, the ATM Forum is a collective effort of over six hundred companies which provide asynchronous transfer mode oriented products or services. The Forum was started by four companies in 1991 and the members meet at frequent intervals and collectively agree to meet stated implementation standards, thereby assuring that products from diverse manufacturers will work together. Membership in the ATM Forum is at three levels: Principal members pay \$10,000 yearly for voting rights and the privilege of sending two representatives to all meetings, auditing membership costs \$1,500 annually with the right to send one representative to the annual meetings (without voting rights), and user membership which also costs \$1,500 annually and which permits attendance at a restricted set of committee meetings and no voting rights on general issues.

DISCUSSION

This type of industry forum is typically composed of working groups which focus their activities along specific functional or mission oriented lines. For instance, the ATM Forum includes an education committee and a marketing committee along with nine

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technical sub-committees working on topics such as the LAN emulation, testing, physical layer specifications, and traffic management. The MBMMR Forum could have groups addressing modularity (which functions are included in each module, which are mandatory and which are discretionary, etc), interfaces (hardware and software, internal and external, signalling, downloading of files, etc), bus structure and architecture, and the user interface.

Not all characteristics of the radio need be defined by the forum. Such things as physical characteristics (form/fit envelope, weight, battery type, power, etc), implementation decisions (software language, microprocessors, antenna design, power output, etc), and other strictly internal characteristics can be left up to the manufacturer. In addition, the individual manufacturers, for reasons of competitive distinction, should be permitted to add features which enhance radio performance and which do not conflict with the basic radio standard.

Involvement of industrial organizations in a group of this kind would be motivated by the perception that an open system radio architecture is desired by the military and that future radio acquisitions will require these capabilities.

This kind of open systems arrangement should result in interoperable radios and modules becoming available from multiple sources, conceivably, even from even third parties. In fact, a radio could ultimately be composed of mixed and matched modules, from different manufacturers.

The forum membership should not be limited to military services and military contractors, rather, it should contain a wide range of groups including military users, public safety interests, law enforcement, federal and other commercial organizations. An initial steering group of, perhaps, twenty members invited by Rome Lab should be convened to establish a strawman charter, by-laws and mission statement; then, following a CBD announcement, an unlimited public conference can be held to discuss, modify, and ratify the charter.

Rome Laboratory participation could range from a minimum of providing initial impetus and secretariat support for arranging meeting facilities and publishing meeting minutes to providing travel and labor funding for all of the participants. It is suggested that RL take the middle ground of providing initial leadership of the effort, secretariat support, and partial financial support for some of the participants for the first few years. The participants should initially match RL funds and, ultimately, the forum should be self-supporting through membership fees similar to the ATM Forum. If RL were to support a dozen industrial organizations in the initial phase at a level of \$25k per year, the annual RL cost should be less than \$500k.

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SCHEDULE

RL internal meetings to define goals, plan strategy and process	2-30 JAN
Exploratory meetings with industrial organizations (one at a time)	2-30 JAN
Steering Committee invitations distributed	1 FEB
Steering Committee meeting to draft forum charter, organize, and establish subcommittees	15 FEB
CBD announcement for general meeting	22 FEB
General Meeting to discuss charter and propose revisions	22 MAR
Distribute revised charter for review	29 MAR
Proposal deadline ¹	29 APR
Contracts awarded ²	29 MAY
Initial forum meeting to sign charter and begin operations	15 JUN ³

STEERING COMMITTEE

DoD/Military

Rome Lab
CECOM
USAF Electronic Systems Center
ARPA

Federal Agencies

Department of Commerce (ITS)
Department of Justice (NIJ, FBI, DEA)

Industry

Hazeltine
Magnavox
Motorola
Harris
Lockheed
Martin Marrietta
Rockwell

Other

Association of Public Safety Communications Officers (APCO)

¹ If contract is to be awarded

² If contract is to be awarded

³ 15 APR if no contract award