

The Commercial Future: Making Remote Sensing a Media Event

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ABSTRACT

The rapid growth of commercial remote sensing has made high quality digital sensing data widely available – now, remote sensing must become and remain a strong, commercially viable industry. However, this new industry cannot survive without an educated consumer base. To access markets, remote sensing providers must make their product more accessible, both literally and figuratively: Potential customers must be able to find the data they require, when they require it, and they must understand the utility of the information available to them. The Internet and the World Wide Web offer the perfect medium to educate potential customers and to sell remote sensing data to those customers. A well-designed web presence can provide both an information center and a marketplace for companies offering their data for sale. The greatest potential web-based market for remote sensing lies in media. News agencies, web sites, and a host of other visual media services can use remote sensing data to provide current, relevant information regarding news around the world. This paper will provide a model for promotion and sale of remote sensing data via the Internet.

1. OVERVIEW

Until recently, remote sensing was a government pursuit: Any satellite imagery that made its way to the public eye did so only upon release by a government agency. The last five years, however, have seen a sea change in the industry: The rapid growth of private remote sensing enterprises has made high-quality, current imagery available to any potential buyer.

One of the strongest potential markets for remote sensing imagery is mass media: Newspapers, television and Internet news outlets survive because of their ability to deliver the most interesting and informative take on the day's events. Publishers and producers must provide the best news, first. And, this is a zero-sum game –media outlets that deliver first increase their viewer or readership, at the expense of every other outlet.

In this context, remote sensing data can clearly add value: Access to timely satellite images of hot news spots could provide an invaluable edge in what has always been a cutthroat market. And, once one publication or broadcast incorporates this new type of information, others will have to follow suit.

In spite of these factors, remote sensing has yet to make a strong showing in mass media – no private company has achieved unqualified success by selling their data to CNN. Why? The data is there – newsworthy remote sensing information exists, in far higher quality than necessary for typical news media. And the fact that you are reading this paper proves that the sellers exist, as well.

The problem? Remote sensing data remains a distant mystery to the vast majority of potential customers. It is hard to find, difficult to interpret, and even harder to purchase. While strides in the organization and delivery of satellite sensing information have made it more accessible to members of the industry, remote sensing remains opaque to those who are not 'in the know'. Remote sensing's commercial success depends on the industry's ability to increase ease-of-use, make its product more accessible and promote that product to potential customers.

The solution? Internet syndication. The Internet offers a solution to all three of these challenges: Most computer owners know how to operate a web browser; it is almost universally accessible to media companies; it offers an excellent promotional engine. But simply 'being there' is not enough. An electronic store for remote sensing information must be designed with the audience in mind, and promoted with an eye towards that audience. This paper will outline a plan for designing, implementing, and promoting an online remote sensing store that targets mass media.

2. THE AUDIENCE

For an Internet site to succeed, it must be designed with its audience in mind. In this case, potential customers – producers, editors, journalists and other media decision-makers – include a wide range of users, from web-savvy surfers to individuals who have used the Internet for only a few weeks. This audience will judge the value of the product based on three criteria:

Relevance. This audience does not think in terms of longitude, latitude or GIS data – it thinks in terms of events, locations and dates. If a potential customer comes looking for remote sensing information, they will already have a specific event in mind: A military clash, a storm, or other occurrence.

Timeliness. In addition, these potential customers are looking for up-to-date information. While older data may provide a good comparative tool, they want images and sensing data for events that are happening *now*.

Saleability. The ever-elusive ‘coolness factor’ is an essential element of mass media. If the potential customer sees that the product will sell to *their* audience, then the sale is practically complete.

In addition, most of this audience knows nothing about remote sensing.

Most important, this audience is not going to be patient, and it is not unique in that characteristic. In our experience as a design firm, web users will leave a site in frustration if they cannot find what they need, or at least make good progress toward the information they want, in under two minutes. While the complex search systems found on most remote sensing web sites allow for precise, powerful searches, this audience will generally prefer a simplified browsing scheme. This means that any remote sensing site selling to the media must provide for quick, easy access to its archives.

After reading the past few paragraphs, you may think that this audience will not want remote sensing imagery at all. But the news media, and other forms of mass media, *need* this information. Remote sensing can provide information about nearly-inaccessible areas, at a fraction of the cost of sending a photographer, reporter or newsperson. In some instances, it can provide information long before the media can otherwise arrive, regardless of expense. And, remote sensing has an aura of high-tech about it that fascinates any mass-media audience.

The challenge, then, is to deliver imagery to potential purchasers who know little or nothing about remote sensing, in a way that makes clear to them how valuable this information can be for them.

3. GENERAL STRATEGY: DESIGN

Site design can meet most of this challenge – a simple, navigable design that demonstrates relevance, eases searching and purchasing, and delivers quickly is essential to success. The design has four components: Data storage, site structure, page layout, and data delivery.

To cater to the mass media audience, **data storage** must be a more plain-language-based than in existing remote sensing search engines.

Site structure is the actual flow of information through the site. A well-designed site structure will minimize the number of ‘clicks’ required to get from the first page, to the desired information, and then to the purchasing procedure.

Page layout is the ‘look’. In this case, the page layout should be simple, fast-loading, and easy to use.

Data delivery determines how the site provides the information to the user. Will the site use JPEG images? A special server-based system for hi-resolution image delivery? Data delivery will impact both site structure and page layout.

1. Data storage

Commercial sales of remote sensing data to the media will require a rethinking of how that data is stored and accessed. Most remote sensing web sites allow the visitor to query their database using a map. However, the query results are often difficult to interpret. To successfully sell to a less technical audience, each image must include information that this audience will immediately recognize: Location (in plain language), date, an abstract of the event that the image captured (if any), and cost. Any database of images should include, at a minimum:

Image Title	A plain-language title for the image. Ex: 'Downtown Seattle, USA'
Date Taken	The date the image was captured.
Abstract	A 100-150 word description of the scene depicted. If you cannot write an abstract for the image, it is unlikely that any visitor will want to buy it.
Keywords	A series of keywords, to facilitate searches.

This type of a database becomes a searchable index. If visitors can search this information, and view images that include that information with the search results, then that information immediately becomes more relevant, and more valuable to the audience.

2. Site structure

The site structure must anticipate what the audience will most want to see, and the order in which they will view information on the site. Any site selling material to mass media must allow potential customers to jump directly to a specific event, as well as search by location or event. In addition, the customer must be able to purchase images directly from the preview image page.

This site's structure should consist of four basic sections:

Search would allow a visitor to find all data indexed under a specific location or event. Search tools must function at a high level – that is, the search tools on the site must allow users with no knowledge of remote sensing to locate the information they require. An advanced search might also allow the visitor to add date, latitude and longitude to their search criteria. The search tool must, above all else, allow the visitor to use terms familiar to them to retrieve information. However, different users locate information different ways, and some may find a search engine to clumsy.

The **Events** area would provide an additional way to locate images. This site area would list the current world events for which the site has remote sensing data. By clicking on a specific event name, the user could immediately browse a list of relevant information.

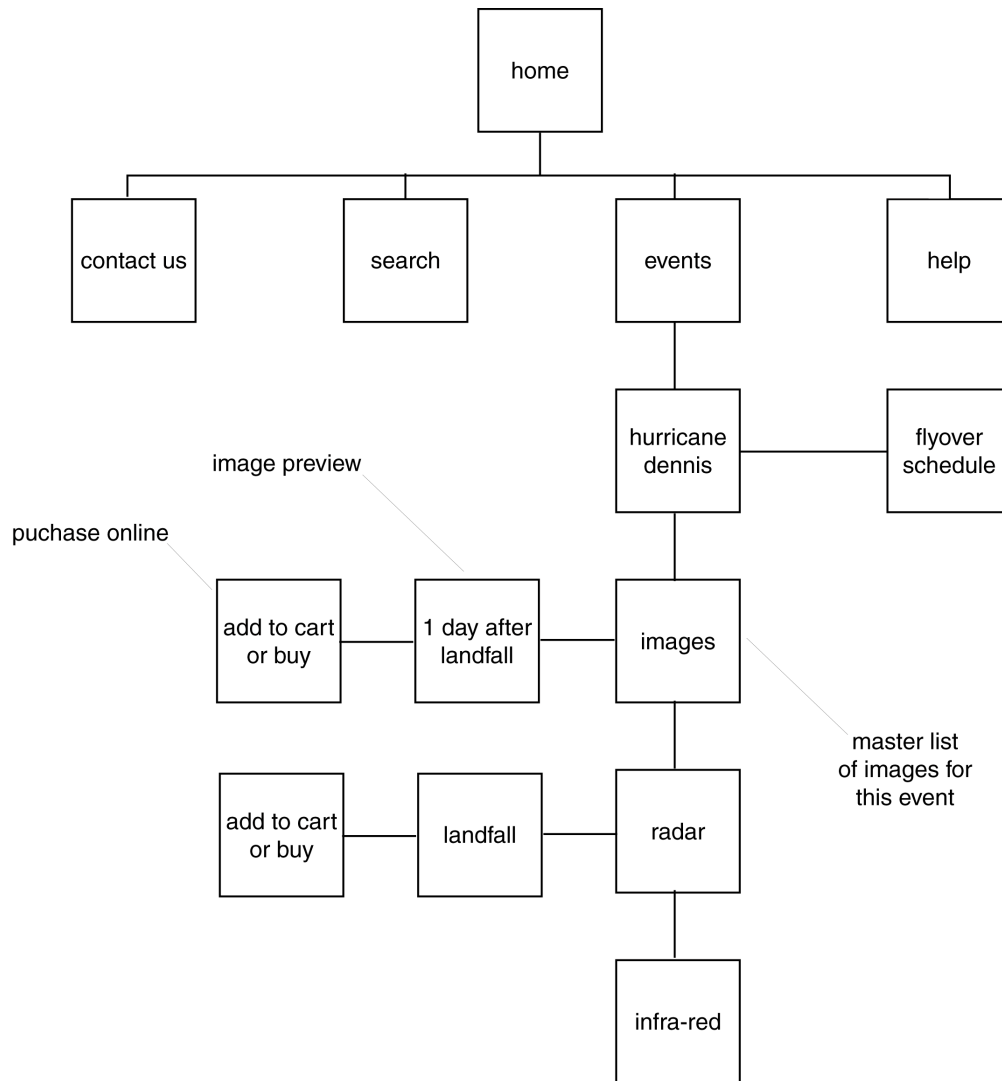
Every event would also show a **flyover schedule** – this schedule would display when the next satellite images of the affected area will be available. Repeat customers are crucial to successful Internet businesses – the flyover schedule increases the chance that a customer will return to purchase more information, and makes it more likely that a visitor who does not find what they need will later return to check for better information.

For both the Events and Search areas, all available data would be grouped by data type, such as photographic, radar, or infra-red.

The **Contact** area would allow visitors to quickly contact the site operators, either by phone or email. Finally, the **Help** area would provide visitors with information on using the site, plus a plain-language guide to remote sensing technology.

While this structure is extremely simple at the first level, it allows for an unlimited number of events and searches, and ensures that the product is never more than a few clicks away. In addition, this structure insures that searches and browses will only show events and locations for which images exist. This avoids the frustration of spending time selecting map coordinates, zooming in on the map, and confirming your query, only to discover that no data exists for that area.

The diagram below is a site 'map' that also shows a sample route through the site to a specific item of information:



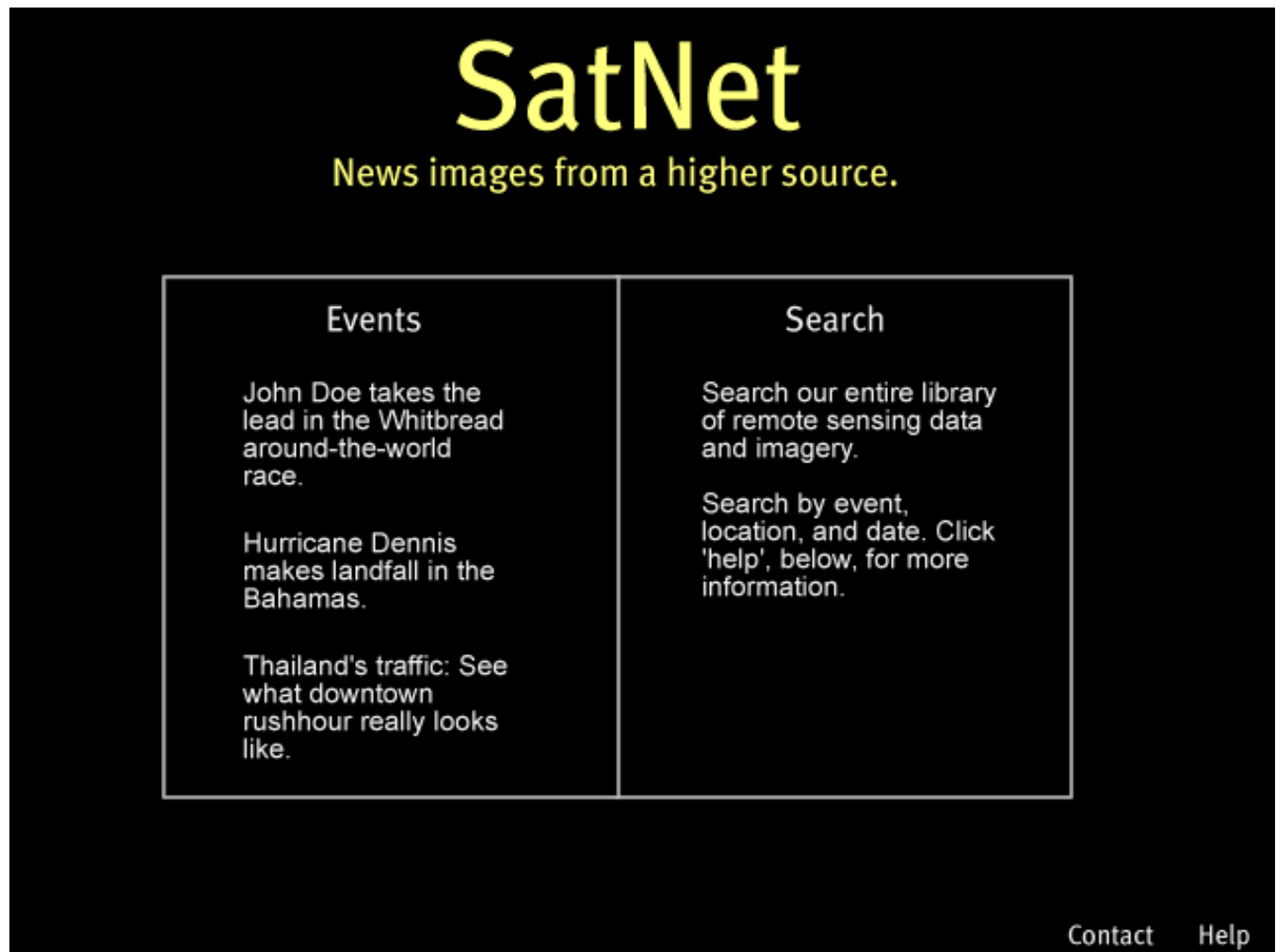
In this case, a journalist has reached the site looking for images of damage in the wake of Hurricane Dennis. When she reaches the site, she immediately goes to the 'events' page, and clicks the link to Hurricane Dennis. She then clicks the 'images' link and finds one image of the Bahamas one day after the storm made landfall. She previews the image and, if satisfied, purchases it. Note that this entire transaction required only five 'clicks', from reaching the site to beginning the purchase process.

3. Page layout

Any site should be designed with the least web-savvy visitor in mind. In this case, potential customers include visitors who may have only recently discovered the Internet. The design should be extremely simple and fast loading, and it should

emphasize the links which visitors will most likely use. It should not place any special technical demands on the user, such as additional software or 'plug-ins'.

The page below shows a possible 'home' or 'index' design. This sample is extremely simple, with no additional graphic elements. Any final design used on the Internet would likely include the necessary elements for branding and marketing, and graphics to make the 'look' more interesting.



However, this design demonstrates a few important elements:

Simplicity. This page includes four primary links: Events, Search, Contact and Help. Many remote sensing sites (and others) attempt to cram pages of information onto the first page of the web site. The opening page of the site should have no more than four to six links. In addition, this page does not require that the user download any Java applets, or that the user have any special plug-ins. Finally, this page will fit on the smallest, lowest-resolution monitors, without requiring that the user scroll up and down to see important information.

Attention. The primary site features, Events and Search, are also the primary elements on the page. Also, the Events pane includes direct jumps to events that may be of greatest interest.

All of these functions are only one click away – this increases the utility of the site, and the chance that a visitor will purchase an image.

Also, the image displayed, while not a photograph, is easily interpreted: Water looks like water, land is obvious, and the coastline is easy to follow. As this site would be selling to professionals outside of the remote sensing industry, clear, easily interpreted imagery is vital. Radar and infrared images must be manipulated to insure this level of clarity, and photographic images should be delivered either in gray scale or simulated color.

Any site design aimed at a commercial market should add to, not distract from, the content being sold. By presenting images in fast-loading, clear, easy-to-understand formats and layouts, you can draw in your customer – your site becomes a resource, instead of a store.

4. Data Delivery

Image delivery via the Internet is still problematic. Large files tax the web server hosting the site, slow site download times (regardless of connection speed) and place a larger burden on the browsing computer. In addition, only the most common image formats – GIF and JPEG – can be opened in standard web browsers. However, these image formats are only suitable for previews – their compression schemes permanently remove information from the image, and diminish detail and clarity.

On the other hand, higher-quality image formats, such as TIFF or PNG, require image-editing software, such as Adobe PhotoShop. And, these formats create far larger files.

To allow fast previews, but still deliver high-quality images as quickly as possible, the site should use a dual-format system:

Preview images, such as the image shown in the sample page, above, can be delivered in JPEG format, at 72 dots per inch (DPI). This will allow an accurate preview, while keeping file size to a minimum. Larger preview images can also be delivered in JPEG format.

Purchased images can be stored and delivered in 300 dpi TIFF format, using a lossless compression scheme, such as ZIP or TAR. When a site visitor purchases an image, the system will automatically email the ZIPped image, or display a link to download the image. Compression will save storage space and speed downloads as much as possible.

Video fly-throughs or other full-motion data can be delivered using a similar, two-tiered system:

Preview video can be delivered in a streaming format, such as RealPlayer or Windows Media player.

Purchased video can be delivered in high-quality MPG or QuickTime format. Video editing facilities can use either format when preparing spots for broadcast.

Other image delivery schemes on the horizon may offer more effective methods for delivering high-quality images, without long downloads. Some of the most promising include Hewlett Packard's Open Pix, and Live Picture Corp's Live Picture. However, these technologies still have limitations: They require plug-ins or other additional software, expensive server software, or they have very specific software platform requirements.

The exact data delivery scheme is not as important as the basic principle: Previews must be extremely fast and easy to download, and the purchased image must be high-quality and easy to work with.

4. PROMOTION

Site design is only part of the process – commercial web ventures live and die based on marketing. No one knows the precise number of web sites in the world, but the quantity of information on the Web means that getting a site noticed can be a huge task. To succeed, a marketing strategy for a remote sensing web site must be properly targeted, and it needs to reach potential customers on and off the Internet.

The key to marketing any web site is to make a strong connection between the site address and the content delivered. Any time that a potential customer considers purchasing remote sensing data, or is researching any information for a story or production, the site address should be foremost in their mind. This may sound obvious, but the vehicles for achieving this are not. The next two sections describe methods that my own company has used to sell our services to the news, television and publishing industries.

1. The message

Any marketing campaign targeting customers outside of remote sensing must speak to that audience in terms it will understand. In the case of mass media, decision-makers must measure any investment by three criteria:

Audience Interest. Will the product purchased be of immediate interest to their viewers/readers?

Timeliness. Will the information provided allow quicker reporting of unfolding events?

Ratings. In the long term, will the product purchased make for consistently increased viewership?

The marketing campaign must show remote sensing's value in all three areas to succeed.

2. Off-web promotion

Promoting the web site *off* the web is at least as important as promoting it on the web. This can mean advertising in magazines, letters, newspaper advertising, or even television spots. There are several publications targeted at media professionals that would provide direct access to the advertiser.

Informational materials and presentations can be even more valuable than advertising. An article published in a new media journal regarding potential uses of remote sensing data could be a powerful vehicle for promotion. A booth or demonstration at a trade show can be even more effective.

There is a multitude of non-Internet marketing possibilities. The key is to find avenues that best balance cost of advertising and contact with your audience. In this case, your target audience is clear, and publications exist that aim squarely at that audience.

3. On-web promotion

Internet marketing remains an inexpensive but elusive tool for web site promotion. There are four main vehicles for marketing a web site on the Internet:

Search Engines and Directories. The most well-known web marketing method can also be the most frustrating. With tens of thousands of new web sites submitted to them every day, search engines (such as Excite and Infoseek) and directories (such as Yahoo!) have to sift through millions of records for an average search, and the even the most savvy marketer can turn grey trying to get a top-ten search listing. Each search engine has its own rules for how it ranks submitted sites, and they typically do not publish those rules. It can take as long as one year for monthly search engine registrations to become effective. But, search engines are free, and everyone uses them to find the information they need. Persistence and research are the essential ingredients for success here – there are no magic formulas. Whole books have been written on the subject, but those books are typically out of date within weeks. But, effective use of <META> tags, ALT text for images and hidden 'comment' tags are all pieces of the puzzle. Any HTML guide will provide information on these tags.

Link Exchange. Many webmasters will exchange links with other sites, to maximize their exposure on the Internet. This is usually free, and has two benefits: First, a link to your site from another site offers one more way people can reach your web presence. Second, many search engines increase site ranking according to the site's 'popularity', or

number of links to that site. Contact the webmaster for sites with which you would like to exchange links for details of how they handle these exchanges.

Email. While unsolicited email, or ‘spam’, is both rude and unproductive, ‘opt-in’ email, where visitors to a web site register to receive a newsletter or site updates, can be an invaluable tool for keeping customers interested in a site. Ideally, ask customers if they would like to receive an email newsletter when they purchase an image from the site. The newsletters will, at a minimum, keep the site URL in front of potential buyers, and remind them that the site is there as a resource.

Banner Advertising. Site marketers can purchase banner advertising on other sites, such as Yahoo!. However, such advertising tends to be extremely expensive, and often unproductive. I rarely recommend banner advertising to clients.

Of these four options, the first three cost only time, so the real question is why *not* use them. A small amount of work each month can have big pay-offs over time. For example, when we launched our company site, we received roughly 250 visits each month. A year later, after registering with search engines monthly, exchanging links, and keeping in touch with clients, we received 1000 each month. Now, four years later, we receive approximately 5000 monthly visits. Each visit may not equal a sale, but sales are definitely proportional to visits, and ‘word of email’ is a powerful advertising tool on the Internet – every visitor to a web site will likely tell someone else about it, and that has a cascading effect.

But Internet marketing still remains hit-and-miss, and it is definitely a long-term proposition. Do not expect instant returns from web-based advertising of any kind. A sound promotional plan for a commercial remote sensing site will balance on and off-web promotion: Advertising in older media should be intended to gain immediate ‘eyeballs’; internet-based marketing should be planned to gain steadily increasing attention over a long period of time.

5. MINIMIZING SITE COSTS

Any site designed to sell a product over the Internet has minimum costs. E-commerce sites are among the most expensive, because they require elements of all of the web design trades: Secure credit-card processing, marketing, design and programming.

But there are ways to minimize costs.

1. Use existing technologies

The rate of evolution on the Internet continuously accelerates, and it is tempting to try to invent a better system for every facet of a web site. However, technologies exist to create a robust, scalable web presence designed to present and deliver thousands, or even hundreds of thousands, of high-quality images.

For example, there are many pre-written web-to-database connectivity packages that can shorten development cycles and reduce costs, when compared to PERL or other CGI programming. Most of these packages also come with pre-written online stores that can be customized for any ‘look’ and logic desired.

The key is to avoid the ‘not invented here’ syndrome: Just because a technology comes pre-packaged does not mean that it is any less powerful, or that it cannot be configured exactly as needed.

2. Hire a professional

Web designers are typically less expensive than C++ programmers and internal MIS staff. While it is tempting to spent soft rather than hard dollars, and use in-house staff, employees who have to learn all of the nuances of e-commerce and web design will likely cost far more than outside resources. Also, the success of any commercial remote sensing site will depend on that site’s ability to reach its audience. Web professionals have experience in creating targeted sites that connect with their intended customers.

Companies planning commercial site development need to balance the cost of hiring an outside consultant with the cost of learning to build a site in-house, and the odds for success in both cases.

3. Spread costs

One of the best ways to minimize costs is to diffuse them among multiple site partners. A remote sensing web site selling data from four companies will cost almost the same as a site selling data from one – such partnerships are common on the Internet, and can pay enormous dividends. Each investor can receive income from sales of their data, or all partners can receive an equal share.

As an added benefit, a site backed by multiple companies will have a larger library of remote sensing data, and greater value as a resource. Multiple investors also means a larger advertising budget.

6. THE COMMERCIAL FUTURE

The remote sensing industry clearly has much to offer mass media. Remote sensing information would allow television, internet and print news outlets around the world to deliver more timely information, and deliver that information in a way that is sure to intrigue audiences at the turn of the millenium. And the content exists – many remote sensing web sites already provide access to hundreds of high-quality satellite and aircraft images.

The remaining piece of the puzzle? Commercial remote sensing web sites that are targeted and marketed at an audience outside of the remote sensing industry. Such sites would need to be designed with a less technical end user in mind: Simpler site layouts and plain-language retrieval tools are essential to creating a market for remote sensing data in other industries. And, these sites must be marketed in terms that the media market understands: Ratings, timeliness and viewer interest.

The Internet is now a highly competitive retail space. Simply ‘being there’ – have an e-commerce presence – is not enough. But a well-planned, effectively marketed site is sure to garner sales over time, and provide a valuable resource to its customers.