Self-Regulation of E911 for VoIP: Lessons for the Cable Industry from Environmental Voluntary Agreements

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Abstract

It will be difficult and costly to use traditional command and control regulation to support social policy goals for emergency services access (E911) for all emerging voice applications enabled by Voice-over-IP (VoIP) technology. A self-regulation regime by the cable industry and more broadly by the telecommunications industry could be both more flexible and more efficient. Whether it would be effective is a different question and one that would need to be answered proactively as part of any proposal. Here we explore the theoretical and empirical literature on environmental self-regulation, particularly voluntary agreements by polluting firms, to understand what would be relevant to a cable industry self-regulation proposal. Key recommendations include the need to proactively address effectiveness critiques by advocating an appropriate role for government regulators in the overall scheme, by monitoring and publicly reporting outcomes rather than effort, and including appropriate third party stakeholders in developing agreements so as to avoid the appearance or fact of regulatory capture.

Introduction

Convergence in the telecommunications industry is leading many operators and application designers to develop and deploy novel voice applications; the cable industry is particularly active. Some voice applications look much like traditional telephony, while others (such as voice augmented instant messaging or video gaming) look quite different. The reliable provisioning of calling for emergency services (the traditional E911 framework) remains an important social policy goal. But the strain induced by the extension of voice applications far beyond the traditional telephony model makes a straightforward extension of E911 regulation to all voice applications quite difficult.

One approach would be to rely on a government agency (most likely the FCC) to develop new and extensive emergency services regulations that would be broadened to cover all emerging voice applications, specifying which ones should confirm with provision of
emergency services, how conformance is measured, and then enforcing conformance. Previously, we proposed a different approach: that the industry develops a self-regulatory approach based on labeling and certification (Sicker and Lookabaugh, 2004). We suggested that industry should be strongly motivated to pursue this approach in order to maintain flexibility that matches the much broader and evolving opportunity set around innovation based on voice over IP and voice services in new contexts. We warned, though, that self-regulation for social policy reasons is a relatively new concept and one fraught with questions, particularly around credibility and effectiveness, and we developed a set of observations and recommendations to address these.

In this paper we extend that work by carefully evaluating experience in environmental regulation. Environmental regulation has seen the most active experimentation in self-regulation of any area of social policy. High profile environmental failures like the Union Carbide gas leak in Bhopal, India, the Three-Mile Island and Chernobyl radioactivity leaks, and the Exxon Valdez oil spill as well as persistent concerns with issues like ground water contamination, loss of ozone, acid rain, global warming, etc., help draw substantial attention to the question of corporate responsibility for the environment. A vocal environmentalist movement contests with industry interests in legislatures, regulatory bodies, and the courts to define and enforce corporate accountability for the environment. At the same time, recent trends in government are towards less explicit and comprehensive direct regulation. This has made environmental policy a testing ground for concepts of industry self-regulation and certification, resulting in a proliferation of experimentation both domestically and internationally with forms of voluntary agreements to address social policy goals for environmental protection (Dietz and Stern, 2004, Garcia-Johnson, 2001). These experiments hold lessons for any new self-regulatory regime such as the one we advocate for E911 and VoIP – and even possibly other social policy goals in the telecommunications area.

Regulatory Approaches

Traditional regulatory strategies for achieving social policy goals, including both environmental and telecommunications policy, have focused on “command and control”, in which an expert government agency determines and enforces regulations, including applying penalties and sanctions. More recently, environmental regulation has also seen the introduction of market instruments that attempt to address economic theory about the efficient provision of social goods by creating tradable pollution credits. Market instruments achieve an important degree of flexibility in the allocation of costs, but are still embedded in a highly structured, monitored, and enforced regime overseen by governments. Primary concerns with both command and control and market instrument regulation are lack of flexibility, high transaction costs, and the potential of stifling innovation both directly in the form of innovation serving the relevant social policy goals and other forms of innovation relevant to the affected industry.

More recently, voluntary agreements have emerged as an alternative to either command and control or to government sponsored market instruments in environmental regulation.
Voluntary agreements can take several forms, including (Higley, Convery, and Lévêque, 2001, Alberini and Sergerson, 2002):

- Intra-industry agreements – in which an industry develops its own framework independent of any government regulators
- Negotiated agreements – in which regulatory agencies and firms negotiate targets for environmental performance
- Public Voluntary programs – in which a regulator establishes a program and its requirements and firms choose to participate on a voluntary basis.

An alternative taxonomy is to note that most agreements include two components: a set of rules, principals, and guidelines and a reporting or monitoring mechanism (Garcia-Johnson, 2001). As we will see, those agreements which only include the former tend to be problematic.

The potential benefits of voluntary agreements are primarily that they can reduce the perceived problems of traditional regulation by increasing flexibility and lowering costs; these are as motivating in the area of environmental social policy regulation as they are potentially for telecommunications regulation.

**Firm Rationale and Environmental Voluntary Agreements**

Environmental voluntary agreements may have potential advantages relative to traditional regulation, but they confront a number of credibility and effectiveness challenges. We can expect many of these same challenges to apply to telecommunications social policy regulation.

An important question about voluntary agreements is why we would expect firms to enter into and perform under such agreements. Two major frameworks are advanced to explain why firms would and would not participate in voluntary agreements. Institutional organizational theory typically draws on the framework of DiMaggio and Powell (DiMaggio and Powell 1983); they posit a trend for firms to adopt similar practices and behaviors over time (isomorphism) driven by coercive pressure (external pressure), mimetic pressure (the pressure to imitate industry leaders), and normative pressure (norms derived from professionalism). These pressures can help motivate compliance with socially desirable goals of minimizing environmental impact even if this is in conflict with apparent economic goals (Darnall, 2001, Rivera and De Leon, 2004); a similar analysis derives from managerial and actor theory (Prakash, 2001). Institutional economic theory, on the other hand, seeks to understand when firms would enter into voluntary environmental agreements for purely economic reasons, by defining economic rationales sufficiently broadly to incorporate various stakeholder interests (Alberini and Segerson, 2002, Harford 1997, Khanna and Anton, 2002, Khanna and Damon, 1999, Ashby et al., 2004, Delmas and Terlaak, 2001, Anton et al, 2002).
The economic approach tends to highlight a set of specific motivations for firms to undertake voluntary agreements, including:

- The threat of environmental liabilities
- High cost of compliance with threatened command and control regulations, if voluntary agreements fail
- Customer pressure for conformance
- Social pressure for conformance (e.g., from NGO’s)
- Reputational costs

Some authors also posit pressure from investors for conformance, e.g., through environmentally sensitive investment funds or through highly diversified shareholders who reflect societies broad interests (Khanna and Anton, 2002, Harford 1997), but there does not seem to be significant empirical support for this effect (Rivera and DeLeon, 2004).

**Free Riding, Industry Concentration, and Anti-Trust**

A persistent concern about firm involvement in voluntary agreements is the potential for free-riding: entering the agreement but underperforming relative to the obligations on the theory that others who are performing relative to its obligations will secure benefits shared by all; there is an obvious theoretical basis for this concern and empirical evidence to support it as well, for example in the Chemical Industry’s Responsible Care program (King and Lenox, 2000). Free-riding is probably inevitable and it is valuable to minimize it; however, the fact that some free-riding is present is not sufficient to reject voluntary agreements as unable to provide net superior efficiency to command and control regulation (Dawson and Segerson, 2003).

A technique to reduce free-riding is to develop measurement and sanction mechanisms to discipline firms. One candidate for this role is an industry trade association; this is, however, problematical as it is not clear whether an association has sufficient independence to be effective. Moreover, anti-trust legislation normally forbids certain types of punitive action by trade associations as being overly collusive (King and Lenox, 2000). More generally, there are anti-trust concerns around voluntary agreements facilitating tacit collusion among industry players and the use of voluntary agreements by incumbents to raise barriers to entry (Harford, 1997). The interaction with anti-trust makes the selection of measurement and sanction mechanisms more difficult and leads to a role for government or for truly independent third party certifiers (King and Lenox, 2000).

Aside from anti-trust issues, it is an open question as to whether industry concentration facilitates the effectiveness of voluntary agreements. Brau and Carraro argue that concentration reduces free-riding and so enhances effectiveness (Brau and Carraro, 2000), but Chapple et al. find in both their empirical work and that of others that industry
concentration is negatively correlated with involvement with voluntary agreements (Chapple et al., 2001). Of course these are not quite the same thing: participation in voluntary agreements may also come with substantial free riding.

Credibility and Effectiveness Challenges to Voluntary Agreements

Effectiveness

Any serious proposal for self-regulation will have to address theoretical and empirical questions about effectiveness: does self-regulation efficiently meet the social policy goals it is intended to advance, and in particular, is it better than existing alternatives?

The record for environmental voluntary agreements is mixed. Theoretical arguments in support of voluntary agreements abound (see the section “Firm Rationale and Environmental Voluntary Agreements” above) and there is some empirical evidence in support as well (Khanna and Damon, 1999). However, much of the empirical literature is ambiguous or negative about effectiveness. Harrison and Antweiler maintain that in a case they studied in detail, upon further analysis gains purported to be from voluntary agreements in fact were largely due to traditional command and control regulation (Harrison and Antweiler, 2003). In several cases, there is suggestion that environmental performance is actually weakened by voluntary agreements, including the Department of Energy’s Climate Challenge Program on CO₂ emission (Welch et. al., 2000) and the Sustainable Slopes Program for ski areas (Rivera and De Leon, 2004). The perverse performance under these agreements is attributed to the lack of specific institutional mechanisms to prevent opportunism (too much free-riding), including no specific environmental standards, third-party oversight or sanctions. More generally, an emphasis on means (“proactive efforts”) rather than ends (measurable outcomes) seems to be decidedly problematic (Khanna 2001).

Transparency and Stakeholder Involvement

Another broad concern around voluntary agreements is the extent to which parties to the agreements make them in private failing to incorporate the legitimate needs of all stakeholders, including society at large. When a regulator is a party to the agreement, this is the well known problem of regulatory capture (Krarup, 2001). Traditional strategies for mitigating regulatory capture are transparency and visibility of process and the explicit involvement of other groups such as NGO’s in structuring agreements (Carmin et al., 2003); these can add substantial legitimacy to voluntary agreements.

Monitoring

After agreements are reached, effective monitoring of agreements emerges as a common element for effectiveness (Barth and Dette, 2001, Krarup, 2001). This is a potential role for a government regulator (Rivera, 2002). Monitoring should be coupled with public dissemination in order to support the reputational motivation for compliance with voluntary agreements (Lindsay, 1998); in addition monitoring can provide measurement
feedback to firm managers that is valuable in and of itself (Asfah et al., 2000). Examples of such public monitoring include the U.S. Environmental Protection Agency’s Toxic Release Inventory (a reporting requirement of the EPA which is then captured in a publicly available database), the Canadian government’s National Pollutant Release Inventory, and similar mechanism in Australia and the European Union (Harrison and Antweiler, 2003).

Certification

Certification is a key part of our proposal for E911 over VoIP. In the case of environmental regulation, the closest analogy is ISO 14001, a regime like the ISO 9000 framework for quality management (Darnall, 2001). In ISO 14001, facilities develop an environmental management system (EMS), certified by an external third party auditor. The facility then implements a process of continuous improvement to reduce environmental impact through learning, feedback, and proactive management changes. Most work to date on ISO 14001 has been in observing the dynamics that drive adoption. Evidence from the adoption of ISO 14001 in Japan shows the difficulty of assuming that firms share a single common capability and orientation towards adoption; in fact, the character of adopting firms changes markedly as adoption increases, suggesting complementary changes in the motivations and support provided by regulators or third parties (Welch et al., 2002). Evidence from the UK suggests that highly internationalized industries are more prone to adoption and that firm size and profitability are both negatively correlated with adoption (Chapple et al., 2002), a finding somewhat contradicted by a study of US companies showing that adoption is positively correlated with strong internal capabilities (Darnall, 2001). The cultural environment and role of government regulators seems to be particularly pronounced in distinguishing between adoption rates in the US and in the EU (Delmas, 2002).

Credible Threat of Regulation

A consistent finding in both the theoretical and empirical literature on environmental self-regulation is the requirement for a credible threat of costly command and control regulation imposed by government should self-regulation fail (Convery and Lévêque, 2001, Khanna and Damon, 1999, Khanna 2001, Alberini and Segerson, 2002). In a game theoretic analysis, for example, Ashby et al. are quite explicit: “These observations suggest that government has an incentive to generate the expectation of a zero tolerance regime irrespective of its true intentions…. However, governments following this approach need to avoid a credibility gap as the one generated by the UK government’s failure to legislate following a series of damning reports on press self-regulation.” (Ashby et al, 2004)

A regulatory threat can be one of command and control regulation with either impacts on firm flexibility or directly on cost through compliance costs and potential penalties, or the threat of a costly taxation regime. (Convery and Lévêque, 2001).
Dissemination of Expertise

A complement to a credible threat of regulation is the positive role of disseminating technical expertise or other knowledge by a government regulator or other third party. This has proven valuable in helping small and medium players participate in environmental voluntary agreements and can take a number of forms, including outreach/education, tools development and dissemination, challenge/recognition/award programs, demonstration projects, and technical assistance (Lindsay, 1998).

Recommendations to the Cable Industry

Based on this analysis of experiences in environmental self-regulation, we can augment and amplify our previous recommendations (Sicker and Lookabaugh, 2004) as follows:

1. Assume that any industry proposal for self-regulation for social policy goals by the cable industry or more broadly by the telecommunications industry will be met with skepticism by other stakeholders. Anticipate this in developing the proposals.

2. Anticipate and promote a role for a government regulator to negotiate agreements and provide a credible threat of command and control regulation. Involve other stakeholders (e.g., NGO’s) in the negotiation to avoid the fact or appearance of regulatory capture.

3. Look to an independent third party (either a certifier or a government regulator, not a trade association) to monitor and publicly report performance and disseminate knowledge and expertise.

4. Performance needs to be measured against specified outcomes, not effort or intention.

Conclusion

Self-regulation for social policy goals is a challenging but enticing proposition. Advantage flows from the potential for increased flexibility and lower costs (both for regulator and for regulated firms) relative to traditional command and control regulation. The challenge comes from skepticism (often justified) regarding the effectiveness of this kind of regulation.

We see self-regulation as a possible approach to the application of E911 style emergency services calling goals to the proliferation of new communication applications emerging as networks converge onto a common IP infrastructure. And, if successful there, we can imagine a number of other telecommunications social policy goals that could be amenable to a similar treatment. Indeed, we are hard pressed to see how an expert agency will be able to keep up with the rate of innovation now occurring; either a more flexible regulatory system such as self-regulation will emerge, or regulatory agencies will find themselves directly constraining valuable innovation.
But for self-regulation for social policy goals to be credible, we need to learn from previous experiences in similar endeavors. The field of environmental self-regulation through voluntary agreements has been one of the most active areas of experimentation in new forms of regulation over the last decade and a half. A substantial collection of both theoretical and empirical work has emerged and we can learn several useful lessons. In particular, it seems clear that in constructing a proposal we should actively seek out a government agency capable of providing a credible threat of command and control regulation; such a threat helps save industry from itself by providing what appears – from the experience in environmental self-regulation – to be a necessary context for a successful regime. Other key findings include the need to define, measure, and publicly report results using an independent third party (possibly, but not necessarily, the same government agency) in order to reduce the tendency for free-riding by firms, and the desirability of taking advantage of this same third party to assist in dissemination of knowledge that will support successful self-regulation by firms, and the advantage to credibility from including other interested parties such as NGO’s in development of self-regulation policies (rather than simply relying on industry and regulators to engage in bilateral negotiations). These findings further help us in defining and supporting a credible self-regulation proposal to the industry, government, other stakeholders, and society at large.

References


