

## SEARCH HISTORY

<b>Application Number</b>	PCT/US 18/48480
<b>Search Conducted By</b>	BIP
<b>Search Approved By</b>	BIP

<b>US/IPC Classifications Searched</b>	IPC (8) – H04W 4/04, G06T 19/00 (2018.01) CPC - H04W 4/043, H04W 4/20, G01S 5/163, G06T 19/006, G01C 15/002, G06K 9/2063, G06K 9/00671, G06K 9/3208
<b>Date Conducted</b>	04 December 2018

<b>Documentation Searched</b>	USPC: 455/456.3, 345/633 CPC: H04W 4/043, H04W 4/20, G01S 5/163, G06T 19/006, G01C 15/002, G06K 9/2063, G06K 9/00671, G06K 9/3208
<b>Search Terms Used</b>	BIM, augmented reality, virtual reality, real time, facility, monitor, telemetry, sensor, measurement, wireless, display, overlay, static, dynamic, temporal, etc.
<b>Date Conducted</b>	04 December 2018

<b>Electronic Database Searched</b>	Patbase
<b>Files Searched</b>	Full-text: AU BE BR CA CH CN DE DK EP ES FI FR GB IN JP KR SE TH TW US WO Bibliographic: (Europe) AT BA BE BG CH CS CY CZ DD DK EE ES FI GE GR HR HU IE IS IT LT LU LV MC MD MT NL NO PL PT RO RS SE SI SK SM TR UA YU (Asia) EA GC HK ID IL IN KZ MN MY PH RU SG SU TH TJ TW UZ VN (North America) CA CR CU DO GT HN MX NI PA SV TT (South America) AR BR CL CO EC PE UY (Australasia) AU NZ (Africa) AP DZ EG KE MA MW OA ZA ZM ZW
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	

<u>1</u>	IC=(H04W4/04 or G06T19/00)	31210
<u>2</u>	CPC=(H04W4/043 or H04W4/20 or G01S5/163 or G06T19/006 or G01C15/002 or G06K9/2063 or G06K9/00671 or G06K9/3208)	15325
<u>3</u>	UC=(455/456.3 or 345/633)	6225
<u>4</u>	2 and FT=((real time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) W3 (data or information*))	4527
<u>5</u>	4 and FT=(augment* or virtual)	3248
<u>6</u>	5 and FT=(facilit* or industrial plant* or industrial or commercial or vessel* or maritime)	2260
<u>7</u>	6 and FT=(BIM or building information model*)	22
<u>8</u>	6 and FT=(3d or 3-D or three dimens*)	1692
<u>9</u>	8 and FT=(temporal* or periodic*)	939
<u>10</u>	9 and FT=(align* or register* or map*)	882
<u>11</u>	10 and FT=((static*) W3 (element* or component*))	75
<u>12</u>	11 and FT=(dynamic*)	74
<u>13</u>	9 and FT=(temporal)	459
<u>14</u>	13 and FT=(display* W4 augment*)	231
<u>15</u>	14 and FT=((realtime or real time or sensor or telemet*) W4 (data or information))	224
<u>16</u>	15 and FT=(overla*)	213
<u>17</u>	16 and FT=(monitor*)	192
<u>18</u>	1 or 2 or 3	44034
<u>19</u>	18 and FT=((real time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) W3 (data or information*))	9556
<u>20</u>	19 and FT=(augment* or virtual)	5559
<u>21</u>	20 and FT=(facilit* or industrial plant* or industrial or commercial or vessel* or maritime) W3 (monitor*)	185
<u>22</u>	20 and FT=((realtime or real time or sensor or telemet*) W4 (data or information))	4529
<u>23</u>	22 and FT=(BIM or building information model*)	38

Electronic Database Searched

Thomsoninnovation

<b>Files Searched</b>	US Grant,AU Innov,CA App, US App,AU Grant,FR App,EPGrant,AU App,DE Util,EP App,GB App,DE Grant,WO App,CA Grant,DE App,JP App, KR Grant,KR App,Other,JP Util,KR Util ,CN Util,JP Grant,CN Grant,CN App,VN Grant,MY Grant,TH Grant,VN App,IN Grant,IN App,ID App ,ID Simple,SG Grant,SG App
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	

No.	Results	Collections	Search Query
1	451661	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) near3 (data or information*));
2	7816	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) near3 (data or information*)) and CTb=(augment*);
3	1119	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) near3 (data or information*)) and CTb=(augment*) and CTB=(facilit* or industrial ADJ plant* or industrial or commercial or vessel* or maritime);
4	2	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) near3 (data or information*)) and CTb=(augment*) and CTB=(facilit* or industrial ADJ plant* or industrial or commercial or vessel* or maritime) and ALL=(BIM or building ADJ information ADJ model*);
5	521	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GD Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or telemetric* or temporal or periodic or sensor* or measurement*) near3 (data or information*)) and CTb=(augment*) and CTB=(facilit* or industrial ADJ plant* or industrial or commercial or vessel* or maritime) and ALL=(3d or 3-D or three ADJ dimens*);
6	72	AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App	CTb=((real ADJ time or realtime or live or

telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and CTB=(temporal\* or periodic\*);

7 448 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*);

8 15 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) near3 (element\* or component\*));

9 264 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) and (element\* or component\*));

10 226 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) and (element\* or component\*)) and ALL=(dynamic\*);

11 134 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) and (element\* or component\*)) and ALL=(dynamic\*) and ALL=(temporal);

12 29 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) and (element\* or component\*)) and ALL=(dynamic\*) and ALL=(temporal) and ALL=(display\* near4 augment\*);

13 84 8 OR 6 OR 4

14 17 12 not 13

15 101 13 OR 12

16 78 11 not 15

17 179 15 OR 11

18 131 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App CTb=((real ADJ time or realtime or live or telemetric\* or temporal or periodic or sensor\* or measurement\*) near3 (data or information\*)) and CTb=(augment\*) and CTB=(facilit\* or industrial ADJ plant\* or industrial or commercial or vessel\* or maritime) and ALL=(3d or 3-D or three ADJ dimens\*) and ALL=(align\* or register\* or map\*) and ALL=((static\*) and (element\* or component\*)) and ALL=(dynamic\*) and ALL=(augmented ADJ reality);

19 43 18 not 17

20 222 18 OR 17

21 199 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App ALL=(building ADJ information ADJ model or BIM) AND ALL=(augmented ADJ reality);

22 113 AU App, AU Grant, AU Innov, CA App, CA Grant, DE App, DE Grant, DE Util, EP App, EP Grant, FR App, FR Grant, GB App, GB Grant, JP App, KR App, KR Grant, Other, RU App, RU Util, US App, US Grant, WO App ALL=(building ADJ information ADJ model or BIM) AND ALL=(augmented ADJ reality) and ALL=((realtime or real ADJ time or sensor or telemet\*) near4 (data or information));

23 111 22 not 20

<b>Electronic Database Searched</b>	Google Scholar
<b>Files Searched</b>	All Articles
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	
<p>About 2,170 results (0.15 sec)                      (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (BIM OR building information model) AND (align OR register) AND (static AND dynamic component)</p> <p>About 751 results (0.12 sec)                      (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (augmented reality) AND (static data AND dynamic data) AND (periodic scans)</p> <p>About 343,000 results (0.04 sec)                      (building information model) AND (real time information) AND (augmented reality)</p>	

<b>Electronic Database Searched</b>	Google Patents
<b>Files Searched</b>	US patents and US Applications
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	
<p>About 3,580 results (0.58 seconds)                      (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (BIM OR building information model) AND (align OR register) AND (static AND dynamic component)</p> <p>About 2,620 results (0.71 seconds)                      (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (augmented reality) AND (static data AND dynamic data) AND (periodic scans)</p> <p>About 48,700 results (0.43 seconds)                      (building information model) AND (real time information) AND (augmented reality)</p>	

<b>Electronic Database Searched</b>	Freepatentsonline
<b>Files Searched</b>	US patents and US Applications
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	
<p>Matches 1 - 50 out of 135 (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (BIM OR building information model) AND (align OR register) AND (static AND dynamic component)</p> <p>Matches 1 - 50 out of 61 (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (augmented reality) AND (static data AND dynamic data) AND (periodic scans)</p> <p>Matches 1 - 50 out of 19566 (building information model) AND (real time information) AND (augmented reality)</p>	

<b>Electronic Database Searched</b>	Google.com
<b>Files Searched</b>	All Files
<b>Date Conducted</b>	04 December 2018
<b>Search Logic:</b>	
<p>About 155,000 results (0.83 seconds)                      (telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND (BIM OR building information model) AND (align OR register) AND (static AND dynamic component)</p>	

About 84,700 results (0.73 seconds)

(telemetric monitoring) AND (facility OR environment OR factory) AND (3D scan) AND  
(augmented reality) AND (static data AND dynamic data) AND (periodic scans)

About 17,200,000 results (0.74 seconds)

(building information model) AND (real time information) AND (augmented reality)