

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT4850266

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
DYMITR RUTA	08/01/2017
KIN POON	08/01/2017
FABRICE SAFFRE	08/31/2017

RECEIVING PARTY DATA

Name:	BRITISH TELECOMMUNICATIONS PLC
Street Address:	81 NEWGATE STREET
City:	LONDON
State/Country:	UNITED KINGDOM
Postal Code:	EC1A 7AJ
Name:	KHALIFA UNIVERSITY OF SCIENCE, TECHNOLOGY, AND RESEARCH
Street Address:	P.O. BOX 127788
City:	ABU DHABI
State/Country:	UNITED ARAB EMIRATES
Name:	EMIRATES TELECOMMUNICATIONS CORPORATION
Street Address:	ESTISALAT BUILDING
Internal Address:	INTERSECTION OF ZAYED THE 1ST STREET AND SHEIKH RASHID BIN SAEED AL MAKTOUM STREET
City:	ABU DHABI
State/Country:	UNITED ARAB EMIRATES

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15841463

CORRESPONDENCE DATA

Fax Number: (216)241-0816

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2166228844

Email: ipdocket@calfee.com

Correspondent Name: SEAN T. MOORHEAD

Address Line 1: 1405 EAST 6TH STREET

PATENT

Address Line 4: CLEVELAND, OHIO 44114

ATTORNEY DOCKET NUMBER: 27154/04068

NAME OF SUBMITTER: SEAN T. MOORHEAD

SIGNATURE: /Sean T. Moorhead/

DATE SIGNED: 03/05/2018

Total Attachments: 44

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**ASSIGNMENT OF INVENTION
AND ASSOCIATED INTELLECTUAL PROPERTY RIGHTS**

Parties:

1 'The Inventor'

Dymitr Ruta

Etisalat BT Innovation Centre, Khalifa University, Abu Dhabi, United Arab Emirates

2 'The Employer'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

3 'The Assignee'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

and

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

and

*Emirates Telecommunications Corporation
Etisalat Building, Intersection of Zayed the 1st Street and Sheikh Rashid Bin Saeed Al
Maktoum Street, PO Box 3838, Abu Dhabi, United Arab Emirates*

Recitals:

- (A) The Inventor is the inventor of the invention or inventions entitled Methods and Systems for Controlling Appliances which is described in the abstract annexed hereto and is the subject of Case No. SXH/FP7278377 of the Assignee's patent attorneys, Mewburn Ellis LLP (such invention or inventions being hereafter called "the Invention").
- (B) The Inventor was an employee of the Employer when the Invention was made.
- (C) The Assignee currently intends to file (in the name of the inventor(s) of the Invention, as required by United States law) one or more United States utility patent application(s) for the Invention and possibly subsequent patent applications in various jurisdictions claiming priority from the said United States utility patent application(s) (the United States utility application(s) together with any subsequent applications for the Invention and/or claiming priority from any of the said United States utility patent applications being hereafter called "the Patent Applications")

D.R
01-AUG-2017



31/8/17

PATENT
REEL: 045488 FRAME: 0322

(D) The Inventor, the Employer and the Assignee have agreed that the Inventor and the Employer will each assign to the Assignee for the consideration mentioned below all such present and future rights title and interest as they each may own in to under and arising from the Invention and the Patent Applications, including without limitation any further contributions that the Inventor may make in the future to the development or improvement of the Invention and any matter that shall be contained in any of the Patent Applications.

Operative provisions:

In consideration for the payment of One U.S. Dollar by the Assignee to each of the Inventor and the Employer, the receipt and sufficiency of which are hereby acknowledged by the Inventor and by the Employer:-

1 The Inventor and the Employer HEREBY SELL ASSIGN AND TRANSFER to the Assignee absolutely and free from encumbrances, by way of current assignment of both existing and future rights and property:

1.1 all such legal and beneficial rights title and interest as they each may own or be entitled to in Canada and the United States and all other countries of the world in to under and arising from the Invention and the Patent Applications and all matter that shall be contained in the Patent Applications, and all national and regional phases and any and all divisions, continuations and continuations-in-part of all of the aforesaid applications, and any and all patents that may be granted pursuant to any of them for the full period thereof, including any re-issues, re-examinations, renewals, extensions and Supplementary Protection Certificates, and including all rights and powers arising or accrued therefrom including the right to sue for damages and other remedies in respect of any infringement of any such rights before on or after the date hereof and to retain any damages obtained as a result of such action;

1.2 all such rights as they each may have to apply for prosecute and obtain patents and other intellectual property protection anywhere in the world in respect of the Invention and the invention(s) that shall be disclosed in and all matter that shall be contained in the Patent Applications to the intent that any patents or other intellectual property protection for the Invention and for such invention(s) and matter may be applied for and shall be granted in the name of and shall vest in the Assignee or its successors or assigns;

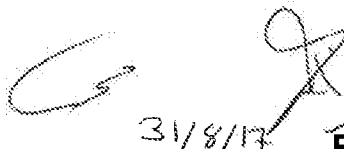
1.3 all such rights as they each may have to claim priority from any and all of the Patent Applications in any and all applications for patent protection for the Invention and the invention(s) that shall be disclosed in the Patent Applications, such right to be enjoyed by the Assignee as from the date of filing of each patent application from which priority is claimed;

to the intent that the Assignee shall have and hold the rights title and interest hereby assigned as fully and entirely as the same would have been held and enjoyed by the Inventor or by the Employer had this assignment not been made.

2 The Inventor and the Employer and the Assignee HEREBY GRANT the firm of Mewburn Ellis LLP the power to insert in the Schedule to this Assignment any further identification of any future patent applications in Canada or the United States or any other countries or regions of the world which shall fall within the scope of clause 1 above, as may be necessary or desirable in order to comply with the rules of the United States Patent Office or the Canadian Patent Office or any other patent office for recordation of this document. It is understood and agreed that the Assignee's attorneys Mewburn Ellis LLP have represented only the Assignee and will continue to represent only the Assignee and its successors and assigns with respect to this Assignment.

3 The Inventor and the Employer each HEREBY UNDERTAKE that at the request and cost of the Assignee or its successors or assigns they will at all times hereafter promptly do all such acts and execute all such documents (including but not limited to documents required to be signed by or on behalf of inventors or assignors in the course of any and all Canadian or United

D. R.
01-AUG-2017


3/18/17

PATENT
REEL: 045488 FRAME: 0323

States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.


4 The Inventor and the Employer HEREBY REQUEST the US Commissioner of Patents and the relevant authorities in all countries of the world to issue any patents granted for the Invention or the invention(s) that shall be disclosed in the Patent Applications in the name of the Assignee or its successors or assigns in accordance with this Assignment.

5 This assignment and undertaking shall be binding upon the heirs, executors, administrators, successors and/or assigns of the Inventor and of the Employer and shall enure to the benefit of any heirs, executors, administrators, successors and/or assigns of the Assignee.

6 This agreement shall be governed by and interpreted in accordance with the laws of England, and the courts of England shall have exclusive jurisdiction to settle any disputes which may arise in connection with this agreement.

AS WITNESS the signatures of the Inventor and of duly authorised officers of the Employer and the Assignee

THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS


31/8/17

D.R
01-AUG-2017

PATENT
REEL: 045488 FRAME: 0324

SCHEDULE

Identification of some, but not necessarily all, patent applications falling within the scope of clause 1 of this Assignment

Country/region	Application No.	Application Date	Title	Signature for Mewburn Ellis LLP
US	15/841463	14/12/17	METHOD AND SYSTEM FOR CONTROLLING APPLIANCES	<i>Zickler</i>

SIGNED by)
 the INVENTOR)
 at: KHALIFA UNIVERSITY)
 on: 01-AUG-2017)
 in the presence of:)

Signature: *Dimitri Rutz*

Witness
 Signature: *[Signature]*
 Name: Beum Seuk Lee
 Address: Khalifa University


D.R.
 01-AUG-2017

[Signature]
 31/8/17

SIGNED for and on behalf of)
the EMPLOYER)
at: Abu Dhabi)
on: 31-8-17)
in the presence of:)

Witness


Signature: N. AZARMI)
Name: Nader Azarmi)
Address: Abu Dhabi, UAE)

Signature: )
Name: Dr. Mohammed AlMualla)
Position: Board Member, Khalifa Univ.)

SIGNED for and on behalf of)
the 1st CO-APPLICANT)
at: Abu Dhabi)
on: 31-8-17)
in the presence of:)

Witness

Signature: N. AZARMI)
Name: Nader Azarmi)
Address: Abu Dhabi, UAE)

Signature: )
Name: Dr. Mohammed AlMualla)
Position: Board Member - Khalifa Univ.)

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)
at:)
on:)
in the presence of:)

Witness


Signature:)
Name:)
Address:)

Signature:)
Name:)
Position:)

SIGNED for and on behalf of)
the 3rd CO-APPLICANT)
at: Abu Dhabi)
on: 31/8/17)
in the presence of:)

Witness

Signature: N. Azarmi)
Name: Nader Azarmi)
Address: Abu Dhabi - UAE)

Signature: )
Name: Nasser Salim)
Position: GM, EDCH, BTISalat)

D.R.
01-AUG-2017

31/8/17

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.



31/8/17

D.R
01-AUG-2017

PATENT
REEL: 045488 FRAME: 0328

04/09/17

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Parties:

1 'The Inventor'

Dymitr Ruta

Etisalat BT Innovation Centre, Khalifa University, Abu Dhabi, United Arab Emirates

2 'The Employer'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

3 'The Assignee'

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and

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(B) The Inventor was an employee of the Employer when the Invention was made.

(C) The Assignee currently intends to file (in the name of the inventor(s) of the invention, as required by United States law) one or more United States utility patent application(s) for the Invention and possibly subsequent patent applications in various jurisdictions claiming priority from the said United States utility patent application(s) (the United States utility application(s) together with any subsequent applications for the Invention and/or claiming priority from any of the said United States utility patent applications being hereafter called "the Patent Applications")

CA
04/09/12

(D) The Inventor, the Employer and the Assignee have agreed that the Inventor and the Employer will each assign to the Assignee for the consideration mentioned below all such present and future rights title and interest as they each may own in to under and arising from the Invention and the Patent Applications, including without limitation any further contributions that the Inventor may make in the future to the development or improvement of the Invention and any matter that shall be contained in any of the Patent Applications.

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1.2 all such rights as they each may have to apply for prosecute and obtain patents and other intellectual property protection anywhere in the world in respect of the Invention and the invention(s) that shall be disclosed in and all matter that shall be contained in the Patent Applications to the intent that any patents or other intellectual property protection for the Invention and for such invention(s) and matter may be applied for and shall be granted in the name of and shall vest in the Assignee or its successors or assigns;

1.3 all such rights as they each may have to claim priority from any and all of the Patent Applications in any and all applications for patent protection for the Invention and the invention(s) that shall be disclosed in the Patent Applications, such right to be enjoyed by the Assignee as from the date of filing of each patent application from which priority is claimed;

to the intent that the Assignee shall have and hold the rights title and interest hereby assigned as fully and entirely as the same would have been held and enjoyed by the Inventor or by the Employer had this assignment not been made.

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States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.

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AS WITNESS the signatures of the Inventor and of duly authorised officers of the Employer and the Assignee

THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS

SIGNED for and on behalf of)
the EMPLOYER)

at:)

on:)

in the presence of:)

Witness

Signature:

Name:

Address:

Signature:

Name:

Position:

SIGNED for and on behalf of)
the 1st CO-APPLICANT)

at:)

on:)

in the presence of:)

Witness

Signature:

Name:

Address:

Signature:

Name:

Position:

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)

at: London England)

on: 04/09/2017)

in the presence of:)

Witness

Signature: Nigel Geffen

Name: NIGEL GEFEN

Address: 1, Knighton St.
LONDON EC4V 5BT.

Signature: [Signature]

Name: CHI-FAI LAM

Position: SENIOR PATENT ATTORNEY

SIGNED for and on behalf of)
the 3rd CO-APPLICANT)
at:)
on:)
in the presence of:)

Signature:
Name:
Position:

Witness
Signature:
Name:
Address:

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.

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Kin Poon

Etisalat BT Innovation Centre, Khalifa University, Abu Dhabi, United Arab Emirates

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P.O. Box 127788, Abu Dhabi, United Arab Emirates*

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Recitals:

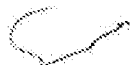
(A) The Inventor is the inventor of the invention or inventions entitled Methods and Systems for Controlling Appliances which is described in the abstract annexed hereto and is the subject of Case No. SXH/FP7278377 of the Assignee's patent attorneys, Mewburn Ellis LLP (such invention or inventions being hereafter called "the Invention").

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31/8/17



K.P.
1st Aug 2017

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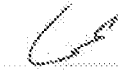
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V.P.
18th Aug 2016

States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.

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THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS



K.F.
18th Aug. 2016

31/8/17

PATENT
REEL: 045488 FRAME: 0339

SCHEDULE

Identification of some, but not necessarily all, patent applications falling within the scope of clause 1 of this Assignment

Country/region	Application No.	Application Date	Title	Signature for Mewburn Ellis LLP
US	15784463	11/12/17	METHOD AND SYSTEM FOR CONTROLLING APPLIANCES	<i>Tobin</i>

SIGNED by)
the INVENTOR)
at: *Khalifa University*)
on: *1st Aug 2017*)
in the presence of:)

Signature: *Danyel*

Witness *R*
Signature: _____

Name: *Beum Seuk Lee*
Address: *Khalifa University*

J


k.P.
1st Aug. 2017

3118/17

SIGNED for and on behalf of)
the EMPLOYER)
at: Abu Dhabi)
on: 31/8/17)
in the presence of:)

Witness


Signature: N. AZARMI)
Name: Nader Azarmi)
Address: Khalifa Univ, Abu Dhabi-UAE)

Signature: )
Name: Mohammed Al Mualla)
Position: Board Member, Khalifa Univ.)

SIGNED for and on behalf of)
the 1st CO-APPLICANT)
at: Abu Dhabi)
on: 31/8/17)
in the presence of:)

Witness

Signature: N. AZARMI)
Name: Nader Azarmi)
Address: Khalifa Univ, Abu Dhabi-UAE)


Signature: )
Name: Mohammed Al Mualla)
Position: Board Member, Khalifa Univ.)

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)
at:)
on:)
in the presence of:)

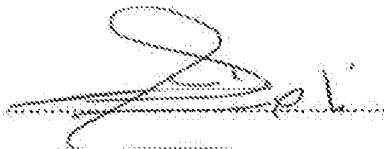
Witness

Signature:)
Name:)
Address:)

Signature:)
Name:)
Position:)

 k.P.
1st Aug 2017

SIGNED for and on behalf of)
the 3rd CO-APPLICANT)
at: Abu Dhabi)
on: 31/8/17)
in the presence of:)



Signature: 
Name: Nasser Salim
Position: GM, EDCH, ETISALAT

Witness
Signature: N. AZARM
Name: Nader Azarm
Address: Khalifa Univ, Abu Dhabi-UAE


31/8/17
K.P.
31 Aug. 2017
PATENT
REEL: 045488 FRAME: 0342

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.

  K.P.
1ST Aug 2017
PATENT
REEL: 045488 FRAME: 0343

**ASSIGNMENT OF INVENTION
AND ASSOCIATED INTELLECTUAL PROPERTY RIGHTS**

Parties:

1 'The Inventor'

Kin Poon

Etisalat BT Innovation Centre, Khalifa University, Abu Dhabi, United Arab Emirates

2 'The Employer'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

3 'The Assignee'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

and

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

and

*Emirates Telecommunications Corporation
Etisalat Building, Intersection of Zayed the 1st Street and Sheikh Rashid Bin Saeed Al
Maktoum Street, PO Box 3838, Abu Dhabi, United Arab Emirates*

Recitals:

(A) The Inventor is the inventor of the invention or inventions entitled *Methods and Systems for Controlling Appliances* which is described in the abstract annexed hereto and is the subject of Case No. SXH/FP7278377 of the Assignee's patent attorneys, Mewburn Ellis LLP (such invention or inventions being hereafter called "the Invention").

(B) The Inventor was an employee of the Employer when the Invention was made.

(C) The Assignee currently intends to file (in the name of the inventor(s) of the Invention, as required by United States law) one or more United States utility patent application(s) for the Invention and possibly subsequent patent applications in various jurisdictions claiming priority from the said United States utility patent application(s) (the United States utility application(s) together with any subsequent applications for the Invention and/or claiming priority from any of the said United States utility patent applications being hereafter called "the Patent Applications")

CH
04/09/17

(D) The Inventor, the Employer and the Assignee have agreed that the Inventor and the Employer will each assign to the Assignee for the consideration mentioned below all such present and future rights title and interest as they each may own in to under and arising from the Invention and the Patent Applications, including without limitation any further contributions that the Inventor may make in the future to the development or improvement of the Invention and any matter that shall be contained in any of the Patent Applications.

Operative provisions:

In consideration for the payment of One U.S. Dollar by the Assignee to each of the Inventor and the Employer, the receipt and sufficiency of which are hereby acknowledged by the Inventor and by the Employer:-

1 The Inventor and the Employer HEREBY SELL ASSIGN AND TRANSFER to the Assignee absolutely and free from encumbrances, by way of current assignment of both existing and future rights and property:

1.1 all such legal and beneficial rights title and interest as they each may own or be entitled to in Canada and the United States and all other countries of the world in to under and arising from the Invention and the Patent Applications and all matter that shall be contained in the Patent Applications, and all national and regional phases and any and all divisions, continuations and continuations-in-part of all of the aforesaid applications, and any and all patents that may be granted pursuant to any of them for the full period thereof, including any re-issues, re-examinations, renewals, extensions and Supplementary Protection Certificates, and including all rights and powers arising or accrued therefrom including the right to sue for damages and other remedies in respect of any infringement of any such rights before on or after the date hereof and to retain any damages obtained as a result of such action;

1.2 all such rights as they each may have to apply for prosecute and obtain patents and other intellectual property protection anywhere in the world in respect of the Invention and the invention(s) that shall be disclosed in and all matter that shall be contained in the Patent Applications to the intent that any patents or other intellectual property protection for the Invention and for such invention(s) and matter may be applied for and shall be granted in the name of and shall vest in the Assignee or its successors or assigns;

1.3 all such rights as they each may have to claim priority from any and all of the Patent Applications in any and all applications for patent protection for the Invention and the invention(s) that shall be disclosed in the Patent Applications, such right to be enjoyed by the Assignee as from the date of filing of each patent application from which priority is claimed;

to the intent that the Assignee shall have and hold the rights title and interest hereby assigned as fully and entirely as the same would have been held and enjoyed by the Inventor or by the Employer had this assignment not been made.

2 The Inventor and the Employer and the Assignee HEREBY GRANT the firm of Mewburn Ellis LLP the power to insert in the Schedule to this Assignment any further identification of any future patent applications in Canada or the United States or any other countries or regions of the world which shall fall within the scope of clause 1 above, as may be necessary or desirable in order to comply with the rules of the United States Patent Office or the Canadian Patent Office or any other patent office for recordation of this document. It is understood and agreed that the Assignee's attorneys Mewburn Ellis LLP have represented only the Assignee and will continue to represent only the Assignee and its successors and assigns with respect to this Assignment.

3 The Inventor and the Employer each HEREBY UNDERTAKE that at the request and cost of the Assignee or its successors or assigns they will at all times hereafter promptly do all such acts and execute all such documents (including but not limited to documents required to be signed by or on behalf of inventors or assignors in the course of any and all Canadian or United

OK
01/01/17

States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.

4 The Inventor and the Employer HEREBY REQUEST the US Commissioner of Patents and the relevant authorities in all countries of the world to issue any patents granted for the Invention or the invention(s) that shall be disclosed in the Patent Applications in the name of the Assignee or its successors or assigns in accordance with this Assignment.

5 This assignment and undertaking shall be binding upon the heirs, executors, administrators, successors and/or assigns of the Inventor and of the Employer and shall enure to the benefit of any heirs, executors, administrators, successors and/or assigns of the Assignee.

6 This agreement shall be governed by and interpreted in accordance with the laws of England, and the courts of England shall have exclusive jurisdiction to settle any disputes which may arise in connection with this agreement.

AS WITNESS the signatures of the Inventor and of duly authorised officers of the Employer and the Assignee

THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS

ck
04/09/17

SCHEDULE

Identification of some, but not necessarily all, patent applications falling within the scope of clause 1 of this Assignment

Country/region	Application No.	Application Date	Title	Signature for Mewburn Ellis LLP
US	15/841463	14/12/17	METHOD AND SYSTEM FOR CONTROLLING APPLIANCES	<i>Taylor</i>

SIGNED by)
the INVENTOR)
at:)
on:) Signature:
in the presence of:)
Witness
Signature:
Name:
Address:

SIGNED for and on behalf of)
the EMPLOYER)
at:)
on:)
in the presence of:)
Witness
Signature:
Name:
Address:

Signature:
Name:
Position:

SIGNED for and on behalf of)
the 1st CO-APPLICANT)
at:)
on:)
in the presence of:)
Witness
Signature:
Name:
Address:

Signature:
Name:
Position:

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)
at: London, England)
on: 04/09/2017)
in the presence of:)
Witness
Signature: *N. G.*
Name: NIGEL GIFFEN
Address: 1, Knightbridge St.
LONDON EC4N 5BT.

Signature: *[Signature]*
Name: CHI-FAI LAM
Position: SENIOR PATENT ATTORNEY

ck
04/09/17

SIGNED for and on behalf of)

the 3rd CO-APPLICANT)

at:)

on:)

in the presence of:)

Witness

Signature:

Name:

Address:

Signature:

Name:

Position:

04/09/17

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.

**ASSIGNMENT OF INVENTION
AND ASSOCIATED INTELLECTUAL PROPERTY RIGHTS**

Parties:

1 'The Inventor'

Fabrice Saffre

*c/o British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

2 'The Employer'

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

3 'The Assignee'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

and

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

and

*Emirates Telecommunications Corporation
Etisalat Building, Intersection of Zayed the 1st Street and Sheikh Rashid Bin Saeed Al
Maktoum Street, PO Box 3838, Abu Dhabi, United Arab Emirates*

Recitals:

(A) The Inventor is the inventor of the invention or inventions entitled Methods and Systems for Controlling Appliances which is described in the abstract annexed hereto and is the subject of Case No. SXH/FP7278377 of the Assignee's patent attorneys, Mewburn Ellis LLP (such invention or inventions being hereafter called "the Invention").

(B) The Inventor was an employee of the Employer when the Invention was made.

(C) The Assignee currently intends to file (in the name of the inventor(s) of the Invention, as required by United States law) one or more United States utility patent application(s) for the Invention and possibly subsequent patent applications in various jurisdictions claiming priority from the said United States utility patent application(s) (the United States utility application(s) together with any subsequent applications for the Invention and/or claiming priority from any of the said United States utility patent applications being hereafter called "the Patent Applications")



31/8/17

**PATENT
REEL: 045488 FRAME: 0352**

(D) The Inventor, the Employer and the Assignee have agreed that the Inventor and the Employer will each assign to the Assignee for the consideration mentioned below all such present and future rights title and interest as they each may own in to under and arising from the Invention and the Patent Applications, including without limitation any further contributions that the Inventor may make in the future to the development or improvement of the Invention and any matter that shall be contained in any of the Patent Applications.

Operative provisions:

In consideration for the payment of One U.S. Dollar by the Assignee to each of the Inventor and the Employer, the receipt and sufficiency of which are hereby acknowledged by the Inventor and by the Employer:-

1 The Inventor and the Employer HEREBY SELL ASSIGN AND TRANSFER to the Assignee absolutely and free from encumbrances, by way of current assignment of both existing and future rights and property:

1.1 all such legal and beneficial rights title and interest as they each may own or be entitled to in Canada and the United States and all other countries of the world in to under and arising from the Invention and the Patent Applications and all matter that shall be contained in the Patent Applications, and all national and regional phases and any and all divisions, continuations and continuations-in-part of all of the aforesaid applications, and any and all patents that may be granted pursuant to any of them for the full period thereof, including any re-issues, re-examinations, renewals, extensions and Supplementary Protection Certificates, and including all rights and powers arising or accrued therefrom including the right to sue for damages and other remedies in respect of any infringement of any such rights before on or after the date hereof and to retain any damages obtained as a result of such action;

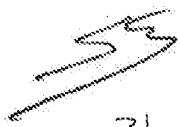
1.2 all such rights as they each may have to apply for prosecute and obtain patents and other intellectual property protection anywhere in the world in respect of the Invention and the invention(s) that shall be disclosed in and all matter that shall be contained in the Patent Applications to the intent that any patents or other intellectual property protection for the Invention and for such invention(s) and matter may be applied for and shall be granted in the name of and shall vest in the Assignee or its successors or assigns;

1.3 all such rights as they each may have to claim priority from any and all of the Patent Applications in any and all applications for patent protection for the Invention and the invention(s) that shall be disclosed in the Patent Applications, such right to be enjoyed by the Assignee as from the date of filing of each patent application from which priority is claimed;

to the intent that the Assignee shall have and hold the rights title and interest hereby assigned as fully and entirely as the same would have been held and enjoyed by the Inventor or by the Employer had this assignment not been made.

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31/8/17



PATENT

REEL: 045488 FRAME: 0353

States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.

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AS WITNESS the signatures of the Inventor and of duly authorised officers of the Employer and the Assignee

THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS

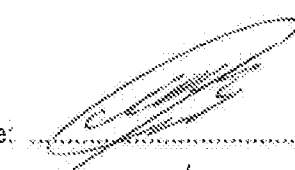


31/8/17

SIGNED for and on behalf of)
the EMPLOYER)
at:)
on:)
in the presence of:)
Witness
Signature:
Name:
Address:

Signature:
Name:
Position:

SIGNED for and on behalf of)
the 1st CO-APPLICANT)
at: Abu Dhabi)
on: 1-8-17)
in the presence of:)
Witness
Signature: N. AZAMI
Name: Nader Azami
Address: Abu Dhabi - UAE

Signature: 
Name: Dr. Mohammed Al Mualla
Position: Board member, Khalifa Univ.

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)
at:)
on:)
in the presence of:)
Witness
Signature:
Name:
Address:

Signature:
Name:
Position:

31/8/17


SIGNED for and on behalf of)
the 3rd CO-APPLICANT)
at: Abu Dhabi)
on: 31-8-17)
in the presence of:)

Witness

Signature: N. AZARMI

Name: Nader Azarmi

Address: Abu Dhabi - VAE

Signature: 

Name:

Position:

GM, EDCH, ETISALAT

Naser Salim


53

31/8/17

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.



31/8/17

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AND ASSOCIATED INTELLECTUAL PROPERTY RIGHTS

Parties:

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Fabrice Saffre

*c/o British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

2 'The Employer'

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

3 'The Assignee'

*Khalifa University of Science, Technology, and Research
P.O. Box 127788, Abu Dhabi, United Arab Emirates*

and

*British Telecommunications plc
81 Newgate Street, London, EC1A 7AJ, United Kingdom*

and

*Emirates Telecommunications Corporation
Etisalat Building, Intersection of Zayed the 1st Street and Sheikh Rashid Bin Saeed Al
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(D) The Inventor, the Employer and the Assignee have agreed that the Inventor and the Employer will each assign to the Assignee for the consideration mentioned below all such present and future rights title and interest as they each may own in to under and arising from the Invention and the Patent Applications, including without limitation any further contributions that the Inventor may make in the future to the development or improvement of the Invention and any matter that shall be contained in any of the Patent Applications.

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to the intent that the Assignee shall have and hold the rights title and interest hereby assigned as fully and entirely as the same would have been held and enjoyed by the Inventor or by the Employer had this assignment not been made.

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04/17/17

States or any other patent applications which relate to the Invention or to any invention(s) that shall be disclosed in any of the Patent Applications and any and all divisionals, continuations and continuations-in-part of any such applications) as may be reasonably necessary or desirable to secure or to provide further evidence of the vesting in the Assignee or its successors or assigns of all legal and beneficial rights title and interest intended to be assigned to the Assignee hereunder and to confirm the title of the Assignee or its successors or assigns to all such rights title and interest and to assist (in the course of litigation or interference or any other proceedings or otherwise) in the resolution of any question concerning the Invention or invention(s) that shall be disclosed in the Patent Applications or any application for patent or other intellectual property protection for any of the said inventions or any intellectual property protection granted pursuant to any such application.

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AS WITNESS the signatures of the Inventor and of duly authorised officers of the Employer and the Assignee

THIS ASSIGNMENT MAY BE EXECUTED IN COUNTERPARTS

SIGNED for and on behalf of)
the EMPLOYER)
at: London, England)
on: 09/09/2017)
in the presence of:)

Signature: [Signature]
Name: CHI-FAI LAM
Position: SENIOR PATENT ATTORNEY

Witness
Signature: [Signature]
Name: NIGEL GEFLEN
Address: 1, Knightbridge St.
LONDON EC4V 5BT

SIGNED for and on behalf of)
the 1st CO-APPLICANT)
at:)
on:)
in the presence of:)

Signature: _____
Name: _____
Position: _____

Witness
Signature: _____
Name: _____
Address: _____

SIGNED for and on behalf of)
the 2nd CO-APPLICANT)
at: London, England)
on: 09/09/2017)
in the presence of:)

Signature: [Signature]
Name: CHI-FAI LAM
Position: SENIOR PATENT ATTORNEY

Witness
Signature: [Signature]
Name: NIGEL GEFLEN
Address: 1, Knightbridge St.
LONDON EC4V 5BT

CFR
04/09/17

SIGNED for and on behalf of)

the 3rd CO-APPLICANT)

at:)

on:)

in the presence of:)

Witness

Signature:

Name:

Address:

Signature:

Name:

Position:

04/09/17

ANNEX – ABSTRACT OF THE INVENTION

This invention relates to methods and systems for controlling appliances, particularly climate control (heating or cooling) appliances such as air conditioning units used in buildings. Embodiments of the invention provide methods and systems which provide a framework of semi-autonomous sensors and actuators which can achieve climate control without the need for centralised or explicit coordination. In certain embodiments, the climate control system is capable of identifying suitable pairings of sensors and actuators and taking into account actions of other actuators. The embodiments have particular application in buildings where large numbers of individual sensors and actuators are deployed in an ad-hoc or unplanned manner over time, but can communicate with each other. The embodiments of the invention can provide improved efficiency, reduced infrastructure costs, improved flexibility and can be deployed across multiple sites.