

Industrial Cooperation in a Competitive Environment—The Story of the Advanced Photo System

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Introduction

On April 22, 1996, consumers from around the world began buying and using products and services from an entirely new photographic system offered by forty different companies. The simultaneous introduction worldwide by these companies was a historic moment in the photo industry. However, that's just part of the story.

The products and services of the Advanced Photo System evolved from an unprecedented collaborative process involving Eastman Kodak and its top competitor, Fuji, as well as three leading camera companies: Canon, Minolta, and Nikon. The film, cameras, and photofinishing services were based on several key new technologies and a set of detailed specifications, developed jointly by the five System Developing Companies (SDC). Licenses were then offered to other photographic companies, so that they could also make products or offer services for the Advanced Photo System. This collaboration was done in accordance with laws governing antitrust behavior.

This paper addresses 4 topics:

1. Why was cooperation necessary and desired?
2. What methods were employed to ensure that the SDC would make progress and achieve the ultimate goal?
3. What factors were critical to the success of the effort?
4. What did Kodak learn from the experience?

This project, named "Orion" within Kodak, was among the most ambitious projects ever for the photographic industry leader. Initial brainstorming of concepts began in the mid 1980's, shortly after the introduction of the Disc system. Searches for partners lasted from the late 1980's to the early 1990's. By November, 1991, a 5-party, 82-page agreement had been reached just on how we would work together, not on matters specific to the actual system, which had yet to be developed. There were several major setbacks in technology and in reaching consensus on how the new system would look but everyone was ready in April, 1996, a date agreed upon two years earlier.

The risks were high. What would the consumers want in a new system? Would they be pleased with the offering? Would the new technologies work? Could we launch within an acceptable window of time, before competing products made the Advanced Photo System obsolete? Could the SDC reach agreement on specs while each party protected its own

interests? Could Kodak realize an acceptable rate of return from such a huge investment? It was within this context that the SDC both collaborated and competed.

The Need for Cooperation

In order to understand why cooperation was necessary, you must first examine the nature of the photographic industry and its condition in the late 1980's. There are just a handful of companies who drive major innovation; among them are the five who became known as the SDC for the Advanced Photo System. There are dozens of other companies who also supply products and services to the industry, which had sales of \$65-70 billion in 1995.

Companies in the photo industry want people to capture, process, store, and use images. Anything offered that increases picture taking and usage benefits the industry. Some fifteen billion exposures are taken annually worldwide. Growth in the business has traditionally been driven by innovation in the form of new and easier to use products. For example, the 126 format was introduced in the late 1960's, followed by the 110 system in the 1970's, Disc in the early 1980's, and point and shoot 35mm cameras in the mid-1980's. There has always been an *evolutionary* trend upward in exposures taken, driven by population growth, amount of discretionary income, and product cost. However, each major product innovation caused an additional spike upward to a new level in photo activity—a *revolutionary* gain.

In the late 1980's, Pete Palermo was the General Manager of Kodak's Consumer Imaging business unit, the one that focuses on products for the average snapshotter. There were strong opinions among some people that traditional silver halide photography was mature and warranted no further investment. Instead, as the reasoning went, put all emphasis on driving manufacturing costs and prices down. Spend research dollars on digital imaging which was still in its infancy, but was expected to explode in popularity. Palermo had a different vision. While manufacturing costs and the digital arena deserved attention, he also recognized that there was still room for innovation in silver halide products. Customer data and research studies indicated that 35mm cameras, even though described as "point and shoot," still required a film loading operation that intimidated some people. In addition,

technologies were under development at Kodak that offered the promise of additional features like multiple print sizes from the same roll of film. Palermo and others saw the possibility of a new system that removed some barriers and added new attractions at the same time. This system could cause the next spike upward to a new level in picture taking.

It was decided that we would look at all aspects of the picture taking process and drive innovation wherever it made sense, based on the identified needs of our customers. These customers included the final consumer and the operators of photofinishing equipment. The new system would be based on the needs of our customers. It would not be a technology “push” from the innovator. Palermo felt that success would depend on a collaboration among industry innovators and he initiated steps that led to the formation of the SDC.

From Kodak’s perspective, the benefits of cooperation outweighed the risks of losing competitive advantage. First, a unified support of the new system by industry leaders would virtually guarantee a broad-based acceptance of any new standards. The VHS/Beta conflict in the early days of video technology demonstrated convincingly how a single company with a proprietary system has a difficult challenge in gaining worldwide acceptance. Apple Computer’s troubles in recent years provide another example.

A second benefit of cooperation was that the expertise of the SDC members would complement one another. The theory, validated later in the project, was that more and better ideas would surface in the concept and development stages. This would result in a more appealing and more robust product. Later in this paper we’ll discuss examples of the synergy within SDC in more detail. A third benefit of cooperation was that the cost and resource burden of development could be shared among more parties.

A fourth benefit of cooperation was the potential to reduce the product development cycle time. The theory is that development work could be shared by companies working in parallel. The topic of cycle time had several interesting facets in this project. There *were* cases in which work was shared to save time. However, the nature of the SDC relationship caused delays as well. Basically, each of the five members had veto power on any technology and design issue of significance. Gaining agreement often required lengthy reviews of data, hundreds of pages of faxes, and hours of personal debate. Ultimately, each of the companies launched products on the agreed upon date of April 22, 1996. Each member realized the importance of the new Advanced Photo System and the potential rewards for participation. The collaboration on development of the system led each company to have complete confidence that the others would be ready on time. This peer pressure had a significant positive affect on the project success as measured from a schedule perspective.

A fifth and last major benefit of the SDC cooperation would be the consistent advertising push on a worldwide basis. Each company, of course, would be calling attention to the benefits of its own products, but all would be emphasizing the benefits of the Advanced Photo System in general. Consumers would be expected to hear a similar message from different companies. This would help Kodak and other companies achieve a goal of a stepwise increase in industry photo activity.

Advanced Photo System Description

It is not the intent of this paper to dwell on the features or technology of the new photo system, but a brief description will help the reader understand some of the challenges we faced as well as the excitement felt by team members. The Advanced Photo System film uses traditional silver halide chemistry, but the plastic support onto which the chemicals are coated is entirely new and represents only the second time the support has been changed for consumer film in Kodak’s 117 year history. The support needed to change to accommodate the new film cassette, which is all recyclable plastic and has no film leader showing. The consumer simply drops the cassette into the camera (it will only fit one way) and closes the lid. For each frame in the roll, the consumer may choose one of three sizes: classic (like a standard 35mm print), group (slightly wider print) or panoramic. The camera easily fits in a shirt pocket or purse. Its small size is a benefit of the smaller film size, about 60 percent of the area of a 35mm negative, but 6 times larger than a Disc negative. Advances in chemistry have allowed film manufacturers to maintain the quality one would see in a 35mm print.

Prints are returned in an envelope along with an index print (contains a miniature image of each picture on the roll) and the original cassette, which contains the processed negatives. While the prints may go in photo albums, the cassette and index prints may be neatly stored in specially designed containers for easy future reference—no more shoeboxes! Ordering of re-prints is easy because each index print has an identification number that matches one found on the cassette. You simply select your frame numbers and quantities and give the cassette back to the retailer. This eliminates the need to look at and handle negatives. A key technology that makes much of this possible is a new magnetic layer on the film, which allows communication among the consumer, camera, and photofinisher.

Every component of the photo system changed: the film (chemistry, support, and magnetic layer), the cassette, the camera, and the photofinishing equipment.

Methods Used in the Cooperative Effort

The First Steps

The SDC members were—and are—intense competitors. When Kodak initially approached the others, a great deal of suspicion had to be overcome by all involved. In the end, all five companies realized that cooperation was necessary to achieve the goal of industry growth. In short, the other companies became convinced of the same benefits to cooperation discussed earlier. A lengthy agreement was signed to ensure that the companies would work together in good faith and to minimize risk if the SDC collapsed before products were commercialized. Royalty and patent ownership understandings were also reached. When the SDC was originally formed, the members had only the most general notion of what might be created. We knew we wanted something revolutionary and had information on barriers to consumer usage, but the specifics were yet to be determined. This was a challenge in itself as we sought to define project requirements.

Product features were driven by consumer research. More than 22,000 people were surveyed in a series of studies conducted worldwide by Kodak to determine the features of most importance to them in an ideal picture-taking system. This market research is a Kodak strength. While some information was kept internally for competitive reasons (e.g., camera styling and film packaging graphics), other results were shared with SDC members to support a list of basic system features like drop-in film loading and three print sizes.

Another early activity in the project for SDC was to define and agree upon a set of standards. This became the “backbone” which would be referenced by all product manufacturers. The standards covered the basic elements of the system: the camera, the film cassette, equipment for processing and printing the film images, and how digital information would be encoded and read. Definitions and agreements were not easily reached and required much negotiation. One reason was the language and culture barrier. The Japanese required Kodak to define and explain the differences between “targets,” “goals,” and “objectives.” We sometimes used these words interchangeably. Another reason for the difficulty in reaching agreements was the need for each company to protect its own interests. A third reason for difficulty is that the SDC members may have had different priorities. An important matter to one was not necessarily a “front burner” issue for another company.

The standard-setting process, while often painful, focused the SDC members on the ultimate goal: a reliable product which would delight the customer. The standards were made available to licensees beginning in April, 1994. Educational forums were held for licensees so that they would understand

and comply with the standards. Participating companies still had two years to design products that met Advanced Photo System specifications with their own innovations included for reasons of differentiation. The SDC agreed upon the April, 1996 introduction date early in 1994, after estimating when the technology that SDC was developing would be mature and how much time licensees would need to understand the system and develop their own products.

Organization

They say a camel is a horse designed by committee. The word “committee” is seldom used in business anymore because of negative connotations: inactivity, non-productive activity, long cycle times, etc. Well, the SDC formed a series of committees. It *did* take a long time to reach agreement for the reasons cited earlier. At times, the negotiations resembled a government bureaucracy. However, progress was made and the goals were achieved. The system of interlocking committees fostered communication of the right topics at the right levels. Detailed work could be “pushed down” to teams and people with the appropriate skills and knowledge.

The *Steering Committee* was at the top and included key business and technical leaders from the five companies. It was responsible for overall strategic direction and decision making. The Steering Committee agreed upon the introduction date and resolved disagreements at lower levels. The *Working Committee* was composed of technical leaders from SDC. It managed the evaluation of system features and technologies developed for the Advanced Photo System. One of its key roles was to recommend which features and technologies should be incorporated. The Steering Committee ultimately decided to accept or reject the suggestions.

The problem of having different priorities and interests was mentioned earlier. One example of this surfaced within the Working Committee. The camera companies (Nikon, Canon, Minolta) proposed a film cassette design early in the project that was made of metal and had about twenty parts that would require hand assembly. Keep in mind that a company like Kodak would be making millions of these each year. Such a product would have had a unit cost of ten times the design actually used. The proposed design would have made camera design simpler, but was totally inconsistent with Kodak and Fuji goals and impractical from a manufacturing point of view.

The *Specifications Subcommittee* reported to the Working Committee and developed the system specification document. This document defined the selected technologies (new or existing) required to meet the customer feature requirements. It also defined the dimensions and standards for the film, film cassette, camera, and photofinishing equipment. This document is what was given to licensees for a fee, so that they could develop their own products that would be compatible with the

new system. While the Working Committee developed and tested designs, selecting the best for the new system, the Specifications Subcommittee documented the selections in a way that would minimize misinterpretation by a third party.

The *Patent Committee* determined which of the patent claims owned by the SDC should be licensed. Various categories of patents were established by this team, and patents were sorted and royalty fees established. To give an idea of the work of this team and the project complexity, over 2700 patent applications were filed that related to the Advanced Photo System. Kodak generated roughly 60 percent of the critical patents issued to date. The *Licensing Committee* was responsible for the SDC agreements and for transferring the system technologies and specifications to the photographic industry. A help desk was established to aid licensees and document updates are distributed as needed. Today, over fifty companies have purchased a license for the Advanced Photo System.

Communication

The Kodak development team in Rochester, N.Y. was thousands of miles away from the SDC members in Japan. Cultural and language differences were also barriers. Effective, continuous, and relevant communication was critical to success. An excellent policy was implemented early: all key communication would be done by fax. In addition to the value of a written record, errors in translation were lessened. It should be noted that the Japanese were gracious in that all of their fax communication was in English. During peak times of SDC activity, the fax traffic reached 200 pages per day received at the Kodak site. Internally, the Kodak team put another success factor in place: all SDC communication went to one fax machine. It was sorted for review and distribution by the project manager and chief technical leader. Outbound communication went through the same one fax machine. This control mechanism ensured that the Kodak team was unanimous in its position on a given topic and spoke with one voice.

In spite of the distance challenge, face to face meetings were necessary and occurred approximately every 2-3 months, with the location alternating between the U.S. and Japan. Translators were used, requiring twice as much time as a meeting might take where all parties shared the same native language. All SDC members seemed thoroughly prepared for meetings, thanks to the detailed attention given to agendas prior to the meetings and the quality of each company's team. Kodak ensured that it understood its position on each issue, had the data ready to support it, and developed contingency plans based on most likely reactions of other SDC members. Good preparation did not guarantee brief meetings—they were just shorter than they would have been otherwise. Skillful negotiations by all parties with the underlying

shared vision of an exciting new photo system facilitated progress and success. A tele-video conference was used at one point. While the participants saw the potential value in certain situations, the face to face meetings were perceived to be more effective, possibly due to the complexity and importance of the issues.

Key Success Factors

A number of factors contributed to the success of the project. The most important was that all five members of the SDC were committed to the effort. For all but one (Canon), silver halide imaging is the core of their business. The SDC shared the same vision of launching a new system to benefit the consumer and the industry. There were several serious disagreements throughout the project about key requirements and specifications. While in the middle of these intense negotiations, there were doubts that the issues would be resolved. However, the shared vision and the realization that no company individually was likely to succeed with the new system gave the SDC determination to work through the problems.

All SDC members had a sense of urgency about the project. Together, they knew that there was a window of opportunity that wouldn't be open forever. Most analysts predict that digital capture, storage, and display of images is the future, but the technology is not yet here to give the desired quality at an affordable price. Silver halide imaging yields extraordinary value. Technology does not stand still; it will improve over time. The Advanced Photo System both provides new benefits to traditional photography and serves as a bridge to the digital future.

Within Kodak, there was also a sense of urgency. Once agreement was reached on key requirements, the Kodak team felt that the other SDC members would be ready on the agreed upon launch date with products. The Kodak team wanted to also be ready—with the best product offering. Even though the SDC collaborated to design the system, they never lost sight of the fact that they were intense competitors in the marketplace.

The Kodak team that interfaced with the SDC was intentionally kept small. There were three key individuals: the Kodak project manager, the project chief technical leader, and the project commercial affairs leader (he was the lawyer who drafted the SDC agreements and provided counsel on all matters related to the relationships among the SDC companies and between SDC and licensees). These three gentlemen worked as a team for over five years, through launch of the new system. It was a sign of their own commitment to success. The continuity was important for three reasons. One was the stable leadership internally, for the benefit of the Kodak team. The second reason was the building and

maintaining of relationships within SDC. It is disconcerting for any company to see the faces of their negotiating partner change. The stability allowed professional and personal relationships to develop and created a climate that nurtured trust. The third reason for the importance of continuity was related to the complexity of the technology and SDC relationships. The learning curve for a new addition to the team would have been too steep.

Another success factor was meeting preparation, which was extensive. Setting the agendas for SDC meetings was an effort in itself, with much fax traffic back and forth. For each meeting, the Kodak team discussed the issues, formed a position, anticipated reactions from other SDC members, prepared contingencies, and documented key points in advanced (proposals, experimental data, etc.). It was obvious from the meetings that the Japanese companies were equally prepared. The teams did not allow the time pressure of the meetings to alter their positions. In other words, even though the project itself felt time pressure, the negotiating teams did not feel a need to come back from a meeting with agreement on an issue if it meant compromising their position. However, there *were* some meetings that went well on into the night, to take advantage of the time together to make progress.

The two film companies complemented each other's skills. Kodak and Fuji had different design approaches that allowed each to look at problems from a different perspective. Fuji was very good with technical details and managed action item lists thoroughly. Kodak took a broader systems view. Kodak introduced; Fuji followed up. Kodak introduced more revolutionary ideas; Fuji's mindset was more evolutionary. Kodak excelled at statistical analysis, tolerances, and dimensioning. Fuji tested everything and helped to uncover some issues. The companies found a way to effectively blend these skills so that a more robust product could be introduced.

Kodak senior management was resolute in its support of the process. They stepped in when needed to keep the project moving forward, but otherwise allowed the project team to work at its own pace and style within the SDC. The Kodak team had direct access to the President of Consumer Imaging and to the CEO. Key decisions in the negotiating process were not slowed by the bureaucracy often associated with large companies.

Lessons Learned

A multi-company effort to develop specifications for a new product requires one to choose partners carefully. Each company will have their own rationale for participating. Is there a shared vision that will lead to success? Is there enough flexibility that each partner will be able to accomplish their own individual goals while supporting the collaboration effort?

The strategy for collaboration must be well defined and agreed to by all parties. What are the boundaries for discussion and effort? As with any type of effort, the complexity increases with the number of partners. It is doubtful that the Advanced Photo System project could have been successful with any more SDC members than the five we had.

Project success is often attributed to having the "right" people on your team. Kodak had the right people in leadership positions. They were aggressive, persistent, and committed to success. They were experienced negotiators and had excellent communication skills. They were open minded to new ideas. They shared a common vision for the future of Kodak and the industry. A sponsor or manager who is initiating a new project must think about the key roles and attributes (like those mentioned) required for success in those roles. Then the candidates with the best combination of attributes should be selected.

Negotiating teams for the companies must communicate with one another promptly and often. Although the fax traffic for SDC was heavy and overwhelming at times, it was effective. The single contact point within Kodak served us well. Meeting preparation and follow-up must be thorough. Internal analysis after a meeting of what went well and what went wrong leads to suggestions for improvement in the next meeting. The project team within a company must also communicate well. In addition to documenting agreements, decisions, and action items, the effective team will stay focused on its strategy (revising when appropriate).

Finally, as with all projects, there must be strong and visible sponsorship. The project team has a duty to update the sponsors regularly on progress and issues. The sponsors have an obligation to help when needed. There were times in the Advanced Photo System project when the senior management of each company was required to resolve a disagreement among the SDC negotiators. This was an effective and necessary use of the time and talents of the managers. They stayed out of the way of the project team otherwise and allowed them to do their job.

Conclusion

The System Developing Companies and licensees successfully launched the Advanced Photo System on schedule worldwide in early 1996. Features were delivered to consumers that they wanted in a new system. The response has been tremendous. Post-launch research of owners of the Kodak version of the cameras revealed some of the most positive feelings ever about a new product. Four out of five were more satisfied with their new camera than the one they typically used. Four out of five were taking better pictures and

making fewer mistakes. Over 95 percent said they would recommend the new photo system to others.

The launch brought elation—and a huge sigh of relief—from the companies involved. There were times when we wondered if we could deliver the products on time. There were times when we thought the entire collaboration would fall apart. We often wondered if the effort was worth the personal sacrifice. We overcame all of the obstacles to deliver a breakthrough product for genuine growth in the photographic industry and we now have a wealth of experience to apply to similar efforts in the future.