                    ECML v1: Field Names for E-Commerce

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IESG Note

   This document is the output of a vendor consortium, and is not the
   output of an IETF Working Group. Implementors of this specification
   are warned that this data model is heavily biased toward conventions
   used in the United States, and the English language. As such it is
   unlikely to be suitable for international or multilingual use in the
   global Internet.

Abstract

   Customers are frequently required to enter substantial amounts of
   information at an Internet merchant site in order to complete a
   purchase or other transaction, especially the first time they go
   there. A standard set of information fields is defined as the first
   version of an Electronic Commerce Modeling Language (ECML) so that
   this task can be more easily automated, for example by wallet
   software that could fill in fields. Even for the manual data entry
   case, customers will be less confused by varying merchant sites if a
   substantial number adopt these standard fields.

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1. Introduction

1.1 Background

   Today, numerous merchants are successfully conducting business on the
   Internet using HTML-based forms. The data formats used in these forms
   varies considerably from one merchant to another. End-users find the
   diversity confusing and the process of manually filling in these
   forms to be tedious. The result is that many merchant forms,
   reportedly around two thirds, are abandoned during the fill in
   process.

   Software tools called electronic wallets can help this situation. A
   digital wallet is an application or service that assists consumers in
   conducting online transactions by allowing them to store billing,
   shipping, payment, and preference information and to use this
   information to automatically complete merchant interactions. This
   greatly simplifies the check-out process and minimizes the need for a
   consumer to complete a merchant's form every time. Digital wallets
   that fill forms have been successfully built into browsers, as helper

applications to browsers, as stand-alone applications, as browser
plug-ins, and as server-based applications. But the proliferation of
electronic wallets has been hampered by the lack of standards.

ECML (Electronic Commerce Modeling Language, <www.ecml.org>) Version
1 provides a set of simple guidelines for web merchants that will
enable electronic wallets from multiple vendors to fill in their web
forms. The end-result is that more consumers will find shopping on
the web to be easy and compelling.

The set of fields documented herein was developed by the
Wallet/Merchant Standards Alliance (www.ecml.org) which now includes,
in alphabetic order, the following:

            American Express (www.americanexpress.com)
            AOL (www.aol.com)
            Brodia (www.brodia.com)
            Compaq (www.compaq.com)
            CyberCash (www.cybercash.com)
            Discover (www.discovercard.com)
            FSTC (www.fstc.org)
            IBM (www.ibm.com)
            Mastercard (www.mastercard.com)
            Microsoft (www.microsoft.com)
            Novell (www.novell.com)
            SETCo (www.setco.org)
            Sun Microsystems (www.sun.com)
            Trintech (www.trintech.com)
            Visa (www.visa.com)

The fields are derived from and consistent with the W3C P3P base data
schema at

    <http://www.w3.org/TR/WD-P3P/basedata.html>.

1.2 Relationship to Other Standards

ECML Version 1 is not a replacement or alternative to SSL/TLS [RFC
2246], SET [SET], XML [XML], or IOTP [IOTP]. These are important
standards that provide functionality such as non-repudiatable
transactions, automatable payment scheme selection, and smart card
support.

ECML may be used with any payment mechanism. It simply allows a
merchant to publish consistent simple web forms.

Multiple wallets and multiple merchants plan to interoperably support
ECML. This is an open standard. ECML is designed to be simple.

Version 1 of the project adds no new technology to the web. A
merchant can adopt ECML and gain the support of these multiple
Wallets by making very simple changes to the HTML pages that they
currently use to support their customers. Use of ECML requires no
license.

1.3 Areas Deferred to Future Versions

Standardization of information fields transmitted from the merchant
to the consumer, considerations for business purchasing cards, non-
card payment mechanisms, wallet activation, privacy related
mechanisms, additional payment mechanisms, and any sort of
"negotiation" were among the areas deferred to consideration in
future versions. Hidden or other special fields were minimized. The
primary target was North American consumer to merchant electronic
commerce.

2. Using The Fields

To conform to this document, the field names shall be as listed in
section 3 below. Note: this does not impose any restriction on the
user visible labeling of fields, just on their names as used in
communication with the merchant.

2.1 Presentation of the Fields

There is no necessary implication as to the order or manner of
presentation. Some merchants may wish to ask for more information,
some less by omitting fields. Some merchants may ask for the
information they want in one HTML form on one web page, others may
ask for parts of the information at different times on different
pages. For example, it is common to ask for "ship to" information
earlier, so shipping cost can be computed, before the payment method
information. Some merchants may require that all the information
they request be provided while other make much information optional,
etc.

There is no way with version 1 of ECML to indicate what fields the
merchant considers mandatory. From the point of view of customer
software, all fields are optional to complete. However, the merchant
may give an error or re-present a request for information if some
field it requires is not completed, just as it may if a field is
completed in a manner it considers erroneous.

2.2 Methods and Flow of Setting the Fields

   There are a variety of methods of communication possible between the
   customer and the merchant by which the merchant can indicate what
   fields they want that the consumer can provide. Probably the easiest
   to use for currently deployed software is as fields in an HTML
   [HTML4.0] form. Other possibilities are to use the W3C P3P protocol
   or the IOTP Authenticate transaction [IOTP].

   User action or the appearance of the Ecom_SchemaVersion field are
   examples of triggers that could be used to initiate a facility
   capable of filling in fields. It is required that the
   Ecom_SchemaVersion field, which is usually a hidden field, be
   included on every web page that has any "Ecom_" fields.

   Because web pages can load very slowly, it may not be clear to an
   automated field fill-in function when it is finished filling in
   fields on a web page. For this reason, it is recommended that the
   Ecom_SchemaVersion field be the last "Ecom_" field on a web page.

   Merchant requests for information can extend over several web pages.
   Without further provision, a facility could either require re-
   starting on each page or possibly violate or appear to violate
   privacy by continuing to fill in fields for pages beyond with end of
   the transaction with a particular merchant. For this reason the
   Ecom_TransactionComplete field, which is normally hidden, is
   provided. It is recommended that it appear on the last web page
   involved in a transaction, just before an Ecom_SchemaVersion field,
   so that multi-web-page automated field fill in logic could know when
   to stop if it chooses to check for this field.

2.3 HTML Example

   An example in HTML might be as follows:

   <HTML>
   <HEAD>
   <title> eCom Fields Example </title>
   </HEAD>
   <BODY>
    <FORM action="http://ecom.example.com" method="POST">
   Please enter card information:
   <p>Your name on the card
     <INPUT type="text" name="Ecom_Payment_Card_Name" SIZE=40>

The card number
     <INPUT type="text" name="Ecom_Payment_Card_Number" SIZE=19>

Expiration date (MM YY)
     <INPUT type="text" name="Ecom_Payment_Card_ExpDate_Month" SIZE=2>
     <INPUT type="text" name="Ecom_Payment_Card_ExpDate_Year" SIZE=4>
    <INPUT type="hidden" name="Ecom_Payment_Card_Protocol">
    <INPUT type="hidden" name="Ecom_SchemaVersion"
           value="http://www.ecml.org/version/1.0">

    <INPUT type="submit" value="submit"> <INPUT type="reset">
    </FORM>
   </BODY>
   </HTML>

   After all of the pages are submitted, the merchant will reply with a
   confirmation page informing both the user and the wallet that the
   transaction is complete.

   <HTML>
   <HEAD>
   <title> eCom Transaction Complete Example </title>
   </HEAD>
   <BODY>
    <FORM>
    Thank you for your order. It will be shipped in several days.
    <INPUT type="hidden" name="Ecom_TransactionComplete">
    <INPUT type="hidden" name="Ecom_SchemaVersion"
           value="http://www.ecml.org/version/1.0">
    </FORM>
   </BODY>
   </HTML>

3. Field Definitions

   The fields are listed below along with the minimum data entry size to
   allow. Note that these fields are hierarchically organized as
   indicated by the embedded underscore ("_") characters. Appropriate
   consumer to merchant transmission mechanisms may use this to request
   and send aggregates, such as Ecom_Payment_Card_ExpDate to encompass
   all the date components or Ecom_ShipTo to encompass all the ship to
   components that the consumer is willing to provide. The marshalling
   and unmarshalling of the components of such aggregates depends on the
   data transfer protocol used.

   IMPORTANT NOTE: "MIN" in the table below is the MINIMUM DATA SIZE TO
   ALLOW FOR ON DATA ENTRY. It is NOT the minimum size for valid
   contents of the field and merchant software should, in most cases, be
   prepared to receive a longer or shorter value. Merchant dealing with
   areas where, for example, the state/province name or phone number is
   longer than the "Min" given below must obviously permit longer data
   entry. In some cases, however, there is a maximum size that makes
   sense and where this is the case, it is documented in a Note for the
   field.

FIELD	NAME	Min	Notes
ship to title	Ecom_ShipTo_Postal_Name_Prefix	4	(1)
ship to first name	Ecom_ShipTo_Postal_Name_First	15	
ship to middle name	Ecom_ShipTo_Postal_Name_Middle	15	(2)
ship to last name	Ecom_ShipTo_Postal_Name_Last	15	
ship to name suffix	Ecom_ShipTo_Postal_Name_Suffix	4	(3)
ship to street line1	Ecom_ShipTo_Postal_Street_Line1	20	(4)
ship to street line2	Ecom_ShipTo_Postal_Street_Line2	20	(4)
ship to street line3	Ecom_ShipTo_Postal_Street_Line3	20	(4)
ship to city	Ecom_ShipTo_Postal_City	22	
ship to state/province	Ecom_ShipTo_Postal_StateProv	2	(5)
ship to zip/postal code	Ecom_ShipTo_Postal_PostalCode	14	(6)
ship to country	Ecom_ShipTo_Postal_CountryCode	2	(7)
ship to phone	Ecom_ShipTo_Telecom_Phone_Number	10	(8)
ship to email	Ecom_ShipTo_Online_Email	40	(9)
bill to title	Ecom_BillTo_Postal_Name_Prefix	4	(1)
bill to first name	Ecom_BillTo_Postal_Name_First	15	
bill to middle name	Ecom_BillTo_Postal_Name_Middle	15	(2)
bill to last name	Ecom_BillTo_Postal_Name_Last	15	
bill to name suffix	Ecom_BillTo_Postal_Name_Suffix	4	(3)
bill to street line1	Ecom_BillTo_Postal_Street_Line1	20	(4)
bill to street line2	Ecom_BillTo_Postal_Street_Line2	20	(4)
bill to street line3	Ecom_BillTo_Postal_Street_Line3	20	(4)
bill to city	Ecom_BillTo_Postal_City	22	

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      bill to state/province  Ecom_BillTo_Postal_StateProv       2  ( 5)
      bill to zip/postal code Ecom_BillTo_Postal_PostalCode     14  ( 6)
      bill to country         Ecom_BillTo_Postal_CountryCode     2  ( 7)
      bill to phone           Ecom_BillTo_Telecom_Phone_Number  10  ( 8)
      bill to email           Ecom_BillTo_Online_Email          40  ( 9)

      receiptTo title         Ecom_ReceiptTo_Postal_Name_Prefix  4  ( 1)
      receiptTo first name    Ecom_ReceiptTo_Postal_Name_First  15
      receiptTo middle name   Ecom_ReceiptTo_Postal_Name_Middle 15  ( 2)
      receiptTo last name     Ecom_ReceiptTo_Postal_Name_Last   15
      receiptTo name suffix   Ecom_ReceiptTo_Postal_Name_Suffix  4  ( 3)
      receiptTo street line1  Ecom_ReceiptTo_Postal_Street_Line1 20 ( 4)
      receiptTo street line2  Ecom_ReceiptTo_Postal_Street_Line2 20 ( 4)
      receiptTo street line3  Ecom_ReceiptTo_Postal_Street_Line3 20 ( 4)
      receiptTo city          Ecom_ReceiptTo_Postal_City        22
      receiptTo state/province Ecom_ReceiptTo_Postal_StateProv    2  ( 5)
      receiptTo postal code   Ecom_ReceiptTo_Postal_PostalCode  14  ( 6)
      receiptTo country       Ecom_ReceiptTo_Postal_CountryCode  2  ( 7)
      receiptTo phone         Ecom_ReceiptTo_Telecom_Phone_Number 10 ( 8)
      receiptTo email         Ecom_ReceiptTo_Online_Email       40  ( 9)

      name on card            Ecom_Payment_Card_Name            30  (10)

      card type               Ecom_Payment_Card_Type             4  (11)
      card number             Ecom_Payment_Card_Number          19  (12)
      card verification value Ecom_Payment_Card_Verification     4  (13)

      card expire date day    Ecom_Payment_Card_ExpDate_Day      2  (14)
      card expire date month  Ecom_Payment_Card_ExpDate_Month    2  (15)
      card expire date year   Ecom_Payment_Card_ExpDate_Year     4  (16)

      card protocols          Ecom_Payment_Card_Protocol        20  (17)

      consumer order ID       Ecom_ConsumerOrderID              20  (18)

      schema version          Ecom_SchemaVersion                30  (19)

      end transaction flag    Ecom_TransactionComplete           -  (20)

         FIELD                     NAME                        Min  Notes
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ALLOW FOR ON DATA ENTRY. It is NOT the minimum size for valid
contents of the field and merchant software should, in most cases, be
prepared to receive a longer or shorter value. Merchant dealing with
areas where, for example, the state/province name or phone number is

longer than the "Min" given below must obviously permit longer data
entry. In some cases, however, there is a maximum size that makes
sense and this is documented in a Note for the field.

4. End Notes

   (1) For example: Mr., Mrs., Ms., Dr. This field is commonly not
        used.

   (2) May also be used for middle initial

   (3) For example: Ph.D., Jr. (Junior), 3rd, Esq. (Esquire). This
        field is commonly not used.

   (4) Address lines must be filled in the order line1, then line2,
        last line3.

   (5) 2 characters are the minimum for the US and Canada, other
        countries may require longer fields. For the US use 2 character
        US Postal state abbreviation.

   (6) Minimum field lengths for Postal Code will vary based on
        international market served. Use 5 character or 5+4 ZIP for the
        US and 6 character postal code for Canada. The size given, 14,
        is believed to be the maximum required anywhere in the world.

   (7) Use [ISO 3166] standard two letter codes
        <http://www.din.de/gremien/nas/nabd/iso3166ma/codlstp1.html> for
        country names.

   (8) 10 digits are the minimum for numbers local to the North
        American Numbering Plan (<http://www.nanpa.com>: US, Canada and
        a number of smaller Caribbean and Pacific nations (but not
        Cuba)), other countries may require longer fields. Telephone
        numbers are complicated by differing international access codes,
        variant punctuation of area/city codes within countries,
        confusion caused by the fact that the international access code
        in the NANP region is usually the same as the "country code" for
        that area (1), etc. It will probably be necessary to use
        heuristics or human examination based on the telephone number
        and addresses given to figure out how to actually call a
        customer. It is recommend that an "x" be placed before extension
        numbers.

   (9) For example: jsmith@example.com

   (10) The name of the cardholder.

   (11) Use the first 4 letters of the association name: American
        Express=AMER; Diners Club=DINE; Discover=DISC; JCB=JCB;
        Mastercard=MAST; Visa=VISA.

   (12) Includes the check digit at end but no spaces or hyphens [ISO
        7812]. The Min given, 19, is the longest number permitted under
        the ISO standard.

   (13) An additional cardholder verification number printed on the card
        (but not embossed or recorded on the magnetic stripe) such as
        American Express' CIV, MasterCard's CVC2, and Visa's CVV2
        values.

   (14) The day of the month. Values: 1-31

   (15) The month of the year. Jan - 1, Feb - 2, March - 3, etc.;
        Values: 1-12

   (16) The value in the wallet cell is always four digits, e.g., 1999,
        2000, 2001, ...

   (17) A space separated list of protocols available in connection with
        the specified card. Initial list of case insensitive tokens:
        none, set, & setcert. "Set" indicates usable with SET protocol
        (i.e., is in a SET wallet) but does not have a SET certificate.
        "Setcert" indicates same but does have a set certificate.
        "None" indicates that automatic field fill is operating but
        there is no SET wallet or the card is not entered in any SET
        wallet.

   (18) A unique order ID generated by the consumer software.

   (19) URI indicating version of this set of fields. Usually a hidden
        field. Equal to "http://www.ecml.org/version/1.0" for this
        version.

   (20) A flag to indicate that this web-page/aggregate is the final one
        for this transaction. Usually a hidden field.

5. Security Considerations

   The information called for by many of these fields is sensitive and
   should be protected if being sent over the public Internet or through
   other channels where it can be observed. Mechanisms for such
   protection are not specified herein but channel encryption such as
   SSL/TLS [RFC 2246] or IPSec [RFC 2411] would be appropriate in many
   cases.

User control over release of such information is needed to protect
the user's privacy.

Any multi-web-page or other multi-aggregate field fill in or data
provision mechanism should check for the Ecom_TransactionComplete
field and cease automated fill when it is encountered until fill is
further authorized.

References

   ISO 3166 - Codes for the representation of names of countries,
             <http://www.din.de/gremien/nas/nabd/iso3166ma>

   ISO 7812 - Identification card - Identification of issuers - Part 1:
             Numbering system

   HTTP4.0 - HTML 4.0 Specification, <http://www.w3.org/TR/REC-html40>

   RFC 2026 - Bradner, S., "The Internet Standards Process -- Revision
             3", BCP 9, RFC 2026, October 1996.

   RFC 2246 - Dierks, T. and C. Allen, "The TLS Protocol: Version 1.0",
             RFC 2246, January 1999.

   RFC 2411 - Thayer, R., Doraswany, N. and R. Glenn, "IP Security:
             Document Roadmap", RFC 2411, November 1998.

   IOTP -   Internet Open Trading Protocol, being specified in the
             IETF TRADE working group, D. Burdett

   SET -   Secure Electronic Transaction,
             <http://www.setco.org/set_specifications.html>

   XML -   Extensible Markup Language (XML) 1.0,
             <http://www.w3.org/TR/1998/REC-xml-19980210>, T. Bray, J.
             Paoli, C. M. Sperberg-McQueen

Authors' Addresses

   Donald E. Eastlake, 3rd
   IBM, J1-N63
   17 Skyline Drive
   Hawthorne, NY 10532 USA

   Phone: +1-914-784-7913
   Fax: +1-914-784-3833
   EMail: dee3@us.ibm.com

   Ted Goldstein
   Brodia Networks, Inc.
   221 Main Street, Suite 1530
   San Francisco, CA 94105 USA

   Phone: +1 415-495-3100 x222
   Fax: +1 415-495-3177
   EMail: tgoldstein@brodia.com

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