

[REDACTED]

From: Robert Adams-OTG [REDACTED]
Sent: Monday, August 25, 2008 6:48 PM
To: McNutt, Jan (HQ-MC000) [REDACTED]
Subject: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.
Attachments: OTG_NASA_25AUG08.pdf; OTG_NASA_Refs.pdf; nasa_usps.pdf

Follow Up Flag: Follow up
Flag Status: Completed

b(6)

Sent via U.S. Mail with tracking number

Jan S. McNutt,

Please see the attached letter; it is your response to your most recent letter.

Thank you,

Dr. Robert Adams – CEO
Optima Technology Group
[REDACTED]

Simply Smarter, Encryption & Aerospace Solutions since 1990! The information contained in this e-mail and any attachments are legally privileged and confidential. If you are not an intended recipient, you are hereby notified that any dissemination, any and all distribution or copying of this e-mail is strictly prohibited without the prior consent of Optima Technology Group (sender). If you have received this e-mail in error, please notify the sender and permanently delete the e-mail and any attachments immediately. You should not retain, copy or use this e-mail or any attachment for any purpose, nor disclose all or any part of the contents to any other person. Thank you.

Main Office
Finance & Operation
1981 Empire Rd.
Reno, NV 89521-7430
Tel: 949-419-6970
Fax: 949-226-7378

August 25, 2008

Jan S. McNutt
Attorney-Advisor (Commercial)
Office of the General Counsel

[REDACTED]
[REDACTED] SW
[REDACTED]

Attn.: GP 02-37016

RE: Case number I-222

Sir,

Thank you for your response despite the month's delay. May I note that the patents and ownership and all active claim(s) had been transferred to our company and you have erred, as a matter of law, when you state that this would be a new claim; as it is not, sir. Due to no fault of ours, it is NASA who has not returned our letters or calls for years regarding this claim, let alone followed up with us until recently. We do not see how your personnel problems are our problem, and the court will most assuredly side with us on this matter.

The "positions" you have stated are not sustainable in any context and could well violate the standards of Rule 11 in the context of litigation. All the information requested in your letter dated August 20 2008 was provided to NASA and Mr. Kennedy over the last 5-6 years. Please see the attached as I am sure it will refresh your memory. Mr. Kennedy's promise to Mr. Margolin in 2003 that an investigation would be conducted indicates that the information Mr. Margolin provided to NASA was sufficient to establish the claim.

We have offered you a fair settlement time period and yet you decide to waste time in an attempt to hide your clear infringement. We would welcome the opportunity to properly discuss a reasonable settlement either directly or through our Intellectual Property attorney Larry Oliverio of Rissman, Jobse, Hendricks & Oliverio who can be reached at

[REDACTED]

b(6)

Respectfully,

Robert Adams
CEO, Optima Technology Group

World Headquarters

Paris, France

New York

Irvine, CA

Hong Kong

02796
Vancouver

Reference 1 (1 Page)

National Aeronautics and
Space Administration

Langley Research Center
100 NASA Road
Hampton, VA 23681-2199



May 14, 2003

Reply to Attn of:

212

Jed Margolin
3570 Pleasant Echo Drive
San Jose, CA 95148

Subject: Infringement Inquiry

Dear Mr. Margolin,

I received notice of your belief that NASA may have infringed one or more of your U.S. patents. In order to address your concerns, we need to receive some more detailed information. Please provide the titles and patent numbers of any patents you feel NASA may have infringed. Please also provide a description of any actions by NASA leading to your belief of possible infringement. Finally, please specify in detail how those actions constitute infringement of your patent(s). This information will allow us to evaluate your assertion and respond and/or react appropriately. Thanks for contacting us. I look forward to hearing from you soon, and discussing your concerns further.

Cordially,

A handwritten signature in black ink that reads "Barry V. Gibbens".

Barry V. Gibbens
Patent Attorney
Technology Commercialization
Program Office

Jed Margolin

[Redacted]
[Redacted]
[Redacted]

May 18, 2003

Mr. Barry V. Gibbens
National Aeronautics and Space Administration
Langley Research Center
100 NASA Road
Hampton, VA 23681-2199

b(6)

Attn: 212

Dear Mr. Gibbens,

This is in response to your letter dated May 14, 2003.

As we discussed in our telephone conversation on May 16, the information you have requested was supplied in my email to Mr. Kurt Hammerle on May 12, 2003.

After I emailed my inquiry to Mr. Jesse Midgett on May 12, I discovered the web page for the Patent Counsel Office and contacted Mr. Hammerle by telephone.

I apologize for any confusion this may have created.

As a result of more searching I have discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Software at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

{ The emphasis on teleoperation of remotely piloted vehicles is mine. }

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[Redacted] 36
[Redacted] 20
[Redacted] C

b(6)

Integrated Video for Synthetic Vision Systems

For 2001 Phase II:

Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]
[REDACTED]

b(6)

01-2-H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

If there is any additional information regarding my patents that you would find helpful please let me know.

Sincerely yours,

Jed Margolin

Jed Margolin



NASA SBIR SUCCESSSES

INNOVATION

LandForm VisualFlight™ is the power of a geographic information system (GIS) and the speed of a flight simulator, accessible from any Windows application.

ACCOMPLISHMENTS

- The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.
- AFVT will enhance the ability of analysts and operators to interact with large amounts of multidimensional data using the most natural paradigm available: 3D immersion. This operator/data interaction technology will be an advancement comparable to the invention of the Heads-Up Display (HUD). AFVT will move the HUD into the third dimension.
- A simplified user interface, it will fuse real-time 3D displays of terrain with digital maps, satellite data, vehicles, flight paths, and waypoints. This unique and innovative approach will build upon recent software technology research and development from Rapid Imaging Software. VisualFlight™ permits users to construct and deploy their own immersive multidimensional display applications on Windows-based computer platforms.

COMMERCIALIZATION

- VisualFlight™ is sold as a development kit starting with 5 run-time licenses. Users who wish to distribute more applications

Johnson Space Center
1998 Phase II

LandForm VisualFlight™

Rapid Imaging Software, Inc.

Albuquerque, NM



Optional Powerpoint file

GOVERNMENT/SCIENCE APPLICATIONS

- The firm's VisualFlight™ System was used to fly the X-38 on it's latest test flight. The flight vehicle was piloted by astronaut (Ken Ham) using LandForm VisualFlight

using LandForm VisualFlight™ technology can purchase additional run-time licenses as needed.

- VisualFlight™ 1.0 has been available to qualified users for several months now, and the response is excellent. VisualFlight™ has been deployed to display live real-time flight data broadcast over a network. Please visit this page for the latest VisualFlight™ developments.
- **LandForm V/O Video Overlay** plug-in for LandForm C3 or Flight Vision is available for the Matrox Corona board only. The price is \$4995 for a # single users license. Site license is available for \$6995.

system as his digital cockpit window.

For more information about this firm, please send e-mail to: [company representative](#)

[Return to NASA SBIR Success Listings](#)

Curator: [SBIR Support](#)

Jed Margolin

[Redacted]

Email: [Redacted]

[Redacted]

June 7, 2003

Mr. Alan J. Kennedy
Office of the General Counsel
National Aeronautics and Space Administration

[Redacted]

[Redacted]

b(6)

Dear Mr. Kennedy,

Mr. Barry Gibbens of your Langley Research Center suggested I contact you. I missed you when I called on Friday so I am sending this fax to provide background.

I believe that NASA may have used one or more of my patents in connection with the X-38 project and may be using one or more of my patents in other projects using Synthetic Vision.

This fax contains a number of Internet links. If you would like an email version of this fax containing active links please send me an email [Redacted] with your email address.

Summary

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In Synthetic Vision (NASA's term), the aircraft's position and orientation are used with a terrain database (such as the Digital Elevation Database) to produce a 3D projected view of the terrain over which the aircraft is flying. One of the advantages of this system is that the pilot is able to "see" the terrain regardless of weather conditions or whether it is day or night.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,566,073 Pilot Aid Using a Synthetic Environment** issued October 15, 1996 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed August 9, 1995, and was a continuation of Application Ser. No. 08/274,394, filed July 11, 1994.

With synthetic vision it is not necessary for the pilot to be in the aircraft. I believe the X-38 project used this method.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,904,724 Method and Apparatus For Remotely Piloting an Aircraft** issued May 18, 1999 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed January 19, 1996.

X-38 Project

I became aware that NASA was using synthetic vision in the X-38 project in the January 2003 issue of NASA Tech Briefs, page 40, "**Virtual Cockpit Window**" for a **Windowless Aerospacecraft**. The article is available at: <http://www.nasatech.com/Briefs/Jan03/MSC23096.html>

This led me to Rapid Imaging Software, Inc. and their press release (<http://www.landform.com/pages/PressReleases.htm>) which states:

"On December 13th, 2001, Astronaut Ken Ham successfully flew the X-38 from a remote cockpit using LandForm VisualFlight as his primary situation awareness display in a flight test at Edwards Air Force Base, California. This simulates conditions of a real flight for the windowless spacecraft, which will eventually become NASA's Crew Return Vehicle for the ISS. We believe that this is the first test of a hybrid synthetic vision system which combines nose camera video with a LandForm synthetic vision display. Described by astronauts as 'the best seat in the house', the system will ultimately make space travel safer by providing situation awareness during the landing phase of flight."

The RIS press release provided a link to an article in Aviation Week & Space Technology: http://www.aviationnow.com/avnow/news/channel_space.jsp?view=story&id=news/sx381211.xml

As a result of more searching I have discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Systems at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

{The emphasis on teleoperation of remotely piloted vehicles is mine.}

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]
[REDACTED]

Integrated Video for Synthetic Vision Systems

b(6)

For 2001 Phase II:

Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]

Carolyn Galceran [REDACTED]
01-2-H6.02-8715 JSC
Integrated Video for Synthetic Vision Systems

b(6)³

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,904,724 Method and Apparatus For Remotely Piloting an Aircraft** issued May 18, 1999 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed January 19, 1996.

The patent can be downloaded from the UPTO Web site (www.uspto.gov) in html (no drawings) or in an odd tif format (with the drawings) that requires a special viewer.

An easier way to view and download the patent is through my Web site, on which I have posted the patent in PDF format. The link is <http://www.jmargolin.com/patents2/rpv.htm>.

While I have no way of knowing exactly what method(s) NASA used in controlling the X-38 (unless you are willing to make a full disclosure) my patent covers techniques as exemplified by claim 1.

1. A system comprising:

a remotely piloted aircraft including,

a position determining system to locate said remotely piloted aircraft's position in three dimensions; and

an orientation determining system for determining said remotely piloted aircraft's orientation in three dimensional space;

a communications system for communicating flight data between a computer and said remotely piloted aircraft, said flight data including said remotely piloted aircraft's position and orientation, said flight data also including flight control information for controlling said remotely piloted aircraft;

a digital database comprising terrain data;

said computer to access said terrain data according to said remotely piloted aircraft's position and to transform said terrain data to provide three dimensional projected image data according to said remotely piloted aircraft's orientation;

a display for displaying said three dimensional projected image data; and

a set of one or more remote flight controls coupled to said computer for inputting said flight control information, wherein said computer is also for determining a delay time for communicating said flight data between said computer and said remotely piloted aircraft, and wherein said computer adjusts the sensitivity of said set of one or more remote flight controls based on said delay time.

Although the X-38 project has been canceled, the methods developed to fly it are too good to waste and should be used in follow-up projects like CRV.

Synthetic Vision

I became aware of NASA's Synthetic Vision program perhaps two years ago from a program on NASA TV. I was unable to follow it up at that time due to health problems and the demands of my other patenting activity.

According to the NASA Aviation Safety Program Web site (http://avsp.larc.nasa.gov/program_svs.html)

Synthetic Vision Systems

TECHNOLOGY WOULD REDUCE AIRLINE FATALITIES
Synthetic Vision would give pilots clear skies all the time

A revolutionary cockpit display system being developed with seed money from NASA would help prevent the world's deadliest aviation accidents.

And I agree.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,566,073 Pilot Aid Using a Synthetic Environment** issued October 15, 1996 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed August 9, 1995, and was a continuation of Application Ser. No. 08/274,394, filed July 11, 1994.

The patent can be downloaded from the USPTO Web site (www.uspto.gov) in html (no drawings) or in an odd tif format (with the drawings) that requires a special viewer.

The patent can also be downloaded from my Web site in PDF format at:
<http://www.jmargolin.com/patents2/pilot.htm>

As with the X-38 program I have no way of knowing exactly what method(s) NASA used in its Synthetic Vision program (unless you are willing to make a full disclosure). My patent covers techniques as exemplified by claim 1.

1. A pilot aid which uses an aircraft's position and attitude to transform data from a digital data base to present a pilot with a synthesized three dimensional projected view of the world comprising:

a position determining system for locating said aircraft's position in three dimensions;

a digital data base comprising terrain data, said terrain data representing real terrestrial terrain as at least one polygon, said terrain data generated from elevation data of said real terrestrial terrain;

an attitude determining system for determining said aircraft's orientation in three dimensional space;

a computer to access said terrain data according to said aircraft's position and to transform said terrain data to provide three dimensional projected image data according to said aircraft's orientation; and

a display for displaying said three dimensional projected image data.

NASA's Visits to My Web Site

There is good reason to believe that NASA was aware of my work in these areas through visits to my Web site. NASA has been visiting my Web site (www.jmargolin.com) regularly since I started it in December 2000. (I have no objection to NASA's visits; I am flattered that NASA considers my Web site worth visiting.)

A listing of NASA access statistics follows the end of this fax.

I also have regular visits from <http://cap.nipr.mil>, which I understand is a secure gateway to other military networks. I don't know if NASA uses nipr so I have not included it in my listing.

The Web Statistics software provided by my Web Hosting Service tell me who is visiting my Web site and what people are looking at but not who is looking at what, (In January of this year I discovered there are raw Web log files containing this information but my Web Hosting Service does not keep backup log files older than the previous month.)

I am including an example of the detailed Web log data; it's understandable why my Web Hosting Service abstracts it into a less detailed form.

The article being referenced is **Unit Vector Math for 3D Graphics**
(www.jmargolin.com/uvmath/uvmenu.htm)

Now that I can see what people are looking at I have noticed a great deal of interest in this article as well as **The Relationship between Unit Vector Rotations and Euler Angle Functions**.
(www.jmargolin.com/uvmath/euler.doc)

These articles also seem to interest military contractors like Lockheed Martin (lmco.com), Boeing (boeing.com), Northrop Grumman (northgrum.com), and SAIC (saic.hq.nasa.gov) as well as a large number of educational institutions.

Some accesses are obviously just for fun, to articles such as to **Gas Music From Jupiter**
(www.jmargolin.com/gmfj/gmfj.htm)

There are also visits from most of our national labs. I expect they are interested in **U.S. Patent 6,377,436 Microwave Transmission Using a Laser-Generated Plasma Beam Waveguide** issued April 23, 2002 to Jed Margolin.

Abstract

A directed energy beam system uses an ultra-fast laser system, such as one using a titanium-sapphire infrared laser, to produce a thin ionizing beam through the atmosphere. The beam is moved in either a circular or rectangular fashion to produce a conductive shell to act as a waveguide for microwave energy. Because the waveguide is produced by a plasma it is called a plasma beam waveguide. The directed energy beam system can be used as a weapon, to provide power to an unmanned aerial vehicle (UAV) such as for providing communications in a cellular telephone system, or as an ultra-precise radar system.

There is a possibility that this device could be used to make a linear Tokamak.
(www.jmargolin.com/debs/debs.htm)

Conclusion

I realize this is a great deal of material to wade through, but I would appreciate confirmation that you have received it and, if possible, an estimate as to when I can expect to hear NASA's decision on this claim.

Hopefully, then we can discuss compensation. The '724 patent is available for sale if NASA wishes to purchase it to avoid setting the precedent of the U.S. Government paying compensation for each flight of an aircraft using my patent. (I don't think this would be popular with DOD.) I expect that the first UAV to crash due to Pilot Induced Oscillation (or just Flight Computer Induced Oscillation, as occurred in the first flight of the Predator) would cost more than the cost of buying my patent. I believe this patent also has commercial applications like using UAVs for traffic reporting and in Law Enforcement so your Commercialization Department may be able to generate income with it.

Sincerely yours,

Jed Margolin

Jed Margolin

[REDACTED]
[REDACTED]
[REDACTED]

b(6)

Here are NASA's visits to my Web site:

June 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
2	0.02%	1	2	73232 0.02% dhcp161-117.hst.nasa.gov

July 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
24	0.27%	24	1	216909 0.08% aavigil1.wff.nasa.gov
1	0.01%	1	1	96274 0.04% antonius-dekorte-pc.jpl.nasa.gov
25	0.28%	25	2	313183 0.11%

August 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname

02807

40	0.38%	40	1	184514	0.06%	time2burn.larc.nasa.gov
24	0.23%	24	1	216909	0.07%	gerhard.gsfc.nasa.gov
64	0.61%	64	2	401423	0.12%	

October 2001						
nasa.gov						
Total hits		Files	Pageview	Bytes sent Hostname		
1	0.01%	1	1	549657	0.11%	halljm.nsstc.nasa.gov

November 2001						
nasa.gov						
Total hits		Files	Pageview	Bytes sent Hostname		
48	0.39%	24	2	216909	0.06%	aavigil1.wff.nasa.gov
42	0.34%	42	1	532111	0.14%	mac01291100705.jpl.nasa.gov
1	0.01%	1	1	21505	0.01%	dhcp-78-14-233.jpl.nasa.gov
91	0.73%	67	4	770525	0.21%	

December 2001						
nasa.gov						
Total hits		Files	Pageview	Bytes sent Hostname		
1	0.01%	1	1	90494	0.01%	pgrant.arc.nasa.gov

February 2002						
nasa.gov						
Total hits		Files	Pageview	Bytes sent Hostname		
1	0.01%	1	0	120832	0.03%	csmad-nt-23.jpl.nasa.gov
1	0.01%	1	1	504805	0.11%	cielo2k.jpl.nasa.gov
2	0.01%	2	1	625637	0.13%	

March 2002						
nasa.gov						
Total hits		Files	Pageview	Bytes sent Hostname		
58	0.35%	45	5	319389	0.05%	fantasy.arc.nasa.gov
6	0.04%	5	4	1299302	0.22%	fryepc.larc.nasa.gov
1	0.01%	1	0	120832	0.02%	shum.larc.nasa.gov

65 0.39% 51 9 1739523 0.29%

8

April 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
40 0.23%	40	1	184514 0.03%	cevennes.jpl.nasa.gov
7 0.04%	7	2	45302 0.01%	doppler.jpl.nasa.gov
1 0.01%	1	1	5735 0.00%	math.jpl.nasa.gov
1 0.01%	1	0	120832 0.02%	k-137-78-152-182.jpl.nasa.gov
49 0.29%	49	4	356383 0.06%	

May 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
4 0.02%	0	0	0 0.00%	k1505776.ksc.nasa.gov
1 0.00%	1	0	120832 0.02%	manzanita-227-215.arc.nasa.gov
1 0.00%	1	1	96274 0.02%	seraph3.lerc.nasa.gov
6 0.03%	2	1	217106 0.03%	

June 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
3 0.02%	1	1	96694 0.02%	micronovich.gsfc.nasa.gov

July 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
43 0.19%	43	4	190275 0.03%	seraph3.lerc.nasa.gov
42 0.19%	42	3	189552 0.03%	varies01113104503.jpl.nasa.gov
2 0.01%	2	2	7802 0.00%	paulafinlayson-pc-pentium.jpl.nasa.gov
1 0.00%	1	1	350096 0.06%	brodbell1.gsfc.nasa.gov
1 0.00%	1	1	93686 0.02%	poes12.gsfc.nasa.gov
89 0.39%	89	11	831411 0.14%	

August 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
24 0.11%	24	1	216909 0.03%	envision.arc.nasa.gov

02800

1	0.00%	1	1	90494	0.01%		pc02141110149.jpl.nasa.gov
1	0.00%	1	1	142144	0.02%		tizzie.nsstc.nasa.gov

26	0.12%	26	3	449547	0.06%		

September 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent Hostname				
5	0.02%	1	0	121528	0.02%		knepper.ivv.nasa.gov
1	0.00%	1	0	285696	0.04%		seraph2.lerc.nasa.gov
1	0.00%	1	0	120832	0.02%		webproxy2.dfrc.nasa.gov

7	0.03%	3	0	528056	0.08%		

October 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent Hostname				
98	0.45%	98	14	827297	0.11%		dial37.jsc.nasa.gov
1	0.00%	1	1	49690	0.01%		isdn-dial-050.gsfc.nasa.gov
1	0.00%	1	0	120832	0.02%		latema.jpl.nasa.gov
1	0.00%	1	0	285696	0.04%		dkiewicz-pc.jpl.nasa.gov

101	0.47%	101	15	1283515	0.16%		

November 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent Hostname				
27	0.12%	25	1	506284	0.06%		ntserve.gdsc.nasa.gov
7	0.03%	7	2	45342	0.01%		ecn1950165.gsfc.nasa.gov
2	0.01%	2	2	1155686	0.15%		zebra.arc.nasa.gov
1	0.00%	1	1	350096	0.04%		norton.gsfc.nasa.gov

37	0.17%	35	6	2057408	0.26%		

December 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent Hostname				
7	0.03%	7	2	45269	0.01%		ws196.gsfc.nasa.gov

January 2003

nasa.gov

Total hits	Files	Pageview	Bytes sent Hostname				

2	0.01%	2	2	29129	0.00%	csg-	10	686.cdsc.nasa.gov
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February 2003

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
2	0.01%	2	2	29138 0.00% odinssc609337.ssc.nasa.gov

April 2003

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
40	0.17%	40	1	184514 0.02% khgmac.larc.nasa.gov
8	0.03%	5	4	40212 0.00% kid-emillerw2k.saic.hq.nasa.gov
5	0.02%	1	0	121528 0.01% psycho.larc.nasa.gov
4	0.02%	3	3	63471 0.01% b03042144127.jpl.nasa.gov
3	0.01%	3	3	29881 0.00% seraph2.grc.nasa.gov
60	0.25%	52	11	439606 0.05%

Example of Detailed Web Log Data

This is an example of the detailed Web log data, so it's understandable why my Web Hosting Service abstracts it into a less detailed form.

The article being referenced is Unit Vector Math for 3D Graphics (www.jmargolin.com/uvmath/uvmenu.htm)

```
khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/fig1.gif HTTP/1.1" 200 2590
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0;
Q312461; .NET CLR 1.0.3705)"
```

```
khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m1.gif HTTP/1.1" 200 2237
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0;
Q312461; .NET CLR 1.0.3705)"
```

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khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m2.gif HTTP/1.1" 200 1464
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0;
Q312461; .NET CLR 1.0.3705)"
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khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m3.gif HTTP/1.1" 200 715
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0;
Q312461; .NET CLR 1.0.3705)"
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khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m4.gif HTTP/1.1" 200 1720
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0;
Q312461; .NET CLR 1.0.3705)"
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khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m5.gif HTTP/1.1" 200 1738
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m7.gif HTTP/1.1" 200 1549
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m8.gif HTTP/1.1" 200 1939
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m6.gif HTTP/1.1" 200 1762
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m9.gif HTTP/1.1" 200 4152
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m10.gif HTTP/1.1" 200 2732
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m11.gif HTTP/1.1" 200 2572
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m12.gif HTTP/1.1" 200 2580
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m13.gif HTTP/1.1" 200 3915
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m14.gif HTTP/1.1" 200 2591
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m15.gif HTTP/1.1" 200 2224
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m16.gif HTTP/1.1" 200 1858
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m17.gif HTTP/1.1" 200 1742
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m18.gif HTTP/1.1" 200 2642
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m19.gif HTTP/1.1" 200 1738
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m20.gif HTTP/1.1" 200 1762
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m21.gif HTTP/1.1" 200 1696
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m22.gif HTTP/1.1" 200 2224
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m23.gif HTTP/1.1" 200 1858
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m24.gif HTTP/1.1" 200 1711
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig6.gif HTTP/1.1" 200 3304
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig7.gif HTTP/1.1" 200 995
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig8.gif HTTP/1.1" 200 4441
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig11.gif HTTP/1.1" 200 3186
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig12.gif HTTP/1.1" 200 3743
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig14.gif HTTP/1.1" 200 1936
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig16.jpg HTTP/1.1" 200 61706
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m25.gif HTTP/1.1" 200 1358
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m26.gif HTTP/1.1" 200 1413
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m27.gif HTTP/1.1" 200 1052
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m28.gif HTTP/1.1" 200 1017
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m29.gif HTTP/1.1" 200 1673
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m30.gif HTTP/1.1" 200 2224
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:24 -0500] "GET /uvmath/uvmath.htm HTTP/1.1" 200 40231
"http://www.google.com/search?q=+%22euler+angle%22+normal+openGL&hl=en&lr=&ie=UTF-8&oe=UTF-8&start=10&sa=N" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:24 -0500] "GET /uvmath/fig3.gif HTTP/1.1" 200 2524
"http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

---end

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

Reference 4 (2 pages)



June 11, 2003

Reply to Attn of: GP (02-37016)

Mr. Jed Margolin
[REDACTED]
[REDACTED]

b(6)

Re: Administrative Claim of Jed Margolin for Infringement of
U.S. Patent Nos. 5,566,073 and 5,904,724; NASA Case No. I-222

Dear Mr. Margolin:

Thank you for your letter dated June 7, 2003 regarding possible unauthorized uses by NASA of inventions protected by U.S. Patent Nos. 5,566,073 and 5,904,724. You have identified possible unauthorized uses in the X-38 project and other projects involving synthetic vision technology. NASA considers this matter to be an administrative claim for patent infringement, and has assigned the claim NASA Case No. I-222. An investigation will now be conducted to identify any unauthorized uses of the inventions claimed in the subject patents. In order to proceed further with this investigation, we need you to provide us with the following information:

- (1) The identification of all claims of the patent(s) alleged to be infringed.
- (2) The identification of all procurements known to the claimant or patent owner which involve the alleged infringing item or process, including the identity of the vendor or contractor and the Government procuring activity.
- (3) A detailed identification of the accused articles or processes, particularly where the article or process relates to a component or subcomponent of the item procured, an element by element comparison of the representative claims with the accused article or process. If available, this identification should include documentation and drawings to illustrate the accused article or process in suitable detail to enable verification of the infringement comparison.
- (4) The names and addresses of all past and present licenses under the patent(s), and copies of all license agreements and releases involving the patent.
- (5) A brief description of all litigation in which the patent(s) has been or is now involved, and the present status thereof.

02815

- 6) A list of all persons to whom notices of infringement have been sent, including all departments and agencies of the Government, and a statement of the ultimate disposition of each.
- 7) A description of Government employment or military service, if any, by the inventor and/or patent owner.
- 8) A list of all Government contracts under which the inventor, patent owner, or anyone in privity with him performed work relating to the patented subject matter.
- 9) Evidence of title to the patent(s) alleged to be infringed or other right to make the claim.
- 10) A copy of the Patent Office file of the patent, if available, to claimant.
- 11) Pertinent prior art known to claimant, not contained in the Patent Office file, particularly publications and foreign art.

In addition to the foregoing, if claimant can provide a statement that the investigation may be limited to the specifically identified accused articles or processes, or to a specific procurement, it may materially expedite determination of the claim.

If you have any questions, please feel free to contact me or [REDACTED]

Cordially,



b6
b7C

Alan J. Kennedy
 Director, Infringement Division
 Office of the Associate General Counsel
 (Intellectual Property)

Jed Margolin

June 17, 2003

Mr. Alan J. Kennedy
Director, Infringement Division
Office of the Associate General Counsel
National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

b(6)

Attn: GP(02-37016)

Dear Mr. Kennedy,

I have received your letter dated June 11, 2003.

In my contacts with NASA personnel I have repeatedly stressed my desire that this matter be resolved in a friendly manner. However, since NASA has rejected my request to consider a license proffer and in view of your letter of June 11, it is clear that NASA has decided to handle this in an adversarial manner.

Before I respond to your letter in detail, I want to make things easier for me by withdrawing my U.S. Patent **5,566,073 Pilot Aid Using a Synthetic Environment** from this administrative claim in order to focus more directly on NASA's infringement of my U.S. Patent **5,904,724 Method and Apparatus For Remotely Piloting an Aircraft**. However, I reserve the right to file a claim concerning the '073 patent at a later time.

(1) The identification of all claims of the patent(s) alleged to be infringed.

As I stated in my email of May 13, 2003 to Mr. Hammerle of LARC and in my fax of June 7, 2003 to you, I have no way of determining exactly which claims the X-38 project may have infringed unless NASA makes a full and complete disclosure to me of that project. I also have no way of determining if NASA has (or has had) other projects that also infringe on my patent unless NASA makes a full and complete disclosure of those projects as well.

Therefore, in order to answer your question, I must request that NASA make a full and complete disclosure to me of the X-38 project as well as any other current or past projects that may infringe on my patent.

If this information requires a security clearance (I have none) I suggest you start the required security investigation immediately. If there is further information that you require in this regard feel free to contact me.

- (2) *The identification of all procurements known to the claimant or patent owner which involve the alleged infringing item or process, including the identity of the vendor or contractor and the Government procuring activity.*

As I stated in my fax to you of June 7, 2003, I became aware that NASA was using synthetic vision in the X-38 project in the January 2003 issue of NASA Tech Briefs, page 40, "**Virtual Cockpit Window for a Windowless Aerospacecraft**". The article is available at:
<http://www.nasatech.com/Briefs/Jan03/MSC23096.html>

This led me to Rapid Imaging Software, Inc. and their press release (<http://www.landform.com/pages/PressReleases.htm>) which states:

"On December 13th, 2001, Astronaut Ken Ham successfully flew the X-38 from a remote cockpit using LandForm VisualFlight as his primary situation awareness display in a flight test at Edwards Air Force Base, California. This simulates conditions of a real flight for the windowless spacecraft, which will eventually become NASA's Crew Return Vehicle for the ISS. We believe that this is the first test of a hybrid synthetic vision system which combines nose camera video with a LandForm synthetic vision display. Described by astronauts as 'the best seat in the house', the system will ultimately make space travel safer by providing situation awareness during the landing phase of flight."

The RIS press release provided a link to an article in *Aviation Week & Space Technology*:
http://www.aviationnow.com/avnw/news/channel_space.jsp?view=story&id=news/sx381211.xml

As a result of more searching I discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Systems at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

The emphasis on *virtual reality immersive telepresence* and *teleoperation of remotely piloted vehicles* is mine.

A search of the SBIR archive shows the following entries.

For 2001 Phase I:
 Rapid Imaging Software, Inc.

[REDACTED]
 [REDACTED]
 [REDACTED]

b(6)

01 H6.02-8715 JSC
 Integrated Video for Synthetic Vision Systems

02818

For 2001 Phase II:
Rapid Imaging Software, Inc.

[REDACTED] 6
Carolyn Galceran [REDACTED]
01-2-H6.02-8715 JSC

b(6)

Since my sources of information are limited to those available to the public (magazines such as *Aviation Week & Space Technology* as well as whatever I can find on the Internet) I have no way of knowing if there are other procurements, vendors, contractors, and Government procuring activity related to Claim I-222.

I believe that NASA is in a better position to know what it is (or has been) working on than I am.

- (3) *A detailed identification of the accused articles or processes, particularly where the article or process relates to a component or subcomponent of the item procured, an element by element comparison of the representative claims with the accused article or process. If available, this identification should include documentation and drawings to illustrate the accused article or process in suitable detail to enable verification of the infringement comparison.*

I believe I have answered this in section (2) as much as I am able to without NASA's cooperation.

- (4) *The names and addresses of all past and present licenses under the patent(s), and copies of all license agreements and releases involving the patent.*

There are no past licenses for this patent, and as of this date there are no present licenses for this patent. Naturally, I reserve the right to license this patent in the future as I see fit.

- (5) *A brief description of all litigation in which the patent(s) has been or is now involved, and the present status thereof.*

There has been no past litigation involving this patent, and as of this date there is no present litigation regarding this patent.

- (6) *A list of all persons to whom notices of infringement have been sent, including all departments and agencies of the Government, and a statement of the ultimate disposition of each.*

As of this date NASA is the only agency or department of the Government against which I have filed a claim.

5/11/03 – sent email to comments@hq.nasa.gov

I believe that NASA may have infringed on one or more of my U.S. Patents. How do I file a claim and whom do I contact?

5/11/03 – Received reply:

Date: Sun, 11 May 2003 17:48:46 -0400 (EDT)
 From: "PAO Comments" <comments@bolg.public.hq.nasa.gov>
 Message-ID: <200305112148.h4BLmkhJ011314@bolg.public.hq.nasa.gov>
 To: [REDACTED]
 Subject: Thank you for your email.

Thank you for your message to the NASA Home Page. The Internet Service Group will attempt to answer all e-mail regarding the site, but cannot guarantee a response by a particular time. The group will not be able to answer general inquiries regarding NASA, which should instead be sent to public-inquiries@hq.nasa.gov

 5/11/03 – Sent email to <public-inquiries@hq.nasa.gov>

I believe that NASA may have infringed on one or more of my U.S. Patents. How do I file a claim and whom do I contact?

Jed Margolin

As far as I can tell I did not receive a response.

b(6)

 5/12/03 – Sent email to [REDACTED] (found on Web site)

I believe that NASA may have infringed on one or more of my U.S. Patents. How do I file a claim and whom do I contact? (Or is my only recourse to sue in Federal Court?)

Jed Margolin

5/12/03 – Received reply:

Mr. Margolin,

Thank you for contacting NASA with your concerns. I have referred this matter to the Patent Counsel Office, and they will be contacting you to work with you on this issue.

*Best wishes,
Jesse Midgett*

b6(c)

5/12/03 – Given my experience with trying to contact Government officials via email (or mail, or fax) I hadn't waited for the reply from J. Midgett. I had found the web site for the LARC (NASA Langley) Patent Counsel Office, and called up. I was connected to Kurt Hammerle and we had a nice talk. I sent him an email the next day (May 13, 2003).

I received a phone call from Barry Gibbens [redacted] who, apparently, was calling because of my email to J.C.Midgett and hadn't seen the email I sent to K. Hammerle. (I explained to him what I had done.) We had a nice talk. He said he had already sent me a letter.

I received his letter and sent a reply on May 18, 2003 (USPS), adding to the email I had sent K. Hammerle.

Thursday, June 5, 2003 – Received message from B. Gibbens, asking me to call him because I should contact Alan Kennedy at NASA Headquarters [redacted]

Friday, June 6, 2003 - I called B. Gibbens. Then I called A. Kennedy but he was out.

Saturday, June 7, 2003 – Sent a fax to A. Kennedy. The first number I tried [redacted] only accepted 4 pages (out of 13). I tried a few times. Then I tried [redacted] It turned out that [redacted] was the correct number and that [redacted] was another group. As a result, A. Kennedy initially only got 4 pages.

Monday, June 9, 2003 – Received message from A. Kennedy and called him back.

He had not gotten the fax so he went and found it. I learned the next day that he had only gotten 4 pages.

We had a "free and frank" discussion. I stressed that I wanted to resolve it in a friendly manner and that I preferred to have NASA buy the patent for the Government.

Tuesday, June 10, 2003 – Received a message from A. Kennedy and called him back.

He said that his Manager has turned down my request that NASA consider a license proffer and has decided to handle it as a Claim, and that the investigation would take 3-6 months.

However, NASA is not the only agency or department of the Government I have contacted.

7/5/1999 Email to [redacted]
Dr. Birckelbaw, Project Manager for the UCAV contract awarded to Boeing.

Introduced myself and asked if DARPA was interested in my patent.
Response: none

7/26/1999 USPS Mail to:
Dr. Larry Birckelbaw
Program Manager, Aerospace Systems
DARPA Tactical Technology Office
[redacted]
[redacted]

b(6)

Introduced myself and asked if DARPA was interested in my patent. Enclosed copy of patent.
Response: none

Office of the Secretary of Defense (OSD)
Mr. E.C. "Pete" Aldridge
Under Secretary of Defense for Acquisition, Technology, and Logistics
U.S. Department of Defense
Contact Method: Email: webmaster@acq.osd.mil
Response: none

May 3, 2002 and June 6, 2002

Army - AATD, Fort Eustice, VA.
Col. Wado Carmona, Commander
Applied Aviation and Training Directorate (AATD)
Army Aviation and Missile Command
Ft. Eustice, VA

Contact Method:
Email: Ms. Lauren L. Sebring [redacted] il

June 1, 2002

Phone Call Followup: She suggested I talk to Mr. Jack Tansey
Mr. Jack Tansey, Business Development [redacted]
Email Followup: [redacted]

b(6)

June 18, 2002
June 18, 2002

Air Force Research Laboratory (AFRL)
Dr. Barbara Wilson
Contact Method: email [redacted]
Response - none

July 17, 2002

Air Force Research Laboratory (AFRL)
Dr. R. Earl Good, Director,
Directed Energy Directorate
Air Force Research Laboratory
Kirtland Air Force Base, NM 87117-5776
[Redacted]

Response: none

July 23, 2002

Department of the Air Force
Dr. James G. Roche
Secretary of the Air Force
Washington, DC
[Redacted]

b(6)

Response: Letter from
Lt. General Charles F. Wald
Deputy Chief of Staff, Air & Space Operations, USAF

July 28, 2002

August 13, 2002

(7) *A description of Government employment or military service, if any, by the inventor and/or patent owner.*

I have never been employed by the U.S. Government (or any other government). Likewise, I have never been in military service (in the United States or elsewhere). In the interests of full disclosure, I worked for three summers (1967, 1968, 1969) at the RCA Astro-Electronics Division in Hightstown, NJ. (They had a summer job program for students.)

(8) *A list of all Government contracts under which the inventor, patent owner, or anyone in privity with him performed work relating to the patented subject matter.*

None. I did this entirely on my own dime.

(9) Evidence of title to the patent(s) alleged to be infringed or other right to make the claim.

This appears to be a two-part question. Does the patent belong to Jed Margolin, and am I that Jed Margolin?

Part 1 - If you look at the front page of the '724 patent you will see that it was, indeed, issued to Jed Margolin, [REDACTED]

If you contact the U.S. Patent and Trademark Office, Document Services Department (703-308-9726), you can order an Abstract of Title to verify that I own the patent. According to 37 CFR 1.12, assignment records are also open to public inspection at the United States Patent and Trademark Office.

Part 2 - If you look up Jed Margolin, [REDACTED] in a telephone directory you will find assigned to it the telephone number [REDACTED]

When you called me on June 9 and June 10, that was the number you called.

Other than my affirming that I am, indeed, the Jed Margolin in question, I can only suggest that you contact my cousin Lenny (oops, I mean Dr. Len Margolin) who is employed by Los Alamos National Laboratory, and ask him if he has a cousin Jed who is an engineer and an inventor, and who possesses the Margolin gene for being very persistent. (Some say stubborn.) The last time I saw him was in Ann Arbor, Michigan, after he had just passed the orals for his doctorate. (He bought me a beer at a place on South University.)

(10) A copy of the Patent Office file of the patent, if available, to claimant.

I do not have a copy of the USPTO's patent file. What I have is my prosecution file which contains, among other things, privileged communications between my patent attorney and myself.

Besides, in our telephone conversation of June 10, you stated that one of the research centers (I believe it was LARC) had already ordered the file.

(11) *Pertinent prior art known to claimant, not contained in the Patent Office file, particularly publications and foreign art.*

I have found no relevant prior art.

However, there is an interesting article in the June 2, 2003 issue of *Aviation Week & Space Technology* on pages 48-51 entitled **GA Riding 'Highway-in-the-Sky'** which describes, among other things, the work of Dennis B. Berlinger, lead scientist for flight deck research at the FAA's Civil Aeromedical Institute (CAMI) regarding what is called **Performance-Controlled Systems**. In the Specification of my '724 patent I call it **First Order RPV Flight Control Mode**. In Claim 18:

18. The station of claim 13, wherein said set of remote flight controls are configured to allow inputting absolute pitch and roll angles instead of pitch and roll rates.

An Internet search turned up Mr. Berlinger's report **Applying Performance-Controlled Systems, Fuzzy Logic, and Fly-By-Wire Controls to General Aviation** as DOT/FAA/AM-02/7.

I am pleased that Mr. Berlinger's May 2002 study confirms the value of Performance-Controlled Systems in piloted aircraft and I believe that teaching it in my '724 patent (filed January 19, 1999) gave an additional novel and useful aspect to my invention.

(The article also describes the Synthetic Vision system used in the FAA's Capstone program.)

If you have any further questions, please contact me.

Sincerely yours,

Jed Margolin

Enclosed: Response from General Wald
AWST article
Berlinger Report
U.S. Patent 5,904,724

02825



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

13 Aug 02

HQ USAF/XO
1630 Air Force Pentagon
Washington, DC 20330-1630

Mr. Jed Margolin

[REDACTED]

b (6)

Dear Mr. Margolin

On behalf of Secretary Roche, thank you for providing your ideas on ways to improve UAV control technology. As you know, we are now operating the Global Hawk and Predator systems in reconnaissance roles, and envision expanding unmanned aircraft applications into the weapons delivery mission area with the UCAV and the Predator/Predator B aircraft. Certainly we see a growing role for UAVs in the Air Force as technology advances and we gain experience in their operation. The improved control methods you have patented may well play a part in future UAV design. I suggest that you present these concepts to the various UAV manufacturers who are in the business of designing systems to meet our operational requirements. They can offer the best assessment on the overall feasibility of integrating your technology. I suggest a similar approach regarding your patented laser techniques.

Again, thank you for taking the time to offer these suggestions. I admire your ingenuity, and appreciate your desire to help us improve our national defense capabilities.

Sincerely

CHARLES F. WALD, Lt Gen, USAF
Deputy Chief of Staff
Air & Space Operations

cc:
SAF/AQ
AF/XOR

02826



US005904724A

United States Patent [19] Margolin

[11] Patent Number: **5,904,724**
[45] Date of Patent: **May 18, 1999**

[54] **METHOD AND APPARATUS FOR REMOTELY PILOTING AN AIRCRAFT**
[76] Inventor: **Jed Margolin, 3570 Pleasant Echo, San Jose, Calif. 95148**

5,406,286 4/1995 Tran et al. 342/13
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"US GeoData Digital Line Graphs", U.S. Dept. of the Interior, U.S. Geol. Surv. Earth Sci. Info Ctr. (Factsheet) Jun. 1993.
"US GeoData Digital Elevation Models", U.S. Dept. of the Interior, U.S. Geol. Surv. Earth Sci. Info Ctr. (Factsheet) Jun. 1993.
Shifrin, Carole A., "Gripen Likely to Fly Again Soon," *Aviation Week & Space Technology*, Aug. 23, 1993, pp. 72-73.

[21] Appl. No.: **08/587,731**
[22] Filed: **Jan. 19, 1996**
[51] Int. Cl.⁶ **G06F 165/00; H04N 7/18**
[52] U.S. Cl. **701/120; 701/2; 701/24; 244/189; 244/190; 348/114**
[58] **Field of Search** **364/423.099, 424.012, 364/424.013, 424.021, 424.022, 449.2, 449.7, 460, 439, 424.028; 340/825.69, 825.72, 967, 989, 991, 992, 993; 244/189, 190, 181, 17.13, 3.11, 3.15; 348/42, 51, 113, 114, 117, 123, 143; 382/154; 395/118, 119, 125**

Primary Examiner—Tan Q. Nguyen
Attorney, Agent, or Firm—Blakely, Sokoloff, Taylor and Zafman LLP

[56] References Cited

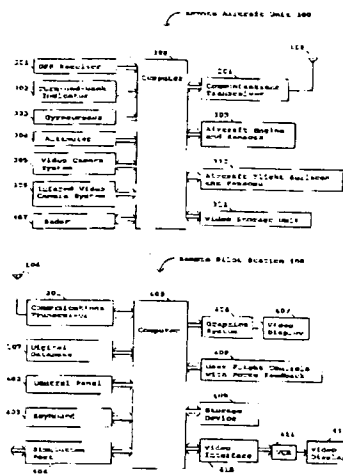
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[57] ABSTRACT

A method and apparatus that allows a remote aircraft to be controlled by a remotely located pilot who is presented with a synthesized three-dimensional projected view representing the environment around the remote aircraft. According to one aspect of the invention, a remote aircraft transmits its three-dimensional position and orientation to a remote pilot station. The remote pilot station applies this information to a digital database containing a three dimensional description of the environment around the remote aircraft to present the remote pilot with a three dimensional projected view of this environment. The remote pilot reacts to this view and interacts with the pilot controls, whose signals are transmitted back to the remote aircraft. In addition, the system compensates for the communications delay between the remote aircraft and the remote pilot station by controlling the sensitivity of the pilot controls.

20 Claims, 7 Drawing Sheets



GA Riding 'Highway-in-the-Sky'

General aviation sector reaps the benefits of research originally conducted for military, commercial transport cockpits

BRUCE D. NORDWALL/WASHINGTON and OKLAHOMA CITY

General aviation aircraft are finally catching up with some of the advances found in the latest commercial transports and military cockpits, and in one particular sphere—display innovations—GA is actually taking the lead.

Researchers in industries and universities around the world have been pursuing a more intuitive guidance display for pilots for years. In general, this elusive presentation is referred to as highway-in-the-sky (HITS) (*AW&ST* Apr. 20, 1998, p. 58). In a twist that may foreshadow future advances, it was a general aviation aircraft that received the FAA's first certification of HITS technology for navigation guidance.

Instead of following course deviation

indicators and altimeters, a pilot using this HITS presentation flies through a series of 3D boxes on a multifunction display. By maneuvering through the 400 X 320-ft. boxes spaced at 2,000-ft.

Flying through "boxes in the sky" keeps pilots on course and altitude during a simulated curved instrument approach down the mountainous Gastineau Channel to Juneau, Alaska.

intervals along the planned GPS route of flight, the pilot keeps the aircraft on course and altitude, which is particularly helpful for a descending, curved instrument approach.

L.A.B. Flying Service's Piper Seneca made the first commercial revenue flight



using HITS in Juneau, Alaska, on Mar. 31. It followed an optimized area navigation (RNAV) route through airspace that would be inaccessible with conventional avionics.

The system was built by Chelton Flight Systems as part of the second

phase of the imaginative Capstone program, an FAA industry/academic partnership in Alaska. The cockpit employs a Chelton FlightLogic electronic flight information system-synthetic vision (EFIS-SV) using two glass displays, one for primary flight guidance and one for navigation.

The big innovation is the use of synthetic vision symbology to present information to pilots. The initial EFIS systems digitally replicated the rudimentary attitude and flight-director symbols of electro-mechanical instruments from an earlier era. Now, in addition to the flight path, pilots see a real-time 3D view of the terrain and obstacles on the primary flight display. These are complemented by a moving map on the navigation display and by aural terrain warnings.

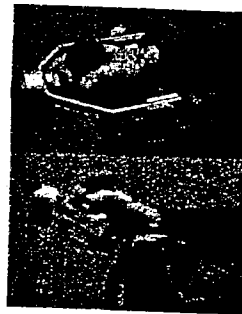
Among the other "firsts" claimed by Capstone Phase II on the Juneau flight were the use of forward-looking 3D terrain and HUD symbology on a certified primary flight display, and commercial

Automatic Dependent Surveillance-Broadcast (ADS-B) equipment. (*AW&ST* Sept. 18, 2000, p. 68). With GPS as the enabling technology, that phase indicated that a low-cost system could give

bush pilots many of the safety benefits long-standard for commercial jet transports. The emphasis was on reducing controlled flight into terrain accidents for these pilots, who usually operate out of the range of navigation aids or radar help from ATC. Phase II with HITS and synthetic vision greatly expands those capabilities.



The navigation display shows GPS WAAS position and an approach not possible with conventional navigation aids due to a 20-30-deg. turn after the GASTN waypoint to align with the runway.



CAMI tested a four-axis side-arm controller in a simulator as a replacement for stick and throttle in a fly-by-wire performance control system.

use of the GPS wide-area augmentation system (WAAS).

Capstone has equipped three aircraft in Alaska with the Chelton Flight Systems' cockpit, and plans to outfit every commercial operator in SE Alaska within the next 18 months. The contract for 125 aircraft could expand to up to 200, according to Gordon Pratt, Chelton's president. The FAA is providing the equipment at no charge in Alaska to any commuter and on-demand (FAA Part 135) operator of fixed-wing aircraft or

The next major safety enhancement for GA aircraft could come from "performance control," according to Dennis B. Beringer, lead scientist for flight deck research at the FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City. While known more for assisting FAA's Aircraft Certification Service and Flight Standards in defining requirements for both aircraft and pilots, CAMI is also an active partner in human factors research to improve cockpits.

lot relaxes pressure, thus bringing the aircraft to straight and level flight.

The reduced number of control movements is one reason flying is easier. Going into a turn with conventional controls, the pilot has to initiate the roll, and then neutralize the ailerons when he achieves the desired bank angle. But with performance controls, one movement establishes the desired bank angle/turn rate. One downside to performance control with envelope protection is the inability to do aerobatics, such as an aileron roll or loop, Beringer said.

In the four-axis side-arm controller (above), rotating the wrist governs the rate of turn, flexing the wrist vertically directs the rate of climb or descent, and fore and aft movement varies the airspeed. Interest in performance controls was renewed with NASA's Agate (Advanced General Aviation Transport Experiments) program, which was concerned with simplifying the flight task and reducing ab initio training requirements. Agate has also been a strong supporter of HITS.

Researchers had previously found that with performance control, non-pilots could learn to fly a simulator in 15 min. Beringer tested the system in a simula-

With performance control, non-pilots could learn to fly a simulator in 15 min.

helicopters. A supplemental type certificate for helicopters was scheduled to be delivered on May 31. An additional 10 aircraft are being outfitted in the contiguous U.S., Pratt said, but at the expense of aircraft owners.

The first phase of the Capstone Program started as a demonstration that equipped a number of commuter and air taxi aircraft in the Yukon-Kuskokwim River delta area with a low-cost GPS, a terrain database, data link and

The performance-control concept was introduced in the 1970s, before electronics were sufficiently advanced for implementation. Beringer said that now some of the fly-by-wire military and commercial aircraft use what could be legitimately called performance-control logic, which not only make aircraft easier to fly, but can also add flight envelope protection.

With conventional flight controls, a pilot has direct command of the aero-

tor configured as a Piper Malibu at CAMI. It used HITS displays and a four-axis side-arm controller. Twenty-four individuals with varying flight experience participated: six high-flight-time pilots; six low-flight-time pilots; six student pilots, and six non-pilots. Each flight involved a takeoff into instrument conditions, a continuous climb while turning downwind, a turn to intercept the instrument landing system glidepath, and a descent to landing. Flights were divided between use of a conventional yoke and the side-arm controller.

The findings were consistent. The aircraft was more stable and had less variations in course and altitude using performance control than with conventional controls. Although experienced pilots

The **big** **innovation** is use of synthetic vision symbology

always outperformed less-experienced individuals, with either system, all agreed the effort required was nearly halved.

Performance control is not apt to be seen in Piper Cubs, but perhaps in Beech Bonanzas and Piper Malibus. A lot of them already have two- or three-axis autopilots, so a significant capability could be achieved by rigging a side-stick control to the autopilot, Beringer said.

But two large problems must be overcome for performance controls to appear in the next generation of GA aircraft. The first is cost. Affordable and certifiable computer controls and servos would have to drop to a level competitive with more conventional systems.

Second, a fly-by-wire debate must be resolved. Could an affordable system be built with sufficient reliability using triple- or quad-redundancy, or would a costly manual-reversion be required? A mechanical backup would add cost for installation and for training pilots to operate the two systems.

Complicating that issue is the question of the level of reliability required. The FAA's current standard for a flight-critical system is a failure rate of 10^{-9} . While this is a standard for NASA, it might not be reasonable for general aviation aircraft. Beringer points out that the failure rate for humans is about 10^{-3} . ●

Reference 6 (1 page)

Jed Margolin
[REDACTED]
[REDACTED]

[REDACTED]
January 8, 2004

Mr. Alan J. Kennedy
Director, Infringement Division
Office of the Associate General Counsel
National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

b(6)

Attn: GP(02-37016)

Dear Mr. Kennedy,

I am disappointed to hear that the investigation that you promised would take 3-6 months has not been completed.

As per our telephone conversation of 10 December 2003, please confirm that you believe the Statute of Limitations gives NASA the right to take up to six years to rule on my claim for compensation for the use of my patent.

Also, please confirm that you expect NASA to reject my claim for compensation on the grounds that the X-38 never flew.

Sincerely yours,

Jed Margolin

Jed Margolin

02831

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Reference 1 (1 Page)

National Aeronautics and
Space Administration
Langley Research Center
100 NASA Road
Hampton, VA 23681-2199



May 14, 2003

Reply to Attn of: 212

Jed Margolin
3570 Pleasant Echo Drive
San Jose, CA 95148

Subject: Infringement Inquiry

Dear Mr. Margolin,

I received notice of your belief that NASA may have infringed one or more of your U.S. patents. In order to address your concerns, we need to receive some more detailed information. Please provide the titles and patent numbers of any patents you feel NASA may have infringed. Please also provide a description of any actions by NASA leading to your belief of possible infringement. Finally, please specify in detail how those actions constitute infringement of your patent(s). This information will allow us to evaluate your assertion and respond and/or react appropriately. Thanks for contacting us. I look forward to hearing from you soon, and discussing your concerns further.

Cordially,

A handwritten signature in cursive script, appearing to read "Barry V. Gibbens".

Barry V. Gibbens
Patent Attorney
Technology Commercialization
Program Office

San Jose, CA 95148-1916
May 18, 2003

[Redacted]

Mr. Barry V. Gibbens
National Aeronautics and Space Administration
Langley Research Center

[Redacted]

b(6)

Attn: 212

Dear Mr. Gibbens,

This is in response to your letter dated May 14, 2003.

As we discussed in our telephone conversation on May 16, the information you have requested was supplied in my email to Mr. Kurt Hammerle on May 12, 2003.

After I emailed my inquiry to Mr. Jesse Midgett on May 12, I discovered the web page for the Patent Counsel Office and contacted Mr. Hammerle by telephone.

I apologize for any confusion this may have created.

As a result of more searching I have discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Software at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

{ The emphasis on teleoperation of remotely piloted vehicles is mine. }

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[Redacted]
Mike Abernath
01 H6.02-8715 JSC
Integrated Video for Synthetic Vision Systems

b(6)

For 2001 Phase II:

Rapid Imaging Software, Inc.

[Redacted]
[Redacted]
Carolyn Galceran [Redacted]

b(6)

01-2-H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

If there is any additional information regarding my patents that you would find helpful please let me know.

Sincerely yours,

Jed Margolin

Jed Margolin



NASA SBIR SUCCESSSES

Johnson Space Center
1998 Phase II

LandForm VisualFlight™

Rapid Imaging Software, Inc.

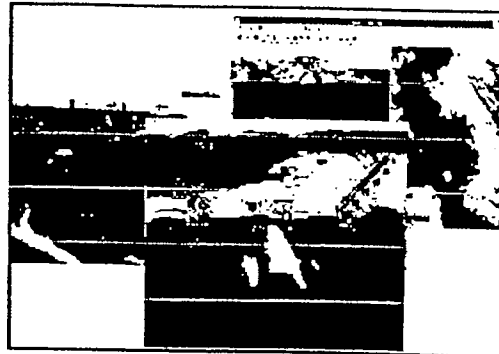
Albuquerque, NM

INNOVATION

LandForm VisualFlight™ is the power of a geographic information system (GIS) and the speed of a flight simulator, accessible from any Windows application.

ACCOMPLISHMENTS

- The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.
- AFVT will enhance the ability of analysts and operators to interact with large amounts of multidimensional data using the most natural paradigm available: 3D immersion. This operator/data interaction technology will be an advancement comparable to the invention of the Heads-Up Display (HUD). AFVT will move the HUD into the third dimension.
- A simplified user interface, it will fuse real-time 3D displays of terrain with digital maps, satellite data, vehicles, flight paths, and waypoints. This unique and innovative approach will build upon recent software technology research and development from Rapid Imaging Software. VisualFlight™ permits users to construct and deploy their own immersive multidimensional display applications on Windows-based computer platforms.



Optional Powerpoint file

COMMERCIALIZATION

- VisualFlight™ is sold as a development kit starting with 5 run-time licenses. Users who wish to distribute more applications

GOVERNMENT/SCIENCE APPLICATIONS

- The firm's VisualFlight™ System was used to fly the X-38 on it's latest test flight. The flight vehicle was piloted by astronaut (Ken Ham) using LandForm VisualFlight

using LandForm VisualFlight™ technology can purchase additional run-time licenses as needed.

- VisualFlight™ 1.0 has been available to qualified users for several months now, and the response is excellent. VisualFlight™ has been deployed to display live real-time flight data broadcast over a network. Please visit this page for the latest VisualFlight™ developments.
- LandForm V/O Video Overlay plug-in for LandForm C3 or Flight Vision is available for the Matrox Corona board only. The price is \$4995 for a # single users license. Site license is available for \$6995.

system as his digital cockpit window.

For more information about this firm, please send e-mail to: [company representative](#)

[Return to NASA SBIR Success Listings](#)

Curator: [SBIR Support](#)

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[REDACTED]

From: Fein, Edward K. (JSC-AL)
Sent: Monday, September 29, 2008 4:03 PM
To: McNutt, Jan (HQ-MC000)
Subject: RE: Margolin Patent Infringement Claim

Jan ... You will recall, I forwarded you a bunch of email exchanges, including some with Mike Abernathy of Ropid Imaging. I'm pasting the stuff below. You may want to communicate directly with Mike. I suspect he'll be able to answer all your questions, and save us all some time.

His email address is [REDACTED]

b(6)

And website: <http://www.landform.com/>

Phone: [REDACTED]

I'll be happy to participate on any telecon or whatever.

-Ed

RE: Patent Infringement claim from Jed Margolin; NASA Case No. I-222

From: Fein, Edward K. (JSC-AL) [REDACTED]
To: McNutt, Jan (HQ-MC000) [REDACTED]
CC: Borda, Gary G. (HQ-MC000) [REDACTED], Rotella, Robert F. (HQ-MA000)
Date: Aug 06 2008 - 2:29pm

b(6)

 Claims Analysis of Patent.doc - 2.1MB - [View in Outlook](#)

Jan ... I do vaguely recall this matter, but don't recall the outcome. I'm copying below tons of stuff I found on my computer using Google Desktop. I have not reviewed what I'm sending. There no doubt a good deal of redundancy, for which I apologize.

It looks like Langley may have taken the lead on this. Barry Gibbens at Langley appears to have worked it. Regrettably, Barry is deceased -- a very sad story for another time. But Linda Blackburn may be of some assistance.

Let me take this opportunity to welcome you to the NASA team. I look forward to meeting you in the not too distant future.

-Ed

RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

From: Mike Abernathy <HYPERLINK [REDACTED]>
To: 'Delgado, Francisco J. (JSC-ER2)' <HYPERLINK [REDACTED]>
[REDACTED] 'Fein, Edward K. (JSC-AL)' <HYPERLINK [REDACTED]>
[REDACTED] Kennedy, Alan J. (HQ-MC000)' <HYPERLINK [REDACTED]>
[REDACTED] <HYPERLINK [REDACTED]>
CC: Fredrickson, Steven L. (JSC-ER)' <HYPERLINK [REDACTED]>

b(6)

Date: Sep 26 2006 - 12:13pm

02864

Thank you very much. It means very much to Carolyn and I right now.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Delgado, Francisco J. (JSC-ER2) [mailto:HYPERLINK [REDACTED]]

Sent: Monday, September 25, 2006 9:42 PM

To: Mike Abernathy; Fein, Edward K. (JSC-A1); Kennedy, Alan J. (HQ-MC000); HYPERLINK [REDACTED]

Cc: Delgado, Francisco J. (JSC-ER2); Fredrickson, Steven E. (JSC-ER)

Subject: FW: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

b(6)

See email from "Mr. Adams" below.

This is getting more ridiculous by the minute. I have resisted replying in any form as suggested by JSC council. However, this matter has been left open for quite some time and something needs to be done NOW. It has come to my attention that Mr. Adams and company have issued a letter that prohibits RIS from selling any of their software until this issue is resolved. We have had a very "intellectually" fruitful relationship with RIS for almost a decade and would like to continue this relationship for many years to come. Some of the technology concepts in question were co-developed by RIS and I during many "brainstorming sessions" on how to provide optimal situation awareness to various users.

The folks pressing forward with this claim do not have solid ground to stand on (IMHO). Based on the previous research performed, I do not see how their patent claims are valid and I would like to request that NASA's council take this matter seriously and get the patents invalidated (as it should have been done when this first showed up a couple of years ago). This is not only the right legal thing to do, but also the right moral thing to do. If we allow an individual to continue to harass small companies and stand-by with little/no action, then we are no better than the company doing the harassing. As a government organization, we need to keep the public faith and trust and again, "do the right thing." I realize that patience is important in legal matter, but believe that the time for sitting idle and hoping that this matter goes away is way past due and that something needs to be done ASAP. Putting companies that NASA relies on to help move technology forward out of business with a barrage of unwarranted litigation does not seem like it is in NASA's (or our taxpayers) best interest.

Please let me know what I need to do on my end to help move this along.

BTW: If we do not deal with issue immediately it will only get worse for NASA. I know of several Projects within JSC, JPL, and Langley that use independently developed technology (i.e. technology that does not use what RIS and I came up with) that I am sure Mr. Adams and company would claim infringes on their "Patents." We seem to be on his radar at the moment because we do what government organizations are encouraged to do ("Publish their work").

Thank You,

Frank Delgado

From: Robert Adams [mailto:HYPERLINK [REDACTED]]

Sent: Mon 9/25/2006 5:58 PM

To: Delgado, Francisco J. (JSC-ER2)

Subject: RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that

b(6)

cover said technology that RIS and your groups are using.

Sir,

Since you have clearly refused to cooperate, please provide us your department's heads information and said contact information including a contact in your IP litigation department. We are aware that you received your read receipt of our email sent to you regarding:

Let us chat on about SCOUT, SC3D, the X-38 program, and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We simple have one goal in mind and that is have a chat regarding the technology and that RIS and NASA take a license of said IP technology.

Thank you

From: Delgado, Francisco J. (JSC-ER2) [mailto:HYPERLINK [REDACTED]]

b(6)

Sent: Tuesday, September 19, 2006 7:30 AM

Subject: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

Your message

To: Delgado, Francisco J. (JSC-ER2)

Cc:

Subject: Let us chat on about SCOUT, SC3D, the X-38 program and RIS;

noted below are our patents that cover said technology that RIS and your groups are using.

Sent: Tue, 19 Sep 2006 08:52:25 -0500

was read on Tue, 19 Sep 2006 09:30:05 -0500

RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

From: Fein, Edward K. (JSC-AL) <HYPERLINK [REDACTED]>

To: Delgado, Francisco J. (JSC-ER2) <HYPERLINK [REDACTED]>

[REDACTED], Kennedy, Alan J. (HQ-MC000) <HYPERLINK [REDACTED]>

Date: Sep 26 2006 - 10:58am

Frank ... I've talked with Alan, and he said he'd respond, and give you a call.

b(6)

02865

-Ed

RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

From: Mike Abernathy <HYPERLINK [REDACTED]>

To: 'Delgado, Francisco J. (JSC-ER2)' <HYPERLINK [REDACTED]>

>, 'Fein, Edward K. (JSC-AL)' <HYPERLINK [REDACTED]>

, 'Kennedy, Alan J. (HQ-MC000)' <HYPERLINK [REDACTED]>

, <HYPERLINK [REDACTED]>

CC: 'Fredrickson, Steven E. (JSC-ER)' <HYPERLINK [REDACTED]>

Date: Sep 26 2006 - 12:13pm

Thank you very much. It means very much to Carolyn and I right now.

b(6)

Mike Abernathy

Rapid Imaging Software, Inc.

From: Delgado, Francisco J. (JSC-ER2) [mailto:HYPERLINK [REDACTED]]

Sent: Monday, September 25, 2006 9:42 PM

To: Mike Abernathy; Fein, Edward K. (JSC-AL); Kennedy, Alan J. (HQ-MC000); HYPERLINK [REDACTED]

Cc: Delgado, Francisco J. (JSC-ER2); Fredrickson, Steven E. (JSC-ER)

Subject: FW: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

b(6)

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Sent: Mon 9/25/2006 5:58 PM

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b(6)

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United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We simple have one goal in mind and that is have a chat regarding the technology and that RIS and NASA take a license of said IP technology.

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Sent: Tuesday, September 19, 2006 7:30 AM

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b(6)

Your message

To: Delgado, Francisco J. (JSC-ER2)

Cc:

Subject: Let us chat on about SCOUT, SC3D, the X-38 program and RIS;

noted below are our patents that cover said technology that RIS and your

groups are using.

02868

Sent: Tue, 19 Sep 2006 08:52:25 -0500

was read on Tue, 19 Sep 2006 09:30:05 -0500

b(6)

FW: and the very last communication of the day
From: Fein, Edward K. (JSC-AL) <HYPERLINK [REDACTED]>
To: Kennedy, Alan J. (HQ-MC000) <HYPERLINK [REDACTED]>
CC: Borda, Gary G. (HQ-MC000) <HYPERLINK [REDACTED]>
Date: Sep 26 2006 - 8:11am

PSISDG_3691_1_149_1.pdf - 4.7MB - HYPERLINK
"http://127.0.0.1:4664/openemail&product=18?id=0000000060DD3C97DBDF854FA0DFC12DCB24F757070098EA6B27A73A274AA37D2D68E1AAD96C000000B46F20000B906DD4ED66CD544937253A0E58AC1C900000108565A0000%5F213&action=d&s=2j9jyPjw8GDx3QdGj2q_fGI5wD0" View in Outlook

fyi ...

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 8:18 PM
To: Delgado, Francisco J. (JSC-ER2); Fein, Edward K. (JSC-AL)
Subject: FW: and the very last communication of the day

Mike Abernathy

Rapid Imaging Software, Inc.

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 6:25 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA); DELGADO FRANCISCO J. (FRANK) (HYPERLINK [REDACTED]); Kennedy, Alan J. (HQ-MC000);
HYPERLINK [REDACTED]; HYPERLINK [REDACTED];
'Moore, Thomas, Mr, OSD-ATE'; Davey, Jon (Bingaman)'
Subject: and the very last communication of the day

b(6)

Hi All,

Let me summarize what I think has just happened to our company.

In late 1995 we introduce our LandForm synthetic vision system to the market as COTS software product.

In 1997/8 we sell this to NASA and together we are the first people on earth to create a synthetic vision flight guidance system for a remotely piloted vehicle. Starting in 1998 the X38 is captive carried and test flown using this system. We documented our success in the attached document written in 1998 and published in early 1999. It was my privilege to be at Edwards when it happened, and is the highlight of my career until the program is cancelled in 2002.

We go on and demonstrate that our software can be used as pilot aid to other UAVs including Predator, Shadow, Tern, and many more. We receive no interest in this application, but instead they use it for sensor operator stations. It is a commercial success and people say good things about it. It is sold to mostly to a commercial UAV manufacturer named AAI Corporation. Many tests are done and the military guys all like it.

In 1999 the patent office issues a patent to a former Atari employee named Margolin for a Synthetic Environment for Remotely Piloted Vehicle. He had evidently applied for it in 1996. Shortly thereafter he begins to complain to NASA that they and RIS infringed upon his patent presumably by flying a system 2 years before he received his patent. Is this a joke?

In 7 years he never so much as asked RIS about using his technology. Margolin as best I can tell never built this system and never test flew it. Can't say as I blame him because his system looks to me like a crater looking for an address. It cannot be safely operated in the form patented (no autopilot). No one is even stupid enough to build it this way, not even him.

Sometime after that, I am alerted to the patent. I read it, but since there are major differences in the way X-38 worked with our software, I felt strongly that we had not infringed. I provide this information, plus evidence of prior art to NASA legal counsel. I am troubled because really I can't see how his system could fly because it would fail during link loss. Margolin also had a patent on synthetic vision for manned aircraft (if you can imagine) and we found copious prior art for that. I am also troubled because I never hear that the request for reexamination has been sent in by NASA.

Last week I received an email from Optima technology group threatening (thinly veiled) to destroy our relationships with our customers and sue us if we don't license their technologies. We explain that we do not sell software for use in piloting unmanned aerial vehicles any more owing to insurance which is true. We had demonstrated this in the past, but there really is not much market that we could see. We also explained that we had not infringed and why we thought we had been respectful of their patent, but they just tried to make it look like we infringed. But we did not.

They know we cannot withstand the onslaught of their lawsuits, even though we are clearly and obviously not guilty of infringement. They think that we will have to fold and accept their license, but we cannot do this because they are legal blackmailers, and because they are selling defective technology. If we give in, then they will just destroy some other little companies they way they did ours. And we cannot let anyone pay them off for us, because that just gives them funds to go destroy another company. For many years our company has tried to provide an innovative product with an excellent value and never compromise our integrity. I cannot let this nonsense bring that to an end by pretending that we are licensing technology when what they are selling is a fraud.

When I asked politely if their system has ever been tested Mr. Adams simply tells us to go get a lawyer, he is referring the matter for filing. I felt that it was not unreasonable to ask to know this but it really made him furious. Anyway I told him to tell it to our lawyer Mr. Ben Allison of Sutinfirm with whom I shall meet tomorrow. Tonight they said that they will issue a cease and desist order, which I believe means that we will be unable to sell our software anymore which will destroy our income stream and that will be it. I can't waste anymore time on this now. It is time for me to get back to work on things that matter for our users.

I have a docs appointment tomorrow at 8-10 local time. I had throat surgery recently so I really can't talk and frankly I find I tend to break into tears very frequently when I try to do so. But I want you all to know that I will stand firm until it is over. What would the soldiers who have used our software in combat think of me if I gave ground? Then bring it on.

I know it sounds bad for us right now, but remember that whatever happens to us no one can take away the honor and the privilege of working with NASA, the OSD, and all the other completely excellent people with whom we have worked.

Mike Abernathy

Rapid Imaging Software, Inc.

Attached are the other communications from them.

From: Robert Adams [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 3:51 PM
To: 'Mike Abernathy'
Subject: RE: license

b(6)

Mike,

Let me try and be clear, all such development at OTG on behalf and or/or by our licensee is covered by NDA's and thus our company can be sued should we violate such agreements. As to your company's infringement of our patents, since that was clearly not covered by a NDA with us; please provide said information in detail:

Other than those items listed at your website and NASA's, what other projects did you do that infringed on our invention? If so when, where, and how?

Who at NASA flight-tested your product that used our invention? Please provide us with the name of the Pilot in Command, the responsible Flight Test Engineer, the model and block number of the vehicle and GCS, and the range or location at which such testing might have taken place with NASA and others. Also, indicate the dates of such testing. If flight test reports are available, as well please provide them to us.

Mike, I have no time to play games with someone who clearly infringes and thinks nothing of respecting our IP.

I will forward said matter to our legal department for further research and filing in accordance with the Federal laws. Please have your legal IP counsel contact our attorneys.

Robert Adams

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 2:26 PM
To: 'Robert Adams'
Subject: RE: license

b(6)

Robert,

You have offered to license your technology to our company. You have stated that this technology is useful for "see and avoid applications" for UAVs which is an interesting market arena. We are making a good faith effort to consider your offer. We must know whether this technology has been brought into existence and whether it was ever test flown as a matter of due diligence.

We are not asking these questions out of idle curiosity and we certainly not trying to be difficult – we need this information in order to know the market value of the technology to our users, and there are certain elements of the method that we have concerns about. A flight test report – even if the system was implemented on a model airplane – will almost certainly allay our concerns and we can get on with this. The fact of whether or not this technology has been tested does not require an NDA.

Robert, throughout our dealings I have been honest and responsive to all of your requests, perhaps at peril to our company. I now ask you to please reciprocate my efforts in a small way and provide the requested information so that we may consider your offer of license.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 2:49 PM
To: 'Mike Abernathy'
Subject: RE: license

b(6)

Mike,

Neither the company nor I are in any way anxious in signing any more licensees's as we have many already, but as you know we must protect our patents in order to preserve said Intellectual Property.

As to your questions, they do not relate to a license and/or a licensee. Our Intellectual Property has been tested in court and is proven solid by far such standards the Federal Court including the Federal Appeals Court. In addition, as to matters of disclosure, all such development at OTG and by our licensee is covered by NDA's.

Should you wish to challenge such, then I advise you to seek proper legal counseling as we are not an attorney nor will ours advise you on such a matters.

Your company has clearly infringed and OTG must protect itself against such matters just as your company would do if in the same position.

Robert Adams

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 1:29 PM
To: 'Robert Adams'
Subject: license

b(6)

Dear Robert,

Please tell the legal team thanks for getting back to us right away – we appreciate it.

You have asked us to consider licensing and this we are now doing. In the interest of due diligence as a prospective licensor of your technology, we ask that you provide us with the following information about the subject invention:

Was this invention ever constructed? If so when, where, and how?
Was this invention ever flight tested? Please provide us with the name of the Pilot in Command, the responsible Flight Test Engineer, the model and block number of the vehicle and GCS, and the range or location at which such testing might have taken place. Also, indicate the dates of such testing. If flight test reports are available please provide them to us, as well.

I know that you are anxious for us to consider your license offer, please provide us with this information.

Mike Abernathy

Rapid Imaging Software, Inc.

latest from Optima

From: Mike Abernathy <HYPERLINK [REDACTED]>
To: FEIN, EDWARD K. (JSC-HA) (NASA) <HYPERLINK [REDACTED]>
Kennedy, Alan J. (HQ-MC000) <HYPERLINK [REDACTED]>
Date: Sep 25 2006 - 3:08pm

b(6)

image002.gif - 6.9k - HYPERLINK
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213&action=d&s=nbULrgK1zT1E8HP8EWuTxGuDI9o" View in Outlook

Ed,

This has not blown over. We would rather lose our company than see NASA hurt by this. Ed, it appears that RIS situation is hopeless. They know that we did not infringe, yet they continue because they know that we lack the funds to fight them. Our situation appears hopeless but we cannot accept a license for technology that we know is dangerous to the public, so I cannot accept this deal that they have offered.

Let us know what you think as soon as possible.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 23, 2008 12:26 PM
To: 'Mike Abernathy'
Subject: Privileged and Confidential Settlement Communications Protected Under Rule 408 of the Federal Rules of Evidence

b(6)

Privileged and Confidential Settlement Communications Protected
Under Rule 408 of the Federal Rules of Evidence

Mike,

My legal team has read your response and it is a personal shame since you would rather cut and run verse facing the facts and take a license for past and future business, as I am sure it would be substantially less then litigation.

As you have been made aware in our prior communications, among other inventions, the Patents protect a number of features that are implemented in products capable of flying any and all UAV's (1.3) remotely and/or using Synthetic Vision and/or using a synthetic environment.

1.1 "Patent Portfolio" shall mean the portfolio consisting of United States Patent Numbers 5,904,724 (Method and Apparatus for Remotely Piloting an Aircraft), 5,566,073 (Pilot Aid Using a Synthetic Environment), and those future United States patents that may be added in accordance with the covenants and warranties.

1.2 "RPV" shall mean "remotely piloted vehicle." A "remotely piloted aircraft" is an RPV. "UAV" shall mean "unmanned aerial vehicle." RPV is an older term for UAV. "UCAV" shall mean "Unmanned Combat Aerial Vehicle." UCAV is also sometimes defined as an "Uninhabited Combat Aerial Vehicle." UCAV is a UAV that is intended for use in combat. UCAS means "Unmanned Combat Air System."

1.3 "Synthetic Vision" is the current term for "Synthetic Environment" and is the three dimensional projected image data presented to the pilot or other observer.

Of the ten companies responsible for the establishment of UAV Specifications or standard, eight of those companies sell UAV-Devices under brands they control, and each of those companies, i.e., Boeing Aerospace; Lockheed; Nakamichi Corporation; General Atomics Corporation; L-3 and Jacor Corporation; Raytheon; and Geneva Aerospace, pay Optima running royalties for the above referenced patents.

The substantial terms and conditions of our licensing Agreement: i) resulted from negotiations with the market leading manufacturers of UAV's; ii) are subject to most favored nation clauses; and iii) are, therefore, not negotiable.

The Agreement i) is exceedingly fair; ii) does not obligate Infringer to anything more than an industry accepted reasonable royalty for the Patents; iii) does not obligate Infringer to anything more than an industry accepted reasonable terms; and iv) may be canceled by Infringer at any time.

Mike, there is no reason to permit Infringer (Your company) to further drag on the execution of said Agreement based on the facts present on the infringement matter.

Infringer must appreciate that the Patents cover a range of different inventions required to implement the UAV using Synthetic Vision Specifications; and there exists pending divisions of the Patents having claims that are read on by implementation of the UAV Specifications. Infringer principal competitors have appreciated the exceptional litigation strength and flexibility of my patent portfolio and have decided to accept a license rather than expose themselves to an injunction.

Infringer must appreciate that if litigation between the parties is initiated: i) the matter will immediately become personal for both parties; ii) I do not have to account to any other person; and iii) no license or settlement of any kind will ever be possible under any of my intellectual properties. Infringer's competitors require that Infringer be either licensed or enjoined.

I have resolved myself to this course of action in the event an agreement reached shortly, I firmly believe that enjoining Infringer from selling UAV-Devices will not result in lost royalties; and it is in Optima's long-term interests to make an example of a company that has refused to take a license.

Anyone who is fully knowledgeable of the strength and scope of my patent portfolio, and who appreciates the risk-taking and tenacity that I have demonstrated, would not, in light of the terms being offered, recommend jeopardizing the UAV

business infringer enjoys in the U.S.

1.

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of the patents and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them, we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departments of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

RIS own admission they knew about '724 will go to show that their infringement was willful, which means treble damages Robert. (They probably found out about it when NASA interviewed Jed about their X-38 project.) We will find out at trial and/or during the discover phase.

From their web site: <http://www.landform.com/>

SmartCam3D provides unparalleled situation awareness for UAS sensor operators. It fuses video with synthetic vision to create the most powerful situation awareness technology currently available. SmartCam3D is an augmented reality system that has been developed, flight tested, and deployed in the most demanding conditions including combat, and as a result it is highly evolved technology which is in use today around the world. The reason that SmartCam3D is so popular is simple: it makes sensor operators more effective, and reduces the target response time. SmartCam3D is deployed with US Army Shadow UAV, and is at present being integrated to the USAF Predator, as well as the Army Warrior UAS. SmartCam3D is the war fighter's choice for sensor operator situational awareness.

Improving a patented invention by adding something to it (in this case fusing video with synthetic vision) is still infringement. Indeed, you may be able to patent the improvement. However, you may not practice the improved invention without the permission of the original patent holder. (It also means that the holder of the original patent may not practice your improvement without your permission.)

Since they publicly admit SmartCam3D is being used with US Army Shadow, USAF Predator, and Army Warrior his statement "no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations" is obviously false.

Also from their web site:

Software License Changes

RIS, Inc. changed insurance carriers, and effective September 1st, 2006 we updated our Software User License agreement. It now states that "The user is prohibited from using this software to pilot manned or unmanned aircraft." Our licenses have always prohibited use of our software for piloting manned aircraft. As you know, we had hoped that we would find a market for our UAV Glass Cockpit Product line. However, there is simply not sufficient market interest for us to bring such a product to market at this time, so we have decided not to release it. As a small company, we need to focus on our energy on the Sensor Operator and Intelligence Analyst at this time.

He is saying that his product should not be used for the very purpose it being advertised, sold, and used for. Lame. And it doesn't get him off the hook as he is still legally liable.

Since it did not state this until September 1, 2006, he has started to take this seriously, and he is clearly worried thus, he changed the terms to try to reduce the liability. I will have our team use wayback site and pull up the old Software User License agreement prior to Sept 1, 2006 this is when I bet they made all their sales and that is what OTG would be entitled too as well.

Here is a short lesson on infringement for Mike.

02877

From : http://inventors.about.com/library/bl/toc/bl_patent-infringement.htm

Text Box: Infringement can be direct, indirect, or contributory. Anyone who makes, uses, or sells the patented invention is a direct infringer. If a person actively encourages another to make, use, or sell the invention, the person so inducing is liable for indirect infringement. Contributory infringement can be committed by knowingly selling or supplying an item for which the only use is in connection with a patented invention. Good faith or ignorance is no defense for direct infringement, but it can be for indirect or contributory infringement. The remedies for infringement consist of: 1. Injunctive relief,

2. damages (including treble damages for willful infringement),
3. attorneys' fees in some cases, and
4. court costs.

2.

We discovered that the system described in the patent pertaining to remotely piloted vehicles USP 5,904,724 contains an entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by “adjusting control sensitivity”. This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

The clause he is referring to is:

a set of one or more remote flight controls coupled to said computer for inputting said flight control information, wherein said computer is also for determining a delay time for communicating said flight data between said computer and said remotely piloted aircraft, and wherein said computer adjusts the sensitivity of said set of one or more remote flight controls based on said delay time.

Time delays in a control system are unavoidable. Normally, a control system has fixed time delays and the system is designed to operate properly with these time delays. Because of the complexity of a UAV system these time delays may not be known at the time the system (including the control laws) are designed. These time delays may also change during a mission due to the communications path changing. If the system does not properly deal with these changing time delays it will lead to pilot-induced oscillation and there is a good chance the aircraft will crash.

Anyone designing a UAS that does not adjust for changing time delays is an idiot. I don't think the people making UAVs are idiots. That does not relieve him of contributory infringement. It is likely that these time delays are dealt with as part of the control law system which Abernathy might not be privy to and thus a court order will provide us his insider info.

3.

More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

Most important, the autopilot is absolutely required to deal with the frequent communications outages which occur between the UAV and the ground control segment (This can be anywhere from a second to an hour in length, generally). In the system of Margolin, a communications outage would often result in the loss of the aircraft, because the pilot would be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

The fact that '724 does not explicitly teach an autopilot is irrelevant. Adding an autopilot to '724 is still infringement, just as

adding a video overlay is infringement.

There is also the matter of the Doctrine of Equivalence. See attached file patents1.pdf

Consider Column 2, lines 12-18:

The computers in the system allow for several modes of operation. For example, the remote aircraft can be instructed to fly to given coordinates without further input from the remote pilot. It also makes it possible to provide computer assistance to the remote pilot. In this mode, the remote flight control controls absolute pitch and roll angles instead pitch and roll rates which is the normal mode for aircraft.

That legal sounds like a defined autopilot to me and that as we need to show infringement at the Markman hearing..

4.

There is another on-board component called a SAS or Stability Augmentation System found on most large modern UAVs such as Predator, and which performs additional real-time stabilization to that done by the autopilot. Again, the SAS is not contemplated by the Margolin patent, yet is required to dampen control system oscillations in order to safely operate a UAV in systems that may suffer from communications delays to remote user control inputs. There are many more differences that we found when we first examined it, but as you can see we have never worked with a vehicle upon which your system could have been implemented and safely flown, and therefore we realized that it is impossible for us to have infringed this patent 5,904,724. You may easily independently verify the fact of these profound and fundamental differences from your system by examining the printed published materials regarding UAV control system and NASA's many publications on X-38 control systems.

Again, adding something to '724 is still infringement.

As far as examining the control systems on NASA's X-38 project is concerned, in a telephone conversation with NASA's Alan Kennedy in the Office of the General Counsel on February 9, 2006, he repeated his claim that, "The X-38 does fly." NASA has a video of the X-38 (flying) on its web site. (See <http://www.dfrc.nasa.gov/Gallery/Movie/X-38/HTML/EM-0038-01.html>)

5.

We have never allowed our software to be used as an aid in piloting manned aircraft and thus cannot have infringed 5,566,073. If you aware of anyone doing this with our software, kindly inform us immediately, and we will ask them to desist.

We still have him on infringing on '724.

6.

Finally, let me set your mind at ease by informing you that our software product license currently explicitly contains the following clause: "The user is prohibited from using this software to pilot manned or unmanned aircraft." Alas, the requirements of our current company insurance policy, combined with the profound lack of a market for this possible application of our technology facilitated this business decision. Your letter said we recognize the "value" of this technology, but in view of the current situation "lack of value" is probably more appropriate.

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 9:08 AM
To: 'Robert Adams'
Subject: question

b(6)

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Mike Abernathy

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Subject: RE: Rapid Imaging Software, Inc. patent infringement

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Dear Mr. Adams,

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now

and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departments of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

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Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:HYPERLINK [REDACTED]]
Sent: Tuesday, September 19, 2006 7:53 AM
To: HYPERLINK [REDACTED]
Cc: HYPERLINK [REDACTED]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

b(6)

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

September 19, 2006

Michael F. Abernathy
Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]

b(6)

Sent via US MAIL, FAX & EMAIL

02882

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b(6)

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Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

b(6)

FW: question

From: Mike Abernathy <HYPERLINK "mailto:[redacted]">[redacted]

To: DELGADO FRANCISCO J. (FRANK) <HYPERLINK "mailto:[redacted]">[redacted]

[redacted] Fein, Edward K. (JSC-AL) <HYPERLINK "mailto:[redacted]">[redacted]

[REDACTED] 'Kennedy, Alan J. (HQ-MC000)' <HYPERLINK [REDACTED]>

[REDACTED] <HYPERLINK [REDACTED]>

Date: Sep 25 2006 - 11:44am

One more FYI.

b(6)

Mike Abernathy

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Sent: Tuesday, September 19, 2006 7:53 AM
To: HYPERLINK [REDACTED]
Cc: HYPERLINK "mailto:[REDACTED]"
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

b(6)

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

02888

September 19, 2006

Michael F. Abernathy

Rapid Imaging Software, Inc.

[Redacted]

b(6)

Sent via US MAIL, FAX & EMAIL

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02887

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Optima Technology Group

RA/cp

-enclosure links-

RE: Rapid Imaging Software, Inc. patent infringement

From: Fein, Edward K. (JSC-AL) <HYPERLINK [REDACTED]>

To: Mike Abernathy <HYPERLINK [REDACTED]>

(FRANK) <HYPERLINK [REDACTED]>

DELGADO FRANCISCO J.

CC: Kennedy, Alan J. (HQ-MC000)

Date: Sep 25 2006 - 10:38am

Thanks, Mike.

b(6)

-Ed

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]

Sent: Monday, September 25, 2006 10:32 AM

To: Fein, Edward K. (JSC-AL); DELGADO FRANCISCO J. (FRANK)

Cc: Kennedy, Alan J. (HQ-MC000)

Subject: FW: Rapid Imaging Software, Inc. patent infringement

b(6)

FYI

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02833

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b(6)

02890

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September 19, 2006

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From: Fein, Edward K. (JSC-AL) <HYPERLINK [REDACTED]>
To: Mike Abernathy <HYPERLINK [REDACTED]>, DELGADO FRANCISCO J. (FRANK) <HYPERLINK [REDACTED]>
CC: Kennedy, Alan J. (HQ-MC000) <HYPERLINK [REDACTED]>
Date: Sep 25 2006 - 10:38am
Thanks, Mike.

b(6)

-Ed

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 10:32 AM
To: Fein, Edward K. (JSC-AL); DELGADO FRANCISCO J. (FRANK)
Cc: Kennedy, Alan J. (HQ-MC000)
Subject: FW: Rapid Imaging Software, Inc. patent infringement

b(6)

FYI

Mike Abernathy
Rapid Imaging Software, Inc.

From: Robert Adams [mailto:HYPERLINK [REDACTED]]
Sent: Monday, September 25, 2006 8:55 AM
To: 'Mike Abernathy'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

b66)

Mike,

Thanks for your email, I will forward it today over to my patent and review legal team. Once they complete a review of your comments, I will give you a ring on the phone and a response via the post and/or attorneys.

Respectfully,

Robert Adams

From: Mike Abernathy [mailto:HYPERLINK [REDACTED]]
Sent: Sunday, September 24, 2006 4:29 PM
To: 'Robert Adams'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

b66)

Dear Mr. Adams,

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departments of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

We discovered that the system described in the patent pertaining to remotely piloted vehicles USP 5,904,724 contains an entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by “adjusting control sensitivity”. This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

From: McNutt, Jan (HQ-MC000)
Sent: Thursday, September 25, 2008 3:43 PM
To: Fein, Edward K. (JSC-AL)
Subject: FW: Margolin Patent Infringement Claim

Ed,

[REDACTED]

[REDACTED]

b(5)

[REDACTED]

[REDACTED]

Thanks and Regards, << File: SBIR Margolin Claim.pdf >>
Jan

From: McNutt, Jan (HQ-MC000)
Sent: Monday, September 15, 2008 1:32 PM
To: Fein, Edward K. (JSC-AL)
Subject: Margolin Patent Infringement Claim

Dear Ed,

[REDACTED]

b(5)

[REDACTED]

<< File: RIT SBIR Proposal.pdf >>
Regards,

Jan S. McNutt
Senior Attorney (Commercial)
Office of the General Counsel

02804

NASA Headquarters

[REDACTED]
[REDACTED] W
[REDACTED] 01
[REDACTED]
[REDACTED]

b(6)

This document, including any attachments, contains information that may be confidential, protected by the attorney-client or other applicable privileges, or constitutes non-public information. All content is intended only for the designated recipient(s). If you are not an intended recipient of this information or have received this message inadvertently, please take appropriate steps to destroy this content in its entirety and notify the sender of its destruction. Use, dissemination, distribution, or reproduction of this information by unintended recipients or in a manner inconsistent with its provision is not authorized and may be unlawful.

02895

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[REDACTED]

From: Robert Adams-OTG [radams@optimatechnologygroup.com]
Sent: Tuesday, September 30, 2008 1:04 PM
To: McNutt, Jan (HQ-MC000)
Subject: FW: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.
Attachments: OTG_NASA_25AUG08.pdf; OTG_NASA_Refs.pdf; nasa_usps.pdf

Sir,

[REDACTED]

Dr. Adams

b(4)

From: Robert Adams-OTG [REDACTED]
Sent: Monday, August 25, 2008 3:48 PM
To: 'McNutt, Jan (HQ-MC000)'; [REDACTED]
Subject: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.

b(6)

Sent via U.S. Mail with tracking number

Jan S. McNutt,

Please see the attached letter; it is your response to your most recent letter.

Thank you,

Dr. Robert Adams – CEO
Optima Technology Group

[REDACTED]
[REDACTED]

b(6)

Simply Smarter, Encryption & Aerospace Solutions since 1990! The information contained in this e-mail and any attachments are legally privileged and confidential. If you are not an intended recipient, you are hereby notified that any dissemination, any and all distribution or copying of this e-mail is strictly prohibited without the prior consent of Optima Technology Group (sender). If you have received this e-mail in error, please notify the sender and permanently delete the e-mail and any attachments immediately. You should not retain, copy or use this e-mail or any attachment for any purpose, nor disclose all or any part of the contents to any other person. Thank you.

02897

Main Office
Finance & Operation
1981 Empire Rd.
Reno, NV 89521-7430
Tel: 949-419-6970
Fax: 949-226-7378

August 25, 2008

Jan S. McNutt
Attorney-Advisor (Commercial)
Office of the General Counsel
NASA Headquarters [REDACTED]

[REDACTED] W

b(6)

Attn.: GP 02-37016

RE: Case number I-222

Sir,

Thank you for your response despite the month's delay. May I note that the patents and ownership and all active claim(s) had been transferred to our company and you have erred, as a matter of law, when you state that this would be a new claim; as it is not, sir. Due to no fault of ours, it is NASA who has not returned our letters or calls for years regarding this claim, let alone followed up with us until recently. We do not see how your personnel problems are our problem, and the court will most assuredly side with us on this matter.

The "positions" you have stated are not sustainable in any context and could well violate the standards of Rule 11 in the context of litigation. All the information requested in your letter dated August 20 2008 was provided to NASA and Mr. Kennedy over the last 5-6 years. Please see the attached as I am sure it will refresh your memory. Mr. Kennedy's promise to Mr. Margolin in 2003 that an investigation would be conducted indicates that the information Mr. Margolin provided to NASA was sufficient to establish the claim.

We have offered you a fair settlement time period and yet you decide to waste time in an attempt to hide your clear infringement. We would welcome the opportunity to properly discuss a reasonable settlement either directly or through our Intellectual Property attorney Larry Oliverio of Rissman, Jobse, Hendricks & Oliverio who can be reached at [REDACTED]

b(6)

Respectfully,

Robert Adams
CEO, Optima Technology Group

02898

Reference 1 (1 Page)

National Aeronautics and
Space Administration
Langley Research Center
100 NASA Road
Hampton, VA 23681-2199



May 14, 2003

Reply to Attn of: 212

Jed Margolin

[Redacted]

b(6)

Subject: Infringement Inquiry

Dear Mr. Margolin,

I received notice of your belief that NASA may have infringed one or more of your U.S. patents. In order to address your concerns, we need to receive some more detailed information. Please provide the titles and patent numbers of any patents you feel NASA may have infringed. Please also provide a description of any actions by NASA leading to your belief of possible infringement. Finally, please specify in detail how those actions constitute infringement of your patent(s). This information will allow us to evaluate your assertion and respond and/or react appropriately. Thanks for contacting us. I look forward to hearing from you soon, and discussing your concerns further.

Cordially,

A handwritten signature in cursive script that reads "Barry V. Gibbens".

Barry V. Gibbens
Patent Attorney
Technology Commercialization
Program Office

Jed Margolin

Dr.

May 18, 2003

Mr. Barry V: Gibbens
National Aeronautics and Space Administration
Langley Research Center

b(6)

Attn: 212

Dear Mr. Gibbens,

This is in response to your letter dated May 14, 2003.

As we discussed in our telephone conversation on May 16, the information you have requested was supplied in my email to Mr. Kurt Hammerle on May 12, 2003.

After I emailed my inquiry to Mr. Jesse Midgett on May 12, I discovered the web page for the Patent Counsel Office and contacted Mr. Hammerle by telephone.

I apologize for any confusion this may have created.

As a result of more searching I have discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Software at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

{ The emphasis on teleoperation of remotely piloted vehicles is mine. }

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[Redacted]

01 H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

b(6)

For 2001 Phase II:

Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]
Carolyn Galceran [REDACTED]

b(6)

01-2-H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

If there is any additional information regarding my patents that you would find helpful please let me know.

Sincerely yours,

Jed Margolin

Jed Margolin



NASA SBIR SUCCESSSES

INNOVATION

LandForm VisualFlight™ is the power of a geographic information system (GIS) and the speed of a flight simulator, accessible from any Windows application.

ACCOMPLISHMENTS

- The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.
- AFVT will enhance the ability of analysts and operators to interact with large amounts of multidimensional data using the most natural paradigm available: 3D immersion. This operator/data interaction technology will be an advancement comparable to the invention of the Heads-Up Display (HUD). AFVT will move the HUD into the third dimension.
- A simplified user interface, it will fuse real-time 3D displays of terrain with digital maps, satellite data, vehicles, flight paths, and waypoints. This unique and innovative approach will build upon recent software technology research and development from Rapid Imaging Software. VisualFlight™ permits users to construct and deploy their own immersive multidimensional display applications on Windows-based computer platforms.

COMMERCIALIZATION

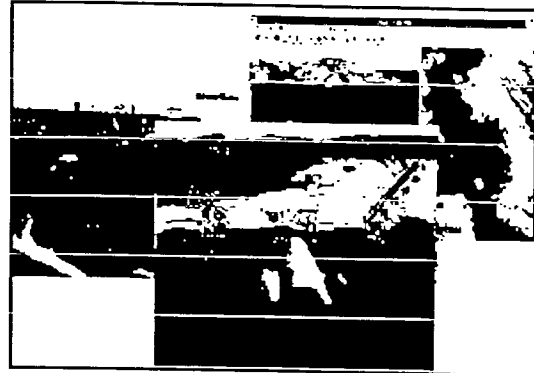
- VisualFlight™ is sold as a development kit starting with 5 run-time licenses. Users who wish to distribute more applications

Johnson Space Center
1998 Phase II

LandForm VisualFlight™

Rapid Imaging Software, Inc.

Albuquerque, NM



Optional Powerpoint file

GOVERNMENT/SCIENCE APPLICATIONS

- The firm's VisualFlight™ System was used to fly the X-38 on it's latest test flight. The flight vehicle was piloted by astronaut (Ken Ham) using LandForm VisualFlight

using LandForm VisualFlight™ technology can purchase additional run-time licenses as needed.

system as his digital cockpit window.

- VisualFlight™ 1.0 has been available to qualified users for several months now, and the response is excellent. VisualFlight™ has been deployed to display live real-time flight data broadcast over a network. Please visit this page for the latest VisualFlight™ developments.
- **LandForm V/O Video Overlay** plug-in for LandForm C3 or Flight Vision is available for the Matrox Corona board only. The price is \$4995 for a # single users license. Site license is available for \$6995.

For more information about this firm, please send e-mail to: [company representative](#)

[Return to NASA SBIR Success Listings](#)

Curator: [SBIR Support](#)

Jed Margolin
[REDACTED]
[REDACTED]

[REDACTED]
June 7, 2003

Mr. Alan J. Kennedy
Office of the General Counsel
National Aeronautics and Space Administration
[REDACTED]
[REDACTED]

b(6)

Dear Mr. Kennedy,

Mr. Barry Gibbens of your Langley Research Center suggested I contact you. I missed you when I called on Friday so I am sending this fax to provide background.

I believe that NASA may have used one or more of my patents in connection with the X-38 project and may be using one or more of my patents in other projects using Synthetic Vision.

This fax contains a number of Internet links. If you would like an email version of this fax containing active links please send me an email (jm@jmargolin.com) with your email address.

Summary

In Synthetic Vision (NASA's term), the aircraft's position and orientation are used with a terrain database (such as the Digital Elevation Database) to produce a 3D projected view of the terrain over which the aircraft is flying. One of the advantages of this system is that the pilot is able to "see" the terrain regardless of weather conditions or whether it is day or night.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,566,073 Pilot Aid Using a Synthetic Environment** issued October 15, 1996 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed August 9, 1995, and was a continuation of Application Ser. No. 08/274,394, filed July 11, 1994.

With synthetic vision it is not necessary for the pilot to be in the aircraft. I believe the X-38 project used this method.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,904,724 Method and Apparatus For Remotely Piloting an Aircraft** issued May 18, 1999 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed January 19, 1996.

02904

X-38 Project

I became aware that NASA was using synthetic vision in the X-38 project in the January 2003 issue of NASA Tech Briefs, page 40, "**Virtual Cockpit Window for a Windowless Aerospacecraft**". The article is available at: <http://www.nasatech.com/Briefs/Jan03/MSC23096.html>

This led me to Rapid Imaging Software, Inc. and their press release (<http://www.landform.com/pages/PressReleases.htm>) which states:

"On December 13th, 2001, Astronaut Ken Ham successfully flew the X-38 from a remote cockpit using LandForm VisualFlight as his primary situation awareness display in a flight test at Edwards Air Force Base, California. This simulates conditions of a real flight for the windowless spacecraft, which will eventually become NASA's Crew Return Vehicle for the ISS. We believe that this is the first test of a hybrid synthetic vision system which combines nose camera video with a LandForm synthetic vision display. Described by astronauts as 'the best seat in the house', the system will ultimately make space travel safer by providing situation awareness during the landing phase of flight."

The RIS press release provided a link to an article in Aviation Week & Space Technology: http://www.aviationnow.com/avnw/news/channel_space.jsp?view=story&id=news/sx381211.xml

As a result of more searching I have discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Systems at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html> .

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

{The emphasis on teleoperation of remotely piloted vehicles is mine.}

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[Redacted]

b(6)

01 H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

For 2001 Phase II:

Rapid Imaging Software, Inc.

[Redacted]

b(6)

Carolyn Galceran [REDACTED] b(6) 3
01-2-H6.02-8715 JSC
Integrated Video for Synthetic Vision Systems

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,904,724 Method and Apparatus For Remotely Piloting an Aircraft** issued May 18, 1999 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed January 19, 1996.

The patent can be downloaded from the UPTO Web site (www.uspto.gov) in html (no drawings) or in an odd tif format (with the drawings) that requires a special viewer.

An easier way to view and download the patent is through my Web site, on which I have posted the patent in PDF format. The link is <http://www.imargolin.com/patents2/rpv.htm>.

While I have no way of knowing exactly what method(s) NASA used in controlling the X-38 (unless you are willing to make a full disclosure) my patent covers techniques as exemplified by claim 1.

1. A system comprising:

a remotely piloted aircraft including,

a position determining system to locate said remotely piloted aircraft's position in three dimensions; and

an orientation determining system for determining said remotely piloted aircraft's orientation in three dimensional space;

a communications system for communicating flight data between a computer and said remotely piloted aircraft, said flight data including said remotely piloted aircraft's position and orientation, said flight data also including flight control information for controlling said remotely piloted aircraft;

a digital database comprising terrain data;

said computer to access said terrain data according to said remotely piloted aircraft's position and to transform said terrain data to provide three dimensional projected image data according to said remotely piloted aircraft's orientation;

a display for displaying said three dimensional projected image data; and

a set of one or more remote flight controls coupled to said computer for inputting said flight control information, wherein said computer is also for determining a delay time for communicating said flight data between said computer and said remotely piloted aircraft, and wherein said computer adjusts the sensitivity of said set of one or more remote flight controls based on said delay time.

Although the X-38 project has been canceled, the methods developed to fly it are too good to waste and should be used in follow-up projects like CRV.

02906

Synthetic Vision

I became aware of NASA's Synthetic Vision program perhaps two years ago from a program on NASA TV. I was unable to follow it up at that time due to health problems and the demands of my other patenting activity.

According to the NASA Aviation Safety Program Web site (http://avsp.larc.nasa.gov/program_svs.html)

Synthetic Vision Systems

**TECHNOLOGY WOULD REDUCE AIRLINE FATALITIES
Synthetic Vision would give pilots clear skies all the time**

A revolutionary cockpit display system being developed with seed money from NASA would help prevent the world's deadliest aviation accidents.

And I agree.

My U.S. Patent that pertains to this use of synthetic vision is: **U.S. Patent 5,566,073 Pilot Aid Using a Synthetic Environment** issued October 15, 1996 to Margolin. (I am the inventor and owner of the patent.) The patent application was filed August 9, 1995, and was a continuation of Application Ser. No. 08/274,394, filed July 11, 1994.

The patent can be downloaded from the USPTO Web site (www.uspto.gov) in html (no drawings) or in an odd tif format (with the drawings) that requires a special viewer.

The patent can also be downloaded from my Web site in PDF format at:
<http://www.jmargolin.com/patents2/pilot.htm>

As with the X-38 program I have no way of knowing exactly what method(s) NASA used in its Synthetic Vision program (unless you are willing to make a full disclosure). My patent covers techniques as exemplified by claim 1.

1. A pilot aid which uses an aircraft's position and attitude to transform data from a digital data base to present a pilot with a synthesized three dimensional projected view of the world comprising:

a position determining system for locating said aircraft's position in three dimensions;

a digital data base comprising terrain data, said terrain data representing real terrestrial terrain as at least one polygon, said terrain data generated from elevation data of said real terrestrial terrain;

an attitude determining system for determining said aircraft's orientation in three dimensional space;

a computer to access said terrain data according to said aircraft's position and to transform said terrain data to provide three dimensional projected image data according to said aircraft's orientation; and

a display for displaying said three dimensional projected image data.

02907

NASA's Visits to My Web Site

There is good reason to believe that NASA was aware of my work in these areas through visits to my Web site. NASA has been visiting my Web site (www.jmargolin.com) regularly since I started it in December 2000. (I have no objection to NASA's visits; I am flattered that NASA considers my Web site worth visiting.)

A listing of NASA access statistics follows the end of this fax.

I also have regular visits from <http://cap.nipr.mil>, which I understand is a secure gateway to other military networks. I don't know if NASA uses nipr so I have not included it in my listing.

The Web Statistics software provided by my Web Hosting Service tell me who is visiting my Web site and what people are looking at but not who is looking at what, (In January of this year I discovered there are raw Web log files containing this information but my Web Hosting Service does not keep backup log files older than the previous month.)

I am including an example of the detailed Web log data; it's understandable why my Web Hosting Service abstracts it into a less detailed form.

The article being referenced is **Unit Vector Math for 3D Graphics**
(www.jmargolin.com/uvmath/uvmenu.htm)

Now that I can see what people are looking at I have noticed a great deal of interest in this article as well as **The Relationship between Unit Vector Rotations and Euler Angle Functions**.
(www.jmargolin.com/uvmath/euler.doc)

These articles also seem to interest military contractors like Lockheed Martin (lmco.com), Boeing (boeing.com), Northrop Grumman (northgrum.com), and SAIC (saic.hq.nasa.gov) as well as a large number of educational institutions.

Some accesses are obviously just for fun, to articles such as to **Gas Music From Jupiter**
(www.jmargolin.com/gmfj/gmfj.htm)

There are also visits from most of our national labs. I expect they are interested in **U.S. Patent 6,377,436 Microwave Transmission Using a Laser-Generated Plasma Beam Waveguide** issued April 23, 2002 to Jed Margolin.

Abstract

A directed energy beam system uses an ultra-fast laser system, such as one using a titanium-sapphire infrared laser, to produce a thin ionizing beam through the atmosphere. The beam is moved in either a circular or rectangular fashion to produce a conductive shell to act as a waveguide for microwave energy. Because the waveguide is produced by a plasma it is called a plasma beam waveguide. The directed energy beam system can be used as a weapon, to provide power to an unmanned aerial vehicle (UAV) such as for providing communications in a cellular telephone system, or as an ultra-precise radar system.

There is a possibility that this device could be used to make a linear Tokamak.
(www.jmargolin.com/debs/debs.htm)

Conclusion

I realize this is a great deal of material to wade through, but I would appreciate confirmation that you have received it and, if possible, an estimate as to when I can expect to hear NASA's decision on this claim.

Hopefully, then we can discuss compensation. The '724 patent is available for sale if NASA wishes to purchase it to avoid setting the precedent of the U.S. Government paying compensation for each flight of an aircraft using my patent. (I don't think this would be popular with DOD.) I expect that the first UAV to crash due to Pilot Induced Oscillation (or just Flight Computer Induced Oscillation, as occurred in the first flight of the Predator) would cost more than the cost of buying my patent. I believe this patent also has commercial applications like using UAVs for traffic reporting and in Law Enforcement so your Commercialization Department may be able to generate income with it.

Sincerely yours,

Jed Margolin

Jed Margolin

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

b(6)

Here are NASA's visits to my Web site:

June 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
2 0.02%	1	2	73232 0.02%	dhcp161-117.hst.nasa.gov

July 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
24 0.27%	24	1	216909 0.08%	aavigill.wff.nasa.gov
1 0.01%	1	1	96274 0.04%	antonius-dekorte-pc.jpl.nasa.gov
25 0.28%	25	2	313183 0.11%	

August 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
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02903

40	0.38%	40	1	184514	0.06%	time2burn.larc.nasa.gov
24	0.23%	24	1	216909	0.07%	gerhard.gsfc.nasa.gov
64	0.61%	64	2	401423	0.12%	

October 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
1	0.01%	1	1	549657 0.11% halljm.nsstc.nasa.gov

November 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
48	0.39%	24	2	216909 0.06% aavigil1.wff.nasa.gov
42	0.34%	42	1	532111 0.14% mac01291100705.jpl.nasa.gov
1	0.01%	1	1	21505 0.01% dhcp-78-14-233.jpl.nasa.gov
91	0.73%	67	4	770525 0.21%

December 2001

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
1	0.01%	1	1	90494 0.01% pgrant.arc.nasa.gov

February 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
1	0.01%	1	0	120832 0.03% csmad-nt-23.jpl.nasa.gov
1	0.01%	1	1	504805 0.11% cielo2k.jpl.nasa.gov
2	0.01%	2	1	625637 0.13%

March 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
58	0.35%	45	5	319389 0.05% fantasy.arc.nasa.gov
6	0.04%	5	4	1299302 0.22% fryepc.larc.nasa.gov
1	0.01%	1	0	120832 0.02% shum.larc.nasa.gov

65 0.39% 51 9 1739523 0.29%

April 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
40 0.23%	40	1	184514 0.03%	cevennes.jpl.nasa.gov
7 0.04%	7	2	45302 0.01%	doppler.jpl.nasa.gov
1 0.01%	1	1	5735 0.00%	math.jpl.nasa.gov
1 0.01%	1	0	120832 0.02%	k-137-78-152-182.jpl.nasa.gov
49 0.29%	49	4	356383 0.06%	

May 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
4 0.02%	0	0	0 0.00%	k1505776.ksc.nasa.gov
1 0.00%	1	0	120832 0.02%	manzanita-227-215.arc.nasa.gov
1 0.00%	1	1	96274 0.02%	seraph3.lerc.nasa.gov
6 0.03%	2	1	217106 0.03%	

June 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
3 0.02%	1	1	96694 0.02%	micronovich.gsfc.nasa.gov

July 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
43 0.19%	43	4	190275 0.03%	seraph3.lerc.nasa.gov
42 0.19%	42	3	189552 0.03%	varies01113104503.jpl.nasa.gov
2 0.01%	2	2	7802 0.00%	paulafinlayson-pc-pentium.jpl.nasa.gov
1 0.00%	1	1	350096 0.06%	brodbell1.gsfc.nasa.gov
1 0.00%	1	1	93686 0.02%	poes12.gsfc.nasa.gov
89 0.39%	89	11	831411 0.14%	

August 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
24 0.11%	24	1	216909 0.03%	envision.arc.nasa.gov

1	0.00%	1	1	90494	0.01%	pc02141110149.jpl.nasa.gov
1	0.00%	1	1	142144	0.02%	tizzie.nsstc.nasa.gov

26	0.12%	26	3	449547	0.06%	

September 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
5	0.02%	1	0	121528 0.02% knepper.ivv.nasa.gov
1	0.00%	1	0	285696 0.04% seraph2.lerc.nasa.gov
1	0.00%	1	0	120832 0.02% webproxy2.dfrc.nasa.gov

7	0.03%	3	0	528056 0.08%

October 2002

nasa.gov

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98	0.45%	98	14	827297 0.11% dial37.jsc.nasa.gov
1	0.00%	1	1	49690 0.01% isdn-dial-050.gsfc.nasa.gov
1	0.00%	1	0	120832 0.02% latema.jpl.nasa.gov
1	0.00%	1	0	285696 0.04% dkiewicz-pc.jpl.nasa.gov

101	0.47%	101	15	1283515 0.16%

November 2002

nasa.gov

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27	0.12%	25	1	506284 0.06% ntserve.gdsc.nasa.gov
7	0.03%	7	2	45342 0.01% ecn1950165.gsfc.nasa.gov
2	0.01%	2	2	1155686 0.15% zebra.arc.nasa.gov
1	0.00%	1	1	350096 0.04% norton.gsfc.nasa.gov

37	0.17%	35	6	2057408 0.26%

December 2002

nasa.gov

Total hits	Files	Pageview	Bytes sent	Hostname
7	0.03%	7	2	45269 0.01% ws196.gsfc.nasa.gov

January 2003

nasa.gov

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2	0.01%	2	2	29129	0.00%	csg-	686.cdsc.nasa.gov
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February 2003

nasa.gov							
Total hits	Files	Pageview	Bytes sent Hostname				
2	0.01%	2	2	29138	0.00%	odinssc609337.ssc.nasa.gov	

April 2003

nasa.gov							
Total hits	Files	Pageview	Bytes sent Hostname				
40	0.17%	40	1	184514	0.02%	khgmac.larc.nasa.gov	
8	0.03%	5	4	40212	0.00%	kid-emillerw2k.saic.hq.nasa.gov	
5	0.02%	1	0	121528	0.01%	psycho.larc.nasa.gov	
4	0.02%	3	3	63471	0.01%	b03042144127.jpl.nasa.gov	
3	0.01%	3	3	29881	0.00%	seraph2.grc.nasa.gov	
60	0.25%	52	11	439606	0.05%		

Example of Detailed Web Log Data

This is an example of the detailed Web log data, so it's understandable why my Web Hosting Service abstracts it into a less detailed form.

The article being referenced is Unit Vector Math for 3D Graphics (www.jmargolin.com/uvmath/uvmenu.htm)

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/fig1.gif HTTP/1.1" 200 2590
 "http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m1.gif HTTP/1.1" 200 2237
 "http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m2.gif HTTP/1.1" 200 1464
 "http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m3.gif HTTP/1.1" 200 715
 "http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m4.gif HTTP/1.1" 200 1720
 "http://www.jmargolin.com/uvmath/uvmath.htm" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m5.gif HTTP/1.1" 200 1738
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m7.gif HTTP/1.1" 200 1549
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m8.gif HTTP/1.1" 200 1939
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m6.gif HTTP/1.1" 200 1762
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m9.gif HTTP/1.1" 200 4152
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m10.gif HTTP/1.1" 200 2732
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m11.gif HTTP/1.1" 200 2572
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m12.gif HTTP/1.1" 200 2580
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m13.gif HTTP/1.1" 200 3915
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m14.gif HTTP/1.1" 200 2591
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m15.gif HTTP/1.1" 200 2224
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m16.gif HTTP/1.1" 200 1858
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m17.gif HTTP/1.1" 200 1742
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m18.gif HTTP/1.1" 200 2642
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m19.gif HTTP/1.1" 200 1738
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m20.gif HTTP/1.1" 200 1762
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:14 -0500] "GET /uvmath/m21.gif HTTP/1.1" 200 1696
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m22.gif HTTP/1.1" 200 2224
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m23.gif HTTP/1.1" 200 1858
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m24.gif HTTP/1.1" 200 1711
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig6.gif HTTP/1.1" 200 3304
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig7.gif HTTP/1.1" 200 995
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig8.gif HTTP/1.1" 200 4441
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig11.gif HTTP/1.1" 200 3186
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig12.gif HTTP/1.1" 200 3743
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig14.gif HTTP/1.1" 200 1936
"<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/fig16.jpg HTTP/1.1" 200 61706
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m25.gif HTTP/1.1" 200 1358
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m26.gif HTTP/1.1" 200 1413
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m27.gif HTTP/1.1" 200 1052
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m28.gif HTTP/1.1" 200 1017
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m29.gif HTTP/1.1" 200 1673
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:15 -0500] "GET /uvmath/m30.gif HTTP/1.1" 200 2224
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:24 -0500] "GET /uvmath/uvmath.htm HTTP/1.1" 200 40231
 "<http://www.google.com/search?q=%22euler+angle%22+normal+openGL&hl=en&lr=&ie=UTF-8&oe=UTF-8&start=10&sa=N>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

khgmac.larc.nasa.gov - - [01/Apr/2003:09:32:24 -0500] "GET /uvmath/fig3.gif HTTP/1.1" 200 2524
 "<http://www.jmargolin.com/uvmath/uvmath.htm>" "Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.0; Q312461; .NET CLR 1.0.3705)"

 ---end

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

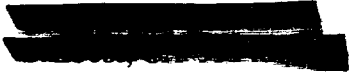
Reference 4 (2 pages)



June 11, 2003

Reply to Attn of: GP (02-37016)

Mr. Jed Margolin



b(6)

Re: Administrative Claim of Jed Margolin for Infringement of
U.S. Patent Nos. 5,566,073 and 5,904,724; NASA Case No. I-222

Dear Mr. Margolin:

Thank you for your letter dated June 7, 2003 regarding possible unauthorized uses by NASA of inventions protected by U.S. Patent Nos. 5,566,073 and 5,904,724. You have identified possible unauthorized uses in the X-38 project and other projects involving synthetic vision technology. NASA considers this matter to be an administrative claim for patent infringement, and has assigned the claim NASA Case No. I-222. An investigation will now be conducted to identify any unauthorized uses of the inventions claimed in the subject patents. In order to proceed further with this investigation, we need you to provide us with the following information:

- (1) The identification of all claims of the patent(s) alleged to be infringed.
- (2) The identification of all procurements known to the claimant or patent owner which involve the alleged infringing item or process, including the identity of the vendor or contractor and the Government procuring activity.
- (3) A detailed identification of the accused articles or processes, particularly where the article or process relates to a component or subcomponent of the item procured, an element by element comparison of the representative claims with the accused article or process. If available, this identification should include documentation and drawings to illustrate the accused article or process in suitable detail to enable verification of the infringement comparison.
- (4) The names and addresses of all past and present licenses under the patent(s), and copies of all license agreements and releases involving the patent.
- (5) A brief description of all litigation in which the patent(s) has been or is now involved, and the present status thereof.

02917

- 6) A list of all persons to whom notices of infringement have been sent, including all departments and agencies of the Government, and a statement of the ultimate disposition of each.
- 7) A description of Government employment or military service, if any, by the inventor and/or patent owner.
- 8) A list of all Government contracts under which the inventor, patent owner, or anyone in privity with him performed work relating to the patented subject matter.
- 9) Evidence of title to the patent(s) alleged to be infringed or other right to make the claim.
- 10) A copy of the Patent Office file of the patent, if available, to claimant.
- 11) Pertinent prior art known to claimant, not contained in the Patent Office file, particularly publications and foreign art.

In addition to the foregoing, if claimant can provide a statement that the investigation may be limited to the specifically identified accused articles or processes, or to a specific procurement, it may materially expedite determination of the claim.

If you have any questions, please feel free to contact me o [REDACTED]

Cordially,



Alan J. Kennedy
Director, Infringement Division
Office of the Associate General Counsel
(Intellectual Property)

b(6)

Jed Margolin
[REDACTED]

[REDACTED] 48-1016
June 17, 2003

Mr. Alan J. Kennedy
Director, Infringement Division
Office of the Associate General Counsel
National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

b(6)

Attn: GP(02-37016)

Dear Mr. Kennedy,

I have received your letter dated June 11, 2003.

In my contacts with NASA personnel I have repeatedly stressed my desire that this matter be resolved in a friendly manner. However, since NASA has rejected my request to consider a license proffer and in view of your letter of June 11, it is clear that NASA has decided to handle this in an adversarial manner.

Before I respond to your letter in detail, I want to make things easier for me by withdrawing my U.S. Patent **5,566,073 Pilot Aid Using a Synthetic Environment** from this administrative claim in order to focus more directly on NASA's infringement of my U.S. Patent **5,904,724 Method and Apparatus For Remotely Piloting an Aircraft**. However, I reserve the right to file a claim concerning the '073 patent at a later time.

(1) The identification of all claims of the patent(s) alleged to be infringed.

As I stated in my email of May 13, 2003 to Mr. Hammerle of LARC and in my fax of June 7, 2003 to you, I have no way of determining exactly which claims the X-38 project may have infringed unless NASA makes a full and complete disclosure to me of that project. I also have no way of determining if NASA has (or has had) other projects that also infringe on my patent unless NASA makes a full and complete disclosure of those projects as well.

Therefore, in order to answer your question, I must request that NASA make a full and complete disclosure to me of the X-38 project as well as any other current or past projects that may infringe on my patent.

If this information requires a security clearance (I have none) I suggest you start the required security investigation immediately. If there is further information that you require in this regard feel free to contact me.

- (2) *The identification of all procurements known to the claimant or patent owner which involve the alleged infringing item or process, including the identity of the vendor or contractor and the Government procuring activity.*

As I stated in my fax to you of June 7, 2003, I became aware that NASA was using synthetic vision in the X-38 project in the January 2003 issue of NASA Tech Briefs, page 40, "**Virtual Cockpit Window for a Windowless Aerospacecraft**". The article is available at:
<http://www.nasatech.com/Briefs/Jan03/MSC23096.html>

This led me to Rapid Imaging Software, Inc. and their press release (<http://www.landform.com/pages/PressReleases.htm>) which states:

"On December 13th, 2001, Astronaut Ken Ham successfully flew the X-38 from a remote cockpit using LandForm VisualFlight as his primary situation awareness display in a flight test at Edwards Air Force Base, California. This simulates conditions of a real flight for the windowless spacecraft, which will eventually become NASA's Crew Return Vehicle for the ISS. We believe that this is the first test of a hybrid synthetic vision system which combines nose camera video with a LandForm synthetic vision display. Described by astronauts as 'the best seat in the house', the system will ultimately make space travel safer by providing situation awareness during the landing phase of flight."

The RIS press release provided a link to an article in *Aviation Week & Space Technology*:
http://www.aviationnow.com/avnow/news/channel_space.jsp?view=story&id=news/sx381211.xml

As a result of more searching I discovered a link to a Johnson Space Center SBIR Phase II award to Rapid Imaging Systems at <http://sbir.gsfc.nasa.gov/SBIR/successes/ss/9-058text.html>.

It includes a particularly relevant paragraph:

The Advanced Flight Visualization Toolkit (VisualFlight™) project is developing a suite of virtual reality immersive telepresence software tools which combine the real-time flight simulation abilities with the data density of a Geographic Information System (GIS). This technology is used for virtual reality training of crews, analysis of flight test data, and as an on-board immersive situation display. It will also find application as a virtual cockpit, and in teleoperation of remotely piloted vehicles.

The emphasis on *virtual reality immersive telepresence* and *teleoperation of remotely piloted vehicles* is mine.

A search of the SBIR archive shows the following entries.

For 2001 Phase I:

Rapid Imaging Software, Inc.

[REDACTED]

Mike Abernathy

01 H6.02-8715 JSC

Integrated Video for Synthetic Vision Systems

b(6)

For 2001 Phase II:
Rapid Imaging Software, Inc.

[REDACTED]
[REDACTED]
Carolyn Galceran [REDACTED]
01-2-H6.02-8715 JSC

b(6)

Since my sources of information are limited to those available to the public (magazines such as *Aviation Week & Space Technology* as well as whatever I can find on the internet) I have no way of knowing if there are other procurements, vendors, contractors, and Government procuring activity related to Claim I-222.

I believe that NASA is in a better position to know what it is (or has been) working on than I am.

- (3) *A detailed identification of the accused articles or processes, particularly where the article or process relates to a component or subcomponent of the item procured, an element by element comparison of the representative claims with the accused article or process. If available, this identification should include documentation and drawings to illustrate the accused article or process in suitable detail to enable verification of the infringement comparison.*

I believe I have answered this in section (2) as much as I am able to without NASA's cooperation.

- (4) *The names and addresses of all past and present licenses under the patent(s), and copies of all license agreements and releases involving the patent.*

There are no past licenses for this patent, and as of this date there are no present licenses for this patent. Naturally, I reserve the right to license this patent in the future as I see fit.

- (5) *A brief description of all litigation in which the patent(s) has been or is now involved, and the present status thereof.*

There has been no past litigation involving this patent, and as of this date there is no present litigation regarding this patent.

- (6) *A list of all persons to whom notices of infringement have been sent, including all departments and agencies of the Government, and a statement of the ultimate disposition of each.*

As of this date NASA is the only agency or department of the Government against which I have filed a claim.

5/11/03 – sent email to comments@hq.nasa.gov

I believe that NASA may have infringed on one or more of my U.S. Patents. How do I file a claim and whom do I contact?

5/11/03 – Received reply:

Date: Sun, 11 May 2003 17:48:46 -0400 (EDT)
 From: "PAO Comments" <comments@bolg.public.hq.nasa.gov>
 Message-ID: <200305112148.h4BLmkhJ011314@bolg.public.hq.nasa.gov>
 [REDACTED]
 Subject: Thank you for your email.

Thank you for your message to the NASA Home Page. The Internet Service Group will attempt to answer all e-mail regarding the site, but cannot guarantee a response by a particular time. The group will not be able to answer general inquiries regarding NASA, which should instead be sent to public-inquiries@hq.nasa.gov

 5/11/03 – Sent email to <public-inquiries@hq.nasa.gov>

I believe that NASA may have infringed on one or more of my U.S. Patents. How do I file a claim and whom do I contact?

Jed Margolin

As far as I can tell I did not receive a response.

 5/12/03 – Sent email to [REDACTED] (found on Web site)

*I believe that NASA may have infringed on one or more of my U.S. Patents How do I file a claim and whom do I contact?
 (Or is my only recourse to sue in Federal Court?)*

Jed Margolin

b(6)

5/12/03 – Received reply:

Mr. Margolin,

Thank you for contacting NASA with your concerns. I have referred this matter to the Patent Counsel Office, and they will be contacting you to work with you on this issue.

*Best wishes,
Jesse Midgett*

5/12/03 – Given my experience with trying to contact Government officials via email (or mail, or fax) I hadn't waited for the reply from J. Midgett. I had found the web site for the LARC (NASA Langley) Patent Counsel Office, and called up. I was connected to Kurt Hammerle and we had a nice talk. I sent him an email the next day (May 13, 2003).

I received a phone call from Barry Gibbens [REDACTED] no, apparently, was calling because of my email to J.C.Midgett and hadn't seen the email I sent to K. Hammerle. (I explained to him what I had done.) We had a nice talk. He said he had already sent me a letter.

I received his letter and sent a reply on May 18, 2003 (USPS), adding to the email I had sent K. Hammerle.

Thursday, June 5, 2003 – Received message from B. Gibbens, asking me to call him because I should contact Alan Kennedy at NASA Headquarters [REDACTED]

Friday, June 6, 2003 - I called B. Gibbens. Then I called A. Kennedy but he was out.

Saturday, June 7, 2003 – Sent a fax to A. Kennedy. The first number I tried [REDACTED] only accepted 4 pages (out of 13). I tried a few times. Then I tried [REDACTED] 1. It turned out that [REDACTED] was the correct number and the [REDACTED] was another group. As a result, A. Kennedy initially only got 4 pages.

Monday, June 9, 2003 – Received message from A. Kennedy and called him back.

He had not gotten the fax so he went and found it. I learned the next day that he had only gotten 4 pages.

We had a "free and frank" discussion. I stressed that I wanted to resolve it in a friendly manner and that I preferred to have NASA buy the patent for the Government.

Tuesday, June 10, 2003 – Received a message from A. Kennedy and called him back.

He said that his Manager has turned down my request that NASA consider a license proffer and has decided to handle it as a Claim, and that the investigation would take 3-6 months.

02923

However, NASA is not the only agency or department of the Government I have contacted.

7/5/1999 Email to [redacted]
Dr. Birckelbaw, Project Manager for the UCAV contract awarded to Boeing.

Introduced myself and asked if DARPA was interested in my patent.
Response: none

7/26/1999 USPS Mail to:
Dr. Larry Birckelbaw
Program Manager, Aerospace Systems
DARPA Tactical Technology Office

b6

[redacted]
[redacted]

Introduced myself and asked if DARPA was interested in my patent. Enclosed copy of patent.
Response: none

Office of the Secretary of Defense (OSD)
Mr. E.C. "Pete" Aldridge
Under Secretary of Defense for Acquisition, Technology, and Logistics
U.S. Department of Defense

Contact Method: Email: webmaster@acq.osd.mil May 3, 2002 and June 6, 2002
Response: none

Army - AATD, Fort Eustice, VA.
Col. Wado Carmona, Commander
Applied Aviation and Training Directorate (AATD)
Army Aviation and Missile Command
Ft. Eustice, VA

Contact Method:
Email: Ms. Lauren L. Sebring [redacted] June 1, 2002

Phone Call Followup: She suggested I talk to Mr. Jack Tansey
Mr. Jack Tansey, Business Development [redacted] June 18, 2002
Email Followup: [redacted] June 18, 2002

Air Force Research Laboratory (AFRL)
Dr. Barbara Wilson
Contact Method: email ([redacted]@af.mil)
Response - none

b6

Air Force Research Laboratory (AFRL)
 Dr. R. Earl Good, Director,
 Directed Energy Directorate
 Air Force Research Laboratory
 Kirtland Air Force Base, NM 87117-5776
 Contact Method: Fax [REDACTED]
 Response: none

July 23, 2002

 Department of the Air Force
 Dr. James G. Roche
 Secretary of the Air Force
 Washington, DC

b(6)

Contact Method: Fax [REDACTED]

July 28, 2002

Response: Letter from
 Lt. General Charles F. Wald
 Deputy Chief of Staff, Air & Space Operations, USAF

August 13, 2002

- (7) *A description of Government employment or military service, if any, by the inventor and/or patent owner.*

I have never been employed by the U.S. Government (or any other government). Likewise, I have never been in military service (in the United States or elsewhere). In the interests of full disclosure, I worked for three summers (1967, 1968, 1969) at the RCA Astro-Electronics Division in Hightstown, NJ. (They had a summer job program for students.)

- (8) *A list of all Government contracts under which the inventor, patent owner, or anyone in privity with him performed work relating to the patented subject matter.*

None. I did this entirely on my own dime.

(9) Evidence of title to the patent(s) alleged to be infringed or other right to make the claim.

This appears to be a two-part question. Does the patent belong to Jed Margolin, and am I that Jed Margolin?

Part 1 - If you look at the front page of the '724 patent you will see that it was, indeed, issued to Jed Margolin [REDACTED]

If you contact the U.S. Patent and Trademark Office, Document Services Department (703-308-9726), you can order an Abstract of Title to verify that I own the patent. According to 37 CFR 1.12, assignment records are also open to public inspection at the United States Patent and Trademark Office.

Part 2 - If you look up Jed Margolin, [REDACTED], in a telephone directory you will find assigned to it the telephone number [REDACTED]

When you called me on June 9 and June 10, that was the number you called. **b(6)**

Other than my affirming that I am, indeed, the Jed Margolin in question, I can only suggest that you contact my cousin Lenny (oops, I mean Dr. Len Margolin) who is employed by Los Alamos National Laboratory, and ask him if he has a cousin Jed who is an engineer and an inventor, and who possesses the Margolin gene for being very persistent. (Some say stubborn.) The last time I saw him was in Ann Arbor, Michigan, after he had just passed the orals for his doctorate. (He bought me a beer at a place on South University.)

(10) A copy of the Patent Office file of the patent, if available, to claimant.

I do not have a copy of the USPTO's patent file. What I have is my prosecution file which contains, among other things, privileged communications between my patent attorney and myself.

Besides, in our telephone conversation of June 10, you stated that one of the research centers (I believe it was LARC) had already ordered the file.

(11) Pertinent prior art known to claimant, not contained in the Patent Office file, particularly publications and foreign art.

I have found no relevant prior art.

However, there is an interesting article in the June 2, 2003 issue of *Aviation Week & Space Technology* on pages 48-51 entitled **GA Riding 'Highway-in-the-Sky'** which describes, among other things, the work of Dennis B. Berlinger, lead scientist for flight deck research at the FAA's Civil Aeromedical Institute (CAMI) regarding what is called **Performance-Controlled Systems**. In the Specification of my '724 patent I call it **First Order RPV Flight Control Mode**. In Claim 18:

18. The station of claim 13, wherein said set of remote flight controls are configured to allow inputting absolute pitch and roll angles instead of pitch and roll rates.

An Internet search turned up Mr. Berlinger's report **Applying Performance-Controlled Systems, Fuzzy Logic, and Fly-By-Wire Controls to General Aviation** as DOT/FAA/AM-02/7.

I am pleased that Mr. Berlinger's May 2002 study confirms the value of Performance-Controlled Systems in piloted aircraft and I believe that teaching it in my '724 patent (filed January 19, 1999) gave an additional novel and useful aspect to my invention.

(The article also describes the Synthetic Vision system used in the FAA's Capstone program.)

If you have any further questions, please contact me.

Sincerely yours,

Jed Margolin

Enclosed: Response from General Wald
AWST article
Berlinger Report
U.S. Patent 5,904,724



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

13 Aug 02

HQ USAF/XO
1630 Air Force Pentagon
Washington, DC 20330-1630

Mr. Jed Margolin

[REDACTED]

b(6)

Dear Mr. Margolin

On behalf of Secretary Roche, thank you for providing your ideas on ways to improve UAV control technology. As you know, we are now operating the Global Hawk and Predator systems in reconnaissance roles, and envision expanding unmanned aircraft applications into the weapons delivery mission area with the UCAV and the Predator/Predator B aircraft. Certainly we see a growing role for UAVs in the Air Force as technology advances and we gain experience in their operation. The improved control methods you have patented may well play a part in future UAV design. I suggest that you present these concepts to the various UAV manufacturers who are in the business of designing systems to meet our operational requirements. They can offer the best assessment on the overall feasibility of integrating your technology. I suggest a similar approach regarding your patented laser techniques.

Again, thank you for taking the time to offer these suggestions. I admire your ingenuity, and appreciate your desire to help us improve our national defense capabilities.

Sincerely

CHARLES F. WALD, Lt Gen, USAF
Deputy Chief of Staff
Air & Space Operations

cc:
SAF/AQ
AF/XOR

02928



US005904724A

United States Patent [19]

[11] Patent Number: 5,904,724

Margolin

[45] Date of Patent: May 18, 1999

[54] **METHOD AND APPARATUS FOR REMOTELY PILOTING AN AIRCRAFT**

[76] Inventor: **Jed Margolin**, 3570 Pleasant Echo, San Jose, Calif. 95148

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 "US GeoData Digital Line Graphs", U.S. Dept. of the Interior, U.S. Geol. Surv. Earth Sci. Info Ctr. (Factsheet) Jun. 1993.
 "US GeoData Digital Elevation Models", U.S. Dept. of the Interior, U.S. Geol. Surv. Earth Sci. Info Ctr. (Factsheet) Jun. 1993.
 Shifrin, Carole A., "Gripen Likely to Fly Again Soon." *Aviation Week & Space Technology*, Aug. 23, 1993, pp. 72-73.

[21] Appl. No.: **08/587,731**

[22] Filed: **Jan. 19, 1996**

[51] Int. Cl.⁶ **G06F 165/00; H04N 7/18**

[52] U.S. Cl. **701/120; 701/2; 701/24; 244/189; 244/190; 348/114**

[58] **Field of Search** 364/423.099, 424.012, 364/424.013, 424.021, 424.022, 449.2, 449.7, 460, 439, 424.028; 340/825.69, 825.72, 967, 989, 991, 992, 993; 244/189, 190, 181, 17.13, 3.11, 3.15; 348/42, 51, 113, 114, 117, 123, 143; 382/154; 395/118, 119, 125

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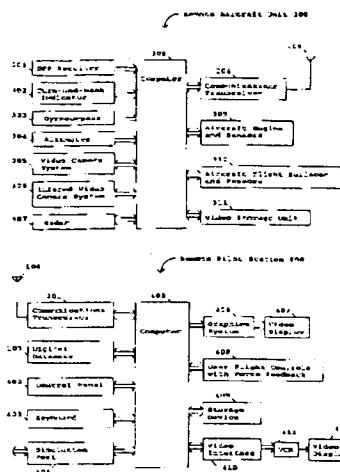
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Primary Examiner—Tan Q. Nguyen
 Attorney, Agent, or Firm—Blakely, Sokoloff, Taylor and Zafman LLP

ABSTRACT

A method and apparatus that allows a remote aircraft to be controlled by a remotely located pilot who is presented with a synthesized three-dimensional projected view representing the environment around the remote aircraft. According to one aspect of the invention, a remote aircraft transmits its three-dimensional position and orientation to a remote pilot station. The remote pilot station applies this information to a digital database containing a three dimensional description of the environment around the remote aircraft to present the remote pilot with a three dimensional projected view of this environment. The remote pilot reacts to this view and interacts with the pilot controls, whose signals are transmitted back to the remote aircraft. In addition, the system compensates for the communications delay between the remote aircraft and the remote pilot station by controlling the sensitivity of the pilot controls.

20 Claims, 7 Drawing Sheets



GA Riding 'Highway-in-the-Sky'

General aviation sector reaps the benefits of research originally conducted for military, commercial transport cockpits

BRUCE D. NORDWALL/WASHINGTON and OKLAHOMA CITY

General aviation aircraft are finally catching up with some of the advances found in the latest commercial transports and military cockpits, and in one particular sphere—display innovations—GA is actually taking the lead.

Researchers in industries and universities around the world have been pursuing a more intuitive guidance display for pilots for years. In general, this elusive presentation is referred to as highway-in-the-sky (HITS) (*AW&ST* Apr. 20, 1998, p. 58). In a twist that may foreshadow future advances, it was a general aviation aircraft that received the FAA's first certification of HITS technology for navigation guidance.

Instead of following course deviation

indicators and altimeters, a pilot using this HITS presentation flies through a series of 3D boxes on a multifunction display. By maneuvering through the 400 X 320-ft. boxes spaced at 2,000-ft.

Flying through "boxes in the sky" keeps pilots on course and altitude during a simulated curved instrument approach down the mountainous Gastineau Channel to Juneau, Alaska.

intervals along the planned GPS route of flight, the pilot keeps the aircraft on course and altitude, which is particularly helpful for a descending, curved instrument approach.

L.A.B. Flying Service's Piper Seneca made the first commercial revenue flight



using HITS in Juneau, Alaska, on Mar. 31. It followed an optimized area navigation (RNAV) route through airspace that would be inaccessible with conventional avionics.

The system was built by Chelton Flight Systems as part of the second

phase of the imaginative Capstone program, an FAA industry/academic partnership in Alaska. The cockpit employs a Chelton FlightLogic electronic flight information system-synthetic vision (EFIS-SV) using two glass displays, one for primary flight guidance and one for navigation.

The big innovation is the use of synthetic vision symbology to present information to pilots. The initial EFIS systems digitally replicated the rudimentary attitude and flight-director symbols of electro-mechanical instruments from an earlier era. Now, in addition to the flight path, pilots see a real-time 3D view of the terrain and obstacles on the primary flight display. These are complemented by a moving map on the navigation display and by aural terrain warnings.

Among the other "firsts" claimed by Capstone Phase II on the Juneau flight were the use of forward-looking 3D terrain and HUD symbology on a certified primary flight display, and commercial

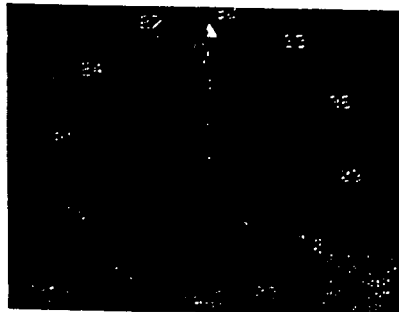
CAMI tested a four-axis side-arm controller in a simulator as a replacement for stick and throttle in a fly-by-wire performance control system.

use of the GPS wide-area augmentation system (WAAS).

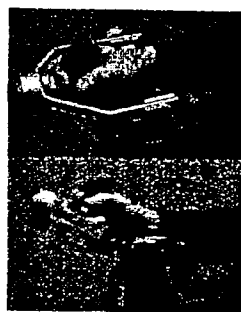
Capstone has equipped three aircraft in Alaska with the Chelton Flight Systems' cockpit, and plans to outfit every commercial operator in SE Alaska within the next 18 months. The contract for 125 aircraft could expand to up to 200, according to Gordon Pratt, Chelton's president. The FAA is providing the equipment at no charge in Alaska to any commuter and on-demand (FAA Part 135) operator of fixed-wing aircraft or

Automatic Dependent Surveillance-Broadcast (ADS-B) equipment. (*AW&ST* Sept. 18, 2000, p. 68). With GPS as the enabling technology, that phase indicated that a low-cost system could give bush pilots many of the safety benefits long-standard for commercial jet transports. The emphasis was on reducing controlled flight into terrain accidents for these pilots, who usually operate out of the range of navigation aids or radar help from ATC. Phase II with HITS and synthetic vision greatly expands those capabilities.

The next major safety enhancement for GA aircraft could come from "performance control," according to Dennis B. Beringer, lead scientist for flight deck research at the FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City. While known more for assisting FAA's Aircraft Certification Service and Flight Standards in defining requirements for both aircraft and pilots, CAMI is also an active partner in human factors research to improve cockpits.



The navigation display shows GPS WAAS position and an approach not possible with conventional navigation aids due to a 20-30-deg. turn after the GASTN waypoint to align with the runway.



dynamic surfaces. With performance control, his movements would be transmitted via a fuzzy-logic controller to a flight management system or an auto pilot that would guide the aircraft to carry out the

desired performance goal. But unlike a simple autopilot, which directs a change in heading at a limited rate of turn, performance-control logic changes control laws so that a pilot commands the rate of turn and bank, and rate of climb or descent. It simplifies command of more complicated maneuvers, and is a compromise between automated maneuvering and manual flight control, Beringer said. Safety is further enhanced using a self-centering (spring-loaded) side stick which returns to the centered position when the pi-

lot relaxes pressure, thus bringing the aircraft to straight and level flight.

The reduced number of control movements is one reason flying is easier. Going into a turn with conventional controls, the pilot has to initiate the roll, and then neutralize the ailerons when he achieves the desired bank angle. But with performance controls, one movement establishes the desired bank angle/turn rate. One downside to performance control with envelope protection is the inability to do aerobatics, such as an aileron roll or loop, Beringer said.

In the four-axis side-arm controller (above), rotating the wrist governs the rate of turn, flexing the wrist vertically directs the rate of climb or descent, and fore and aft movement varies the airspeed. Interest in performance controls was renewed with NASA's Agate (Advanced General Aviation Transport Experiments) program, which was concerned with simplifying the flight task and reducing ab initio training requirements. Agate has also been a strong supporter of HITS.

Researchers had previously found that with performance control, non-pilots could learn to fly a simulator in 15 min. Beringer tested the system in a simula-

With **performance control**, non-pilots could learn to fly *a simulator in 15 min.*

helicopters. A supplemental type certificate for helicopters was scheduled to be delivered on May 31. An additional 10 aircraft are being outfitted in the contiguous U.S., Pratt said, but at the expense of aircraft owners.

The first phase of the Capstone Program started as a demonstration that equipped a number of commuter and air taxi aircraft in the Yukon-Kuskokwim River delta area with a low-cost GPS, a terrain database, data link and

The performance-control concept was introduced in the 1970s, before electronics were sufficiently advanced for implementation. Beringer said that now some of the fly-by-wire military and commercial aircraft use what could be legitimately called performance-control logic, which not only make aircraft easier to fly, but can also add flight envelope protection.

With conventional flight controls, a pilot has direct command of the aero-

tor configured as a Piper Malibu at CAML. It used HITS displays and a four-axis side-arm controller. Twenty-four individuals with varying flight experience participated: six high-flight-time pilots; six low-flight-time pilots; six student pilots, and six non-pilots. Each flight involved a takeoff into instrument conditions, a continuous climb while turning downwind, a turn to intercept the instrument landing system glidepath, and a descent to landing. Flights were divided between use of a conventional yoke and the side-arm controller.

The findings were consistent. The aircraft was more stable and had less variations in course and altitude using performance control than with conventional controls. Although experienced pilots

The **big** **innovation** is use of synthetic vision symbology

always outperformed less-experienced individuals, with either system, all agreed the effort required was nearly halved.

Performance control is not apt to be seen in Piper Cubs, but perhaps in Beech Bonanzas and Piper Malibus. A lot of them already have two- or three-axis autopilots, so a significant capability could be achieved by rigging a side-stick control to the autopilot, Beringer said.

But two large problems must be overcome for performance controls to appear in the next generation of GA aircraft. The first is cost. Affordable and certifiable computer controls and servos would have to drop to a level competitive with more conventional systems.

Second, a fly-by-wire debate must be resolved. Could an affordable system be built with sufficient reliability using triple- or quad-redundancy, or would a costly manual-reversion be required? A mechanical backup would add cost for installation and for training pilots to operate the two systems.

Complicating that issue is the question of the level of reliability required. The FAA's current standard for a flight-critical system is a failure rate of 10^{-9} . While this is a standard for NASA, it might not be reasonable for general aviation aircraft. Beringer points out that the failure rate for humans is about 10^{-3} . ●

Jed Margolin

January 8, 2004

Mr. Alan J. Kennedy
Director, Infringement Division
Office of the Associate General Counsel
National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

b(6)

Attn: GP(02-37016)

Dear Mr. Kennedy,

I am disappointed to hear that the investigation that you promised would take 3-6 months has not been completed.

As per our telephone conversation of 10 December 2003, please confirm that you believe the Statute of Limitations gives NASA the right to take up to six years to rule on my claim for compensation for the use of my patent.

Also, please confirm that you expect NASA to reject my claim for compensation on the grounds that the X-38 never flew.

Sincerely yours,

Jed Margolin

Jed Margolin

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No FEAR Act EEO Data

FOIA



[REDACTED]

From: McNutt, Jan (HQ-MC000)
Sent: Wednesday, October 01, 2008 10:58 AM
To: 'Robert Adams-OTG'
Subject: RE: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.

Dear Mr. Adams,

[REDACTED]

Regards,

b(4)

Jan S. McNutt
Senior Attorney (Commercial)
Office of the General Counsel
NASA Headquarters

[REDACTED]

b(6)

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From: Robert Adams-OTG [REDACTED]
Sent: Tuesday, September 30, 2008 1:04 PM
To: McNutt, Jan (HQ-MC000)
Subject: FW: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.

b(6)

Sir, b(4)

[REDACTED]

Dr. Adams

From: Robert Adams-OTG [REDACTED]
Sent: Monday, August 25, 2008 3:48 PM
To: 'McNutt, Jan (HQ-MC000)'; 'jan.mcnutt@nasa.gov'
Subject: Jan S. McNutt, Please see the attached letter; it is your response to your most recent letter.

b(6)

Sent via U.S. Mail with tracking number

02936

Jan S. McNutt,

Please see the attached letter; it is your response to your most recent letter.

Thank you,

Dr. Robert Adams – CEO
Optima Technology Group



b(6)

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02937