

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ABB INC.  
Petitioner

v.

ROY-G-BIV CORPORATION  
Patent Owner

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Cases IPR2013-00062 & IPR2013-00282  
Patent 6,516,236 B1

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Before THOMAS L. GIANNETTI, JENNIFER S. BISK, and  
JEREMY M. PLENZLER, *Administrative Patent Judges*.

GIANNETTI, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

## I. INTRODUCTION

### A. *Background*

ABB Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1-10 of U.S. Patent No. 6,516,236 B1 (Ex. 1001 (“the ’236 patent”)). Paper 4.<sup>1</sup> On April 18, 2013, the Board instituted trial on claims 1-4 and 8-10. Paper 23. On May 17, 2013, Petitioner filed a second Petition requesting an *inter partes* review of claims 1-10 of the ’236 patent.

IPR2013-00282, Paper 1. With the second Petition, Petitioner filed a motion requesting joinder with IPR2013-00062. IPR2013-00282, Paper 4. On June 10, 2013, Petitioner filed a motion limiting its second Petition to claims 5-7. IPR2013-00282, Paper 11. On August 9, 2013, the Board granted the second Petition and instituted a trial as to claims 5-7. IPR2013-00282, Paper 14. On the same day, the Board granted the motion for joinder and joined IPR2013-00062 and IPR2013-00282. IPR2013-00282, Paper 15.

During trial, ROY-G-BIV Corp. (“Patent Owner”) filed a Patent Owner Response (“PO Resp.”) addressing the challenges from the first Petition and a Supplemental Patent Owner Response (“Supp. PO Resp.”) addressing the challenges from the second Petition. Papers 30, 32. The Patent Owner Response was accompanied by an expert declaration from David B. Stewart, Ph.D. (Ex. 2011), author of the Stewart thesis relied upon by Petitioner. Petitioner filed a Reply (“Pet. Reply”) and, for the first time in this proceeding, presented expert testimony, namely declarations from Richard Voyles, Ph.D. (Ex. 1130) and Nikolaos Papanikolopoulos, Ph.D. (Ex. 1132). Paper 44. Drs. Voyles and Papanikolopoulos worked in the

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<sup>1</sup> Citations to the record refer to IPR2013-00062 unless otherwise noted.

same laboratory at Carnegie Mellon University as Dr. Stewart, and their testimony was presented by Petitioner to rebut Dr. Stewart's expert testimony. Patent Owner also filed a motion to exclude evidence ("Mot."). Paper 59. Oral hearing was held on January 23, 2014. A transcript of the hearing is included in the record as Paper 76 ("Transcript").

We have jurisdiction under 35 U.S.C. § 6(c). This final written decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons discussed below, we determine that Petitioner has not met its burden to prove by a preponderance of the evidence that claims 1-10 of the '236 patent are unpatentable.

#### *B. The '236 Patent*

The '236 patent relates generally to a system that facilitates the creation of hardware-independent motion control software. Ex. 1001, col. 1, ll. 13-16. In particular, the patent describes a high-level motion control application programming interface ("API") made of functions that are correlated with driver functions associated with controlling a mechanical system that generates movement based on a control signal. *See generally id.* at col. 1, ll. 5-49. The object of the invention is to isolate the application programmer from the complexity of hardware devices, which often have a manufacturer-specific motion control command language and functionality that is highly hardware-dependent. *See generally id.* at col. 3, ll. 24-42. At the same time, the API allows the programmer to access base motion operations of the hardware device. *Id.*

As described in the '236 patent, the prior art includes a number of low-level software programs for directly programming individual motion control devices, or for aiding in the development of systems containing a

number of motion control devices. *Id.* at col. 1, l. 55 – col. 2, l. 34. While providing complete control over the hardware, these low-level programs are highly hardware-dependent. *Id.* In describing the invention, the '236 patent discloses a programming interface consisting of “component functions” containing code that relates to driver functions, which in turn are associated with, or contain code for, implementing the motion steps on a given motion control device. *Id.* at col. 3, ll. 56-66. The component functions support both core driver functions—those functions that must be supported by all software drivers—and extended driver functions—those functions that may, or may not be, supported by a particular software driver. *Id.* at col. 4, ll. 3-13. When feasible, component functions can emulate extended driver functions not supported by a particular device by using a combination of core driver functions. *Id.* at col. 4, ll. 25-44.

### *C. Illustrative Claim*

Claim 1, the only independent claim, is reproduced below:

1. A system for generating a sequence of control commands for controlling a selected motion control device selected from a group of supported motion control devices, comprising:
  - a set of motion control operations, where each motion control operation is either a primitive operation the implementation of which is required to operate motion control devices and cannot be simulated using other motion control operations or a non-primitive operation that does not meet the definition of a primitive operation;
  - a core set of core driver functions, where each core driver function is associated with one of the primitive operations;
  - an extended set of extended driver functions, where each extended driver function is associated with one of the non-primitive operations;

a set of component functions;

component code associated with each of the component functions, where the component code associates at least some of the component functions with at least some of the driver functions;

a set of software drivers, where

- each software driver is associated with one motion control device in the group of supported motion control devices,
- each software driver comprises driver code for implementing the motion control operations associated with at least some of the driver functions, and

one of the software drivers in the set of software drivers is a selected software driver, where the selected software driver is the software driver associated with the selected motion control device;

an application program comprising a series of component functions, where the application program defines the steps for operating motion control devices in a desired manner; and

a motion control component for generating the sequence of control commands for controlling the selected motion control device based on the component functions of the application program, the component code associated with the component functions, and the driver code associated with the selected software driver.

*D. The Prior Art References Supporting the Alleged Unpatentability of Claims 1-10*

The following references are relied upon by Petitioner:

Gertz	Matthew Wayne Gertz, A Visual Programming Environment for Real-Time Control Systems (Ph.D. dissertation, Carnegie Mellon University)	Nov. 22, 1994	Ex. 1002
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