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## **The 'payto' URI scheme for payments draft-dold-payto-00**

### Abstract

This document defines the 'payto' Uniform Resource Identifier (URI) scheme for specifying payments.

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Scheme Syntax . . . . .	<a href="#">2</a>
<a href="#">3.</a>	Scheme Semantics . . . . .	<a href="#">3</a>
<a href="#">4.</a>	Examples . . . . .	<a href="#">3</a>
<a href="#">5.</a>	Payment Methods . . . . .	<a href="#">3</a>
<a href="#">6.</a>	Generic Options . . . . .	<a href="#">3</a>
<a href="#">7.</a>	Interoperability . . . . .	<a href="#">4</a>
<a href="#">8.</a>	Encoding . . . . .	<a href="#">4</a>
<a href="#">9.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">10.</a>	References . . . . .	<a href="#">4</a>
<a href="#">10.1.</a>	Normative References . . . . .	<a href="#">4</a>
<a href="#">10.2.</a>	Informational References . . . . .	<a href="#">5</a>
	Authors' Addresses . . . . .	<a href="#">5</a>

**[1.](#) Introduction**

This document defines the 'payto' Uniform Resource Identifier (URI) [[RFC3986](#)] scheme for specifying payments. In its simplest form, a 'payto' URL identifies a payment method and optionally an account identifier. Additional parameters for a payment, such as an amount or a payment reference, can be provided.

**[2.](#) Scheme Syntax**

This document uses the Augmented Backus-Naur Form (ABNF) of [[RFC5234](#)]. Certain values are included by reference from [[RFC3986](#)]:

```

payto-URI = "payto" "://" method account [ "?" params ]
params = param *( "&" param )
param = (generic-param / method-specific-param) "=" *pchar
generic-param = "amount" / "recipient-name" / "sender-name" /
               "message" / "instruction"
method-specific-param = *pchar
method = <authority, see [RFC3986], Section 3.2>
account = <path-abempty, see [RFC3986], Section 3.3>
pchar = <pchar, see [RFC3986], Appendix A.>
amount = [ currency ":" ] unit [ "." fraction ]
currency = 1*ALPHA
unit = 1*(DIGIT / ",")
fraction = 1*(DIGIT / ",")

```



### 3. Scheme Semantics

The authority component of a payment URI identifies the payment method. The registry for payment methods is defined in [Section 5](#) of this document. The path component of the URI identifies the target account for a payment as interpreted by the respective payment method. The query component of the URI can provide additional parameters for a payment. Every payment method SHOULD accept the options defined in generic-opt.

### 4. Examples

```
payto:///sepa/CH9300762011623852957?amount=EUR:200.0&message=hello
```

```
INVALID (authority missing): payto:sepa/12345
```

### 5. Payment Methods

sepa: Single European Payment Area. The path is an IBAN, as defined by [\[ISO20022\]](#).

upi: Unified Payment Interface. The path is an account alias, as defined by [\[UPILinking\]](#).

bitcoin: Bitcoin protocol. The path is a bitcoinaddress, as defined by [\[BIP0021\]](#).

ach: Automated Clearing House. The path is a bank account number, as defined by [\[NACHA\]](#)

### 6. Generic Options

The following options SHOULD be understood by every payment method.

amount: The amount to transfer, including currency information if applicable. The format MUST be:

```
amount = [ currency ":" ] unit [ "." fraction ]
currency = 1*ALPHA
unit = 1*(DIGIT / ",")
fraction = 1*(DIGIT / ",")
```

The fraction MUST be smaller than  $10^8$ . The unit value MUST be smaller than  $2^{53}$ . The use of commas is optional for readability and they MUST be ignored.



recipient-name: Name of the recipient of the payment.

sender-name: Name of the sender of the payment.

message: A short message to identify the purpose of the payment, which MAY be subject to lossy conversions (for example, due to character set encoding limitations).

instruction: A short message giving instructions to the recipient, which MUST NOT be subject to lossy conversions. Character set limitations allowed for instructions depend on the payment method.

## **7. Interoperability**

This URI scheme subsumes other URI schemes for payments, such as "bitcoin" (provisionally registered) and "upi" (unregistered but in use, see [[UPILinking](#)]), providing one unified scheme for payment information.

## **8. Encoding**

The payto URI scheme encoding conforms to the encoding rules established for URIs in [[RFC3986](#)]. Various payment systems use restricted character sets. An application that processes 'payto' URIs MUST convert characters that are not allowed by the respective payment systems into allowable character using either an encoding or a replacement table. This conversion process is typically not lossless.

## **9. Security Considerations**

The payto URL contains instructions on how to send money. Applications that support the payto URI scheme MUST ask for confirmation from the user in order to confirm a payment. Applications MUST handle payto URLs in conformance with the principle of safe interaction (<http://www.w3.org/TR/webarch/#safe-interaction>).

## **10. References**

### **10.1. Normative References**

[ISO20022]

International Organization for Standardization, "ISO 20022 Financial Services - Universal financial industry message scheme", May 2013.

[NACHA]

NACHA, "NACHA Operating Rules & Guidelines", January 2017.



- [RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](http://www.rfc-editor.org/info/rfc3986), DOI 10.17487/RFC3986, January 2005, <<http://www.rfc-editor.org/info/rfc3986>>.
- [RFC5234] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, [RFC 5234](http://www.rfc-editor.org/info/rfc5234), January 2008.

## **[10.2.](#) Informational References**

- [BIP0021] Schneider, N. and M. Corallo, "Bitcoin Improvement Proposal 21", January 2012, <[https://en.bitcoin.it/wiki/BIP\\_0021](https://en.bitcoin.it/wiki/BIP_0021)>.
- [UPILinking]  
National Payment Corporation of India, "Unified Payment Interface - Common URL Specifications For Deep Linking And Proximity Integration", May 2016, <<http://www.npci.org.in/documents/UPILinkingSpecificationsVersion10draft.pdf>>.

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