

HSMM

Communicating Voice, Video, and Data with Amateur Radio

The Sociology of Regulations

When the ARRL Board of Directors, at the recommendation of its Chief Technical Officer, Paul Rinaldo, W4RI, established the High Speed Multimedia (HSMM) Working Group (WG) we were given a very broad mission statement. Since then some critics have rightfully commented that the assigned mission was too broad to be accomplished in any reasonable time frame given the limited resources available.

That is an after-thought, or "Monday morning quarterbacking." At the time, it all sounded challenging, but within reason. However, we were ignorant.

We proceeded to gather together the WG, drawing on the best volunteers we could find in the Amateur Radio Service. To accomplish the goal of designing a nationwide HSMM network, which we later dubbed "The Hinternet," we quickly realized that a change of regulations would be needed.

The current Amateur Spread Spectrum regulations, although drafted by hams with good intentions years ago, were totally unsuitable. For example, the Automatic Power Requirement (APR) was tough to achieve and had little meaning given the hidden node issue with IEEE 802.11 modulation.

Furthermore, why have the 100-watt power limit? We had enough trouble and expense just generating 1 watt on the 2.4-GHz shared band. Finally, our later work on lower frequencies depended on orthogonal frequency-division multiplexing (OFDM) modulation and wasn't really spread spectrum anyway, especially when some of the bandwidths got down to 100 kHz! It wasn't gaining any advantage by "spreading."

The toughest issue by far was dealing with the need for encryption for the pur-

One HSMM User's Perspective

By Rick Williams, KV9U

The WiMax setup here is just a very common ISP-installed RF link using Alvarion equipment. I use the term *WiMax* as a generic higher powered version of WiFi. Alvarion did not wait for the final IEEE specification and started marketing its products much earlier. I have seen these kinds of systems in other communities.

They do throttle back the throughput, since you are sharing the sector with anyone else on that connection. It can run over 1 Gbps, but Alvarion has it below 500 Mbps, I have heard. My understanding is that Alvarion has a hexagon

array of antennas with each covering 60-degree beam-width to cover the full 360 degrees. The power level is a few watts and runs on 2.4 GHz. It cannot tolerate the slightest blockage from distant buildings or trees, so it is truly line of sight (LOS). The neighbor's barn just happens to be in line with a water tower located about 5 or 6 miles away, which has one of the access points, so there just is no usable signal at my location. Luckily, after cutting down some trees on the other side of the highway, I was able to open up a LOS link to a more distant tower about 7 or 8 miles away.

pose of network, not to obscure the meaning of the communications. Clearly, the current regulations were never intended for a post-9/11 high-speed data emergency communications environment. Chris Imlay, W3KD, was most helpful in working between the FCC and us on such complex issues.

When I read the comments of Bonnie Crystal, KQ6XA, regarding regulations and the digital-radio reflector, it brought everything into perspective, and I simply have to share her excellent observations with you. They are so classic that I like to call her comments "The Sociology of Regulations," but you judge for yourself:

Like laws, ham radio regulatory rules are not black and white. They are subject to interpretation, tradition, politics, and convincing arguments.

A gray area is the area of rules where an unclear or unsharp dividing line may apply to a specific instance, a trend, a group, or in this case ... a communication signal.

Often, a new convincing argument may move a previously gray area situation into a more clear definition.

In the USA's ham radio rules, there are many gray areas. Generally speaking, gray areas are widely accepted in democratic societies and have a clear connection to the

notion of tolerance, whereas in societies of totalitarianism, gray areas typically are not accepted on any level.

The notion is that there may be a gray area in a rule or regulation, as an area where no clear rule or precedent exists, or where the rule has not been applied in a long time, thus making it unclear if it is applicable at all.

Many people accept gray areas of life as a natural part of the human experience, whereas others may react with suspicion and a feeling of defect or incompleteness of any thought system (or paradigm) accepting gray areas.

It is not surprising that strong polarizing opinions exist regarding this subject or how it is applied to ham radio digital communications. Gray areas always are present in ham regulations and rules because:

1. Technology always moves faster than regulatory process.
2. Some rules are inherently self-contradictory.
3. Regulation rarely anticipates all things possible.
4. New inventions happen.
5. Users deploy technology that has not been previously in wide use.
6. "Spirit of the law" may tend to obscure or modify a rule.
7. New valid arguments may modify the way rules are interpreted.

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8. Enforcement may be different than actual commonly accepted meaning.

9. Valid loopholes may be found or become boldly evident.

10. Technology may be designed to effectively circumvent rules.

11. Technology may have an inherent higher value under "Spirit of the law" to preclude enforcement over a long time, thus rendering the rule null in the practical sense.

12. Civil disobedience or long-term use of a particular gray area method may effectively render it clearly within the rule through non-enforcement.

13. Pressure through widespread common use in surrounding jurisdictions may render the rule moot, ineffective, or non-enforced.

14. Humans wrote the rules, and humans are not infallible.

15. The value or strength of one rule may

overtake or nullify another rule when applied to a situation.

16. Compelling arguments for one side may win over the other side.

There are other explanations for gray areas, and ham radio digital communications have many examples. In future columns we will attempt to cover some of these other gray areas.

73 de John, K8OCL

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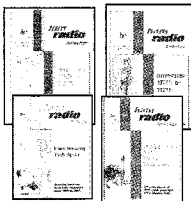
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