**Title:** VIRTUAL TOKEN FOR TRANSPARENTLY SELF-INSTALLING SECURITY ENVIRONMENT

**Abstract:** A virtual token for use in a virtual computer environment to implement the secure cryptographic facilities of a hardware security token within a computer without requiring custom installation or administrator privileges. The hardware security token contains an automatic installer for the virtual environment and the virtual token with the computer’s operating system. When plugged into the computer the hardware security token automatically performs dynamic installation as necessary, providing secure cryptographic services to standard application programs already installed in the computer. The installation is transparent to the user, and requires no user attention or special access privileges. After the session is completed and the security token is removed from the computer, the virtual environment is effectively uninstalled from the host computer, also transparent to the user, without any user attention, and without making any modifications to the computer’s operating system.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(8) - H04L 9/32 (2009.01)
   USPC - 726/9
   According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
   Minimum documentation searched (classification system followed by classification symbols)
   USPC: 726/9

   Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
   USPC: 726/2, 9, 14, 380/255

   Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
   Databases: USPTO WEST (PGPB, USPT, USOC, EPAB, JPAB) Google Scholar
   Search Terms: Transparent, token, key, virtual, software, card, self, install, unnotice, uninterrupt

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 7,103,771 B2 (Grawrock) 05 September 2006 (09.05.2006), (fig. 1; col. 2, In 37 - col. 3, In 65; col. 4, In 38 - col. 5, In 3)</td>
<td>1-6</td>
</tr>
<tr>
<td>A</td>
<td>US 7,222,240 B2 (Elieto) 22 May 2007 (22.05.2007), Entire document</td>
<td>1-6</td>
</tr>
<tr>
<td>A</td>
<td>US 7,085,931 B1 (Smith et al.) 01 August 2006 (01.08.2006), Entire document</td>
<td>1-6</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
27 January 2009 (27.01.2009)

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Date of mailing of the international search report
20 MAR 2009

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Form PCT/ISA/210 (second sheet) (April 2007)