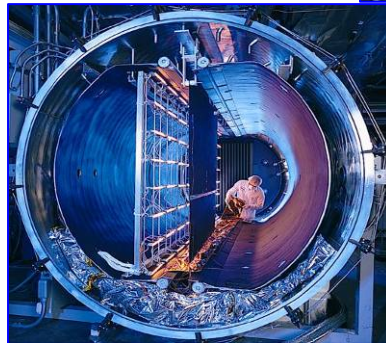


**Wyle Laboratories, Inc.
Written Statement for EAC Public Meeting and Hearing
September 2, 2009**

**Submitted to:
US Election Assistance Commission
1225 New York Ave., NW, Suite 1100
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Good Morning/Afternoon, Madam Chair and Commissioners. Thank you for inviting Wyle Laboratories to participate in this hearing today and providing us with the opportunity to talk about the use of “Commercial Off–The-Shelf” or COTS products in voting systems.

1. Introduction

Wyle Laboratories was founded 57 years ago as the first independent testing laboratory for systems and components under harsh environments, including dynamic and climatic extremes.

Today, Wyle is the world’s leading environmental simulation laboratory, with nearly 4,000 employees. We are engaged in test and evaluation activities across the U.S.

Wyle provides testing services to the aircraft, military, space, communications, transportation and power industries. We maintain expertise in critical technical areas to ensure that we can always provide realistic simulation of the environment in which a product will function, and that we can take accurate and objective measurements of how the product operates in the specified environment.

2. Wyle’s Involvement with Voting Systems

Wyle became involved with the testing of electronic voting systems in the early 1990’s and has tested over 150 separate voting systems.

Wyle was the first company to obtain accreditation by the National Association of State Election Directors (NASSED). Wyle is accredited by the Election Assistance Commission (EAC) as a Voting System Testing Laboratory (VSTL). Our scope of accreditation as a VSTL



encompasses all aspects of the hardware and software of a voting machine. Wyle also received NVLAP accreditation to ISO/IEC 17025:2005 from NIST.

3. Relationship with the EAC

In the case of voting systems, Wyle is a Voting Systems Test Laboratory (VSTL) operating under the auspices of the EAC, which sets the testing standards and requirements under which Wyle operates. Wyle's role is to provide testing and evaluation services as set forth in the current voting system standards. Wyle does not control the listing number for voting systems and is not the final authority on the acceptability of a system. Wyle is committed to work with the EAC, within the established guidelines, in order to help improve the process used to accredit voting systems.

4. Wyle Comments

Introduction:

Almost all voting systems use COTS in one manner or another. COTS can be hardware or software. COTS hardware components may be a PC/Laptop, monitor, keyboard, or peripherals including Americans with Disabilities Act (ADA) devices. COTS software components may be the operating system, system database, browser, or utilities. These components may come in three main forms. The COTS software component could be a compiled independent application, an embedded source code component, or a tool that generates source code compiled into the final product.



Classifications:

COTS components are classified into two categories in the 2005 EAC Voluntary Voting Systems Guidelines (VVSG). These classifications are unmodified COTS and modified COTS. It is the responsibility of the VSTL, working with the EAC, to determine what classification a COTS component of a voting system is categorized and test accordingly. Unmodified COTS components are exempt from many of the VVSG requirements where modified COTS require the VSTL to perform an engineering analysis to determine which standards apply and what testing should be performed.

Pros and Cons:

There are many “Pros” and “Cons” for a voting system manufacturer to use COTS components. Some of the “Pros” for the use of COTS are that COTS manufacturers specialize in the production of the specific equipment (such as Dell manufacturing a PC/Laptop). Voting system manufacturers are able to select components that are readily available and have been proven in the field. This allows the development cycle to be accelerated with large cost savings. Some of the “Cons” to the use of COTS components is the voting system manufacturer can use the COTS components as a “Black Box” component, but changes are made to COTS components continually. These changes may be a small component change to a part or a total rework of a part. The reasons for these changes vary from cost savings, end of life (EOL) of a part, to issues discovered in the field.



The changes many times are to a similar part or component but not identical to the existing part. For example, Wyle has seen a liquid crystal display (LCD) monitor that passed original Electrostatic Disruption (ESD) testing, but failed during ESD testing for an update. After a lengthy discussion and research with the LCD manufacturer, it was discovered the same LCD model and revision were changed during production. The LCD manufacturer switched from one subcontractor to another subcontractor. In this situation, the voting system manufacturer was not aware of this change. The LCD manufacturer assumed the same specifications used to build the product created by different subcontractors would perform exactly the same, but they did not, resulting in the failure.

Testing for COTS:

The EAC has published Request for Interpretation (RFI) "2007-05 Testing Focus and Applicability". This document requires COTS standalone products such as PC/Laptops to have a Federal Communications Commission (FCC) Class B and "European Conformity" (CE) Marks affixed to the unit and the VSTL to receive the Declaration of Conformity from the COTS product manufacturer. These products are not always tested to the same level as in the VVSG. Volume I section 4.1.2.8 Electrostatic Disruption Testing is based on an international standard EN 61000-4-2. This standard contains two levels: A residential level for the air discharge of ± 8 kV and an industrial level at ± 15 kV. The VVSG requires the industrial level. Conducted RF Immunity is based on an international standard



EN-61000-4-3. This standard contains two levels: A residential level of 3 v rms and an industrial level at 10 v rms. The VVSG requires the industrial level. For CE compliance, a manufacturer can test to either the residential level or the industrial level and claim conformance.

Use of COTS PCs/Laptops in Voting Systems:

There are typically two ways that a COTS PC/Laptop would be used in a voting system. The COTS PC/Laptop is used to support the Election Management System (EMS) functions of the voting system and/or the COTS PC/Laptop itself is the voting device with proprietary software. The development cycle for the proprietary voting system software used for these two functions relies on third-party supporting software such as operating systems, databases, web browsers, and drivers. In most situations, the COTS hardware only needs to support the third-party package for these functions to operate successfully. Most proprietary voting system software has been written with assumptions that the third-party packages are available and resident on the hardware. An example of this could be the voting system using a reporting application like Adobe "Acrobat" or Business Objects "Crystal Reports". All proprietary software would be written with the assumption that the required software is resident on the PC/Laptop where it is being run. The hardware components are in a fixed state and unlikely to change, but the third-party supporting software is dynamic and likely to require updates. The requirements for the hardware most likely are interchangeable between components if a COTS PC/Laptop is a different model or



manufacturer as long as the system designs are similar and can support the third-party package required by the proprietary voting system software.

5. Conclusion

COTS PCs/Laptops used to support the EMS functions of a voting system, most likely require third-party software packages to be resident on the hardware. This is the only requirement for successful implementation. In this case, changes to the COTS equipment have a minimal impact on the system. Wyle believes the three EAC-suggested methods for testing would all be sufficient to lessen potential risks and minimizes testing and certification costs:

- Certifying voting systems with specific PC models and allowing the same models to be used in future systems as long as the memory or hard drive capacity is not decreased;
- Allowing the addition of other models of PCs from the same vendor, as long as the minimum system requirements are met and the PC manufacturer provides a letter stating that the models are interchangeable with respect to performance;
- Allowing the substitution of equivalent models of PCs from other vendors provided that a declaration of conformance from the certified vendor is available stating that the models are interchangeable with respect to performance and some sort of regression testing is performed.



Wyle would also like to suggest another possible solution would be to perform an installation test on the replacement model. This installation test could include installing all third-party products required by the system along with the voting system applications to insure the system can support the voting system. In addition to installing the software, a minimum performance test could be performed. The details of this test could be documented by the EAC as an RFI.

COTS PCs/Laptops loaded with proprietary software functioning as the voting device should be fully tested under the VVSG guidelines. This belief is based on the differences in CE testing versus the requirements set forth in the VVSG. Simply analyzing the statement of conformance in this situation may not be fully equivalent to the VVSG requirements.

Again, I would like to thank Madam Chair and Commissioners for inviting Wyle to participate in this hearing today.