

# Means to Command Resources and Influence Ground Actions M The Natural Absorption of Airborne G

*A curious trait found within most moments of progress is that any technological advancement saves work and yet, at the same time, creates more work. Airborne surveying is no exception. Pessimists reading this should not assume that more work is a bad thing and proof of a failed idea. On the contrary, it illustrates that airborne surveillance work, much like nature, abhors a vacuum. With developments in processing speed and simplicity come reduced costs, new applications, and rising demand for airborne-derived data resources – in short, the opportunity for more work.*

By Anthony Melihen



Airlift Over New Orleans. Flood victims lifted from rooftops by helicopter. Image: Courtesy U.S. Air Force.

## Best Use of Available Services

More important for its intended purpose, the bird's-eye perspective has provided a means to command resources and influence ground actions more effectively, making the best use of available services and limited numbers of people. If one is fortunate enough to invest in airborne earth observation surveillance, the returns are almost immeasurable, and if such a level of visualization is indeed the only possible option for managing a large-scale geographic challenge, the investment price will quickly disappear.

Only a decade ago, when commercial sub-meter satellites were being launched, it was feared that much of the airborne surveying market would quickly dry up. This might well have been the case had it not been for the

development of new technologies and new approaches. The moment for progress was ideal, with several key factors arriving at the perfect time. The combination of the digital revolution, the removal of GPS restrictions, and the development of modern INS (inertial navigation systems) for direct georeferencing suddenly made aerial survey operations practical and profitable again. It also made the overflowing amounts of data produced more affordable, and their application in many new purposes more sensible.

## Reaping the Rewards of Technology

Any organization that recognized the initial investment opportunity could potentially reap the rewards of technology and would find itself well positioned at the threshold of a new

and burgeoning spatial market. Aerial cameras like the Applanix DSS (Digital Sensor System), featuring precision GPS-supported inertial measurement technology, made the direct georeferencing of every captured image pixel a far faster and more accurate feat of processing. These strengths added to the inherent advantages of airborne platforms plus the time/cost/risk savings of no longer needing people on the ground collecting ground control points for image correction. Suddenly, not only could aerial surveying compete very well with satellites, it was obvious that airborne earth observation assets could operate with near impunity within whole new market segments.

## The Demand for Data

One application to emerge from this plot twist comes from the rising demand for data during or immediately following a sizable disaster. Calls for high-priority site and situation information in the wake of a forest fire, flood, tornado, or hurricane now come not only from emergency response leaders and politicians but insurance agencies and public engineers alike. Airborne rapid ortho solutions are close to producing data products on demand in markets that satellite data can generally only support before and/or after all circumstances have played out. This will not likely change, and as a result, the rapid response segment has become one of the newest market niches to be carved out, explored, and dominated by aerial survey teams looking to expand business revenues and market share.

## The Demand for Results

A by-product of the race to deliver on these data needs is the demand for increasingly effective remote sensing tools capable of delivering ever more immediate results. Geospatial solution suppliers see this as a sign of a healthy industry and recognize the developmental and financial opportunities that come from being responsive to changing user requirements. Applanix, recognized early as a rapid-response solution provider by organizations such as the National Oceanic and Atmospheric Administration (NOAA), has begun serving the disaster-relief surveying market with a DSS RapidOrtho solution that encompasses new rapid response ortho products, each designed with specific speed and data precision goals.

# ore Effectively eospatial Technology



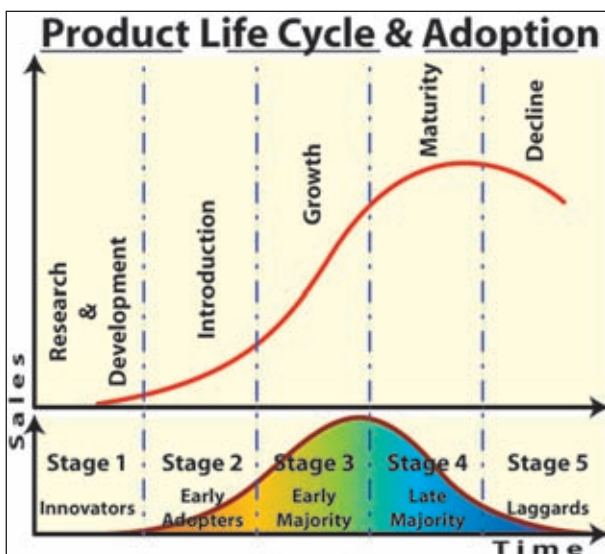
As population growth and climate change become critical issues, the number of people at high risk of flooding is expected to rise dramatically over the next half century.  
Image: Courtesy of Flickr.com.

Geospatial companies are not alone in their rapid response market agendas. Numerous organizations, such as those involved with communications or robotics, are joining in the pursuit, some going so far as to specialize heavily in delivering specific emergency response technologies within singular geographic markets that experience cyclical envi-

ronmental misfortunes. The Center for Robot-Assisted Search and Rescue at the University of South Florida, for example, is unique among academic institutions in that they have developed and hold on standby a cache of robots (both ground and aerial), sensors, and a team of specialists to assist with an emergency situation within hours.

may eventually be applied to build better prediction and action models or to study the hourly progression of an event in incredible detail. At the very least, it will provide a durable and detailed record of events, the likes of which were never before possible.

The fate of technological developments is somewhat more difficult to track. In simplest terms, most leading-edge technologies entering the market begin their product lifecycle positioned as a premium technology. Singular in purpose and design, unit market price meshes with specialized advantages. What takes place next can best be described as a downward filtration. While proven technologies may hold their position through further development and client brand insistence, competitive substitutes enter the market in due course, creating choices and trade-offs based on fundamental criteria (price, performance, etc.) One inescapable derivative of this process is that the highest performance standards established today eventually become tomorrow's minimum expectations. To reach the stage where rapid-response ortho production could capture, orthorectify, and mosaic map-grade data for immediate GIS



## Detailed Record of Events

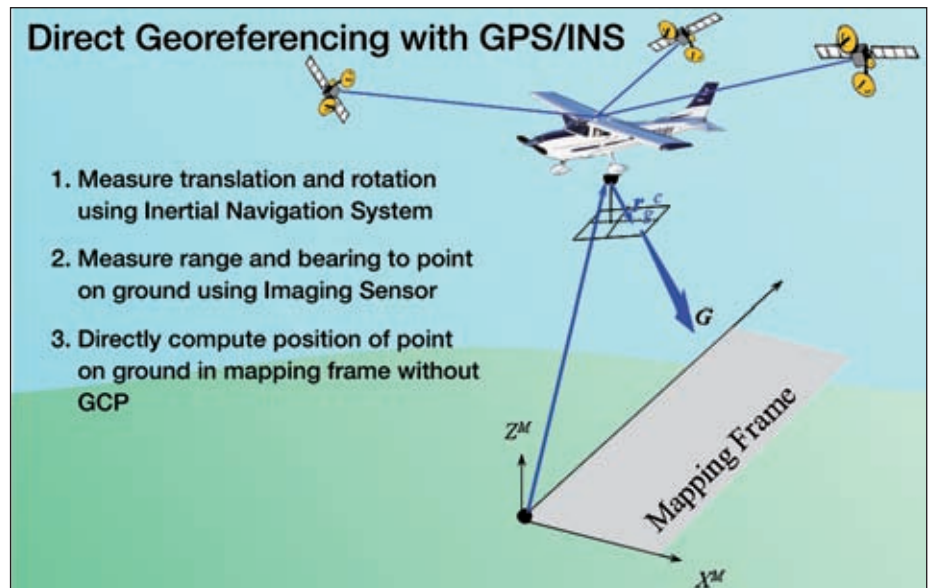
Once the time for fear has fully passed, both the compilation of data produced plus the technology applied as remedy become the subject of study. The data

*Typical product lifecycle and adoption curves. Depending on the conditions surrounding a product, its life cycle may last months or decades. Adoption rates vary depending on such things as recognized advantages, price and operational costs, substitutes, promotional marketing efforts, and risk. Image: Courtesy of Applanix Corp.*

application within hours took years of development. It is easy to imagine, however, that one day soon the advantages of this technology will permeate into far less critical applications. Foresters and town planners may grow increasingly accustomed to having the immediate access to data resources enjoyed by crisis centers. Without fanfare, leading-edge technology gradually becomes one among many competitive advantages or a product-differentiator footnote.

### Something We Call Progress

Such may be the nature of growth. And such may be the nature of the market. How the work of the metaphorical 'invisible hand' may periodically be seen within the economics of the geospatial industry could be the subject of much longer discussions in the future. And similarly, despite our best intentions, the altruism we feel every day, whether developing geospatial technology or using it, is arguably guided by the same Adam Smith altruism that guides Walmart and Microsoft, that is to say that any social benefits that have accrued are simply a by-product of players within the industry striving for reward. But



GPS supported INS provides highly accurate position and orientation for direct georeferencing of captured ground data. Image: Courtesy of Applanix Corp.

this is all part of a larger process taking place in our geospatial world that we like to call progress. To ignore the economics that fuels this machine is almost as dangerous as not fully capitalizing upon the exceptional endowment it grants.

Anthony Melihen ([amelihen@applanix.com](mailto:amelihen@applanix.com)) holds a position in marketing communications, and technical writing at Applanix Corporation.

For more information on the company's Integrated Inertial/GPS technology, visit [www.applanix.com](http://www.applanix.com).