

# THUNDERBIRD addOn development

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- [#maildev](http://irc.mozilla.org) :protz
- <http://blog.xulforum.org>





# mozilla



# Thunderbird B-17, photo credits to Citats

# AUTHORING THUNDERBIRD ADDONS

... without getting crazy because you're using 10-year-old APIs

# A FEW ADDONS YOU SHOULD USE

- Thunderbird Conversations
- Manually Sort Folders
- Compose in a tab
- Latex It



# THIS TALK WILL TRY TO

- Show you how to get started
- Show you which APIs to use
- Show you how various parts interact together

... now folks, demo time !



# GLoDa IS...

- “global database”
- What makes this demo possible
- What you want to use

(seriously)

# Old APIs

- Not documented
- XPCOM, Mozilla-style
- Obsolete patterns (streaming)
- Fight to extend them
- Authors gone

# New APIs

- Great documentation
- Pure Javascript
- Real data structures
- Designed with extensibility in mind
- :asuth on IRC

# Now THIS...

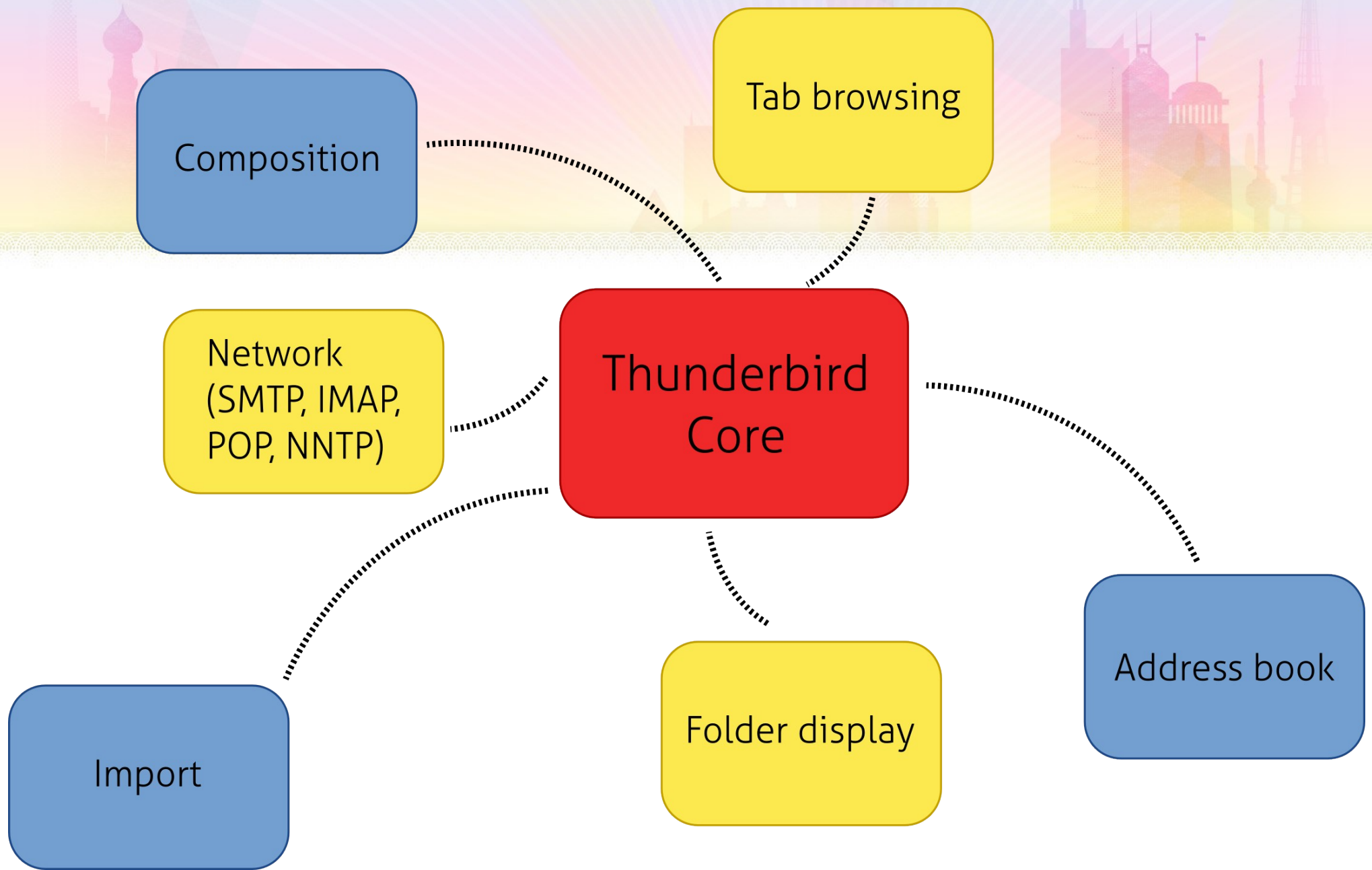
```
40 /* *****
41 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
42 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
43 *
44 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
45 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
46 *
47 * Dear Mortals,
48 *
49 * Please be advised that if you are adding something here, you should also
50 * strongly consider adding it to the other place it goes too! These can be
51 * found in paths like so: mailnews/.../build/WhateverFactory.cpp
52 *
53 * If you do not, your (static) release builds will be quite pleasant, but
54 * (dynamic) debug builds will disappoint you by not having your component in
55 * them.
56 *
57 * Yours truly,
58 * The ghost that haunts the MailNews codebase.
59 *
60 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
61 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
62 *
63 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
64 * ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION! ATTENTION!
65 * *****/
```

**... IS OVER**



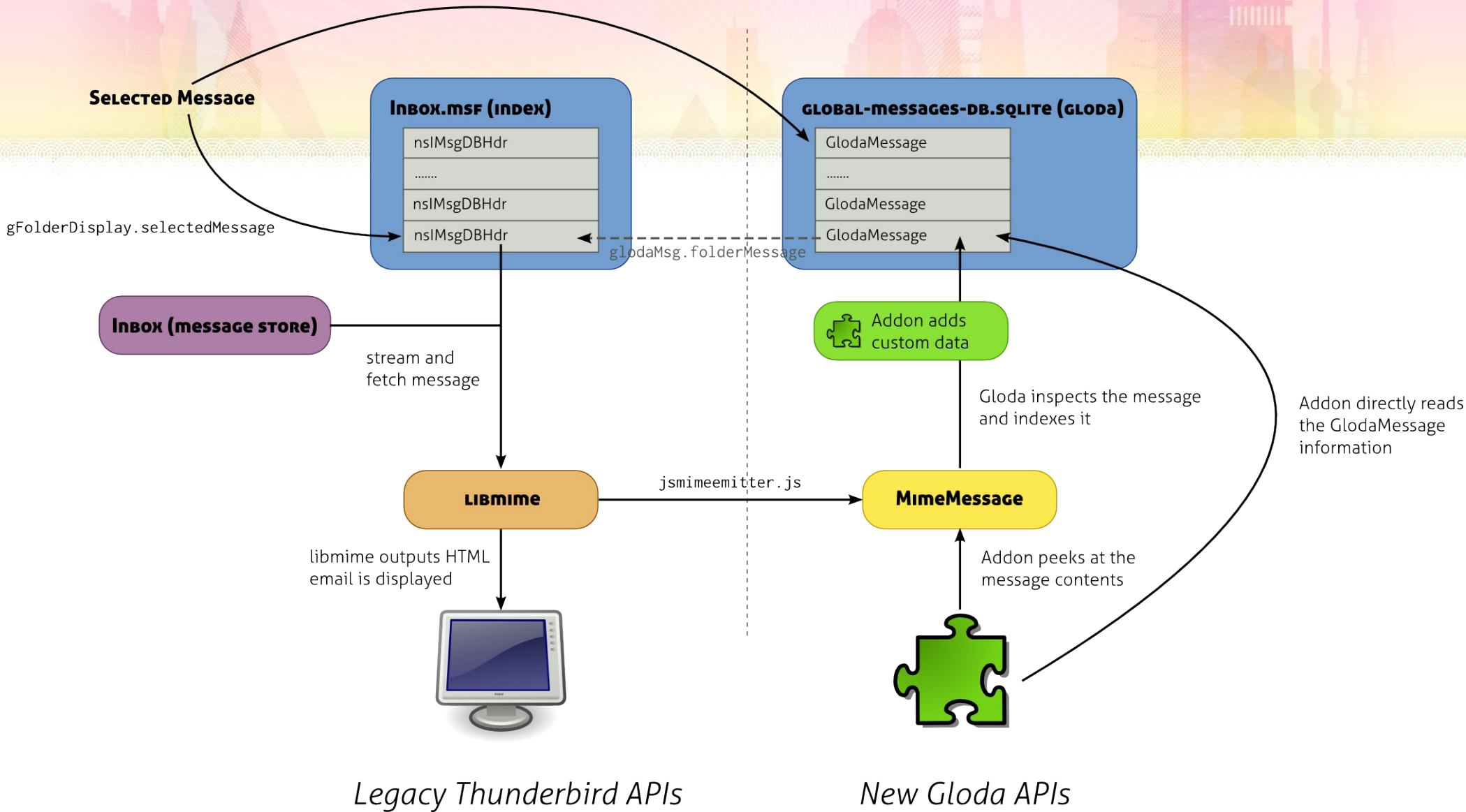
# Part I

## UNDERSTANDING HOW VARIOUS PARTS OF THUNDERBIRD FIT TOGETHER



# ZOOMING IN

```
Gloda.getMessageCollectionForHeader(gFolderDisplay.selectedMessage, ...)
```



# THE message LIST

The screenshot displays the Thunderbird email client interface. At the top, the title bar reads "Inbox - xulforum@gmail.com - Shredder". The menu bar includes "File", "Edit", "View", "Go", "Message", "Tools", and "Help". Below the menu bar, there are buttons for "Get Mail", "Write", "Address Book", "Tag", and "Glodebug", along with a search bar "Search all messages... <Ctrl+F>".

The left sidebar shows the "Unified Folders" view for the account "xulforum@gmail.com". The folders listed include "Inbox", "Drafts", "Templates", "Sent", "Archives", "Spam", "Trash", "Outbox", "Mailings" (with sub-folders "ChinesePod" and "The Economist"), "Tests GCV" (with sub-folders "Dont-sync-this" and "Quoting"), and "Local Folders" (with sub-folder "Local").

The main pane shows a list of messages in the inbox. The selected message is from "Jonathan Protzenko" with the subject "Bonjour", dated "01/27/2011 02:52 PM". Below the list, the message content is displayed, showing a thread of three "Me to Me" messages. The first message is the selected one, followed by a "First reply.." and a "Second reply..". Each message includes a "reply", "reply all", and "forward" button. The status bar at the bottom indicates "Unread: 0 Total: 7".

| Subject                           | From               | Date                |
|-----------------------------------|--------------------|---------------------|
| Bonjour                           | Jonathan Protzenko | 01/27/2011 02:52 PM |
| Re: Fwd: Fwd: Fwd: happy new year | Xulforum           | 01/14/2011 05:32 PM |
| Re: Fwd: ryan air                 | Xulforum           | 01/14/2011 05:30 PM |

**Bonjour**

★ Me to Me Thursday | more ▼  
Ça va ? 不错 !  
reply reply all forward

★ Me to Me Thursday | more ▼  
In xulforum@gmail.com [ Gmail / Sent Mail ]  
First reply..  
On Thu 27 Jan 2011 02:52:36 PM CET, Jonathan Protzenko wrote:  
Ça va ? 不错 !  
reply reply all forward

★ Me to Me Thursday | more ▼  
In xulforum@gmail.com [ Gmail / Sent Mail ]  
Second reply..  
On Thu 27 Jan 2011 02:52:36 PM CET, Jonathan Protzenko wrote:  
Ça va ? 不错 !  
reply reply all forward

jonathan.protzenko@free.fr is up to date Unread: 0 Total: 7

Gloda.getMessageCollectionForHeader(gFolderDisplay.selectedMessage, ...)

**Selected Message**

**Inbox.msf (INDEX)**

nsIMsgDBHdr  
.....  
nsIMsgDBHdr  
nsIMsgDBHdr

**GLOBAL-MESSAGES-DB.SQLITE (GLODA)**

GlodaMessage  
.....  
GlodaMessage  
GlodaMessage

gFolderDisplay.selectedMessage

glodaMsg.folderMessage

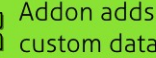
**Inbox (message store)**

stream and  
fetch message

**LIBMIME**

jsmimeemitter.js

**MimeMessage**



Addon adds  
custom data

Gloda inspects the message  
and indexes it

Addon directly reads  
the GlodaMessage  
information

libmime outputs HTML  
email is displayed



Addon peeks at the  
message contents



*Legacy Thunderbird APIs*

*New Gloda APIs*

# The message Header

The screenshot shows the Thunderbird email client interface. The title bar reads "Inbox - xulforum@gmail.com - Shredder". The menu bar includes "File", "Edit", "View", "Go", "Message", "Tools", and "Help". The toolbar contains "Get Mail", "Write", "Address Book", "Tag", and "Glodebug". The main window title is "Inbox - xulforum@gmail.com" with an "Add-ons Manager" tab. The "Unified Folders" pane on the left shows a tree view of folders for "jonathan.p...@free.fr", "xulforum@gmail.com", "Drafts", "Templates", "Sent", "Archives", "Spam", "Trash", "Outbox", "Mailings", "Tests GCV", and "Local Folders". The "Quick Filter" bar shows "Unread", "Starred", "Contact", "Tags", and "Attachment". The message list shows three entries: "Bonjour", "Re: Fwd: Fwd: Fwd: happy new year", and "Re: Fwd: ryan air". The selected message header is from "Jonathan Protzenko" with the subject "Bonjour", sent on "01/27/2011 02:52 PM". The header also shows "to You <xulforum@gmail.com>". The message body contains the text "Ça va ? 不错!". The status bar at the bottom indicates "jonathan.protzenko@free.fr is up to date" and "Unread: 0 Total: 7".

from Jonathan Protzenko ✨  
subject **Bonjour**  
to You <xulforum@gmail.com> ✨

01/27/2011 02:52 PM  
other actions ▾

Ça va ? 不错 !

jonathan.protzenko@free.fr is up to date  
Unread: 0 Total: 7

# The message pane

The screenshot displays the Thunderbird email client interface. The window title is "Inbox - xulforum@gmail.com - Shredder". The menu bar includes "File", "Edit", "View", "Go", "Message", "Tools", and "Help". Below the menu bar are icons for "Get Mail", "Write", "Address Book", "Tag", and "Glodebug", along with a search bar for "Search all messages... <Ctrl+K>".

The main interface is divided into three panes:

- Left Pane (Unified Folders):** Shows a tree view of folders. The "Inbox" folder is expanded, showing sub-folders for "jonathan.p...o@free.fr" and "xulforum@gmail.com". Other folders include "Drafts", "Templates", "Sent", "Archives", "Spam", "Trash", "Outbox", "Mailings", "ChinesePod", "The Economist", "Tests GCV", "Dont-sync-this", "Quoting", and "Local Folders".
- Center Pane (Message List):** Displays a list of messages with columns for "Subject", "From", and "Date". The selected message is "Bonjour" from "Jonathan Protzenko" dated "01/27/2011 02:52 PM". Other messages include "Re: Fwd: Fwd: Fwd: happy new year" and "Re: Fwd: ryan air".
- Right Pane (Message Content):** Shows the details of the selected message. It includes a toolbar with "reply", "forward", "archive", "junk", and "delete" buttons. The message header shows "from Jonathan Protzenko", "subject Bonjour", and "to You <xulforum@gmail.com>". The message body contains the text "Ça va ? 不错!".

At the bottom of the window, a status bar indicates "Jonathan.protzenko@free.fr is up to date" and "Unread: 0 Total: 7".



# The **streaming pattern**

... is good for displaying messages.

That's all.



# Part II

## USING GLODA: AN EXAMPLE THE “EMAIL CHAT” EXTENSION

# THE GLODA DESIGN

- Gloda **nouns**: message, conversation, identity, contact
- Relationships between nouns:
  - message → conversation
  - message → identity → contact
  - message → contact
  - etc.

# The GLoDa Design (2)

- Nouns have attributes:
  - **message:** from, to, date, identity
  - **contact:** name, email
  - **conversation:** subject, messages
  - etc.
- Attribute providers:
  - builtin
  - your own

# The GLODA DESIGN (3)

- All nouns are stored in a database
- Each attribute is stored in a row
  - fundamental = a SQL column
  - extra = a “data” field with JSON

# The GLoDa Design (4)

- A powerful query engine
  - query messages (from, to, date, attachments, FULLTEXT body)
  - query conversations
  - query contacts
- What backs the fulltext search in Thunderbird 3
- A convenient abstraction over the old APIs

Gloda.getMessageCollectionForHeader(gFolderDisplay.selectedMessage, ...)

**Selected Message**

**Inbox.msf (INDEX)**

nsIMsgDBHdr  
.....  
nsIMsgDBHdr  
nsIMsgDBHdr

**GLOBAL-MESSAGES-DB.SQLITE (GLODA)**

GlodaMessage  
.....  
GlodaMessage  
GlodaMessage

gFolderDisplay.selectedMessage

glodaMsg.folderMessage

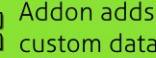
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the GlodaMessage  
information

libmime outputs HTML  
email is displayed



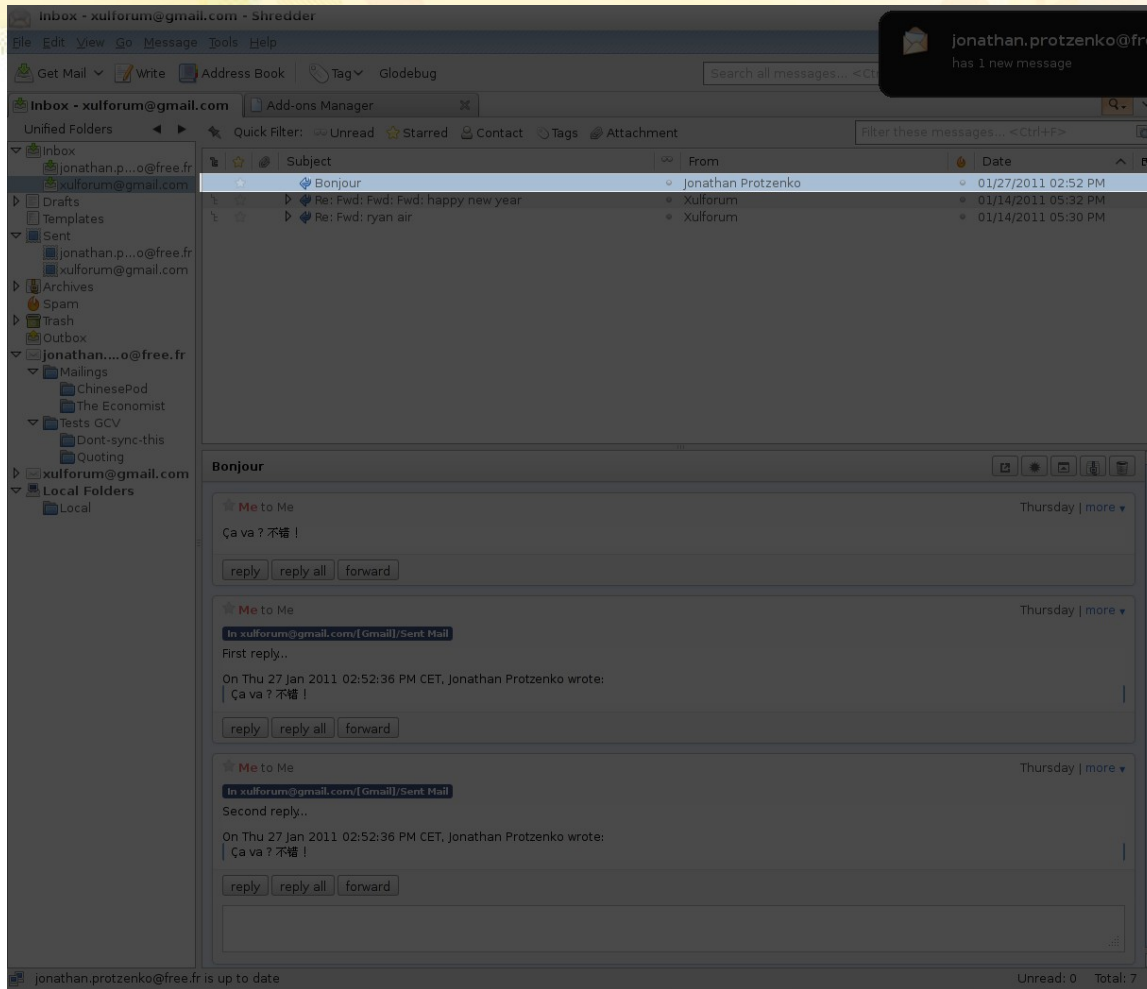
Addon peeks at the  
message contents



*Legacy Thunderbird APIs*

*New Gloda APIs*

# THE LIFE OF a Gloda query



We start with the selected message.

```
var msgHdr =  
gFolderDisplay  
.selectedMessage
```

```
nsIMsgDbHdr
```

# The LIFE OF a GLODA query (2)

```
Gloda.getMessageCollectionForHeaders([msgHdr], {
  onItemsAdded: function (aItems) {},
  onItemsModified: function () {},
  onItemsRemoved: function () {},
  onQueryCompleted: function (aCollection) {
    let items = aCollection.items;
    if (items.length) {
      let glodaMsg = items[0];
    }
  },
}, null);
```

GlodaMessage

# The LIFE OF a GLODA query (3)

```
glodaMsg.conversation.getMessageCollection({
  onItemsAdded: function (aItems) {},
  onItemsModified: function () {},
  onItemsRemoved: function () {},
  onQueryCompleted: function (aCollection) {
    let glodaMessages = aCollection.items;
    // do something now
  },
}, null);
```

GlodaConversation

# Viewing the results

- Open a new chrome tab (on MDN)
- Iterate over GlodaMessage instances: from, to, read, starred, tags, attachments, date, \_indexedBodyText (on MDN)
- Output HTML using jquery-tmpl
- Use jquery for the UI, and thunderbird-stdlib to send a quick reply

# WHY GLODA?

- Query updated in real-time:
  - ✓ read/unread
  - ✓ starred/unstarred
  - ✓ tags
  - ✓ message added/removed from conversation
- Register your own metadata if you feel like it
- Need to perform some complex operation? Use `glodaMessage.folderMessage //a nsIMsgDbHdr`

# In THE end...

- One afternoon
- ~250 lines of JS
- Pure HTML UI
- Packages thunderbird-stdlib, jquery, jquery-tmpl
- Available on GitHub, fully documented source

*<http://github.com/protz/Email-chat>*



# Part III

## OTHER THINGS YOU CAN DO OTHER APIS FOR YOU

# ENRICH Gloda WITH CUSTOM METADATA

- Run a Gloda query... you need some property of the messages! Say, `X-Bugzilla-Who` header.
- Rather than stream the message again (`MimeMessage`), add a gloda plugin
- A gloda plugin is passed a `MimeMessage`, extract information, records it in the `GlodaMessage`
- Stays in the database

# COMPLEX STUFF WITH nsIMsgDBHdrs

- Display a message in an iframe (on MDN)
- Reply to a message (on MDN)
- Extract the message body (on MDN)
- Change a message's properties

# Meet THUNDERBIRD-STD LIB

- A pet project of mine
- Wrap complex XPCOM manipulations:
  - send a message
  - quote a message
  - various actions on nsIMsgDbHdrs: archive, delete, mark as read, star/unstar, extract body, is the message draft, junk, inbox, sent...?
- On GitHub! <http://protz.github.com/thunderbird-stdlib/>

# OTHER AREAS OF INTEREST

- New account types (twitter, exchange web services)
- Content tabs (web tabs),
- More experiments: thunderbird conversations, compose in a tab...



# Part IV

## THE FINAL (KEY)WORD

# The STRATEGY

- Use Gloda to manipulate and query messages
- Use HTML and Javascript to drive the UI
- Don't bother dealing with nsIMsgDbHdrs unless you have to

come and find us! [#maildev](http://irc.mozilla.org)

# LINKFEST

- <https://clicky.visophyte.org/momo/docs/gloda/outline/index.html>
- [http://protz.github.com/thunderbird-stdlib/doc/symbols/\\_global\\_.html](http://protz.github.com/thunderbird-stdlib/doc/symbols/_global_.html)
- <http://mxr.mozilla.org/central/source/mailnews/db/gloda/modules/>
- <https://developer.mozilla.org/en/Extensions/Thunderbird/HowTos>

# LINKFEST (2)

- [https://developer.mozilla.org/en/Thunderbird/Creating\\_a\\_Gloda\\_message\\_query](https://developer.mozilla.org/en/Thunderbird/Creating_a_Gloda_message_query)
- <http://blog.xulforum.org/index.php?post/2011/01/03/An-overview-of-Thunderbird-Conversations>
- <https://wiki.mozilla.org/Thunderbird/CommunicationChannels>
- IRC: [irc.mozilla.org #maildev](irc://irc.mozilla.org/#maildev)



# THAT'S ALL FOLKS

... questions ?

(I'm available after the presentation!)