Summary of
Various Ways to Send an Email
using 4D Internet Commands

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Overview

- Understand the difference between **SMTP_Send** and **SMTP_QuickSend**

- How to deal with various security measures:

  - **POP before SMTP**

  - **SMTP AUTH**

  - **SMTP over SSL**

  - **STARTTLS**

- How to build your own **MIME**

  - to manage **inline** attachments

  - to send **mixed** (plain text + HTML) message

- How to support **OAuth**

Part 1
Send vs QuickSend

SMTP_Send

- At least **8 lines** to send an email

```
$error:=SMTP_New ($smtpId)
If (0=$error)
  Case of
    : (0#IT_SetPort (2;$port))
    : (0#SMTP_Host ($smtpId;$hostName))
    : (0#SMTP_From ($smtpId;$from))
    : (0#SMTP_To ($smtpId;$to))
    : (0#SMTP_Subject ($smtpId;$subject))
    : (0#SMTP_Body ($smtpId;$body))
    : (0#SMTP_Auth ($smtpId;$user;$password))
   Else
      $error:=SMTP_Send ($smtpId;$useSSL)
  End case
  $error:=SMTP_Clear ($smtpId)
End if
```

SMTP_QuickSend

- Just **1 line** to send an email

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body)
```

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SMTP_QuickSend

- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body)
```

SMTP_QuickSend

- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;useSSL)
```
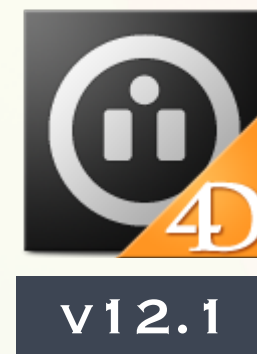
Encryption

v12.1

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SMTP_QuickSend

- Evolution

1: Use SSL

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;useSSL)
```

Encryption

v12.1

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SMTP_QuickSend
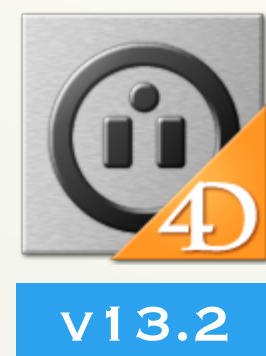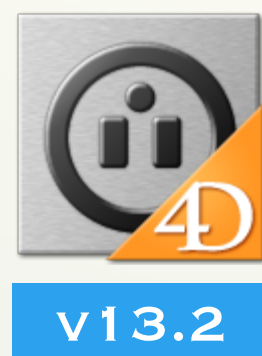
- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```

Encryption v12.1

Authentication v13.2

SMTP_QuickSend

- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```

port, user and password

Encryption

v12.1

Authentication

v13.2

SMTP_QuickSend

- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```

Encryption   v12.1
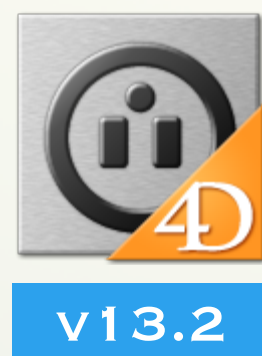
HTML body   v14.0

Authentication   v13.2

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SMTP_QuickSend

- Evolution

1:SSL, 4: HTML, 5: HTML+SSL

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```
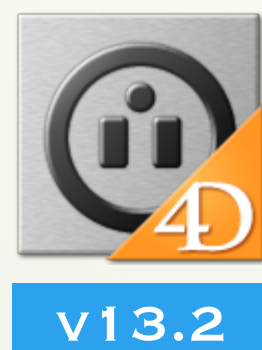
Encryption   v12.1

HTML body   v14.0

Authentication   v13.2

SMTP_QuickSend

- Evolution

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```
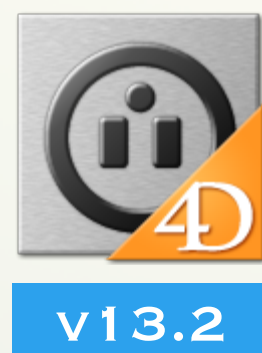
| Encryption | v12.1 | HTML body | v14.0 |
| Authentication | v13.2 | Raw MIME | v14R5 |

SMTP_QuickSend

- Evolution

1:SSL, 8: MIME, 9: HTML+SSL

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```

Encryption v12.1

HTML body v14.0

Authentication v13.2

Raw MIME v14R5

SMTP_QuickSend

- Evolution

1:SSL, 8: MIME, 9: HTML+SSL

```
$error:=SMTP_QuickSend ($hostName;$from;$to;$subject;$body;$param;$port;$user;$password)
```
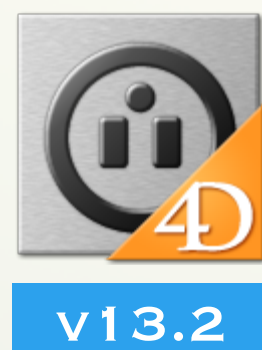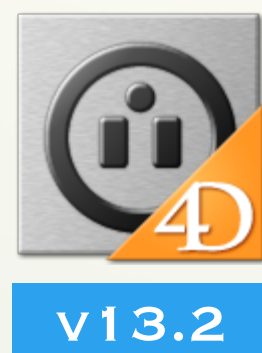
Encryption

v12.1

HTML body

v14.0

Killer feature!

Authentication

v13.2

Raw MIME

v14R5

SMTP_Send vs SMTP_QuickSend

version		QuickSend	Send
	Add Custom header		⭕
	Add attachment		⭕
12.1	SMTP over SSL (without authentication)	⭕	⭕
13.2	SMTP over SSL (with authentication)	⭕	⭕
	STARTTLS	⭕	⭕
	Set content type as text/html	⭕	⭕
14.0	Set message ID		⭕
	Unicode support	⭕	⭕
14R4	Set attachment content ID and type		⭕
14R5	Send MIME directly	⭕	

SMTP_Send vs SMTP_QuickSend

version		QuickSend	Send
	Add Custom header		⭕
	Add attachment		⭕
12.1	SMTP over SSL (without authentication)	⭕	⭕
13.2	SMTP over SSL (with authentication)	⭕	⭕
	STARTTLS	⭕	⭕
	Set content type as text/html	⭕	⭕
14.0	Set message ID		⭕
	Unicode support	⭕	⭕
14R4	Set attachment content ID and type		⭕
14R5	Send MIME directly	⭕	

Everything possible with SMTP_Send... and more!

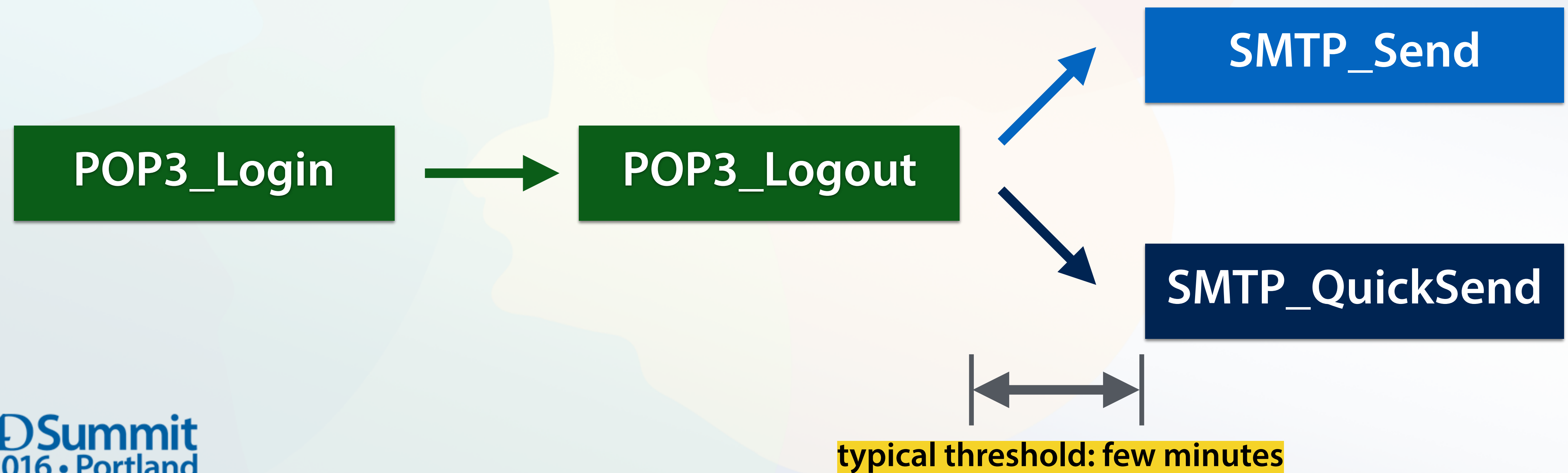# SMTP_Send vs SMTP_QuickSend

use QuickSend 😊
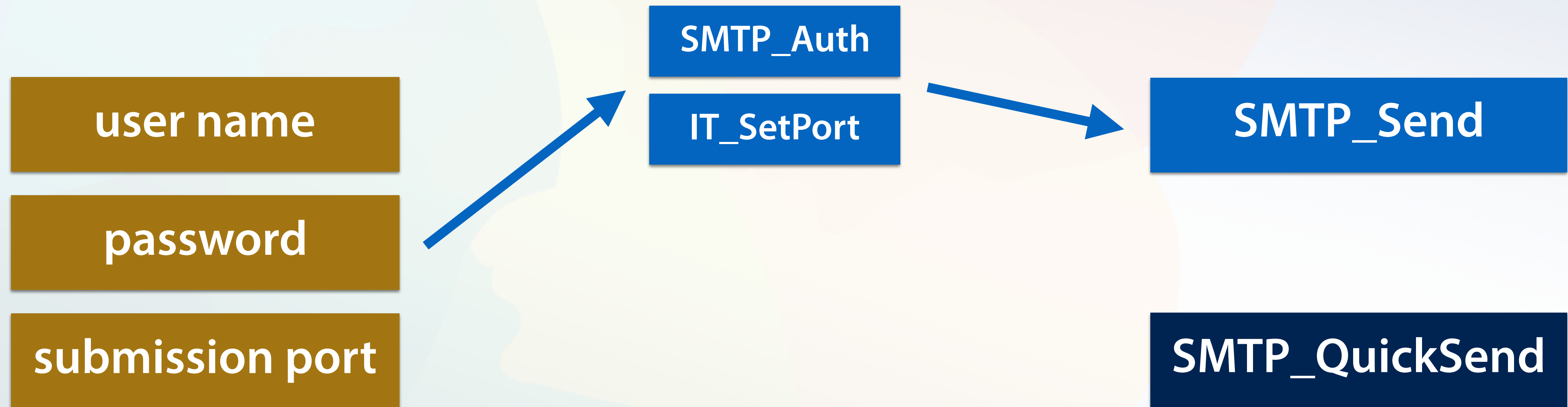
Part 2

Security measures: past and present

POP before SMTP

- SMTP itself doesn't require name or password

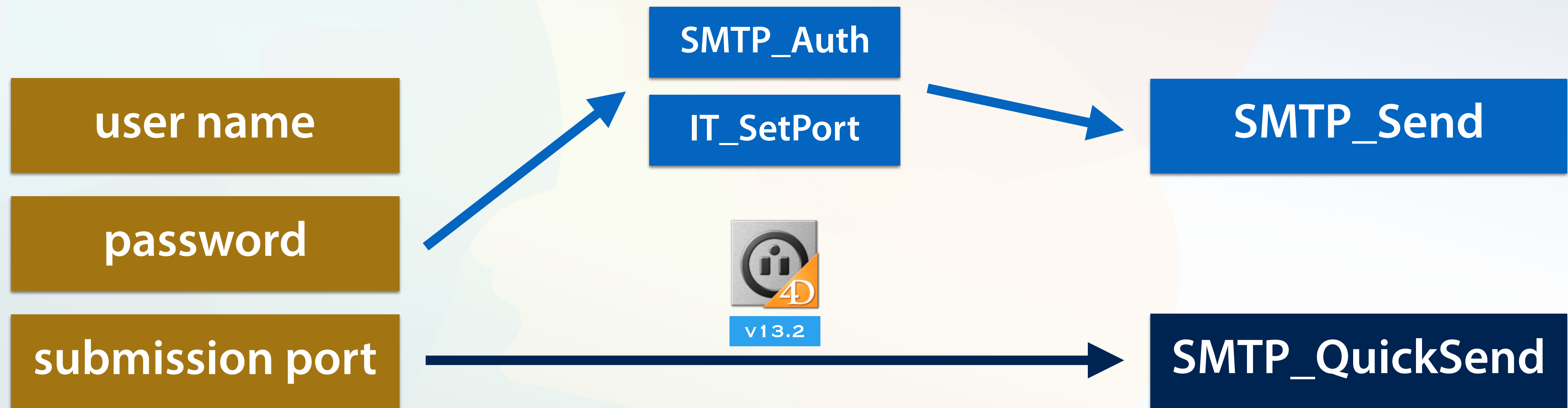- ISP **blocks** access unless a successful **POP3 authentication** is made from the **same IP address**

```
POP3_Login  →  POP3_Logout  ↗  SMTP_Send
                            ↘  SMTP_QuickSend
```

typical threshold: few minutes

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SMTP AUTH

- Authentication by **name** and **password**

- Outbound port 25 **blocking**

user name

password

submission port

typical submission port: 587

SMTP_Auth

IT_SetPort

SMTP_Send

SMTP_QuickSend

SMTP AUTH

- Authentication by **name** and **password**

- Outbound port 25 **blocking**

user name	SMTP_Auth
password	IT_SetPort
submission port	

SMTP_Send

SMTP_QuickSend

v13.2

typical submission port: 587

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SMTP over SSL

- OpenSSL **Encryption**

SMTP:2, SMTP over SSL: 12

IT_SetPort → SMTP_Send

use SSL

submission port

SMTP_QuickSend

typical submission port: 465

v12.1

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SMTP over SSL

- OpenSSL **Encryption**

SMTP:2, SMTP over SSL: 12

IT_SetPort → **SMTP_Send**

v12.1

use SSL

v13.2

submission port → **SMTP_QuickSend**

typical submission port: 465

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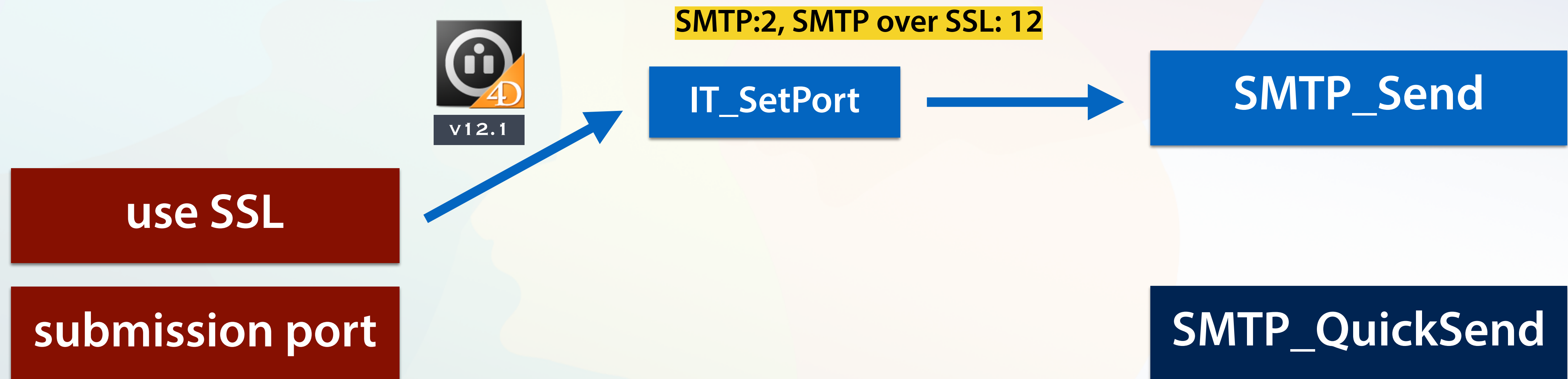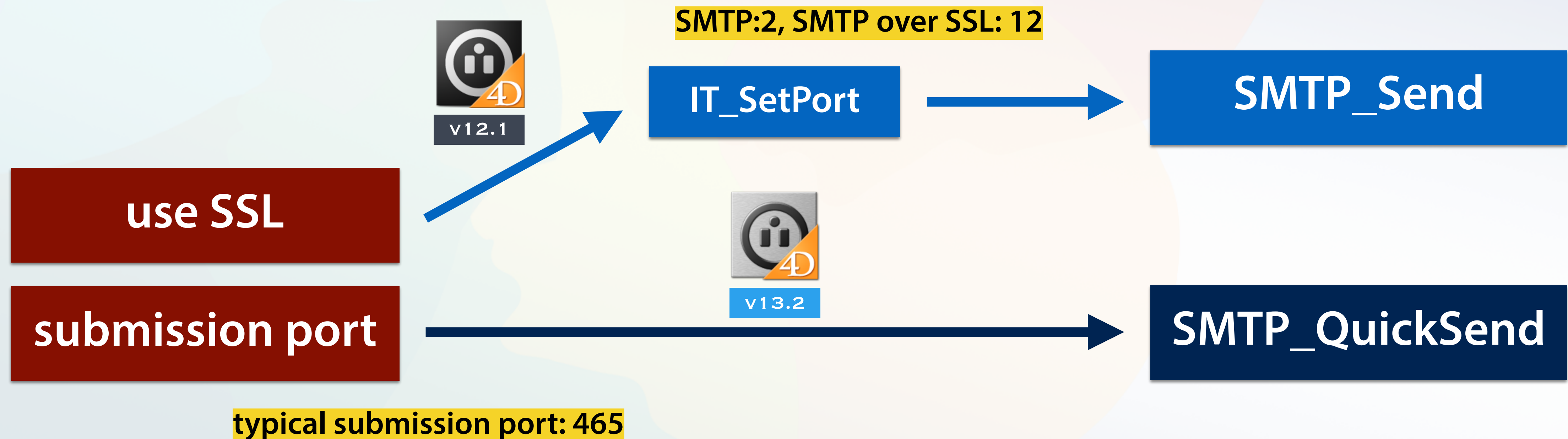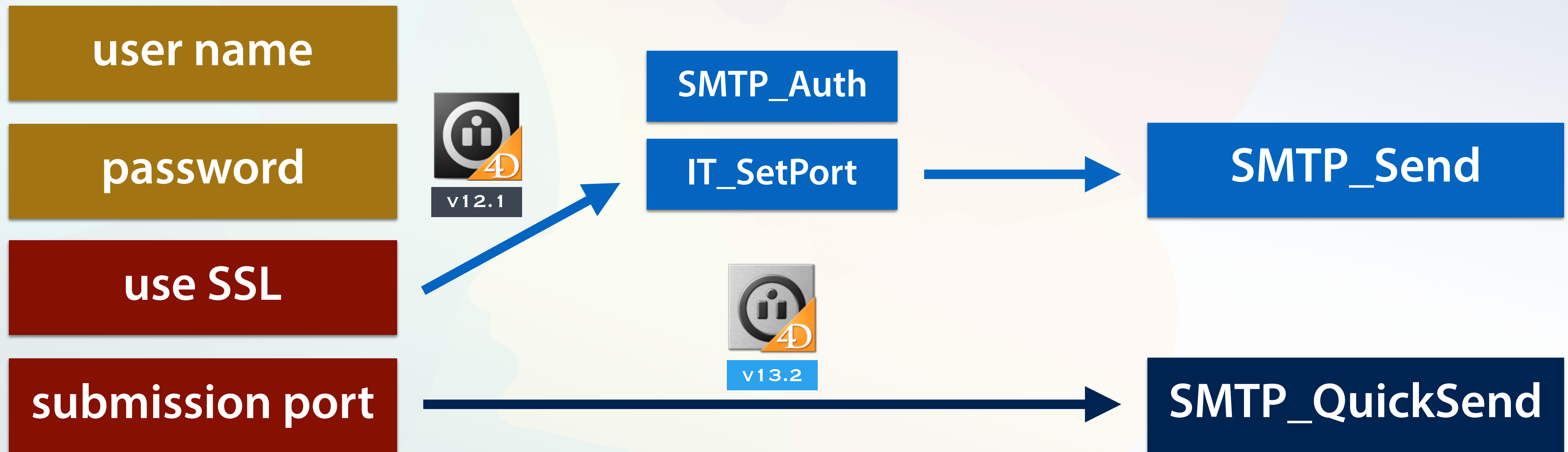
SMTP AUTH

SMTP over SSL

- Gmail: must allow **less secure apps**

Preferred method is OAuth
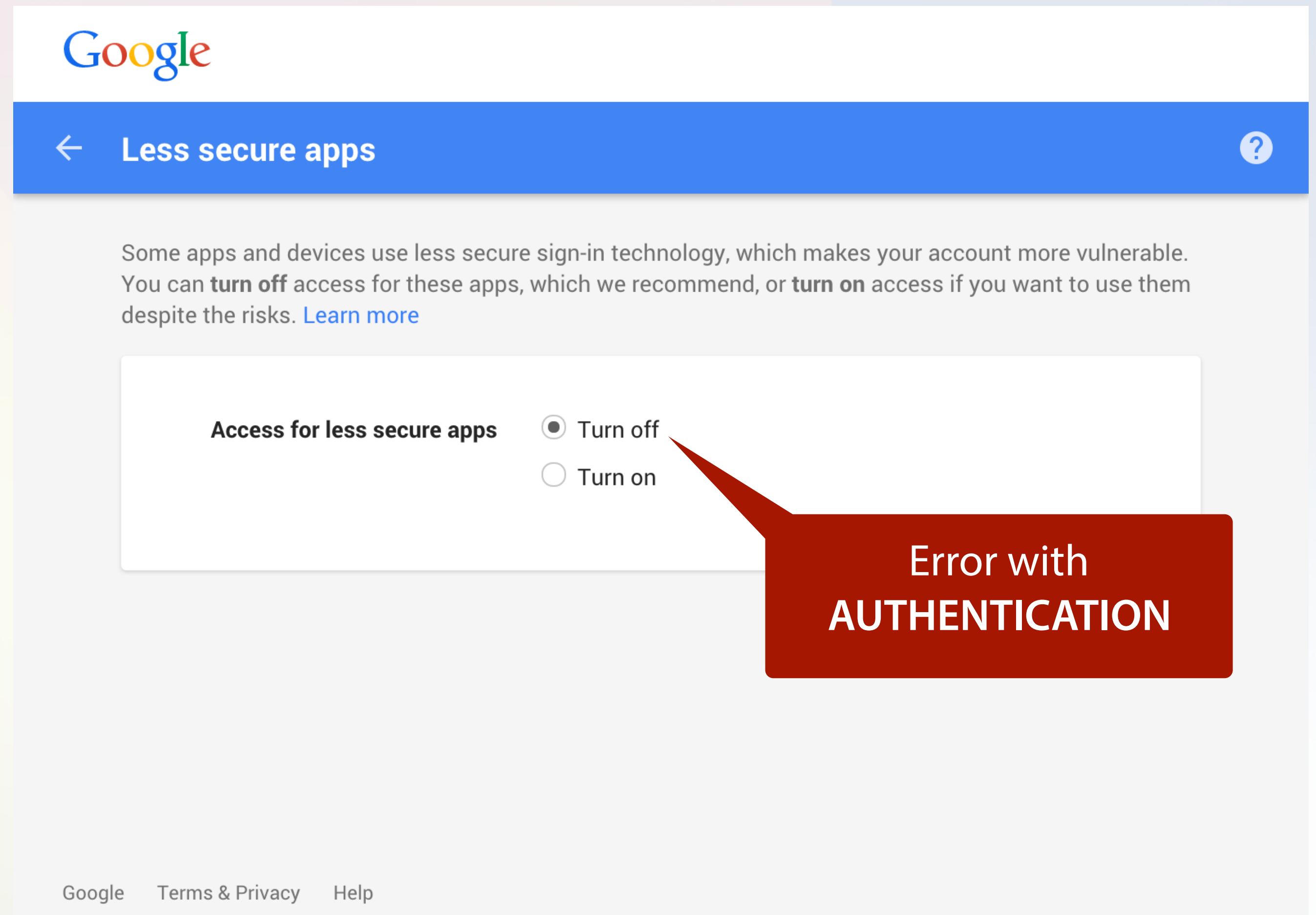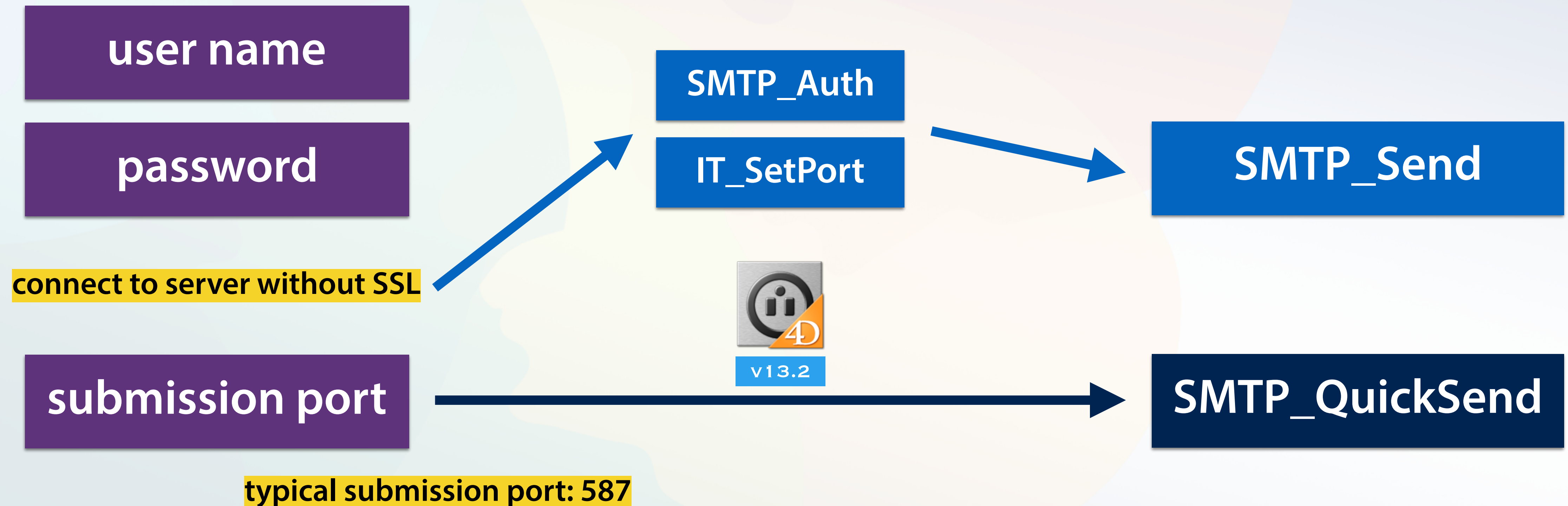
Google

← **Less secure apps** ?

Some apps and devices use less secure sign-in technology, which makes your account more vulnerable. You can **turn off** access for these apps, which we recommend, or **turn on** access if you want to use them despite the risks. Learn more

Access for less secure apps   ● Turn off
   ○ Turn on

Error with
AUTHENTICATION

Google   Terms & Privacy   Help

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Part 3
Building your own MIME

MIME

- Internet standard that extends the format of emails to support:

  - **Characters sets** other than US-ASCII

  - **Attachments**

  - Body in **HTML**

  - Body with **multiple parts**

- Managed <u>automatically</u> by 4D Internet Commands

MIME

- Internet standard that extends the format of emails to support:

  - **Characters sets** other than US-ASCII

  - **Attachments**

  - Body in **HTML**

  - Body with **multiple parts**

- Managed automatically by 4D Internet Commands

  means you have very little control

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MIME

- **Characters sets** other than US-ASCII

Windows-1252

US-ASCII

SMTP_SetPrefs

ISO-8859-1

MIME

- **Characters sets** other than US-ASCII

SMTP_SetPrefs

Windows-1252

US-ASCII

ISO-8859-1

UTF-8

v14.0

NOTE: early versions of 14.x, 15.x and 15R support **only** UTF-8

MIME

- **Attachments**

SMTP_Attachment

BinHex

Base64

AppleSingle

AppleDouble

UUEncode

MIME

- **Attachments**

SMTP_Attachment

BinHex

Base64

AppleSingle

AppleDouble

UUEncode

NOTE: even Apple Mail (iOS, OS X) no longer supports BinHex

MIME

- **Attachments**

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;"";$contentType)
```

v14R4

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MIME

- **Attachments**

inferred from extension, or else application/octet-stream

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;"";$contentType)
```

v14R4

MIME

- **Attachments**

inferred from extension, or else application/octet-stream

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;"";$contentType)
```

v14R4

not all extension are mapped to MIME (e.g. docx, txt)

MIME

- **<u>Attachments</u>**

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;$contentId;$contentType)
```

MIME

- **Attachments**

local reference instead of a remote hyperlink reference

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;$contentId;$contentType)
```

v14R4

MIME

- **Attachments**

local reference instead of a remote hyperlink reference

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;$contentId;$contentType)
```

v14R4

```
<img src="cid:image1" alt="logo" />
```

MIME

- **<u>Attachments</u>**

local reference instead of a remote hyperlink reference

```
$error:=SMTP_Attachment ($smtpId;$filePath;$encoding;0;$contentId;$contentType)
```

v14R4

content-id

```
<img src="cid:image1" alt="logo" />
```

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MIME

- **HTML** format

SMTP_AddHeader → **SMTP_Body** → **SMTP_Send**

SMTP_QuickSend

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MIME

- **HTML** format

SMTP_AddHeader → **SMTP_Body**

v14.0

option: 4

SMTP_Send

SMTP_QuickSend

v14.0

params: 4 or 5

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MIME

- Content-Type of **body**
  - multipart/mixed: plain text **or** HTML, **not both**
  - multipart/alternative: plain text **and** HTML
- Content-Type of **attachments**
  - multipart/mixed: **generic**
  - multipart/related: linked

MIME

- Content-Type of **body**

  - multipart/mixed: plain text **or** HTML, **not both**

  - multipart/alternative: plain text **and** HTML

- Content-Type of **attachments**

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MIME

- Content-Type of **body**
  - multipart/mixed: plain text **or** HTML, **not both**
  - multipart/alternative: plain text **and** HTML
- Content-Type of **attachments**
  - multipart/mixed: **generic**
  - multipart/related: linked

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inline images are displayed twice in Apple Mail

MIME

demonstration

multipart/mixed

automatic

plain or HTML and attachments

MIME

multipart/alternative

manual

plain and HTML and attachments

multipart/related

plain and HTML with attachments

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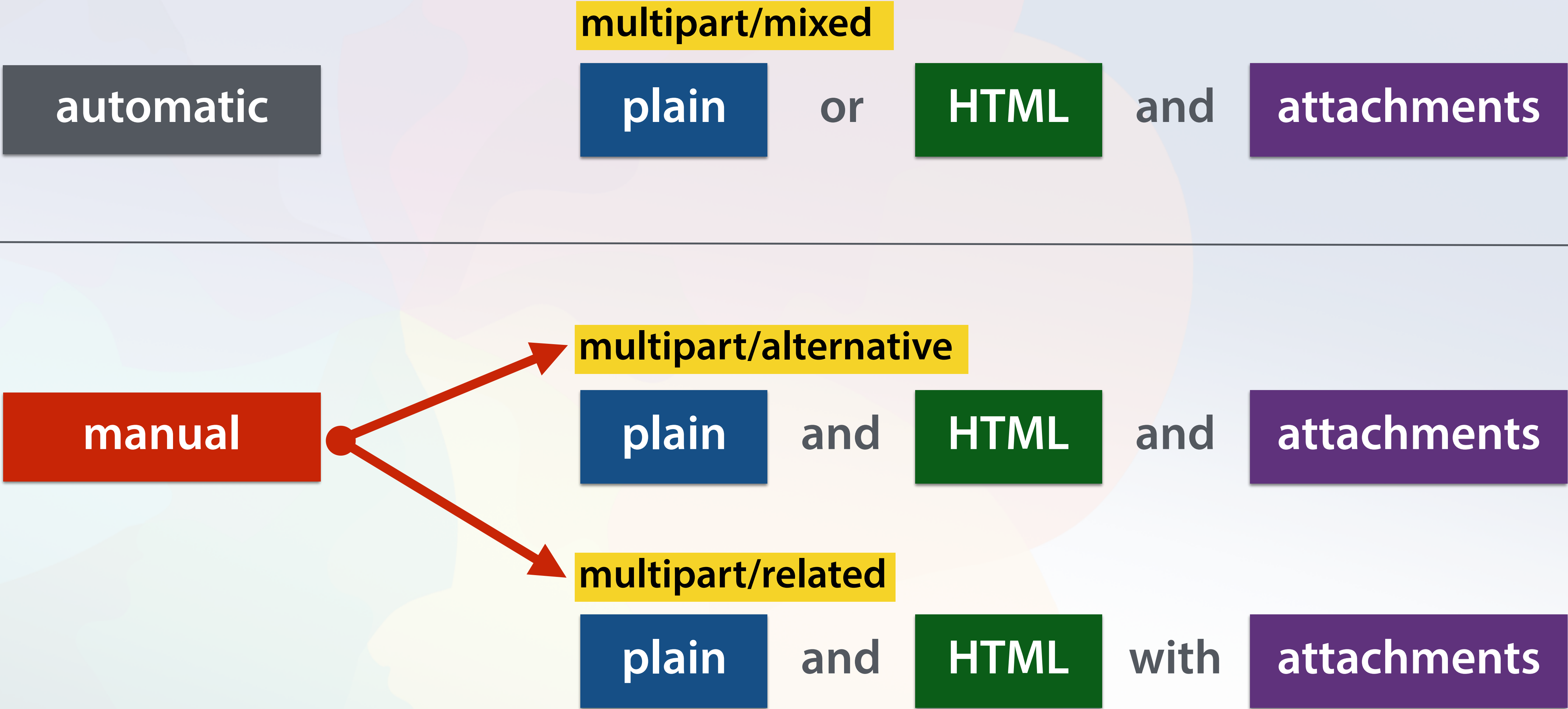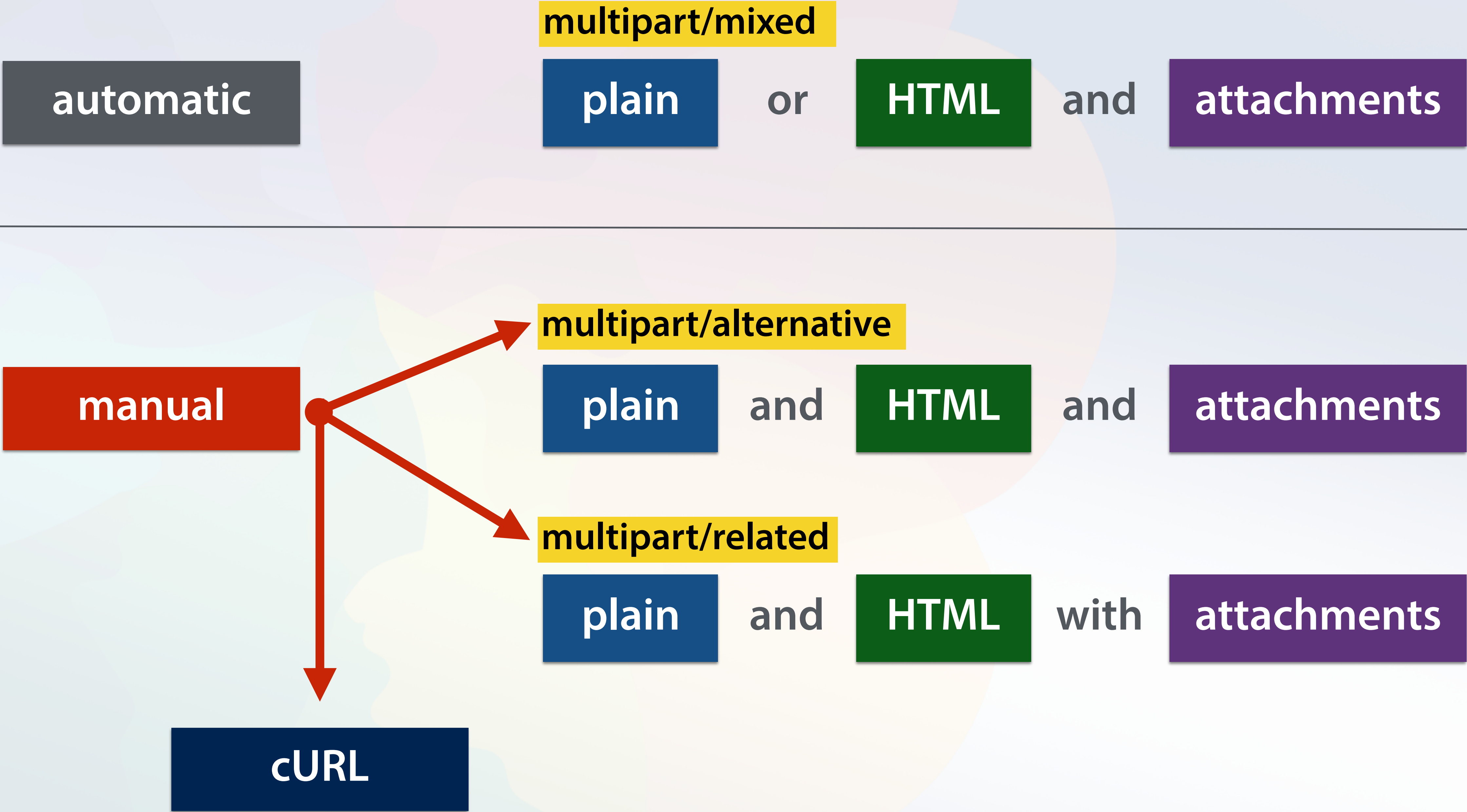
automatic

multipart/mixed

plain or HTML and attachments

MIME

manual

multipart/alternative

plain and HTML and attachments

multipart/related

plain and HTML with attachments

cURL

MIME

multipart/mixed

automatic   plain   or   HTML   and   attachments

manual

cURL

LAUNCH EXTERNAL PROCESS

```
curl
--url smtps://{server:port}
--mail-rcpt {to}
--mail-rcpt {to}…
--mail-from {from}
--upload-file -
--user name:pass
--insecure
--ssl-reqd
```

stdln

Part 4

Supporting OAuth 2.0

OAuth

- Open standard for **authorisation**

- User logs into a third party web service using their G 🐦 f ▦ account

- User **password** is not exposed

- Application 4D is granted authorised access to perform a task in **delegation**

OAuth

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  e.g. send an email

OAuth

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e.g. send an email

OAuth 1.0a

- Twitter

- Gmail **deprecated April 20, 2012**

OAuth

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e.g. send an email

OAuth 1.0a

- Twitter

- Gmail **deprecated April 20, 2012**

OAuth 2.0

- Facebook

- Gmail

- Microsoft

OAuth

user grants access

OPEN URL

authentication endpoint

authorisation code valid unless revoked or re-issued

HTTP POST

authorisation endpoint

access token

access token expires after 3,600 seconds

refresh token to renew access token

Authorised access

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OAuth

OPEN URL

user grants access

authentication endpoint

authorisation code valid unless revoked or re-issued

HTTP POST

access token

authorisation endpoint

access token expires after 3,600 seconds

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Authorised access

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Authorised access

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HTTP POST

authorisation endpoint

access token

4D

access token expires after 3,600 seconds

refresh token to renew access token

Authorised access

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OAuth

user grants access

OPEN URL

authentication endpoint

authorisation code valid unless revoked or re-issued

HTTP POST

authorisation endpoint

access token

access token expires after 3,600 seconds

refresh token to renew access token

Authorised access

refresh access token

OAuth

user grants access

OPEN URL

authentication endpoint

authorisation code is revoked

authorisation code valid unless revoked or re-issued

HTTP POST

authorisation endpoint

access token

4D

access token expires after 3,600 seconds

refresh token to renew access token

Authorised access

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OAuth

OPEN URL

user grants access

authentication endpoint

start all over again

authorisation code valid unless revoked or re-issued

HTTP POST

authorisation endpoint

access token

access token expires after 3,600 seconds

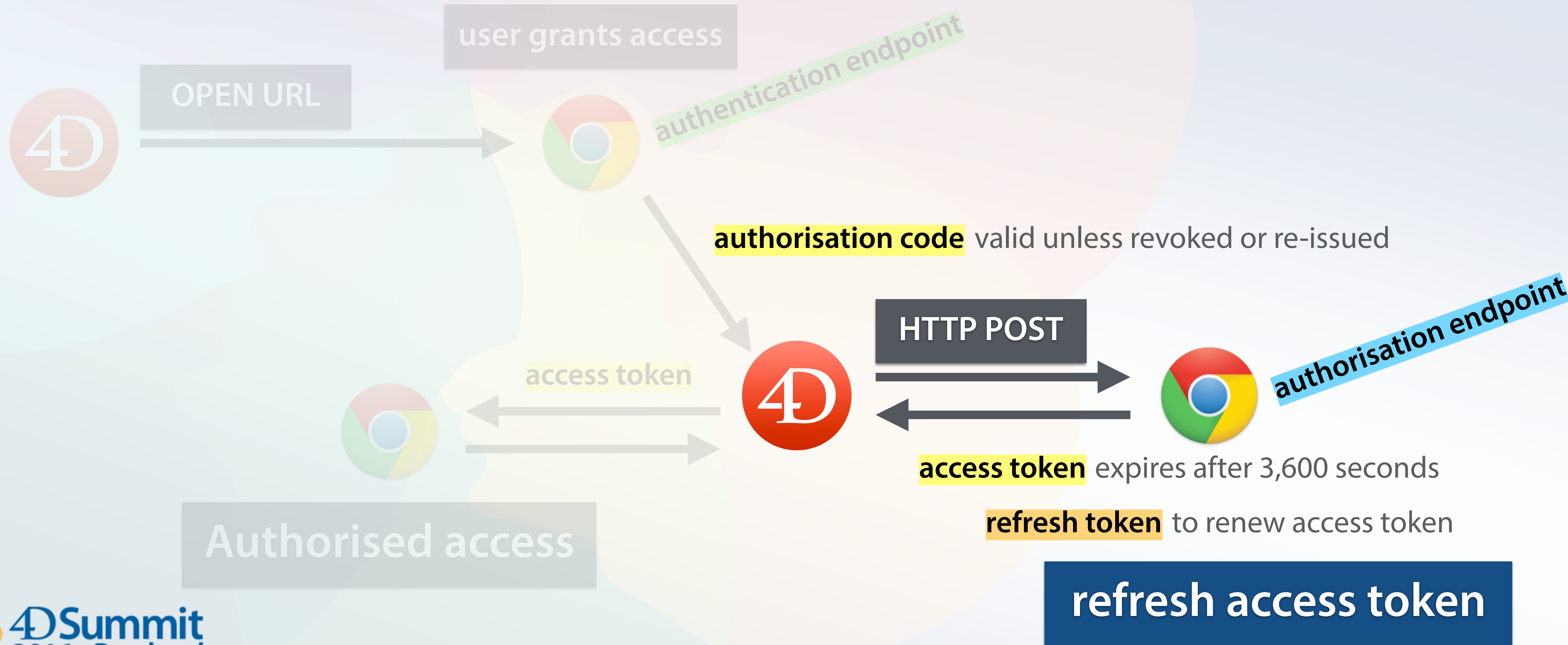refresh token to renew access token
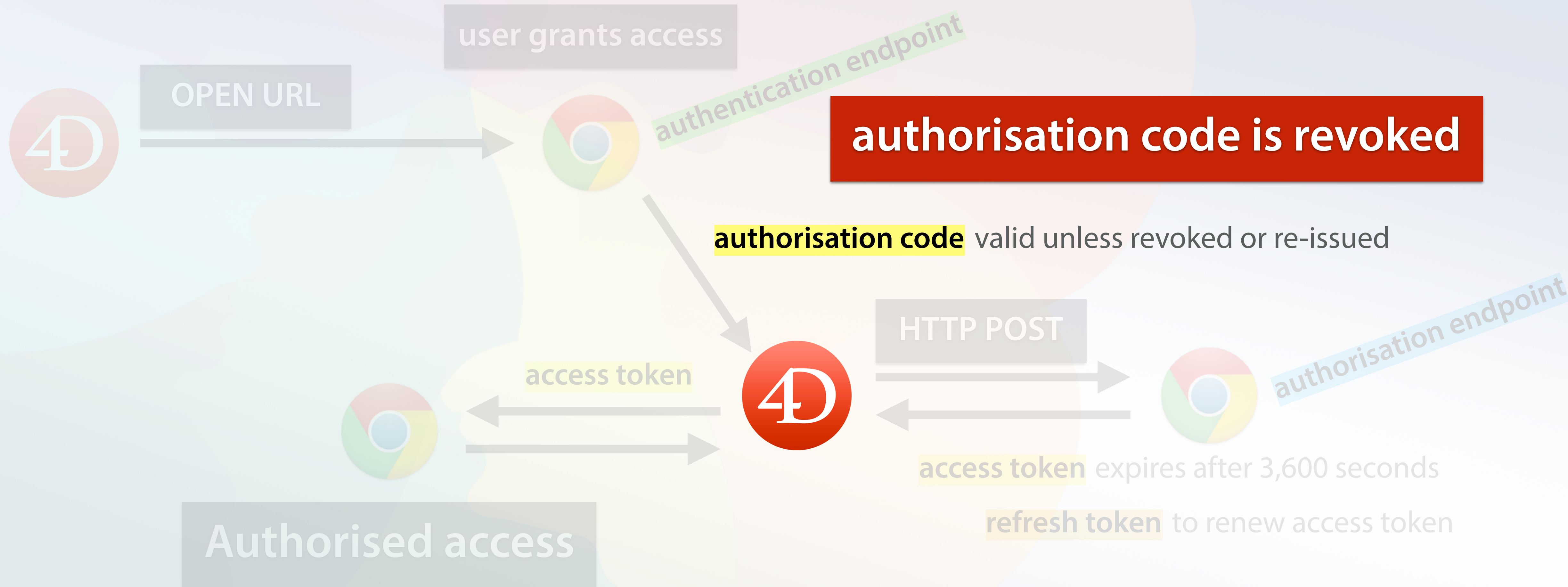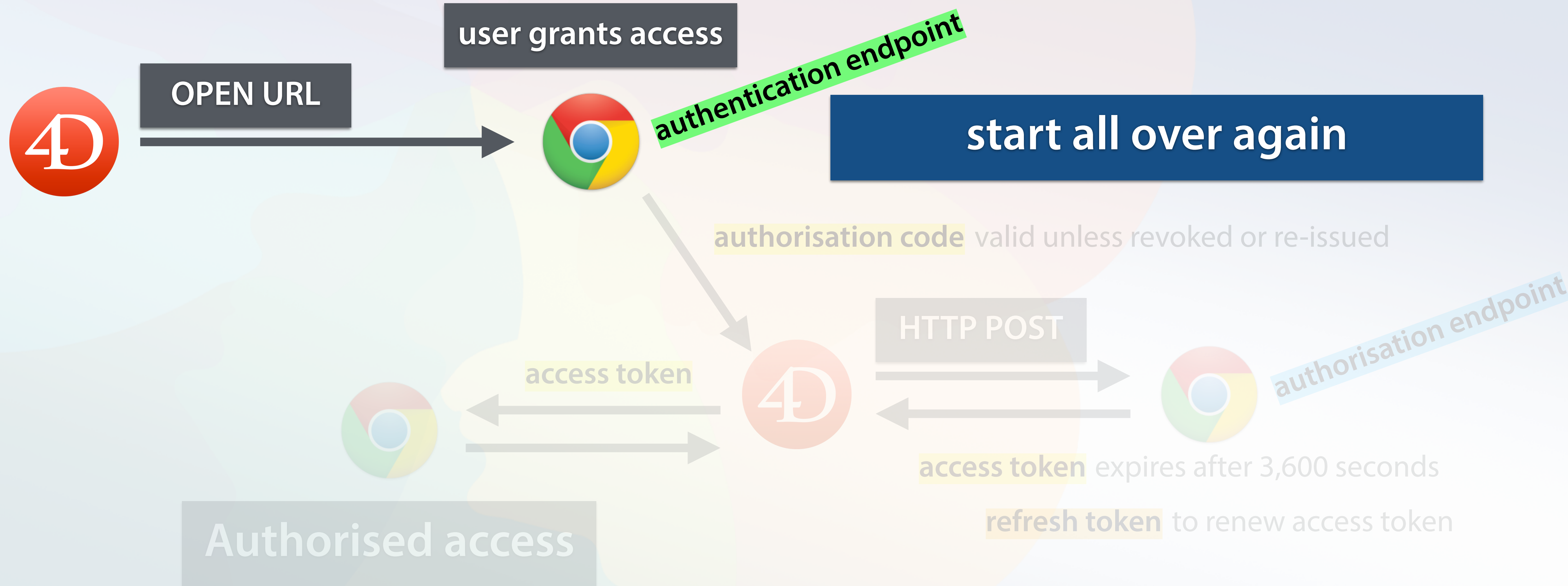
Authorised access

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OAuth

demonstration

to support **OAuth 2.0** you need...

HTTP Request
URL Encoder
MIME constructor

Summary

Summary

POP before SMTP, SMTP AUTH, SMTP over SSL, STARTTLS

SMTP_Send

SMTP_QuickSend

supported

supported

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Summary

MIME (Character set, attachments, content type)

SMTP_Send

SMTP_QuickSend

automatic

full control

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Summary

OAuth 2.0 (Gmail)

SMTP_Send   **SMTP_QuickSend**

N/A   *full control*

Q & A

Summary of
Various Ways to Send an Email
using 4D Internet Commands

the end