NEW YORK STOCK EXCHANGE, INC.
MARKET DATA DIVISION

NYSE's VRXML Business Rules

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ABSTRACT

The purpose of this document is to provide a description of the business rules that are applied to the Vendor Reporting eXtensible Markup Language (VRXML) by the Market Data Services (MDS) division of the New York Stock Exchange (NYSE).

It is assumed that the readers of this document are the NYSE Vendors that are creating VRXML files to meet the NYSE reporting requirements. This document has been made available at on the NYSE MDS website at http://mds.nysedata.com/VRXML/2002/1.0/NYSEVRXMLBusinessRules.pdf.

EXECUTIVE SUMMARY

In December of 2002 the New York Stock Exchange (NYSE) in coordination with the Financial Information Services Division (FISD) published the initial release of the Vendor Reporting eXtensible Markup Language (VRXML). Gemini Systems, LLC created the VRXML language for the NYSE's Market Data Services (MDS) division. VRXML was developed with the flexibility to become an industry standard protocol by serving the needs of exchanges, vendors, and subscribers.

Inherent in the VRXML schema, as with all XML schemas are validation rules. However, not all of the NYSE's business rules are built into the VRXML schema, nor would it be appropriate to do so because each recipient of a VRXML file may have tailored processing rules.

This document is an expression of the NYSE VRXML business rules and can also be used as a model for other VRXML recipients to use for the expression of their own business rules.

VRXML
STRUCTURE

The VRXML structure is made up of layers of elements. Elements are embedded within other elements to provide a feature-laden communication vehicle with explicit reporting capabilities. Each layer is contained within the VRXML root element and rules are applied to how these elements can be intermingled. The following outlines the structure of the VRMXL from a layered perspective.

Meta Data Elements
- vrxml
- fileDescriptor
- entryMetaData

1st Layer Elements:
- inventoryEntry
- vendorEntry
- subscriberNewEntry
- subscriberChangeEntry

2nd Layer Elements:
- product
- productCode
- locationNew
- locationChange
- locationLocals
- contact

Core Data Elements:
- inventory
- address
- company
- person

TOTAL INVENTORY

The NYSE has initiated a new business rule for monthly reporting. In the past Vendors were only required to report changes to their product's inventory. If the Vendor did not report for a product's inventory, then it was to be implied that the inventory has not changed and the quantity remains as the last reported quantity. The outcome of these assumptions led to inconsistencies in the reported quantities for these products.

Total Inventory Rule:
All VRXML files for the NYSE should contain all reportable products for the Vendor. The file submitted must essentially bring the Vendor's reporting obligation up to date. All files are processed using Eastern Time / New York-time (ET) submission dates and times. Therefore, if the file is submitted between June 1, 2003 - 12:00am ET and June 30, 2003 - 23:59 ET, the file must contain the Vendor's inventory for all reportable products at all locations up to and **including June**.

If the Vendor has fulfilled their reporting obligation for the current month then they are allowed to submit files that do not contain all reportable product's quantities. For example, if the Vendor is up to date, the Vendor could submit a file that simply adds a reporting contact and does not contain any inventory.

The NYSE procedures require Vendors to report their total inventory every month. If, for a given month, a Vendor does not submit a report, then they will be required to report for the months missed in addition to the current month in their next report.

MONTHLY REPORTING

A reporting period is defined as the 16th of Month 'A' through the 15th of Month 'B'. For example, the reporting period for June 2003 is May 16, 2003 – June 15, 2003.

The NYSE constitutes that if a product is active at a location on the 15th of the month, then it is to be reported with a quantity for that month. In essence, the Vendor should take a "snapshot" of their database as of the 15th of the month 23:59 ET (the end of the reporting period) and report that data to the NYSE. For example, if a single device is in use during the June reporting period – then it should be reported with a quantity of 1 for June.

There is one exception to this rule. If a product becomes active in the same reporting period that it becomes inactive it must be reported for that month. Therefore, if a product is activated on May 22, 2003 and then deactivated on June 4, 2003 – then it is to be reported with a quantity of 1 for June, and then in next month's file (July) be reported with a quantity of 0 (and made inactive if appropriate).

META ELEMENTS

VRXML

The vrxml element is the root element of every report. All of the reported data is embedded within this element.

Business Rules:

Explanation	The rules for the VRXML file as a whole are applied to ensure the following: • The file is submitted using the stringent rules that are expressed in the VRXML Schema. • The file contains reportable data using the elements provided in the VRXML Schema. • The file contains the new "Total Inventory" concept of reporting. Refer to the Total Inventory section in this document for further details.
Structure	• The file must abide by the VRXML Schema. • The file must have at least one 1st layer element.
Data	• The file must contain Total Inventory. Refer to the Total Inventory section in this document for further details.

FILE DESCRIPTOR

The fileDescriptor element is used to report the following information:
• The Vendor that has submitted the report
• The date the file was created
• Meta data for the report

Business Rules:

Explanation	The rules for the fileDescriptor element are applied to ensure that the vendorId element contains the valid vendorId of the Vendor who is submitting the file.
Structure	No additions to the VRXML Schema.
Data	• The vendorId element must be the valid vendorId of the Vendor that is submitting the report.

ENTRY META DATA

The entryMetaData element is used to report the total count of each first level element expressed within the file.

Business Rules:

Explanation	The rules for the entryMetaData element are applied to ensure that there are no discrepancies in what the Vendor is intending to report and what is actually reported.
Structure	• The count elements of an entryMetaData element must contain the total number of occurrences of the entry identified using the entry attribute.
Data	No additions to the VRXML Schema.

1ST LAYER ELEMENTS **VENDOR ENTRY**	

The vendorEntry element is used to report the following information:
- Vendor name changes
- Billing address changes
- Contact changes to include adding, deleting, and updating contacts
- Adding new locations for internal Vendor usage
- Location changes for internal Vendor usage

Business Rules:

Explanation	The rules for the vendorEntry element are applied to ensure the following: • The Vendor has a clear understanding on what they are submitting, why they are submitting it, and how it is processed. • That there is always one and only one 'Primary Reporting' contact per Vendor. • That a contact cannot be indicated to be a location contact without being linked to that specific location. Adding a location or changing a location can only accomplish this. • That any new contacts are accompanied by an address for that contact. • That adding new contact with 'Primary Reporting' responsibility or changing an existing contact to have 'Primary Reporting' responsibility will automatically change the existing 'Primary Reporting' contact to a 'Reporting' contact.
Structure	• Vendor name changes are actually requests for a name change and are not automatically processed. • Billing addresses are currently ignored. A Vendor can submit this data but it will not be processed. • There can only be one contact element with a contactType element of 'PR' (Primary Reporting) that is being added or updated using an actionCode of 'ADD' or 'UPD' respectively. • There can only be a contact element with a contactType element of 'PR' (Primary Reporting) with an actionCode of 'DEL' if within the file there is a contact element with a contactType element of 'PR' (Primary Reporting) with an actionCode of 'ADD'.

	• A contact element cannot have a single contactType element with a value of 'LO' (Location) unless the contact element is embedded within a locationNew or locationChange element. • If a contact element that is being added using an actionCode='ADD', then the address element becomes a mandatory element.
Data	No additions to the VRXML Schema.

INVENTORY ENTRY

The inventoryEntry element is used to report the following information:
- New products at specified locations
- Product cancellations at specified locations
- Quantities for products at specified locations

Business Rules:

Explanation	The rules for the inventoryEntry element are applied to ensure that a Vendor Account Number (VAN) uniquely identifies the reported locations.
Structure	• The inventoryEntry element's VAN attribute is mandatory unless the inventoryEntry element is embedded within a locationNew or locationChange element. In the latter case the VAN attribute is implied to be the VAN of the locationNew or locationChange element. • The VAN attribute must be less then or equal to 10 characters in length.
Data	No additions to the VRXML Schema.

SUBSCRIBER NEW ENTRY

The subscriberNewEntry element is used to report the following information:
- A new Subscriber for the reporting vendor
- The new Subscriber's billing address
- The new Subscriber's contact information

- The new Subscriber's company information
- The new Subscriber's new locations

Business Rules:

Explanation	The rules for the subscriberNewEntry element are applied to ensure the following: • The Vendor understands that billing addresses are not processed if they are submitted in the file. • That there is not a concept of contacts for Subscribers but rather contacts for Subscriber's locations.
Structure	• Billing addresses are currently ignored. A Vendor can submit this data but it will not be processed. • Contact elements must be embedded within a locationNew element; otherwise contact elements are currently ignored.
Data	No additions to the VRXML Schema.

SUBSCRIBER CHANGE ENTRY

The subscriberChangeEntry element is used to report the following information:
- Billing address changes for the specified Subscriber
- Contact changes for the specified Subscriber
- Company name changes for the specified Subscriber
- New locations for the specified Subscriber
- Changes to existing locations for the specified Subscriber

Business Rules:

Explanation	The rules applied to the subscriberChangeEntry element are supplied to ensure the following: • The Vendor understands that billing addresses are not processed if they are submitted in the file. • There is not a concept of contacts for Subscribers but rather contacts for Subscriber's locations. • All references to Vendor Account Numbers (VANs) must be valid VANs.
Structure	• Billing addresses are currently ignored. A Vendor can submit this data but it will not be processed. • Contact elements must be embedded within a locationNew or locationChange element otherwise contact elements are currently ignored.

		• Company name changes are currently ignored. A Vendor can submit this data but it will not be processed. • The refVAN attribute must be less then or equal to 10 characters in length.
	Data	• The refVAN attribute of the subscriberChangeEntry element must refer to a current location for the Subscriber that is being changed.

2ND LAYER ELEMENTS

LOCATION NEW

The locationNew element is used to report the following information:
- A new location for a Subscriber or Vendor
- Contact information for the new location
- Local address information for the location
- Local company information for the new location
- Inventory information for the new location

Business Rules:

Explanation	The rules applied to the locationNew element are supplied to ensure the following: • Location contacts are the only type of contacts that can be indicated when adding new locations. • Products can only be added to new locations and cannot be deleted until the ensuing month's report. • All new locations must have a local company name. • All references to Vendor Account Numbers (VANs) must be new VANs and cannot already have been reported to the NYSE.
Structure	• If a contact element exists, then the contact element must have a contactType='LO' (Location). • The contact element must have an actionCode='ADD' or an actionCode='UPD'. • Each product element embedded within an inventoryEntry element must have an actionCode='ADD' or an actionCode='UPD'. • LocationNew elements must contain a locationLocals element, which contains a name1 element that indicates the local company name of this new location. • The VAN attribute must be less then or equal to 10 characters in length.
Data	• A location with a VAN equal to that of a locationNew's VAN attribute cannot already exists in the NYSE backend.

LOCATION CHANGE

The locationChange element is used to report the following information:
- Changes to the location's contact information
- Changes to the location's local address
- Changes to the location's local company information

Business Rules:

Explanation	The rules applied to the locationChange element are supplied to ensure the following: • Location contacts are the only type of contacts that can be addressed when changing location information. • All references to Vendor Account Numbers (VANs) must be valid VANs.
Structure	• If a contact element exists, then the contact element must have a contactType='LO' (Location). • The VAN attribute must be less then or equal to 10 characters in length.
Data	• A location with a VAN equal to that of a locationChange's VAN attribute must exist when attempting to change existing location information.

LOCATION LOCALS

The locationLocals element is used to report the local address and company information of a location.

Business Rules:

Explanation	No business rules have been applied.
Structure	No additions to the VRXML Schema.
Data	No additions to the VRXML Schema.

CONTACT

The contact element is used to report the following information:
- Updates to contact information

- Deletions of contacts
- Additions of contacts
- Person information for a contact
- Address information for a contact

Business Rules:

Explanation	The rules applied to the contact element are supplied to ensure the following: • Primary Reporting contacts cannot be a Reporting contact as well -- they are mutually exclusive. • Location contacts are linked with locations. • Contacts are uniquely identified per Vendor by using the contact name. Any changes to contact information must adhere to the uniqueness of the last name.
Structure	• If the contact element has a contactType element of 'PR' (Primary Reporting), the contact element cannot also have a contactType element of "RP' (Reporting). • If the contact element has only one contactType element of 'LO' (Location), then the contact element must be embedded within either a locationNew or locationChange element. • If the contact element has only one contactType element with a value of 'BL' (Billing), then the contact element will be rejected.
Data	• If a contact does not already exist with same last name in the NYSE backend when attempting to update a contact using the actionCode element with a value of 'UPD', then the contact will be added. • Even if a contact exists with same last name in the NYSE backend for this Vendor or Location when attempting to add a contact using an actionCode of 'ADD', the contact will be added.

PRODUCT

The product element is used to report the following information:
- Adding products for a location
- Canceling products for a location
- Inventory quantities for a product

Business Rules:

Explanation	The rules applied to the product element are supplied to ensure the following: • The action of canceling a product must have a date of cancellation associated with it. • Products cannot be indicated as being deleted in the future. • The only product codes that can be used are Vendor product codes. • All products are reported once per month. • Products cannot be canceled using an effective date that is before the effective date that they were added. • Products that are being added to a location must be approved products for that Vendor.
Structure	• If a product element is being cancelled at a location then the effectiveDate element becomes a mandatory field and is used to indicate the date the product is to be canceled. • If product element is being deleted from a location then the effectiveDate element cannot be a date in the future. • All product elements must have a productCode element with a codeOwner='VEN'. • A products inventory elements with the same effectiveDate cannot be listed more than once. .

Data	• If product element is being used to delete it from a location using and actionCode='DEL', then the effectiveDate element cannot be earlier than start date of the product.
	• If a product element is being added to a location using an actionCode='ADD', then the Vendor must have already received approval by the NYSE to vend the product at the specified location.
	• If a product element is being added to a location using an actionCode='ADD' and the product is determined to be for a Metered Usage or Non Professional service, then the following rules apply:
	  1. The product must be being added to a Vendor's location
	  2. The product must not already exist at another location.
	  3. The product's location must be the only location that exists in the NYSE backend or within the file that contains a Metered Usage or Non Professional service.

PRODUCT CODE	
	The productCode element is used to report the identity of the product that is being reported.

Business Rules:

Explanation	The rules applied to the productCode element are supplied to ensure that all referenced product codes are valid product codes.
Structure	No additions to the VRXML Schema.
Data	• The code element with a codeOwner='VEN' must exist in the NYSE backend. .

CORE DATA ELEMENTS

INVENTORY

The inventory element is used to report the quantities for products at locations.

Business Rules:

Explanation	The rules applied to the inventory element are supplied to ensure the following:
	• The Vendor is aware that the NYSE is only concerned with the month and year of the inventory and the day is ignored.
	• The Vendor cannot report for inventory for future months.
	• Inventory quantities cannot be reported for months prior to the start date of the product at that location.
	• Any changes to previously reported inventory must be accompanied by a comment that explains the necessary change.
Structure	• Only the month and year of the effectiveDate element is used.
	• The effectiveDate element must be equal to or earlier than the current month
Data	• If an inventory element is being reported that has already been reported for, then the comments element becomes a mandatory field.

ADDRESS

The address element is used to report address changes and additions.

Business Rules:

Explanation	The rules applied to the address element are supplied to ensure the following:
	• Specific elements in the VRXML schema allow for larger data values than the NYSE allows for those elements.
	• All United States (US) and Canada (CA) locations must indicate a state/province and any values for region are ignored.
	• If a state/province is indicated for a non 'US' or 'CA' location then it will be used as long as it is a valid

		state/province. • Regions are only used if they are in accordance with the ISO 3166-2 standard for country subdivision codes.
	Structure	• Only the first 35 characters are used of the address1, address2, and address3 elements. • If the country element is 'US' or 'CA' then the stateProvince element is mandatory and must contain a valid 'US' or 'CA' state code. • The region element is only used if the country element is not 'US' or 'CA'. • Only the first 20 characters of the postalCode element are used. • The countryCode element must be an ISO 3166-1-alpha-2 country code. • If the country element is 'US' then the postalCode must exist and must be either 5 or 10 characters in length • If the country element is 'CA' then the postalCode must exist.
	Data	• If the country element is not 'US' or 'CA', the stateProvince element is not used. • If the stateProvince element is a valid subdivision for the given country then the stateProvince element is used and the region element is disregarded. • If the region element is used for non 'US' or 'CA' locations is only used if it is an ISO standard state/province/region, otherwise it is ignored.

COMPANY

The company element is used to report the company related informational changes and additions.

Business Rules:

Explanation	The rules applied to the company element are supplied to ensure the following: • Specific elements in the VRXML schema allow for larger data values than the NYSE allows for those elements.
Structure	• Only the first 35 characters are used for name1 and name2 elements.

Data	No additions to the VRXML Schema.

PERSON

The person element is used to report the person related informational changes and additions.

Business Rules:

Explanation	The rules applied to the person element are supplied to ensure the following: • The full name of a person is not a field that is used and can be omitted from files. • Specific elements in the VRXML schema allow for larger data values than the NYSE allows for those elements.
Structure	• The fullName element is currently not used. • Only the first 15 characters are used for the salutation element. • Only the first 50 characters are used for the title element.
Data	No additions to the VRXML Schema.