

INTERNET DRAFT
Expires December 13, 1999

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[draft-eastlake-ecom-fields-00.txt](#)

June 14, 1999

ECML v1: Field Names for E-Commerce

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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.

Acknowledgements

The following persons, in alphabetic order, contributed substantially to the material herein:

George Burne, Trintech

Joe Coco, Microsoft

Kevin Weller, Visa

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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.

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 [[draft-ietf-trade-iotp-v1.0-protocol-*.txt](#)]. 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.

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

- American Express (www.americanexpress.com)
- AOL (www.aol.com)
- Compaq (www.compaq.com)
- CyberCash (www.cybercash.com)
- IBM (www.ibm.com)
- Mastercard (www.mastercard.com)
- Microsoft (www.microsoft.com)
- SETCo (www.setco.org)
- Sun Microsystems (www.sun.com)
- Transactor (www.transactor.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>>.

1.3 Areas Deferred to Future Versions

Standardization of information fields from the merchant to the consumer, considerations for business purchasing cards, non-card payment mechanisms, wallet activation, privacy related 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 merchant may wish to ask for more information, some less. Some merchant 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 [RFC 1866] form. Other possibilities are to use the W3C P3P protocol or the IOTP Authenticate transaction [[draft-ietf-trade-iotp-v1.0-protocol-*.txt](#)].

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.

[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>
<br>The card number
  <INPUT type="text" name="Ecom_Payment_Card_Number" SIZE=19>
<br>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_Protocols">
  <INPUT type="hidden" name="Ecom_SchemaVersion"
    value="http://www.emcl.org/version/1.0">
<br>
  <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.emcl.org/version/1.0">
  </FORM>
</BODY>
</HTML>
```

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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_Protocols	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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IMPORTANT NOTE: "MIN" in the table above 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 this is documented in a Note for the field.

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FOOT 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@isp.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 standard.

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(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.

4. 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.

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File name and Expiration

This file is [draft-eastlake-ecom-fields-00.txt](#).

It expires December 13, 1999.

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