

PATENT ASSIGNMENT COVER SHEET

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| DEVAKI CHANDRAMOULI | 09/08/2019 |
| CURT WONG | 12/07/2019 |
| RECEIVING PARTY DATA | |
| Name: | NOKIA TECHNOLOGIES OY |
| Street Address: | KARAKAARI 7 |
| City: | ESPOO |
| State/Country: | FINLAND |
| Postal Code: | 02610 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 16476769 |
| CORRESPONDENCE DATA | |
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| NAME OF SUBMITTER: | DOUGLAS H. GOLDHUSH |
| SIGNATURE: | /Douglas H. Goldhush/ |
| DATE SIGNED: | 01/23/2020 |
| Total Attachments: 4 | |
| source=059864.02981 Assignment#page1.tif | |
| source=059864.02981 Assignment#page2.tif | |
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| source=059864.02981 Assignment#page4.tif | |

ASSIGNMENT - WORLDWIDE

ASSIGNOR(S)

Devaki Chandramouli, Plano, Texas, USA**Curt Wong**, Bellevue, Washington, USA

ASSIGNEE

Nokia Technologies Oy

Karakaari 7 (as of 1 July 2019, formerly Karaportti 3), 02610 Espoo, Finland

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the ASSIGNOR(S) agree to assign and hereby assign, sell, transfer and set over to the ASSIGNEE and its successors, assigns and legal representatives, the entire right, title and interest, for United States of America and for all other countries in and to (1) the invention(s) identified by the following title or application number and filing date, and (2) any and all related inventions ("RELATED INVENTIONS" as defined below).

Application Title: SHORT MESSAGE SERVICE OVER NON-ACCESS STRATUM WITH HOME-ROUTED MODEL

Application number: US 62/444632 Filing date: 2017-01-10
(YYYY-MM-DD)

I/we, the ASSIGNOR(S), hereby authorize and request a representative of the ASSIGNEE to insert the application title, application number and filing date when known/received, after the execution of this document. The ASSIGNOR(S) hereby acknowledge and agree that the ASSIGNEE shall have the right to claim priority, directly or through another patent application, to the application identified above in any and all related patent applications subsequently filed in all jurisdictions.

I/we the ASSIGNOR(S) hereby acknowledge and agree that RELATED INVENTIONS include all national, regional and international patent applications filed and to be filed in any and all jurisdictions, that claim priority to the invention(s) identified by the above title or application number and filing date, said patent applications include all divisionals, continuations, re-issues, re-examinations, and continuations-in-part applications, and RELATED INVENTIONS include all rights and privileges in said patent applications and under any and all letters patent that may be granted in the United States of America and in all other countries resulting from said patent applications.

The ASSIGNOR(S) authorize the ASSIGNEE to make applications for such protection in its own name and maintain such protection in any and all countries including the United States of America, and to invoke and claim for any application for patent or other form of protection for said invention(s), without further authorization from us, any and all benefits, including the rights of priority provided by any and all treaties, conventions, or agreements.

The ASSIGNOR(S) hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of the ASSIGNEE to apply for patent or other form of protection for said invention(s) and to claim the aforesaid benefit of the right of priority.

The ASSIGNOR(S) request that any and all patents for said invention(s) be issued to the ASSIGNEE, its/their successors, assigns and legal representatives, in the United States of America and in all other countries, or to such nominee as the ASSIGNEE may designate.

The ASSIGNOR(S) agree that, when requested, we shall, without charge to the ASSIGNEE sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

In witness whereof, each inventor/assignor please sign and date below:

| Inventor (First Middle LAST) | Signature | Date (YYYY-MM-DD) |
|------------------------------|---------------|-------------------|
| Devaki Chandramouli | <i>Devaki</i> | 2019-09-08 |
| Curt Wong | | |

This assignment should preferably be signed by the inventor(s) before (a) at least two witnesses who also sign here, or (b) a Notary Public if within the U.S.A.:

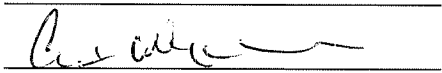
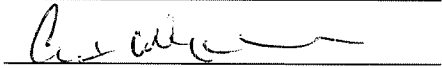
| Witness Name (First Middle LAST) | Signature | Date (YYYY-MM-DD) |
|----------------------------------|-----------------|-------------------|
| KUTTAYAN ANNAMALAI | <i>Kuttayan</i> | 2019-09-08 |
| SHYAM ANNAMALAI | <i>Shyam</i> | 2019-09-08 |

The ASSIGNOR(S) hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any document which may be required in any country in proof of the right of the ASSIGNEE to apply for patent or other form of protection for said invention(s) and to claim the aforesaid benefit of the right of priority.


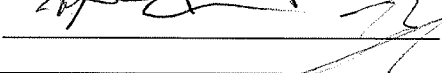
The ASSIGNOR(S) request that any and all patents for said invention(s) be issued to the ASSIGNEE, its/their successors, assigns and legal representatives, in the United States of America and in all other countries, or to such nominees as the ASSIGNEE may designate.

The ASSIGNOR(S) agree that, when requested, we shall, without charge to the ASSIGNEE sign all papers, and do all acts which may be necessary, desirable or convenient in connection with said applications, patents, or other forms of protection.

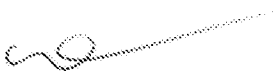
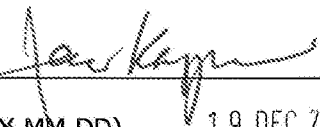
In witness whereof, each inventor/assignor please sign and date below:

| Inventor (First Middle LAST) | Signature | Date (YYYY-MM-DD) |
|------------------------------|---|-------------------|
| <u>Devaki Chandramouli</u> | <u></u> | <u>2015-12-07</u> |
| <u>Curt Wong</u> | <u></u> | <u>2015-12-07</u> |

This assignment should preferably be signed by the inventor(s) before (a) at least two witnesses who also sign here, or (b) a Notary Public if within the U.S.A.:

| Witness Name (First Middle LAST) | Signature | Date (YYYY-MM-DD) |
|----------------------------------|---|-------------------|
| <u>Yvonne Young</u> | <u></u> | <u>2015-12-07</u> |
| <u>Nathan Wong</u> | <u></u> | <u>2015-12-07</u> |

The ASSIGNEE accepts this assignment:

| | | | |
|-------|-----------------------|-------------------|---|
| Name | Yan Wang | Signature |  |
| Title | Manager, Patenting | Date (YYYY-MM-DD) | 19 DEC 2019 |
| Name | Jarmo J. Kemppainen | Signature |  |
| Title | Senior IPR Specialist | Date (YYYY-MM-DD) | 19 DEC 2019 |