

FIGHTING TECHNOLOGY STANDARDS COMPETITIONS: ADAPTING TO NEW RULES

On February 19, 2008, Toshiba's CEO had to concede the defeat of its high-definition disk format HD DVD. With this announcement, two years of consumer confusion had come to a sudden end; the competing Blu-ray format backed by Sony had apparently won the battle to become the next *de facto* standard. Fighting for technological dominance has been an important strategic activity in high-tech companies for decades. A number of such standards wars have become renowned success stories for some combatants and have resulted in disastrous defeats for their competitors. Sony has paid its dues too, most prominently when its Betamax standard suffered a decisive defeat against JVC's VHS format in the market for video cassette recorders.

But don't be deceived. While much attention is still given to the development of management concepts to engage in so-called "winner-take-all" markets, the competitive dynamics have become more sophisticated since the days of the VHS tape battle. Indeed, the recent success of Blu-ray as the next high-definition DVDs seems rather an exception. Based on a **systematic review of a total of 76 standards wars** our observations regarding the evolution of technology dominance in standards competitions over time point us in a different direction: While many new standards competitions continue to emerge, most standards wars tend not to end with a clear winner anymore.¹ For a conceptualization of this trend see Figure 1 on page 2.

Indeed, recent contextual changes due to the emergence of today's digital economy have significantly altered the "classic" way of managing standards competitions. What are then the **new rules** in standards competitions? Which new **tactics** should be applied in emerging technology competitions?

New Rules in the Digital Economy

In our research, we have identified three key rule changes. New communication and information technologies push companies to exhibit **short development cycles**, take advantage of **digital production and distribution** techniques, and deliver **open technologies**.

Naturally, standardization processes are strongly impacted by these new realities. More and more incompatible technologies (e.g., in the markets for audio players, mobile TV or virtual communities) are developed in parallel, each with speedy adoption rates. As technology providers and consumers alike have easier access to information and communication technologies, the intensity of competition and timeliness of competitive responses have heightened. And to influence *de jure* standardization, companies more often form private consortia which aim to establish a *de facto* standard based on common (open) specifications. At the same time, the number of standards wars has exploded in recent years and heightened competitions on



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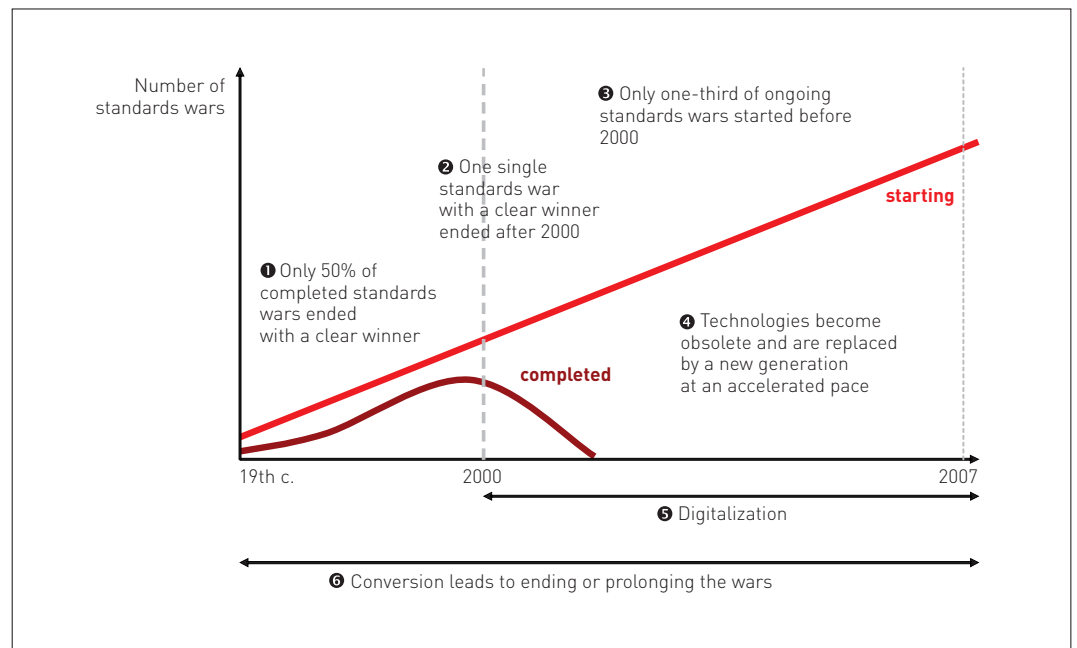


Figure 1. Observations on the Evolution of Standards Competitions

a global scale. In short, companies engaged in today's standards battles need to adapt their tactical management to these new realities and the fast-moving market dynamics.

Tactical Exploitation of Digital Trends

Whenever consumer benefits depend on the number of other consumers in the same network (e.g., number of music titles available for download), companies strive to make use of these network effects, to speed up technology adoption. To do so, they can use both *traditional tactics* (T) – adapted to the traditional technology environment – as well as new *deployment tactics* (N) enabled by recent contextual changes. Table 1 summarizes multiple principle strategies for increasing consumer adoption along with the portfolio of supporting tactics required to enact them.

Installed base creation

Companies have to create installed bases as quickly as possible in order to reach a critical mass and to stimulate adoption-reinforcing network effects.

Firms can use traditional tactics to diffuse their technologies rapidly by using **licensing agreements** or **open systems**. Licensing is a way

to enlarge an installed base with an increasing amount of complementary products, to reduce consumer confusion and to increase technology acceptance. Likewise, network openness favors the development of complementary products. Open systems are usually less expensive and often more successful than proprietary systems and often play a decisive role in de facto standardization.

A **penetration pricing** strategy can be followed to increase the speed of technology adoption. Companies tend to offer very low hardware prices – compensating potential losses on hardware by selling software. It is, for instance, speculated that in video game markets the major consoles are sold at a price near marginal cost, if not below.

Aside from penetration pricing, companies have to make use of **dynamic pricing** due to constant pressure on prices from competitors all along the technology diffusion process. In the high-definition DVD market the incumbents are engaged in a price war already during pre-announcements, cutting product prices to increase the market penetration rate. And although Apple's iPhone outsold all other smartphones upon its market introduction, its price was slashed by a third within three months –agonizing early adopters.

Influence on consumer perception

Companies actively try to influence consumers with respect to the perceived number of actual users and complementary technologies. In this context, “**influentials**,” as referred to by the trade press, financial analysts, weblogs or websites, exercise a certain power over technology adoption – they can exaggerate future sales expectations or actual sales figures. In the audio player market, Apple and its competitors exercise influence on consumer perception by using influentials whose role is quite remarkable: in diverse media, iPod is credited with a market share which fluctuates between 14% and 87%!

Aside from traditional marketing, new deployment tactics relate to the use of worldwide and easily accessible internet marketing technologies. **Participative technologies** (e.g., Web 2.0) and **social networking** allow communities of potential consumers to discuss the pros and cons of technologies of all kinds of networks online via chat rooms, messengers, weblogs, etc. Many weblog owners can influence consumers by giving (sometimes erroneous) information about competing technology.

Indeed, fighting standards wars in terms of influencing consumer perception has increasingly become disconnected from actual product launches. **Product pre-announcement** has become a widespread practice in today’s standards wars, where new systems are announced long before they are available in the market. A firm may sometimes even issue false announcements, called vaporware, in an effort to reduce the market share of their rivals, which are likely to be believed by consumers if the firm has a good reputation. For instance, the product launch of Sony’s PlayStation 3 was shifted out multiple times. Furthermore, pre-announcement increases the effects of the influentials and social networking. Before a technology gets released, influentials and communities of potential users can begin to spread information about it and thus come to impact future technology adoption.

Competition moderation

Companies increasingly build **alliances** to avoid reproducing Sony’s mistake of choosing to remain

on its own in the video cassette recorder market. Alliances also serve in making use of indirect network externalities (i.e., in the provision of complementary products) and impact the firms’ image, as well as the standard’s credibility. In the market for high-definition DVDs, Warner’s decision to exclusively support Blu-ray after having released titles in both formats was so widely spread among technology news and weblogs that sales of Blu-ray hardware captured 90% of the market in the following week (market sales equally split up to this point).

A new challenge for firms in the standards battles is to impose their own proprietary features in the standard alliance. This increasingly important competition model is called **co-opetition** – competitors build semi-open alliances combining competitions between and within standards. A recent example is the Bluetooth alliance which was designed to reach a trade-off between speed of technology development and market penetration.

Technology development

Companies in today’s high-tech markets also compete in terms of technology development, in order to increase consumers’ utility for their technology network.

There is a need to offer **backward compatibility**, because a new technological solution should not only be evolutionary but also build on the existing technology solution. For example, while Sony’s PlayStation 2 was backward compatible and was

Principle Strategies	Supporting Tactics
Installed base creation	Licensing agreements (T) Open systems (T) Penetration pricing (T) Product proliferation (T) Price war (T)
Influence on consumer perception	Influentials (T) Participative technologies (N) Social networking (N) Product pre-announcement (T)
Competition moderation	Alliances (T) Co-opetition (T)
Technology development	Backwards compatibility (T) Conversion (T) Crossover standards wars (N) User-led innovation (N)

Table 1. Portfolio of Tactics.

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enormously successful, Nintendo's GameCube was not and failed.

In a co-opetition framework, technical and tactical manoeuvring includes the use of **conversion** technologies. With converters, compatibility benefits can be transferred from one network to the other, while transfer in the other direction remains incompatible. As a result, losing technologies can benefit from the dominant incumbents' network externalities. Converters may also change the eventual outcome of a standards battle – by accelerating, extending or reversing the process of locking-in a competing technology. Today, technology digitalization not only simplifies but also speeds up the development of conversion technologies; converters are now present in major emerging standards competitions like the high-definition DVDs.²

Another new deployment tactic in standards battles is the development of **“crossover standards wars,”** which is grounded on the tendency of many technological systems to converge. Several network technologies are either merged or bundled in a single product and compete with a product combined with incompatible technologies. That is, the network externalities for each single converged technology can help create the network externalities of the other converged technologies. For example, competing high-definition disks formats Blu-ray and HD DVD are converged into video game consoles PlayStation 3 and Xbox 360, respectively.

A last tactic relates to consumers' expectation to be able to participate in the product development process as a result of the growing importance

of open technologies. The deployed tactic is the **“user-led innovation”** approach. In the context of so-called 2.0 technologies, characterized by the shift from static to dynamic contents, users collaborate to develop applications, and are considered contributors instead of consumers. In the video game console battle, “user-led games” for PlayStation 3 were introduced for users to create the universe in which they play and then watch it evolve.

Perspectives

As a consequence of rule changes, it has become significantly more difficult to emerge as a clear winner in today's standards wars. Although companies should fight standards battles with the objective to dominate the market, they should understand that victory has become less likely. In particular, the portfolio of tactics that companies apply simultaneously to speed technology adoption has significantly evolved over time. At the same time competitors' responses have become more timely and more sophisticated, making use of innovative tactics adapted to the digital economies. In this light, Sony's recent success with its Blu-Ray format appears rather as an exception than as a confirmation of past norms. Indeed, it might still turn into yet another casualty of managing in today's fast moving technology environment. They still need to switch current DVD adopters to the Blu-ray standard before Blu-Ray disks and players become outdated by high-bandwidth downloads and movie storage on emerging high capacity SSD memory.

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¹ The present article is based on a research paper: Varé, A.X. and Seifert, R.W. (2008) *Contextual and tactical changes in standards wars: what consequences for 'winners'?*

² Seifert, R.W. and Varé, A.X. (2008) *Adoption of network technologies in the presence of converters. Forthcoming in Economics of Innovation and New Technologies.*

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