

PATENT ASSIGNMENT

Electronic Version v1.1
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SUBMISSION TYPE:	NEW ASSIGNMENT												
NATURE OF CONVEYANCE:	ASSIGNMENT												
CONVEYING PARTY DATA													
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Timothy Joe FELTY</td> <td>12/19/2011</td> </tr> <tr> <td>James Robert Mason</td> <td>12/23/2011</td> </tr> <tr> <td>Stuart Paul Smith</td> <td>12/23/2011</td> </tr> <tr> <td>Anthony James Grichnik</td> <td>01/24/2012</td> </tr> <tr> <td>Gavin Peter Williams</td> <td>01/10/2012</td> </tr> </tbody> </table>		Name	Execution Date	Timothy Joe FELTY	12/19/2011	James Robert Mason	12/23/2011	Stuart Paul Smith	12/23/2011	Anthony James Grichnik	01/24/2012	Gavin Peter Williams	01/10/2012
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RECEIVING PARTY DATA													
<table border="1"> <tr> <td>Name:</td> <td>Caterpillar Inc.</td> </tr> <tr> <td>Street Address:</td> <td>100 N.E. Adams Street</td> </tr> <tr> <td>City:</td> <td>Peoria</td> </tr> <tr> <td>State/Country:</td> <td>ILLINOIS</td> </tr> <tr> <td>Postal Code:</td> <td>61629-9510</td> </tr> </table>		Name:	Caterpillar Inc.	Street Address:	100 N.E. Adams Street	City:	Peoria	State/Country:	ILLINOIS	Postal Code:	61629-9510		
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PROPERTY NUMBERS Total: 1													
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13338646</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13338646								
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CORRESPONDENCE DATA													
<p>Fax Number: (202)408-4400</p> <p>Phone: 202-408-4000</p> <p>Email: daniel.tucker@finnegan.com</p> <p><i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.</i></p> <p>Correspondent Name: CATERPILLAR/FINNEGAN, HENDERSON, L.L.P.</p> <p>Address Line 1: 901 New York Avenue, NW</p> <p>Address Line 4: WASHINGTON, DISTRICT OF COLUMBIA 20001-4413</p>													
ATTORNEY DOCKET NUMBER:	08350.0392-00												
NAME OF SUBMITTER:	Daniel C. Tucker												

OP \$40.00 13338646

Total Attachments: 20

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ASSIGNMENT

WHEREAS We, the below named inventors, hereinafter referred to as Assignors, have made an invention entitled:

SYSTEMS AND METHODS FOR EXTENDING PHYSICAL SENSOR RANGE USING VIRTUAL SENSORS

for which We will or have filed a patent application; and

WHEREAS, Caterpillar Inc., a corporation of Delaware whose post office address is Intellectual Property Department, 100 N.E. Adams Street, Peoria, Illinois 61629-9510 (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention, and in and to the patent application for this invention and any and all patents to be issued upon this application throughout the world;

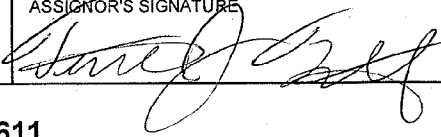
NOW THEREFORE, be it known that for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, We, as Assignors, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, our entire right, title, and interest in and to this invention, provisional application Serial No. _____, filed _____, and this application, and all divisions, and continuations thereof, and all patents which may be granted thereon, and all reissues thereof, as well as all rights to claim priority in any country or jurisdiction or patent office on the basis of this application, and all applications for patents which may hereafter be filed for this invention in any country or jurisdiction or patent office and all patents which may be granted on this invention in any country or jurisdiction or patent office, and all extensions, renewals, and reissues thereof; and We hereby authorize and request any official of any country or jurisdiction or patent office whose duty it is to issue patents on applications as described above, to issue all patents for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, WE HEREBY covenant that We have the full right to convey the interest assigned by this Assignment, and We have not executed and will not execute any agreement in conflict with this Assignment;

AND, WE HEREBY further covenant and agree that We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in any country or jurisdiction or patent office, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns;

AND, WE HEREBY authorize the attorneys/representatives that WE have empowered to prosecute this application to insert here in parentheses the country, application number, and official filing date (_____ Application No. _____, filed _____).

IN TESTIMONY WHEREOF, We have hereunto set our hands.

1. FULL NAME OF SOLE OR FIRST ASSIGNOR Timothy Joe FELTY	ASSIGNOR'S SIGNATURE 	DATE 12/19/2011
ADDRESS 412 Arnold Road, East Peoria, IL 61611		CITIZENSHIP U.S.A.

1. WITNESS NAME <i>Carol Weber</i>	WITNESS SIGNATURE <i>Carol Weber</i>	DATE <i>19 Dec 2011</i>
ADDRESS <i>1290 Hickory Hills Rd</i>		CITIZENSHIP <i>USA</i>
<i>German town Hills IL 61548</i>		

2. WITNESS NAME <i>DONALD B. EDWARDS</i>	WITNESS SIGNATURE <i>Donald B. Edwards</i>	DATE <i>12/18/11</i>
ADDRESS <i>5810 W. Woodbridge Pl,</i>		CITIZENSHIP <i>USA</i>
<i>Peoria, IL 61615</i>		

2. FULL NAME OF SECOND ASSIGNOR James Robert MASON	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 424 W. Knoll Crest Drive, Peoria, IL 61614		CITIZENSHIP U.S.A.

1. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

2. WITNESS NAME	WITNESS SIGNATURE	DATE
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3. FULL NAME OF THIRD ASSIGNOR Stuart Paul SMITH	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 1 Farriers Mews, Scotgate, Stamford, Lincs, UK PE9 2YQ		CITIZENSHIP U.K.

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ADDRESS		CITIZENSHIP

4. FULL NAME OF FOURTH ASSIGNOR Anthony James GRICHNIK	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 759 N. Main Street, Eureka, IL, 61530		CITIZENSHIP U.S.A.

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ADDRESS		CITIZENSHIP

2. WITNESS NAME	WITNESS SIGNATURE	DATE

ADDRESS	CITIZENSHIP

5. FULL NAME OF FIFTH ASSIGNOR Gavin Peter WILLIAMS	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 12 Foundry Rd, Ryhall, Lincolnshire, England PE9 4JA		CITIZENSHIP U.K.

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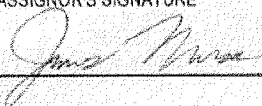
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1. FULL NAME OF SOLE OR FIRST ASSIGNOR Timothy Joe FELTY	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 412 Arnold Road, East Peoria, IL 61611		CITIZENSHIP U.S.A.

1. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

2. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

2. FULL NAME OF SECOND ASSIGNOR	ASSIGNOR'S SIGNATURE	DATE
James Robert MASON		12/23/11
ADDRESS 424 W. Knoll Crest Drive, Peoria, IL 61614		CITIZENSHIP U.S.A.

1. WITNESS NAME	WITNESS SIGNATURE	DATE
Zach St. Clair		12/23/11
ADDRESS 18 Pynes Drive Goodfield, IL		CITIZENSHIP U.S.A.

2. WITNESS NAME	WITNESS SIGNATURE	DATE
John Kinsinger		12/23/11
ADDRESS 615 N Douglas El Paso IL 61738		CITIZENSHIP USA

3. FULL NAME OF THIRD ASSIGNOR Stuart Paul SMITH	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 1 Farriers Mews, Scotgate, Stamford, Lincs, UK PE9 2YQ		CITIZENSHIP U.K.

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ADDRESS 759 N. Main Street, Eureka, IL, 61530		CITIZENSHIP U.S.A.

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ADDRESS		CITIZENSHIP

3. FULL NAME OF THIRD ASSIGNOR Stuart Paul SMITH	ASSIGNOR'S SIGNATURE 	DATE 23-12-2011
ADDRESS 1 Farriers Mews, Scotgate, Stamford, Lincs, UK PE9 2YQ		CITIZENSHIP U.K.

1. WITNESS NAME MICHAEL DAVID SMITH	WITNESS SIGNATURE 	DATE 23 DEC 2011
ADDRESS 4 GREENWOOD CLOSE, BURY, HUNTINGDON, CAMBS. PE26 2NZ UK.		CITIZENSHIP UK

2. WITNESS NAME PETER THOMAS LADLOW	WITNESS SIGNATURE 	DATE 23 Dec 2011
ADDRESS 71 WESTBOURNE PARK, BOURNE, Lincs. PE10 9QS. UK		CITIZENSHIP UK

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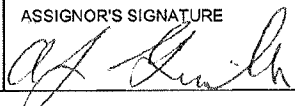
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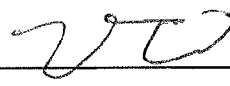
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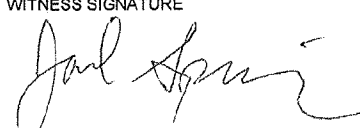
3. FULL NAME OF THIRD ASSIGNOR Stuart Paul SMITH	ASSIGNOR'S SIGNATURE	DATE
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4. FULL NAME OF FOURTH ASSIGNOR Anthony James GRICHNIK	ASSIGNOR'S SIGNATURE 	DATE 24 Jan '12
ADDRESS 759 N. Main Street, Eureka, IL, 61530		CITIZENSHIP U.S.A.

1. WITNESS NAME NATHAN WEAVER	WITNESS SIGNATURE 	DATE 24 JAN '12
ADDRESS 3221 N. TWELVE OAKS DR.		CITIZENSHIP U.S.A.
PEORIA, IL 61604		

2. WITNESS NAME Joel Springer	WITNESS SIGNATURE 	DATE 24 Jan 12
---	--	--------------------------

ADDRESS 300 S 4 th Str , Apt E Dunlap IL 61525	CITIZENSHIP USA
---	--------------------

5. FULL NAME OF FIFTH ASSIGNOR Gavin Peter WILLIAMS	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 12 Foundry Rd, Ryhall, Lincolnshire, England PE9 4JA	CITIZENSHIP U.K.	

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ADDRESS 412 Arnold Road, East Peoria, IL 61611		CITIZENSHIP U.S.A.

JOINT INVENTION
(Worldwide Rights)
Attorney Docket No. 08350.0392-00000
Client Ref. No. 11-0031

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Client Ref. No. 11-0031

3. FULL NAME OF THIRD ASSIGNOR Stuart Paul SMITH	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 1 Farriers Mews, Scotgate, Stamford, Lincs, UK PE9 2YQ		CITIZENSHIP U.K.

1. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

2. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

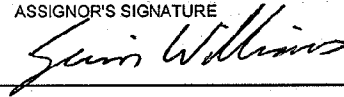
4. FULL NAME OF FOURTH ASSIGNOR Anthony James GRICHNIK	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 759 N. Main Street, Eureka, IL, 61530		CITIZENSHIP U.S.A.

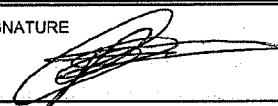
1. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP

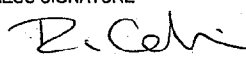
2. WITNESS NAME	WITNESS SIGNATURE	DATE

JOINT INVENTION
(Worldwide Rights)
Attorney Docket No. 08350.0392-00000
Client Ref. No. 11-0031

ADDRESS	CITIZENSHIP

5. FULL NAME OF FIFTH ASSIGNOR Gavin Peter WILLIAMS	ASSIGNOR'S SIGNATURE 	DATE 10 Jan 2012
ADDRESS 12 Foundry Rd, Ryhall, Lincolnshire, England PE9 4JA		CITIZENSHIP U.K.

1. WITNESS NAME RIDWAN KUREEMUN	WITNESS SIGNATURE 	DATE 10/01/2012
ADDRESS 66 KENT ROAD, LUTON, LU1 1TL, UK.		CITIZENSHIP BRITISH

2. WITNESS NAME ROSS COLLINS	WITNESS SIGNATURE 	DATE 10/01/2012
ADDRESS 7 ASHBURN CLOSE, GLINTON, PETERBOROUGH PE6 7LH.		CITIZENSHIP BRITISH