SEMI E142.3-0211
WEB SERVICES FOR SUBSTRATE MAPPING

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1 Purpose

1.1 This Standard is meant to facilitate software vendors, service providers, and/or semiconductor manufactures to offer a cohesive, interoperable set of tools for the transfer of substrate maps among semiconductor entities.

1.2 This Document maps the services of SEMI E142 to XML Web Services. The Web Services Definition Language (WSDL) representation of this Standard is contained in a separate document.

2 Scope

2.1 This Standard defines how to transmit substrate maps defined in SEMI E142, between semiconductor manufacturing sites.

2.2 This Standard defines authentication and non-repudiation of the inter-site connection.

2.3 This Specification provides the following:

- The XML schema data types and elements used to support the transport of SEMI E142.1 defined <MapData> elements.
- The WSDL message, portType and binding definitions used to support the operations necessary for the transport of SEMI E142.1 defined <MapData> elements.

2.4 This Specification does not add new domain information or concepts to the SEMI E142 Specification. The only additions made are those needed to render useful WSDL or XML schemas. The SEMI E142.1 schema file is imported without extensions or restrictions.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 This Standard is limited to the transfer of substrate maps as defined by SEMI E142.

3.2 This Standard does not define encryption of the inter-site connection. The services defined are, however, intended to operate over an encrypted inter-site connection such as SSL.

4 Referenced Standards and Documents

4.1 *SEMI Standards and Safety Guidelines*

SEMI E142 — Specification for Substrate Mapping

SEMI E142.1 — XML Schema for Substrate Mapping

4.2 World Wide Web Consortium Documents[1]

Canonical XML Version 1.1 — W3C, 2 May 2008 (http://www.w3.org/TR/xml-c14n11/)

eXtensible Markup Language (XML) 1.0 (Fifth Edition) — W3C, 26 November 2008 (http://www.w3.org/TR/xml/)

Namespaces in XML 1.0 (Third Edition) — W3C, 8 December 2009 (http://www.w3.org/TR/xml-names/)

[1] World Wide Web Consortium Documents are available from Massachusetts Institute of Technology, Laboratory for Computer Science, 200 Technology Square, Cambridge, MA 02139, USA. Telephone: +1.617.253.2613; Fax: +1.617.258.5999; http://www.w3.org/TR/REC-xml

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XML Schema Part 0: Primer Second Edition — W3C, 28 October 2004 (http://www.w3.org/TR/xmlschema-0/)

XML Schema Part 1: Structures Second Edition — W3C, October 2004 (http://www.w3.org/TR/xmlschema-1/)

XML Schema Part 2: Datatypes Second Edition — W3C, October 2004 (http://www.w3.org/TR/xmlschema-2/)

XML Path Language (xPath) 2.0 — W3C, 23 January 2007 (http://www.w3.org/TR/xpath20/)

SOAP Version 1.2 Part 0: Primer (Second Edition) — W3C, 27 April 2007 (http://www.w3.org/TR/soap12-part0/)

SOAP Version 1.2 Part 1: Messaging Framework (Second Edition) — W3C, 27 April 2007 (http://www.w3.org/TR/soap12-part1/)

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

5 Terminology

5.1 *Abbreviations and Acronyms*

5.1.1 *SOAP* — Simple Object Access Protocol

5.1.2 *W3C* — World Wide Web Consortium

5.1.3 *WS* — Web Service

5.1.4 *XML* — eXtensible Markup Language

5.2 *Definitions*

5.2.1 *document* — an XML document conforming to the SEMI E142.1 schema.

5.2.2 *non-repudiation* — a method by which the sender of data is provided with proof of delivery and the recipient is assured of the sender's identity, so that neither can later deny having processed the data.

5.2.3 *service provider* — a legal entity that provides a web service.

5.2.4 *SOAP* — the formal set of conventions governing the format and processing rules of a SOAP message. These conventions include the interactions among SOAP nodes generating and accepting SOAP messages for the purpose of exchanging information along a SOAP message path.

5.2.5 *web service* — a Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface described in a machine-processable format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP-messages, typically conveyed using HTTP with an XML serialization in conjunction with other Web-related standards.

6 Ordering Information

6.1 Not applicable.

7 Description

7.1 *Services Mapping*

7.1.1 Table 1 shows the web services—WSDL operations—and how they map to WSDL messages.

Table 1 Mapping of SEMI E142 Services to WSDL Message Names

Service Name	*WSDL Input Message Name*	*WSDL Output Message Name*	*Comments*
Logon	LogonRequest	LogonRequestResponse	Logon to service provider to begin a session.
Logoff	LogoffRequest	LogoffRequestResponse	Logoff from service provider to end a session.
MapDownload	MapDownloadRequest	MapDownloadResponse	Download map data assigned to the authenticated user based on specified filters for a single substrate.
MapUpload	MapUploadRequest	MapUploadResponse	Upload map data for a single substrate assigned to the authenticated user.

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Service Name	*WSDL Input Message Name*	*WSDL Output Message Name*	*Comments*
MapGroup Download	MapGroupDownload Request	MapGroupDownload Response	Download map data assigned to the authenticated user based on specified filters for one or more substrates.

7.2 *Authentication*

7.2.1 All services defined in SEMI E142.3 are provided in the context of an authenticated session. The session is established via the Logon service and released by the Logoff service. A SessionId is generated by the service provider in response to the Logon service and returned to the client. The client must include this SessionId for all service invocations within the session. When the client invokes the Logoff service, the SessionId becomes invalid and will no longer be accepted by the service provider. The service provider shall invoke the Logoff service automatically if there is no session activity for a configurable period of time.

7.3 *Session Management*

7.3.1 The SessionId should be globally unique for every individual session. The SessionId is not part of the SOAP message body, but rather transmitted in a "Ticket" member of the SOAP header, named SyncHeader. In this way the handling of the session can be transparent.

7.4 *Non-Repudiation*

7.4.1 The service provider will maintain secure audit trails that include, at a minimum, for every service invocation; username, date, time, SessionId, service name and service parameters. The SessionId in particular can be used to compare with audit trails on the client side to prove that a transaction took place.

7.5 *XML Schema and WSDL Files*

7.5.1 Each service presented in Table 1 is mapped to a WSDL portType and a binding definition. They are named after the service in question. WSDL binding definitions of each portType are used to specify the SOAP 1.2 envelope contents for each operation and to define the corresponding XML encoding styles and HTTP header usage. All SEMI E142.3 WSDL interfaces use document/literal encoding, with the complete SOAP header and body contents defined in XML schema file(s) via global element definitions.

7.5.1.1 Implementations of this specification shall conform to the schema file defined in Table 2 below.

7.5.1.2 The schema file defined in Table 2 imports the schema file defined in SEMI E142.1. The SEMI E142.1 schema file only supports the definition of a Substrate Map. The definition of types necessary to develop the required Web Services are defined in the schema file introduced in Table 2.

Table 2 XML Schema

File Name	E142-3-V0211-Schema.xsd
Target Namespace	urn:semi-org:xsd.E142-3.V0211.SubstrateMap
Imported/Referenced Namespaces	http://www.w3.org/2001/XMLSchema urn:semi-org:xsd.E142-1.V0211.SubstrateMap
Description	This file imports all of the E142.1 data types and elements that define a Substrate Map, and defines the data types and elements required to support the Web Services defined in E142.3.

7.5.1.3 Implementations of this Specification shall conform to the WSDL file defined in Table 3 and Table 4. The Web Services definitions are split in two files referenced in Table 3 and Table 4.

7.5.1.4 The file referenced in Table 3 supports the type, message and portType part of the Web Services definitions.

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