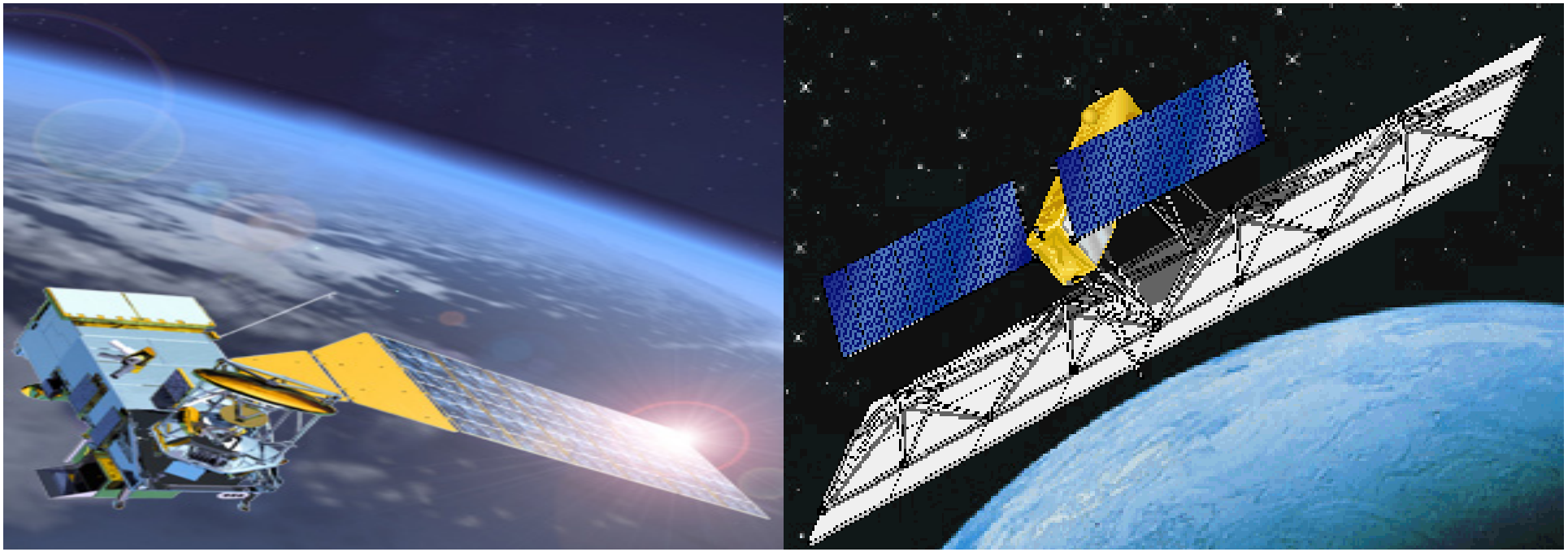
LDCM

LightSAR

Why didn't

Commercialization Work?

SEC / CSIS Forum on Commercial Remote Sensing



What is Commercialization?

"Commercialization is a means to an end, not an end in itself. In the case of Landsat, that end is data continuity at less cost to the government."

Space News Editorial
April 22, 2003

Can the above "end" be achieved when the mission science data has little or no market value?

Problems Common to Both Programs

1. Science requirements different from commercial needs
    a. Government data had little or no commercial value (science requirements not flexible in LightSAR)
    b. Modifications to system design were required to meet commercial needs thus increasing mission costs
2. Government sought benefits of a high “commercial upside” for the investment while refusing to take any significant financial risk (what a great investment this would be!)
    a. T&C’s seeking complete protection for the government from any financial exposure (not indicative of a true partnership) which increased cost
    b. Concern about contractor making “too much” thus creating a controversy for government agency.
3. Legal limits to long-term government commitment to a partnership
    a. Inability of government to provide multi-year appropriations
4. Inability to abandon the “partnership” mantra and seek cheapest and easiest way to fund the mission
5. Reluctant investor community given the uncertainties and passed failed efforts

LDCM Q&A Example

It is clear by the answers provided below by NASA to an LDCM bidder, that their hands were tied by the FAR and the relationship was not a partnership with mutual business risk.

Question *4: Is there some precedence on another termination clause for the clause that NASA chose?*

Response 4: *These termination clauses were developed based on common commercial practice when pre-paying for a product. Within NASA, the only program similar to LDCM is SeaWiFS. The LDCM clauses were adapted from SeaWiFS clauses with minor modifications. Additionally, Federal Acquisition Regulations (FAR) requires recovery of government financing payments related to undelivered work under fixed price contracts. This Regulation applies to SeaWiFS and LDCM to the extent that financing payments correlate to data products that are scheduled for delivery subsequent to the default.*

Important Events of 1983 (Quiz)

1. **Switch from Network Control Protocol (NCP) to Transmission Control Protocol (TCP) and Internet Protocol paved the way for the modern internet**
2. **Camcorders were first introduced**
3. **Modern cell phones first available on network in 1983**
4. **Sally Ride becomes first American Woman in space**
5. **French scientist Dr. Luc Montagnier discovered HIV**
6. **DeLorean sports car was still in production**
7. **Sony introduced CDP-101 (first CD player) for $900 but most music still on vinyl records, cassettes and 8-track formats**
8. **U.S. invaded Granada**
9. **The average home mortgage rate was between 16-17%**

10. **NASA and USGS announced they were taking steps to “commercialize” Landsat**

Chronology of Landsat Commercialization

Jan. 1983
A plan was made to transfer operation of the Landsat Program to the private sector. The first step of this plan required transfer of the Landsat system operation to the Landsat Commercialization Division of the National Oceanic and Atmospheric Administration (NOAA).

Oct. 1985
The Earth Observation Satellite Company (EOSAT), now Space Imaging, assumed responsibility for Landsats 4 and 5 under contract to NOAA. This contract was transferred to the USGS in 1998, but Space Imaging continued to operate Landsats and 5 until mid-2001,

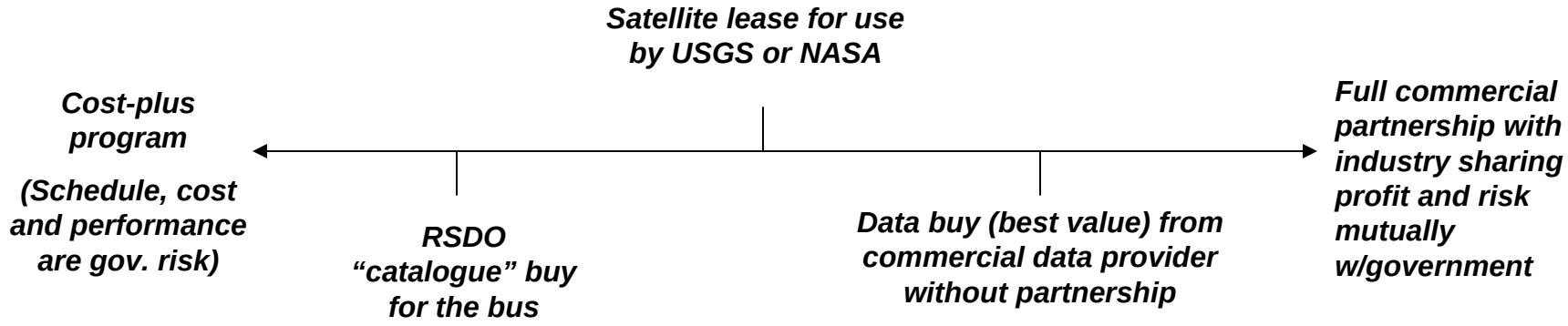
1992
The 1992 Remote Sensing Act expressed a preference for "private-sector funding and management". To that end, NASA and USGS pursued a private-public partnership for procuring LDCM data, and awarded study phase contracts to two commercial companies (DigitalGlobe and Resource21) during 2002.

2002
Study Phase Awarded to DigitalGlobe and Resource 21

Sept. 2003
NASA cancelled the final Request for Proposal (RFP) following an evaluation of the responses to the solicitation. NASA decided that awarding a contract was not in the best interest of the U.S. Government on the basis of proposal evaluations. Since that time, other options for implementing LDCM have been under consideration.

August 5, 2004
A Request for Information (RFI) was issued to solicit information on innovative approaches for the development and incorporation of a new Operational Land Imager and also for a potential stand-alone mission.

The Spectrum of Commercialization



Data continuity options not fully explored

1. *Outsource the entire operation for a price or straight data buy*
2. *Build system using the RSDO "catalogue" from existing capabilities to reduce cost, assure on-time delivery by eliminating requirements creep*

LightSAR Study Contracts

NASA Press Release
January 15, 1997

The agency expects to award up to five LightSAR study contracts worth approximately $700,000 each, with selection scheduled for March 1997 and final reports due in November 1997.

"Our request for proposals is aimed at exploring innovative approaches to government and industry teaming," said Dr. Steven Bard, LightSAR pre-project manager at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "The results of these studies are expected to enable industry to maximize the private sector investment in LightSAR. The proposers are required to share in the cost of implementing this mission, beginning with these studies."

LightSAR Definition Study Teams

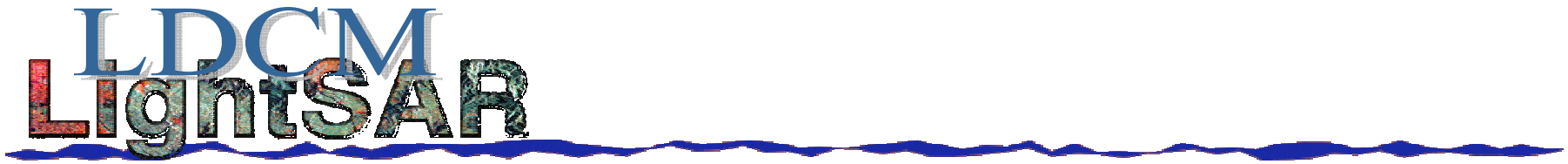
DBA DBA Systems Inc., Orbital Sciences Corp. (formerly CTA Space Systems)

Vexcel Vexcel, Ball Aerospace, South Dakota Space Technology Group, Earthwatch Inc.,

Spacetec; *Affiliates:* ERDAS, Univ. Michigan Radiation Lab (Prof. F. Ulaby), Bechtel, Dynamics Technology Inc. (DTI), Cargill, Georgia Pacific, CAL/FED

RDL RDL, Spectrum Astro, ERIM, Harris, Alenia Spazio, Georgia Institute of Technology

Lockheed Martin Astronautics
Lockheed Martin Astronautics, Space Imaging EOSAT, Autometric, Earth Satellite Corp. (EarthSat), ERDAS, ERIM, Lockheed Martin Tactical Defense Systems, Observa, Inc., Pacific Meridian Resources, Univ. Michigan Radiation Lab (Prof. F. Ulaby), User Systems, Inc.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The Conclusion by JPL / NASA

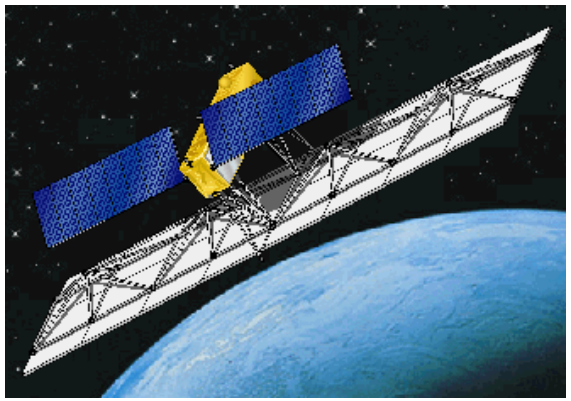
A fairly accurate description by JPL Team

However, it was rumored at the time that two proposals were received. The second one was not discussed in public as it was submitted by a Chinese company connected to the People's Republic and therefore was never acknowledged.

"Development costs for a SAR mission range between below $200 million (for a single frequency system) to $350 million (for a multiple operating mode, dual frequency, system). To obtain a 30%-40% internal rate of return (IRR) for a $200 million system would require about $800 million in net revenue over 5 years!"

SAR Mission Study Report, JPL, Feb. 2000

LightSAR Science Requirements Incompatible with Commercial Market



The only near-term market for SAR data in the late 90's were foreign governments looking for ways to see in areas where access was denied.

The inflexible science requirements meant it was not compatible with a commercial mission

Science Requirements		**Commercial Requirements**
Sun-Synchronous	⟷	Inclined orbit
L-Band	⟷	X-band
Medium Resolution	⟷	Highest Resolution