

**Blueprint Research & Design, Inc.**



**Catalyzing Creativity  
through Competition:  
Building the Field of  
Digital Media and Learning**

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## Can SecondLife Help Us Learn in FirstLife?

Recent stories in the “old media” newsweeklies, *Business Week* and *The Economist*, describe the bewildering and breathtaking ways in which digital media are changing society<sup>1</sup>. Not only have these new technologies revolutionized the way work is done and conversations are had, they have accelerated the pace of change in most social endeavors and, at the same time, blurred the lines between producer and consumer, private and public, and real and virtual.

The MacArthur Foundation has identified opportunity amid this flux<sup>2</sup>: *Digital media tools have advanced significantly in recent years, enabling new forms of knowledge production, social networking, communication, and play. Through the use of such tools, young people are engaged in an unprecedented exploration of language, games, social interaction, and self-directed education that can be used to support learning. They are different as a result of this exposure to and use of digital media and these differences are reflected in their sense of self, and how they express their independence and creativity, and in their ability to learn, exercise judgment, and think systemically.*

It is within this context that the Foundation has taken up its Digital Media and Learning work to explore “the notion that the style and structure of education may need to change to appeal to and accelerate the learning of young people who are ‘growing up digital’.” The Foundation hopes to answer questions such as: Can new approaches to the use of digital media tools be developed that support innovative and engaging approaches to learning? Do social software tools such as blogs and wikis result in new kinds of peer-to-peer learning? Can popular games be adapted to engage young people in learning content knowledge, like math or science?

All of our institutions – families, schools, governing bodies, workplaces, worship sites, community organizations and so on – need to consider and adapt to the potential of digital media. Our children, even those in their early twenties, don’t consider digital media tools to be new. For this generation and all to come, downloading MP3s, IM’ing, texting, hanging out in MySpace, and Googling are the only ways they have ever known of accessing music, finding information, contacting friends, playing games and sharing their personal thoughts.

Innovation and creativity are rampant within the realms of digital media tool creation and use. At the same time, the application of these tools to learning and teaching is, at best, episodic, controversial, and a target for misinterpretation and distrust. This is due, at least in part, to the vast difference between the timelines on which schools and community organizations function and the pace of change and innovation in digital media. There is also an element of confusion, fear and mistrust of these new tools by those in control of our institutions. This is not to say that nobody over the age of 30 “gets” the potential of digital media. On the contrary, the average age of regular video game players is 30 and 65% of game players are over 18,<sup>3</sup> and established industries such as publishing, broadcasting,

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<sup>1</sup> Robert D. Hof, “Virtual World, Real Money,” *Business Week*, 1 May 2006, pp. 73-82. and “Among the Audience: A Survey of New Media,” *The Economist*, 22 April 2006.

<sup>2</sup> Connie Yowell and Julia Stasch, *Proposed Grantmaking in Digital Media, Learning and Education*, The John D. and Catherine T. MacArthur Foundation, prepared for the June 2005 Meeting of the Board of Trustees.

<sup>3</sup> *2005 Essential Facts about the Computer and Video Game Industry*, Entertainment Software Association.

moviemaking, recording, medical record keeping, intellectual property law, telecommunications, computer software and hardware production and many others are all testing new tools and business models to capitalize on the immediacy, multiplicity and pervasive nature of digital media.

But teaching and learning are not (primarily) commercial activities and the pace at which formal institutions need to change is much slower than those that drive commercial enterprises.

How can we advance the development, use and analysis of digital media tools that are deliberately conceived and combined as learning opportunities? There are important questions underlying this goal: do we change what we value as learning to align with the skills and capacities that using digital media clearly support? Alternatively, do we seek to force new digital applications into existing standards and pedagogical structures and see if they foster different learning outcomes than their media predecessors? Neither of these two extremes is very compelling. Successful, engaging, replicable practices for understanding and using digital media as a learning tool will likely arise from somewhere in the middle of this spectrum. They may even be the result of unanticipated hybrid approaches that can not be prescribed in advance but that instead emerge from unexpected applications or uses.

Digital media and learning are currently several distinct fields – drawing interest and participation by media companies, game designers, teachers, students, youth organizations, researchers, corporate training experts, and even architects.<sup>4</sup> Bringing these disparate areas of expertise together into a field will entail helping create a shared and well-understood identity, building a common credible knowledge base, helping develop the means and infrastructure for information sharing, collaborative development, standard setting, and leadership development, and assisting the field in presenting itself as a coherent whole and developing the general public's awareness and understanding.<sup>5</sup>

How can a coherent field be built that makes the most of diverse expertise, encourages unexpected yet powerful hybrids, and begins to foster a common vocabulary, knowledge base and public presence? One approach is to use a widely heralded, well-resourced competition to catalyze specific forms of innovation and to provide the incentives that will cut across existing boundaries and bring together unexpected partnerships. As with much innovation, we may not know what a truly successful tool for digital media and learning looks like until we can see it and see it in action. This deliberate creation needs to be set forth as a goal and a wide net be cast to deliberately induce innovation in and greater production of educational gaming and digital media.

This memo provides recommendations for managing a competitive process that will incite innovation in design, production, distribution and use of digital media learning tools. In preparing these recommendations, we reviewed scholarly literature on research and development oriented competitions, analyzed several well-known competitions in the arts and sciences, and considered lessons learned from the John D. and Catherine T. MacArthur Foundation's Research, Writing and Demonstration Competition.

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<sup>4</sup> KCRW *Design and Architecture* Podcast on the new design of schools

<sup>5</sup> These components of a field are adapted from "What does field building mean for service learning?" available at [http://www.service-learningpartnership.org/site/PageServer?pagename=sl\\_fieldbuilding](http://www.service-learningpartnership.org/site/PageServer?pagename=sl_fieldbuilding); Additional research on field building includes: David Kovick, *The Hewlett Foundation's Conflict Resolution Program: Twenty years of field building, 1984-2004*, the series "Practice Matters: The Improving Philanthropy Project" (available from the Foundation Center), and the work of the Skoll Foundation in building the field of social entrepreneurship.

We have organized our analysis and recommendations by answering two key questions:

1. What would be the role of competitions to induce innovation in digital media for learning?
2. What adaptations to competitions are needed given the nature of digital media?

This memo also provides some brief notes on managing and assessing the success of a demonstration competition.

### The Role of Competitions in Promoting Innovation

Given the prevalence of content creation on the internet (57% of teens report creating content)<sup>6</sup> and of video games (75% of heads of households and 70% of college students play video games)<sup>7</sup> the need to induce the development of new digital media seems counterintuitive. However, while the digital media and game industry is awash in entertainment choices, it is much less conducive to the creation of independent, educational or information-oriented titles. The profit, production, and publishing structures of the digital media and game industry in 2006 are not unlike those of the Hollywood movie studios in the 1970s and 1980s; dominated by a few large houses, hit-driven, and with few built-in supports or incentives for purpose-driven creation.

Competitions, awards and prizes were important in altering the film industry and creating new openings for independent films and documentaries. The rise of the Sundance Film Festival and the success of independent producers such as Harvey and Bob Weinstein of Miramax Films offer a compelling analog for today's digital media and game industry.<sup>8</sup> This is so true that the Independent Games Festival is referred to as the "Sundance for Games."<sup>9</sup>

Since neither the marketplace nor existing grant-making efforts have to date stimulated the development of digital media and games that are primarily educational in purpose, it is appropriate to ask: What can competitions induce? What are the limitations?

Some areas of invention, aviation in particular, have been dramatically shaped by prizes, while others have seen less interest.<sup>10</sup> The chart in the Appendix provides a very quick summary of some of the clear lessons to be taken from reviews of competitions in science, the arts, and product development. The National Academy of Engineering has developed a simple taxonomy: *recognition* prizes (past accomplishment) and *inducement* prizes

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<sup>6</sup> Amanda Lenhart and Mary Madden, *Teen Content Creators and Consumers*, Pew Internet and American Life Project, November 2, 2005, 1.

<sup>7</sup> *2005 Sales, Demographic and Usage Data: Essential Facts about the Computer and Video Game Industry*, Entertainment Software Association. <http://www.theesa.com/files/2005EssentialFacts.pdf> and Steve Jones, *Let the Games Begin*, Pew Internet and American Life Project, July 6, 2003, 1. [http://www.pewinternet.org/pdfs/PIP\\_College\\_Gaming\\_Reporta.pdf](http://www.pewinternet.org/pdfs/PIP_College_Gaming_Reporta.pdf)

<sup>8</sup> See Peter Biskind, *Down and Dirty Pictures: Miramax, Sundance and the Rise of Independent Film*. New York: Simon & Schuster. 2004.

<sup>9</sup> Australia Centre for the Moving Image, Games Lab, Independent Games Festival, <http://www.acmi.net.au/>

<sup>10</sup> National Academy of Engineering, *Concerning Federally Sponsored Inducement Prizes in Engineering and Science*, 1999, 4.

(designed to spark additional effort toward a named goal).<sup>11</sup> Inducement prizes are understood to be effective strategies to:

- attract a broader spectrum of ideas and participants by reducing the costs and other bureaucratic barriers to participation by individuals or firms;
- ... shift more of the risk for achieving or striving toward a prize objective from the [sponsor] agency ... to the contestants;
- ...[leverage] the financial resources of sponsors; and
- ... educat[e] inspire[e], and occasionally mobiliz[e] the public with respect to particular scientific, technological, and societal objectives.<sup>12</sup>

The literature on prizes as mechanisms for sparking innovation is most robust in terms of technology competitions. Even here, it is rather thin. There is agreement, however, in cases where the desired outcome is known (but the routes to success are unclear), prizes can be useful supplements to other strategies.<sup>13</sup> In these cases, competitions and prizes are likely to encourage “less hidebound thinkers who are willing to challenge technological orthodoxies.”<sup>14</sup>

Our research and analysis suggests that competitions can indeed catalyze the creation and distribution of innovative, effective and engaging digital media for learning.

### Competition Design Considerations Given the Nature of Digital Media

In comparing the Inducement Prizes in the Appendix (X Prize, Slamdance Guerrilla Gamemakers Competition, and the Golden Carrots), it is important to keep in mind certain elements of the current digital media and games landscape:

- Changing nature of intellectual property and growing open source movement
- New business models that rely on subscribers and advertisements
- Internet as vehicle for content creation, distribution and consumption
- Consolidation in the games industry and the broader industries of entertainment, publishing, and telecommunications.

In addition, there are elements specific to how games are developed that are important to note:

- Market built around commercial hit titles
- Changing nature of publishing and distribution, e.g., rise of game portals, casual games, and mobile games
- Multiple platforms for games (consoles, PCs, mobile devices, Internet only)
- Emergent “serious games” initiative
- Games increasingly used as advertising vehicles and tie-ins to other media (movies, books)
- Youth and teens as active participants in creating their own content and the multi-generational demographic nature of game players.

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<sup>11</sup> Ibid.

<sup>12</sup> Ibid, 1.

<sup>13</sup> Richard G. Newell and Nathan E. Wilson, “Technology Prizes for Climate Change Mitigation,” Resources for the Future, 2005, 10-11.

<sup>14</sup> Ibid, 28.

These unique conditions lead us to address three key issues, which will be important to consider as criteria and conditions for a competition are developed:

- Pace of change
- Incentives
- Intellectual property.

### *Pace of change*

No one knows what “the next big thing” in the digital revolution will be but it’s safe to say that it’s going to be coming along soon. When asked how has technology impacted the ways young people learn and get information, the Institute for the Future’s Paul Saffo observed, “The thing I see happening is that there’s a real compression between generations (of technology). There used to be about 20 years difference (in technology use). Now you talk to 15-year-old kids and their 9-year-old brother or sister is using stuff that they don’t understand.”<sup>15</sup>

This rapid pace of change has significant implications for the competition’s criteria development, particularly in the designation of an appropriate objective. Given that product life cycles are so short, it may well be that “the target of successful... innovation is not a particular technology, but rather a growing portfolio of technologies, each filling a particular niche and soon replaced by something better.”<sup>16</sup> Indeed, rather than a specific innovative product, it might make more sense to reward development of *breakthrough processes and/or platforms* that enable the creation and distribution of innovative, effective and engaging digital media for learning. For instance, the online world SecondLife has spawned a whole new way of interacting with the virtual world. Inducing a similar breakthrough in the development of digital media for learning would be a higher value result.

The rapid pace of change also has implications for evaluating how well competitions contribute to field-building. Since the situation is so fluid, learning will be “on the go,” which will prove vexing for traditional evaluation methods. Developmental evaluation approaches, such as those advanced by Michael Quinn Patton are potentially appropriate in a complex and volatile environment.<sup>17</sup>

### *Incentives*

Sponsors should also consider the barriers that competitions raise. At least two major barriers matter in thinking about promoting educational digital media and game development. At the front end is the lack of startup capital inherent in most competitions, a truth that may limit the diversity and capitalization of participants. Because “competitors must self-finance all their research spending, and are reimbursed only in the event that they win the competition...” sponsors may want to build in other incentives that will draw in smaller firms or individuals.<sup>18</sup> This is particularly important to consider given the “user as designer” aspect of the digital revolution.

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<sup>15</sup> “On the Record: Paul Saffo,” *The San Francisco Chronicle*. 19 February 2006. Section J, p. 1 & 3.

<sup>16</sup> William A. Masters, *Prizes for Innovation in African Agriculture: A Framework Document*, (New York: Center on Globalization and Sustainable Development, The Earth Institute at Columbia University, 2004), 28.

<sup>17</sup> Michael Quinn Patton, “Evaluation for the Way We Work” *The Nonprofit Quarterly*, 28–33.

<sup>18</sup> Newell and Wilson, *op.cit.*, 11.

On the back end, competitions in this area should recognize the need to invest beyond simply product development. In particular, many of the reviews that looked at prizes compared them to patents as incentive strategies. These reviews noted that “given increased costs of commercialization and marketing, prize winners have little incentive to develop invention further (whereas patents do)...the prize sponsor has to specify a marketing goal as a prize criterion, allow the invention to be patented, or otherwise support the winner.”<sup>19</sup>

Prizes are one incentive but we know that innovators will respond to many. Some scholars hypothesize that the unique value of prizes and competitions (such as world fairs) is “to change the direction of innovative activity rather than raising the number of innovations.”<sup>20</sup> In this case, given the need is not simply for more digital media and games but for a different type of media/game, the use of a prize, festival or competition makes sense. Even so, the sponsors will also need to invest before the competition to encourage a diversity of participants and afterwards to ensure the development of markets and market incentives.

### *Intellectual Property*

*In the age of digital media...[we] have embraced the possibilities to gather, chop, blend and re-blend content to create new expressive materials.*<sup>21</sup>

In a dynamic environment where boundaries are constantly blurred, the issue of intellectual property can become thorny, especially in terms of attribution for the innovation and financial reward for the economic value of the innovation. The competition sponsor will need to weigh carefully the risks and rewards of various approaches to dealing with intellectual property rights.

One researcher notes, “Technological innovation is a cumulative process: each innovation is built of previously available components, produced earlier in time and often by other people. The question of who should be rewarded for each step is a matter of dynamic efficiency as well as fairness.”<sup>22</sup> Devising procedures that ensure fair recognition of contribution to innovation will be especially challenging with digital media where content is “chop[ped], blend[ed], and re-blend[ed].”

One approach to this is to facilitate negotiation between parties: “The prize secretariat might require that each application be accompanied by an attribution agreement, stating what share of the prize each party expects to receive. When the application is made public, a comment period (e.g. 90 days) is opened to invite other parties to examine the data. Anyone who believes they contributed significantly to the innovation can then approach the partnership and request a share, possibly adding additional data to the application...”<sup>23</sup>

Since the marketplace has not adequately produced digital media for learning, open source creation and access should be promoted so that the knowledge embedded in digital media

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<sup>19</sup> Ibid, 21.

<sup>20</sup> Lee Davis and Jerome Davis, *How Effective are Prizes as Incentives to Innovation? Evidence from Three 20<sup>th</sup> Century Contests*, Conference Paper, DRUID Summer Conference 2004 on Industrial Dynamics, Innovation and Development, 25.

<sup>21</sup> Lenhart and Madden, op.cit., 2.

<sup>22</sup> Masters, op. cit., 32.

<sup>23</sup> Ibid, 27.

and game development, remixing and adaptation can be shared to inform further innovation. The competition sponsor will need to consider how to address the innovator's right to compensation and at the same time how to control access to new knowledge for public benefit.<sup>24</sup> One researcher suggests "pay[ing] innovators directly for new products or processes, after which the innovations would pass immediately into the public domain."<sup>25</sup> Other approaches might be developed that would generate revenues to provide awardees compensation as a percentage of the actual economic value of the innovation as well as to create working capital to fund further knowledge development and innovation.

### Recommended Competition Structure

Given these barriers, such a competition or prize should be conducted in stages, focusing initially on creating new content/methods and then ultimately on encouraging the distribution, remixing and reuse of such content over time. More specifically, we suggest the following stages:

- Innovation stage: "Breakthrough Prizes" are awarded based on appraisal of portfolios documenting 1) methods that led to the development of the innovation and 2) demonstrated results (educational value as well as potential for the innovation to be used)
- Collaborative Learning stage: Breakthrough Prize winners then participate in a collaborative learning program to share knowledge about each innovation as well as learn from the MacArthur Foundation's Knowledge Development Portfolio in order to enhance and refine the innovations.<sup>26</sup> Entrepreneurial coaching will be provided to help make the innovations more marketable.<sup>27</sup>
- Commercial viability/Production stage: One "Grand Prize" will be awarded each year based on judgment of commercial viability by a panel of entrepreneurs.

Conducting the competition in stages addresses several of the aforementioned obstacles to distribution of innovation and development of the new field of digital media for learning:

- Competitions inherently have a built-in barrier to entry since contestants must finance their own research up-front. Offering the collaborative learning and entrepreneurial coaching adds incentives for participation
- Providing a Grand Prize based on commercial viability will help motivate the work needed to bring the innovation to market
- Since designers of educational media are likely as motivated by social good as private gain, contributing toward building a new field may also be compelling. Incorporating a collaborative learning component not only promotes a free flow of

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<sup>24</sup> As Davis notes in *Should We Consider Alternative Incentives for Basic Research? Patents vs. Prizes*, 2, "Patents give inventors the legal right to exclude others from making, selling or using their new product or process for a limited period (normally twenty years). In return, the inventor agrees to disclose the details of the invention in the patent document. The patent system serves as an incentive to R&D by initially restricting competition in the invention; it contributes to the accumulation of public knowledge both via the disclosure requirement, and by providing the legal basis for licensing. Yet neither disclosure nor licensing are the same as placing new knowledge in the public domain, since other economic agents cannot freely use it as they wish."

<sup>25</sup> Ibid. 17.

<sup>26</sup> Such collaboration can be facilitated in the real world and with virtual tools. See Fuller, *et al*, *Community Based Innovation: A Method to Utilize the Innovative Potential of Online Communities*.

<sup>27</sup> See Dodt, Ansgar, Lothar Stein and Sigurd Strack. "Do-it-yourself Silicon Valley: Using business plan competitions to spur economic development", *McKinsey Quarterly*. 1999 N. 3.

knowledge that improves the specific innovations, it will also allow comprehensive documentation and transfer of knowledge to generate even more innovation.

Finally, publicity should certainly be factored in as an added incentive. The competition should seek to bring high levels of public awareness to the value of these digital media and games, to the technology and design prowess of those who create them, and to the learning structures that will support their use and re-use.<sup>28</sup> Educational institutions, game distribution, and financial firms are all likely partners in sponsoring or managing such a competition, thereby bringing a greater public profile to the competition and hence, the field-building effort. Positive publicity targeting key audiences will help signal the emergence of the new field.

### Managing and Monitoring a Competition

As important as the investments before and after a prize or competition is the structure and operation of the contest itself. It is very important that a competition to spark innovation be seen as “transparent, simple, fair and unbiased.” In addition, the size of the prize should be “commensurate with the effort required and the goals sought.”<sup>29</sup> This means that the financial reward must be in line with the investment needed to compete. It also requires that the sponsor invest an appropriate amount in publicizing the competition itself and in announcing and drawing attention to its winner. Impartial, transparent rules must be designed and publicized clearly and widely in order to attract competition entrants.

Begoña Gros, in writing about digital games for education, suggests some key questions that could be useful in the development of criteria as well as for evaluating the success of the competition as a strategy for promoting innovation:

- Is the product fun enough that someone who is not in its target audience would want to use it?
- Do people using it think of themselves as “players” rather than “students”?
- Is the experience addictive? Do players want to play again and again?
- Are the users’ skills in the subject matter and learning content of the game – be it knowledge, process, procedure, ability, etc. – significantly improving at a rapid rate and getting better the longer he or she plays?
- Does the game encourage reflection about what has been learned?

Furthermore, if such a competition is launched as part of a larger field-building effort, the sponsor may want to evaluate its contributions by answering to questions such as:

- What competition characteristics seem to matter?
  - How well do potential competitors respond to the prize incentives?
  - What factors determine success among competitors?
  - How do resource levels, technical knowledge, and content focus affect success?
  - What added value did the collaborative learning provide?
  - How effective was the entrepreneurial coaching?

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<sup>28</sup>See Davis and Davis, *op.cit.*, 23: “In a period where advertising, branding and trademark budgets are running into billions of dollars, it is clear that a well-advertised prize rewarding an innovator for a product or service widely acknowledged as being in the public interest can promote sponsor advertising as well.”

<sup>29</sup> National Academy of Engineering, *op.cit.*, 11.

- What do competition results tell us about digital media for learning?
  - To what extent do digital media change the ways students are learning?
  - How is teaching affected?
  - Are there differential effects depending on gender, race or other social characteristics?
  - What are the impacts on subject area content knowledge?
  - What are the impacts on cognitive skills?

There are two overarching measures of success for such a competition: it must effectively induce the creation and wide distribution of new digital media that enhances learning. In so doing, the competition itself must also contribute to the building of a field of digital media and learning. These are related, but by no means synonymous or interdependent, goals.

### Conclusion

It is very important that such a competition be seen as one tool in a portfolio of mechanisms for promoting the development and use of digital media and games for learning. The competition just described would serve as only one strategy in a broader field-building strategy. Achieving the goals of field-building will depend on the interplay and mutual relationships between the various strategies as well as the success of each individual piece. Well-structured competitions are effective tools at stimulating new directions for innovation, for raising public awareness of an opportunity, and for drawing new players or participants into the area of inquiry. However, they must also be part of an ecosystem of supports that includes resources for some of the initial research and design costs, new structural supports for distribution, new licensing and remixing structures that encourage ongoing iteration, and the public understanding of these tools both in terms of general awareness and credible research into their efficacy.

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Appendix: Comparative Types of Prizes

Type	Name	Purpose	Host	Process	Result	Notes
<i>Recognition</i>	Nobel Prize	Reward lifetimes of accomplishments	Alfred Nobel Foundation	Nominations process		
<i>Inducement</i>	X Prize	To create the first private race to space and birth a new industry with dramatic technological, social and investment opportunities	X Prize Foundation	1996 Organize and recruit sponsors. Build publicity. State goal. Open competition. Reward winners.	2004: first private space flight launch. \$10 million prize leveraged \$100 m in private investment	Modeled on the Orteig Prize, which was won by Charles Lindbergh in the first flight to cross the Atlantic.
<i>Inducement</i>	Slamdance Guerrilla Gamemakers Competition	The GGC is focused on developing a thriving scene for independently developed commercial and art games.	Slamdance Film Festival	Submission and selection of 12 games for festival. Five prizes (Grand Jury Award, Audience Award, Student Physics Award, Student Art Award and Casual Games Award) chosen by juries and audience at Festival	\$35,000 in prize money. Past winners have negotiated distribution and design deals	Slamdance Film Festival was launched in 1995 in Park City, Utah "to showcase undistributed films by emerging filmmakers." It deliberately parallels the Sundance Film Festival, and was once touted as the Festival for those rejected by Sundance.

## Catalyzing Creativity through Competition

Type	Name	Purpose	Host	Process	Result	Notes
<i>Inducement</i>	Golden Carrot Awards and the Super Efficient Refrigerator Program (SERP)	"To bring about the commercialization of energy-efficient refrigerators ahead of normal market projections." <sup>30</sup>	U.S. EPA, 24 US utility companies, National Resource Defense Council and others	\$30 million to be paid as incentives from utilities to manufacturers. RFP to potential manufacturers. Confidential application process	Two semifinalists chosen from 14 entrants. Semifinalists delivered prototypes and marketing plans. Whirlpool won, at least in part because of a proprietary system (ExacTrak) it developed for tracking sales by utility region.	Situation sparked by changes in federal regulations on emissions. Market changes (lower energy prices) slowed sales as did the delay of regulatory implementation. Consumer rebates might have been cheaper and more effective approach
<i>Hybrids</i>	MacArthur Fellows	Recognition of creativity and support for unspecified future work	John D. and Catherine T. MacArthur Foundation	Secret nomination and selection process	707 Fellows named since 1981 in the arts, humanities, public issues, sciences, and social sciences.	Colleges and Universities routinely cite the number of MacArthur Fellows on their faculty, along with Nobel Prize winners, as evidence of quality.

<sup>30</sup> Davis, op.cit., 16.



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