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(54) **Displaying static images using spatially displaced sampling with semantic data**

(57) Methods and systems for utilizing metadata to preserve semantic information related to an image to allow a static version of the image to be displayed with sub-pixel precision on display devices having pixels with separately controllable pixel sub-components. A static version of an image can be displayed on a display device having a relatively low resolution, such as those associated with handheld devices, while maintaining the sub-

pixel precision positioning. The image is displayed on a display device, such as a liquid crystal display device, having separately controllable pixel sub-components. The sub-pixel precision positioning is used to map spatially different sets of samples to individual pixel sub-components rather than to entire pixels, resulting in image features, such as character edges, being displayed at pixel subcomponent boundaries, rather than always at boundaries between full pixels.

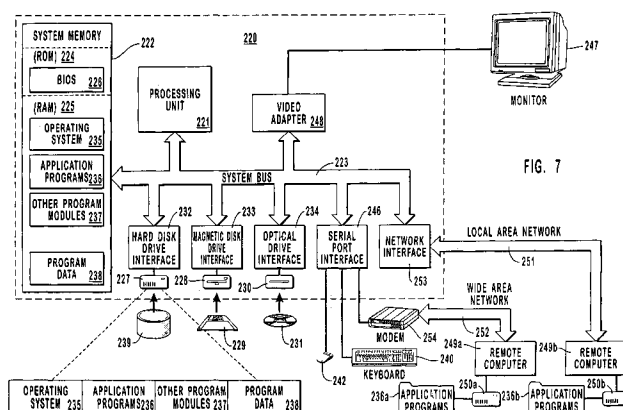


FIG. 7



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Office

# EUROPEAN SEARCH REPORT

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EP 03 01 0400

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |                                                    |                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                 | Relevant to claim                                  | CLASSIFICATION OF THE APPLICATION (IPC)    |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 01/29817 A (INTENSYS CORP [US]; GHULOUM ANWAR M [US]; TAM PAK Y [US]; OUYANG XIAOL) 26 April 2001 (2001-04-26)                                             | 1-20                                               | INV.<br>G09G3/36<br>G09G3/20               |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * abstract *<br>* figure 4 *<br>* page 3, line 20 - page 4, line 16 *<br>-----                                                                                | 21-32                                              |                                            |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EP 0 346 621 B1 (IBM [US])<br>29 March 1995 (1995-03-29)                                                                                                      | 1-20                                               |                                            |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * abstract *<br>* page 2, line 17 - line 20 *<br>* page 2, line 40 - line 45 *<br>* claim 1 *<br>-----                                                        | 21-32                                              |                                            |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 00/21070 A (MICROSOFT CORP [US])<br>13 April 2000 (2000-04-13)                                                                                             | 1-32                                               | TECHNICAL FIELDS<br>SEARCHED (IPC)<br>G09G |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * abstract *<br>* figure 9 *<br>* figure 10b *<br>* page 1, line 12 - line 15 *<br>-----<br>WO 00/21066 A (MICROSOFT CORP [US])<br>13 April 2000 (2000-04-13) | 1-32                                               |                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | * abstract *<br>-----                                                                                                                                         |                                                    |                                            |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                               |                                                    |                                            |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                               | Date of completion of the search<br>14 August 2007 | Examiner<br>Stoffers, Christian            |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                               |                                                    |                                            |

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 01 0400

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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14-08-2007

| Patent document<br>cited in search report |    | Publication<br>date |    | Patent family<br>member(s) |  | Publication<br>date |
|-------------------------------------------|----|---------------------|----|----------------------------|--|---------------------|
| WO 0129817                                | A  | 26-04-2001          | AU | 1097601 A                  |  | 30-04-2001          |
|                                           |    |                     | EP | 1171868 A1                 |  | 16-01-2002          |
|                                           |    |                     | JP | 2003512653 T               |  | 02-04-2003          |
| -----                                     |    |                     |    |                            |  |                     |
| EP 0346621                                | B1 | 29-03-1995          | CA | 1328514 C                  |  | 12-04-1994          |
|                                           |    |                     | DE | 68921926 D1                |  | 04-05-1995          |
|                                           |    |                     | DE | 68921926 T2                |  | 12-10-1995          |
|                                           |    |                     | EP | 0346621 A2                 |  | 20-12-1989          |
|                                           |    |                     | JP | 1945951 C                  |  | 23-06-1995          |
|                                           |    |                     | JP | 2146081 A                  |  | 05-06-1990          |
|                                           |    |                     | JP | 6077182 B                  |  | 28-09-1994          |
|                                           |    |                     | US | 5341153 A                  |  | 23-08-1994          |
| -----                                     |    |                     |    |                            |  |                     |
| WO 0021070                                | A  | 13-04-2000          | AU | 1106900 A                  |  | 26-04-2000          |
|                                           |    |                     | AU | 1443800 A                  |  | 26-04-2000          |
|                                           |    |                     | AU | 6512199 A                  |  | 26-04-2000          |
|                                           |    |                     | CN | 1322343 A                  |  | 14-11-2001          |
|                                           |    |                     | EP | 1155396 A1                 |  | 21-11-2001          |
|                                           |    |                     | JP | 2002527776 T               |  | 27-08-2002          |
|                                           |    |                     | WO | 0021066 A1                 |  | 13-04-2000          |
|                                           |    |                     | US | 6239783 B1                 |  | 29-05-2001          |
|                                           |    |                     | US | 6219025 B1                 |  | 17-04-2001          |
|                                           |    |                     | US | 6225973 B1                 |  | 01-05-2001          |
| -----                                     |    |                     |    |                            |  |                     |
| WO 0021066                                | A  | 13-04-2000          | AU | 1106900 A                  |  | 26-04-2000          |
|                                           |    |                     | AU | 1443800 A                  |  | 26-04-2000          |
|                                           |    |                     | AU | 6512199 A                  |  | 26-04-2000          |
|                                           |    |                     | CN | 1322343 A                  |  | 14-11-2001          |
|                                           |    |                     | EP | 1155396 A1                 |  | 21-11-2001          |
|                                           |    |                     | JP | 2002527776 T               |  | 27-08-2002          |
|                                           |    |                     | WO | 0021070 A1                 |  | 13-04-2000          |
|                                           |    |                     | US | 6239783 B1                 |  | 29-05-2001          |
|                                           |    |                     | US | 6219025 B1                 |  | 17-04-2001          |
|                                           |    |                     | US | 6225973 B1                 |  | 01-05-2001          |
| -----                                     |    |                     |    |                            |  |                     |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

|                |                                                                                            |         |            |
|----------------|--------------------------------------------------------------------------------------------|---------|------------|
| 专利名称(译)        | 使用语义数据使用空间位移采样显示静态图像                                                                       |         |            |
| 公开(公告)号        | <a href="#">EP1363266A3</a>                                                                | 公开(公告)日 | 2007-09-26 |
| 申请号            | EP2003010400                                                                               | 申请日     | 2003-05-08 |
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| 申请(专利权)人(译)    | 微软公司                                                                                       |         |            |
| 当前申请(专利权)人(译)  | 微软技术Licensing，LLC公司                                                                        |         |            |
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| IPC分类号         | G09G3/36 G09G3/20 G06T3/40 G09G5/24 G09G5/28                                               |         |            |
| CPC分类号         | G06T3/403 G09G3/20 G09G3/3611 G09G5/24 G09G2340/0421 G09G2340/0457                         |         |            |
| 优先权            | 10/145317 2002-05-13 US                                                                    |         |            |
| 其他公开文献         | EP1363266A2                                                                                |         |            |
| 外部链接           | <a href="#">Espacenet</a>                                                                  |         |            |

#### 摘要(译)

用于利用元数据来保存与图像有关的语义信息的方法和系统，以允许在具有具有可单独控制的像素子组件的像素的显示设备上以子像素精度显示图像的静态版本。静态版本的图像可以显示在具有相对低分辨率的显示设备上，例如与手持设备相关的显示设备，同时保持子像素精确定位。图像显示在具有可单独控制的像素子组件的显示设备上，例如液晶显示设备。子像素精确定位用于将空间上不同的样本集映射到各个像素子组件而不是整个像素，导致图像特征（例如字符边缘）显示在像素子组件边界处，而不是始终在像素子组件边界之间的边界处。全像素。

